United States
Department of
Agriculture

Forest Service

**Northern
Research Station**

General Technical
Report NRS-P-14

Proceedings of the 2006 Northeastern Recreation Research Symposium

April 9-11, 2006
Bolton Landing, New York

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PROCEEDINGS OF THE 2006 NORTHEASTERN RECREATION RESEARCH SYMPOSIUM

April 9-11, 2006

Program Chair:

Gerard Kyle
Texas A&M University

Compiled by:

Robert Burns
West Virginia University

Karen Robinson
West Virginia University

Sponsors:

USDA Forest Service
Venture Publishing

Published by:

U.S. Forest Service, Northern Research Station

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Tourism Marketing I

DO SPORT TOURISM EVENTS HAVE A BRAND IMAGE?

Kyriaki Kaplanidou
Ph.D. Candidate
Michigan State University
Department of Community, Agriculture, Recreation and Resources Studies
131 Natural Resources Building
East Lansing, MI 48824
kaplanid@msu.edu

Christine Vogt
Michigan State University

Abstract.—Sport tourism events are used by destinations to enhance their image. The components of an event's brand image, however, have not been well studied. Keller (1993) suggested that brand image consists of brand associations featuring attributes, benefits, and attitudes toward the "product." Understanding these brand associations will help determine those elements that constitute a sport tourism event's image. This study aimed to measure a sport tourism event's brand image associations from the participants' perspective. The sport tourism event utilized in this research was an annual bicycling event in the state of Michigan. To explore the brand image associations bicyclists have about sport tourism events, two focus groups were used. The results revealed the image of a sport tourism event consists of mental imageries related to organization, environment, physical activity, socialization, fulfillment and emotions. Implications for both event and destination marketers are discussed.

1.0 INTRODUCTION

Destination marketers have focused on hosting sport tourism events as a strategy to enhance the destination image and differentiate its tourism products (Chalip & Green 2001, Chalip et al. 2003, Chalip & McGuirty 2004, Dimanche 2003, Jago et al. 2003). Sport events can range from mega sporting events, such as the Olympic Games, to medium-size sport events, such as national championships, to smaller-size sport events, such as local cycling, walking and running events. Some smaller-size sport events can also be characterized as leisure sport events, and participation in them has increased in recent years because people desire more active holidays. As a result, interest in sports like cycling, golf, jogging and hiking is booming (de Villier, 2001). For example, sport travel generated $2.4 billion spending in Canada while the total person-trips related to sport travel (over 80 km) was 11,982,000 in 2004 (Canadian Sport Tourism Alliance 2006). Despite the importance of sport tourism events as a marketing vehicle to promote a destination, research on sport tourism events' image is scarce. Studies have used brand personality scales or adjectives to measure the image of a sporting event and its similarities to sponsor brands (e.g., Ferrand & Pages 1996, Gwinner & Eaton 1999, Musante et al. 1999), which limits the concept of image to that of brand personality. In addition, these studies have focused on spectators' perceptions, leaving out another major category of sport tourist—the participant. More research is needed to understand the constituents of a sport tourism event image. This study aimed to measure a sport tourism event's brand image associations from the participants' perspective.

2.0 LITERATURE REVIEW

Destination marketers seek smaller recurring events that take place on a regular basis to promote their destination (Dimanche 2003, Getz 1998). In addition, event marketers need to know how to achieve a better brand image for their events. It is therefore important to understand and define the sport tourism event image and its components. Local sport tourism events such as bicycling, running, or walking are taking place in smaller communities and have not been the focus of sport tourism studies (Chalip & Green 2001). As far as the measurement of a sport tourism event's image is concerned, the literature does not currently provide a scale or a definition for a sport tourism event's image. The closest attempt to identify the image of an event was offered by Gwinner (1997), who proposed that an event's image is a function of the type of event (e.g., sports, festival, arts), the event characteristics (e.g., size, professional status, history, venue, promotional appearance) and individual factors (e.g., meanings associated with the event, strength of meanings, and history with the event). However, Gwinner's approach thus far has been generic and not customized for sport tourism events which feature elements such

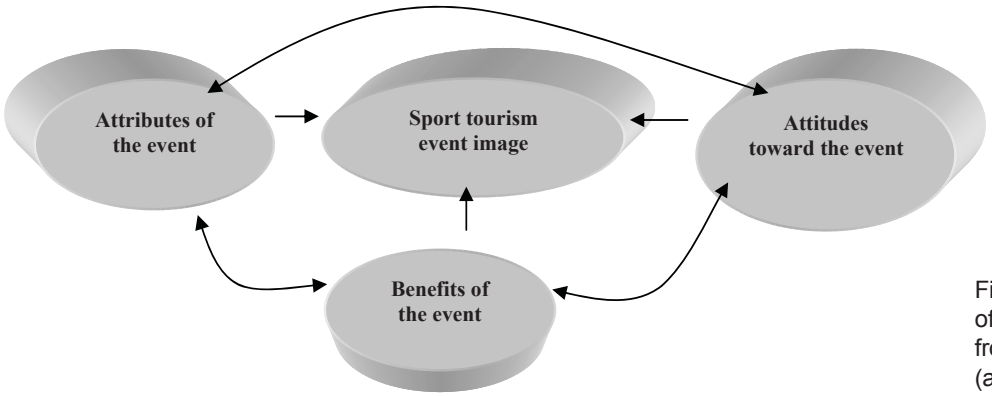

Figure 1.—A conceptual framework of the sport tourism image event from the participant's perspective (adapted from Keller, 1993).

as competition, socialization, skill requirement, and knowledge. Other studies (e.g., Ferrand & Pages 1996, Gwinner & Eaton 1999, Musante et al. 1999) measured the image of the sport event in the context of matching it with a sponsor using adjectives to describe the event's image. Musante et al. (1999) used the brand personality scale (Aaker 1997) to measure the personality match of sponsor brands and sports. Overall, these studies aimed to measure the fit between sport event image and sponsor image and found the image of the sport event was perceived as sophisticated, exciting (Musante et al. 1999), strong, methodical, young, masculine (Martin 1994), popular, entertaining, dynamic, and successful (Ferrand & Pages 1996) by spectators.

Keller's (1993) seminal work on brand equity presents a thorough theoretical framework on brand knowledge and its constituents: brand awareness and brand image. Brand awareness "is related to the strength of the brand node or trace in memory, as reflected by consumers' ability to identify the brand under different conditions…in particular brand name awareness relates to the likelihood that a brand name will come to mind and the ease with which it does so" (Keller 1993, p. 3). Brand image was defined by Keller as "perceptions about a brand as reflected by the brand associations held in consumer memory" (1993, p. 3). Keller (1993) postulated that brand image is defined by types of brand associations, which in turn are defined by attributes, benefits, and attitudes toward the brand. Attributes are product related (ingredients necessary for performing the product or service) and non-product related (external aspects of the product or service that relate to its purchase or consumption) (Keller 1993). Benefits are related to the personal value consumers assign to the product or service and consist of functional, experiential, and symbolic dimensions (Keller 1993). Functional benefits are related to intrinsic advantages of the product or service, experiential benefits relate to what it feels like to use the product or service, and symbolic benefits are the extrinsic advantages of the product or service consumption (Keller 1993). Finally, brand attitudes are consumers' overall evaluations of a brand (Keller 1993).

Sport tourism events can have a brand image formed through media exposure, word-of-mouth, advertisement and personal experiences. Sport tourism events consist of certain attributes, have benefits or costs for the sport tourist (participant and spectator), and can be the object of attitudes, especially for those having participated in such an event. Keller's (1993) framework is suitable to explore the dimensionality of a sport tourism event image because a sport tourism event can have all these components. This framework is suitable for both participants and spectators since both groups will have formed perceptions of these components. However, since the nature of the experience is different for active participants than spectators (Shamir & Ruskin 1984), this study is focusing on exploring the participants' perspective, as there are not many studies that have investigated the images this segment of sport tourists hold. Figure 1 presents a visual representation of what may constitute the image of a sport tourism event from the participant's point of view.

Although Keller's framework is indicative of what may constitute the image of a sport tourism event, qualitative research is required to understand and define

the brand image associations a consumer has about a sport tourism event (Dobni & Zinkhan 1990, Keller 1993). This type of research is necessary because sport tourism event organizers need to understand the event participants' salient image components. Also, event organizers can benefit from this information by working cooperatively with destination marketers to promote the event and promote the area where it is taking place. In summary, this study will adopt Keller's (1993) theoretical framework to examine the brand image associations sport tourism participants have about an event.

3.0 METHOD

Based on Keller's (1993) recommendations to measure the characteristics of brand associations, qualitative techniques were employed to suggest possible image associations. For the purpose of this study, two focus groups were used to study the image of sport tourism events. Focus groups were used to explore attitudes, opinions, and attributes of sport tourism events for future questionnaire items development and pilot testing (Fern 1982, Krueger & Casey 2000). The focus group participants consisted of bicyclists who participated in organized bicycle tourism events. Bicyclists were chosen because the target population's demographics were fairly similar to the demographics of U.S. sport participants (SGMA 2004). The subjects were recruited from a university bicycling club and a bike event participant list. The total number of participants was twelve, 8 in the first group and 4 in the second group. The authors moderated the two focus groups. Research questions aimed to elicit event attributes, attitudes toward sport tourism events, benefits of participating in sport tourism events, and top of mind images/characteristics the participants associated with bicycling sport tourism events. Following the research questions as guides, the text from the focus group's discussion was coded for relevant themes. As themes were developed, the researchers assigned a working definition to each code.

4.0 FOCUS GROUPS DATA ANALYSIS AND RESULTS

Data were derived from questions based on Keller's (1993) framework, which proposed that brand images consist of attitudes, benefits and attributes toward an entity. After the completion of the focus groups, note-based analysis of the data took place (Krueger & Casey 2000). The assistant moderator took notes during both focus groups. The moderator prepared a brief written summary of the key points after the end of the focus groups and discussed the key points with the assistant moderator in order to reach agreement. Themes were identified and agreed upon between the moderator and assistant moderator based on the frequency (how many times something was said), the specificity (detail), the emotion (how emotionally they were expressed), and the extensiveness (how many people said something) (Krueger & Casey 2000). The themes derived from the analysis were the following:

- **Organizational theme** (safer routes, avoid roads/ use trails, organized transportation, convenient, event atmosphere, expensive/inexpensive entry fees, registration deadlines, vacation destinations for overnight stays, event activities at destinations, good services—e.g., showers);
- **Environment theme** (beautiful scenery, countryside, new places, the best of an area);
- **Physical activity theme** (healthy, endurance, perseverance, good physical condition, training);
- **Social activity theme** (socialization, meeting other people, vacation with family and friends, new things to do);
- **Fulfillment theme** (selffulfillment, accomplishment, challenge); and
- **Emotional theme** (relaxing, exciting, enjoyment, pride, happy, friendly, range of emotions before, during and after).

The words in parentheses are actual words used by participants in each focus group. The two focus groups seemed to differ in perceptions of physical activity and training. The university bicycling club was geared more toward the competitive nature of the events, while the bicycle tourism event participants were more interested in the healthy and vacation oriented nature of the activity. Some examples of the comments participants had about the themes mentioned above were the following:

"You know...it is just a great place to meet people because you meet people basically like-mind. Wanting recreation,

wanting some physical activity on their vacation, so… already you are off to a good start of, you know, of just getting along with people. And people do, I mean people can be riding along and you may not know people around you but all of a sudden you start talking and it is very friendly. And of course the sights are just great…"

Another person said:

"For me, the ride is fairly challenging, especially the first one that I went on to choose. I was just not prepared to do 70 miles days back to back on the first ride".

Another focus group participant commented on the challenging aspects of the event, the nature and the relaxing atmosphere:

"It [the event] is an accomplishment and at the same time it raises people's awareness. They don't have to drive their cars everywhere, they can ride their bicycles, and enjoy nature and if there are other people doing it, then if they want to do that there is an option. [The Michigander brings to mind images of] enjoy nature and no worries, there is no stress, there is no to do list. People have time to talk to you or they have time to help you and nobody is looking at their watch and nobody has an appointment they had to get to. So, you get quality conversations with people."

Finally, another participant commented on the opportunities the event offers:

"When you go on a trail you come to places you do not even get to when you drive your car."

Based on these data, a definition of the sport tourism event image was proposed:

> The image of a sport tourism event is the mental representations sport tourism participants have about the organization, environment, physical activity, socialization, fulfillment, and emotional involvement with the event.

The purpose of this definition is to provide the basis for the development of a scale that will measure the themes identified in the definition.

5.0 DISCUSSION, IMPLICATIONS AND CONCLUSION

This study was a preliminary step toward identifying the images active sport tourism participants associate with a specific sport tourism event. The results indicated organization, environmental, physical activity, socialization, fulfillment, and emotional imageries were associated with the event.

Events are branded products through marketing communications (brochures, websites, magazines, word-of-mouth), and they have to communicate the proper brand image for their target markets and the entities that are part of their image (e.g., environment is related to the hosting destination's resources). Jago et al. (2003) suggested sport event marketers and destination marketers should work together to capitalize on sport events as poles of tourism attraction. The results from this study reinforce this view. In the latest tourism business magazine, the Canadian Tourism Commission (CTC) (2006b) discussed the role of events in selling destinations. Although the connection between athletic achievement and tourism is not plainly evident, the achievement on the one field will have an impact on the other (Canadian Tourism Commission 2006b). CTC also presents a website that is the one-stop shopping resource for athletes, coaches, and spectators. CRC also encourages the sport and tourism communities to work together to take advantage of a range of opportunities arising from the upcoming Olympic Games in 2010 and from Canada's strong brand image as a hosting destination (Canadian Tourism Commission 2006a).

The definition of sport tourism event image produced in this study unveils those image items that participants favor about a sport tourism event. These items can be utilized in the development of a destination brand. The results from the development of a sport tourism event image definition revealed that destinations can utilize the organizational, environmental, physical activity, socialization, fulfillment and emotional involvement themes to create related branding images for their destination. The goal would be to attract more people to destinations that identify with those images and increase the numbers of participants in the event because

event image indirectly influences intentions to return to the destination that hosted that event (Kaplanidou 2006). For example, respondents of this study rated the event highly on how fulfilling and healthy it was. Destination and event marketers could utilize promotional images related to fulfillment and healthy activities and places in relation to re-hosting the event to achieve brand leveraging or brand development. This information can also be used to attract sponsoring companies that carry similar brand images and aim for congruency enhancements of their company's image. If the event scores high in items the sponsor company aims to promote, then brand image enhancement could potentially occur. Also, if destinations are the sponsor of an event, then the same implications apply to them.

Event marketers usually focus on spectators. However, participants and their families coming along to support them, are guaranteed visitors in the destination that hosts the sport tourism event. Understanding the active sport tourist (participant) can help event marketers better target participants' needs. For example, in a study of runners who could be participants in the Old Coast marathon event in Australia, Chalip and McGuirty (2004) suggested four clusters of runners: dedicated runners, running tourists, active runners, and runners who shop and concluded that each group prefers different activities offered at the destination to be bundled with the event (e.g., dedicated runners preferred marathon official parties as an activity bundled with the event). These results are examples of event marketing customization for participant clusters. These clusters are identified based on their activity preferences at the destination but also could be segmented based on their event image perceptions. For example, dedicated runners may have higher perceptions in the image item of health and organization, while running tourists may have higher perceptions about emotional image theme and socialization image theme. Based on these perceptions, target marketing approaches can be customized to fit the needs and perceptions of each segment. Since this was a preliminary study, future research should develop and test a set of scale items with a sample of sport tourists.

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IMAGE OF THE UNITED STATES AS A TRAVEL DESTINATION: A CASE STUDY OF UNITED KINGDOM COLLEGE STUDENTS

Sung Hee Park
Department of Community, Agriculture, Recreation & Resource Studies
Michigan State University
131 Natural Resources Building
East Lansing, MI 48824

Pavlina Latkova
Michigan State University

Sarah Nicholls
Michigan State University

Abstract.—The youth travel market is a major growth segment of international tourism. The purpose of this study was to explore the travel behaviors and perceptions of United Kingdom college students with regards to the United States as a travel destination. Two objectives were formulated, to determine whether image dimensions differed based on (1) travel behavior, and (2) socio-demographic characteristics. Results suggest that the UK students studied were mostly concerned with a destination's provision of outdoor recreation, infrastructure, events/attractions, safety/environment, transportation, and value/cost. Additionally, level of agreement with the six image dimensions differed significantly depending on past travel experience, number of previous trips, purpose of and sources of travel information for the most recent trip, and age. Visitors identified a more positive image of the U.S. than non-visitors, signifying visitation's positive impact on image. Such findings have important implications for the more effective marketing of destinations to the growing youth segment.

1.0 INTRODUCTION

The youth tourism market is a major growth segment of international tourism and accounts for 20-25 percent of total international tourism activity (WTO, in Richards & King 2003). As a significant sub-group of the larger youth travel market, the student college market represents a multibillion-dollar business (Bywate 1993, Chadee & Cutler 1996). However, the lack of a widely accepted definition of a youth traveler and the prevailing misconception that youth travelers exhibit low levels of spending have led to limited research into youth and students travelers' perceptions, images, and behaviors (Carr 1998) and has also resulted in the under-marketing of this segment (Seekings 1998; Richards & Wilson 2004).

The low-spender assumption is partly a result of failure to differentiate "between spend per transaction and spend per visit" (Seekings 1998, p. 49). While young travelers tend to be price sensitive, they generate a higher number of transactions and as a result, their spending per visit is often equivalent to adult travelers' spending. Additionally, their already high spending is enhanced by long-stay visits (Seekings 1998). Accordingly, a study of the economic impact of independent youth travel in Canada revealed that youth travelers tended to stay longer (over 60 days on average), which resulted in higher overall spending (D'Anjou 2004, Richards & King 2003). Independent youth travelers also benefit local economies because they tend to purchase locally produced goods (D'Anjou 2004; Seekings 1998), thus resulting in relatively low leakage of sales revenue (Seekings 1998). Since young travelers are among the first explorers of new places, they can play an important role in the development of a destination's tourism industry. Today's young travelers will become future travelers with a significant amount of discretionary income to be spent on travel (Reisinger & Mavondo 2002). Additionally, satisfied youth travelers can become a future target market as they represent potential returning visitors (Seekings 1998).

The United Kingdom (UK) is a leading European country in terms of international youth outbound travel. In 2000, British youth took 6.4 million international trips, accounting for 12 percent of total British international travel, and the United States was the third preferred destination (WTO 2002). The high involvement of British youth in travel is often enabled by participation in a "gap year". This gap year (a break from education or employment) gives young people an opportunity to engage in some form of travel and/or voluntary work. It has been estimated that approximately 200,000 British young people aged 18-25 take a gap year per annum (Simpson 2005).

Though the U.S. is still the world's leading recipient of youth tourists (Reisinger & Mavondo 2002), the U.S.' competitors, mainly the United Kingdom, Australia, New Zealand, and Canada (NAFSA 2003) are trying to attract the youth and college student market by promoting themselves as educational tourism destinations (Son & Pearce 2005), while drawing income away from the U.S. The importance of the student market has also been recognized by other countries, such as Korea, which have created and launched marketing strategies specifically designed to attract youth and college student travelers (Shanka & Musca 1998).

A large number of studies have established that image has an important influence on destination selection (e.g., Crompton 1979, Gartner 1993, Son & Pearce 2005). Further, many studies have examined international students enrolled at U.S. institutions of higher education. For example, Hsu and Sung (1996) examined international students' travel characteristics, while Chen and Kerstetter (1999) studied international students' perceptions of rural Pennsylvania. Other authors have compared international and American college students with regards to their travel behavior (Field 1999) and travel motivations (Kim & Jogaratnam 2002). Notably, there has been a growing effort to determine youth travelers' image of Australia as a travel destination (e.g., Murphy 1999, Shanka, Ali-Knight & Pope 2002; Son & Pearce 2005; Waitt 1996). However, there do not appear to be any studies that have investigated youth and college students' perceptions with regards to the U.S. as a travel destination.

In order to secure or expand the U.S. youth tourism market share, U.S. tourism marketers should pay close attention to youth travelers' behaviors and perceptions of the U.S. as a travel destination. In particular, understanding the travel behaviors and images of UK students can help tourism marketers enhance knowledge of U.S. destinations, increase their accessibility and demand among these students (Michael et al. 2003), and overall more effectively target this lucrative travel market for which the U.S. is still the number one international destination (WTO 2002).

The purpose of this study was to examine the perceptions and behaviors of UK college students with regards to the U.S. as a travel destination. More specifically, the study had two objectives: (1) to determine whether students' perceptions of the US differ based on travel behavior, and (2) to determine whether students' perceptions of the US. varied with socio-demographic characteristics.

2.0 METHODS

Students enrolled at a UK university in spring 2005 comprised the study population. A total of 219 self-administered surveys were collected for a response rate of 27 percent. Since the data collected are based on a convenience sample of students at a single university, they may not represent the entire UK college student population.

The study elicited information regarding recent travel behavior, characteristics of the most recent (if any) trip to the U.S., image of the U.S. as a travel destination, and socio-demographic characteristics. Demographics and travel behavior were analyzed using descriptive statistics, while t-tests were used to compare perceptions of students who had, and had never, visited the US. Based on a review of the literature (Baloghu & McCleary 1999, Chen & Kerstetter 1999, Gallarza et al. 2002, Sirakaya & McLellan 1997), 33 destination-specific image items were identified as important for a college student when selecting a travel destination. The reliability of image items was tested using Cronbach's coefficient alpha. A principal component analysis (PCA) with a Varimax rotation was used to examine underlying dimensions of the image items. Only those factors with eigenvalues equal or greater than 1.0 and items with factors loadings of at least 0.5 were retained (Tabachnick & Fidell 1983). The final number of image items was reduced to 22. MANOVA and one-way ANOVA were then used to examine whether the identified image dimensions differed with travel behavior and socio-demographic characteristics.

3.0 RESULTS

The respondents were predominantly female (59.2%), first-year students (65.7%), and currently not employed (58.4%). Their ages ranged between 18 and 21 (86.7%). The majority (72.5%) of respondents grew up in a village/small town/rural area. Approximately 44 percent

(43.8%) of respondents had visited the U.S. on at least one occasion, and the majority of respondents (78.9%) had traveled with their parents or other family members on their first U.S. trip. Regarding their most recent U.S. experience, more than 50 percent of respondents (52.3%) indicated that entertainment/sightseeing was the primary purpose of this trip, while 20.5 percent identified visiting friends or relatives. The most commonly identified primary source of information for the most recent trip was the recommendations of friends or colleagues (25.0%), and more than 80 percent (80.4%) self-organized their trip. The majority of respondents who had previously visited the U.S. indicated they would revisit the same destination (66.3%) and/or (re)visit other U.S. destinations (72.6%).

T-tests revealed several statistically significant differences ($p<.05$) between visitors to the U.S. and non-visitors in their responses regarding image of the U.S. as a travel destination. Respondents with past travel experience were more likely to perceive the U.S. as a place that is friendly, relaxing, and restful and a place that offers a variety of cultural and historical attractions, parks and open spaces, and high-quality accommodations. Previous visitors were also most likely to perceive the U.S. as a unique vacation destination that is safe and inexpensive and offers good value for the money. Generally, previous visitors rated the U.S. more highly than non-visitors across the entire set of image statements. In fact, previous visitors rated the U.S. higher on all ten statements where differences were large enough to be statistically significant. While these results do not definitively establish that visitation enhances image, it is nonetheless encouraging because visitation does not appear to have a negative impact on image.

Factor analysis identified six image dimensions, *outdoor recreation; infrastructure; events and attractions; safety and environment; transportation;* and, *value and cost,* which cumulatively accounted for 60.2 percent of the variance explained. A Cronbach's alpha of 0.86 was obtained for the entire scale with alphas ranging from a high of 0.80 to a low of 0.64 for the individual factors. Five items related to outdoor recreation contributed heavily to the first factor and had a Cronbach's alpha of 0.80 and an eigenvalue of 5.68, and accounted for 25.8% of the variance explained. Factor 2 (infrastructure) consisted of five items (Cronbach's alpha of 0.72, eigenvalue of 2.15, and 9.8 percent of the variance). Four items associated with events and attractions loaded on the third factor (.72, 1.66, 7.5%). The four items dealing with safety and environment loaded on the fourth factor (.69, 1.43, 6.5%). Two items pertaining to transportation loaded on the fifth factor (.71, 1.30, 5.9%). Factor 6 (value and cost) was also comprised of two items (.64, 1.04, 4.7%) (Table 1).

For follow-up analysis, the items that comprised each factor were added together to generate a mean score for each of the six dimensions. The overall mean scores and standard deviations (SD) for the six image dimensions were as follows: outdoor recreation, 4.02 (SD = 0.65); infrastructure, 3.92 (SD = 0.58); events and attractions, 3.70 (SD = 0.67); safety and environment, 3.00 (SD = 0.66); transportation, 3.30 (SD = 0.85); value and cost, 2.90 (SD = 0.83).

To determine whether general image dimensions differed depending on travel behavior, MANOVA, one-way ANOVA, and correlation procedures were used. Several significant differences were found. The results of the MANOVA procedure indicated that image dimensions differed depending on previous travel experience, number of previous trips, purpose of trip, and source of travel information. A follow-up one-way ANOVA procedure showed that there were significant differences with four travel behavior variables. Significant differences were found for four of the six image dimensions*, infrastructure, events and attractions, safety and environment,* and *value and cost,* for previous travel experience. The results indicated that previous visitors were more likely than non-visitors to agree with the *infrastructure, events and attractions, safety and environment,* and *value and cost* dimensions. Furthermore, respondents who had traveled to the U.S. twice were found to be more likely than respondents who had visited once, to agree with the *outdoor recreation* and *safety and environment* dimensions. The results indicated that individuals who traveled to the U.S. for entertainment and sightseeing were significantly more likely to agree with the *transportation* dimension than those who traveled to the U.S. for other purposes. Furthermore, respondents who obtained travel information from a travel agent were also significantly

Table 1.—Image Dimensions

Attribute Statement	Outdoor Recreation	Infra-structure	Events/ Attractions	Safety/ Environment	Trans-portation	Value/Cost
Offers many opportunities for outdoor recreation	0.816					
Offers outstanding scenic beauty	0.746					
Has many parks and open spaces	0.719					
Offers a lot of sports facilities	0.666					
Has good beaches	0.613					
Has a high standard of living		0.706				
Is an easy place to communicate in		0.665				
Is a good place to shop		0.646				
Offers high quality accommodations		0.614				
Offers a wide variety of restaurants		0.554				
Offers a variety of attractions			0.779			
Offers many festivals and events			0.73			
Offers many cultural/historical attractions			0.676			
Offers a variety of things to see and do			0.586			
Is a restful and relaxing place				0.714		
Has a clean environment				0.686		
Is a safe place				0.632		
Is a friendly place				0.562		
Is an easy place to get around					0.774	
Offers good ground transportation services					0.769	
Offers good value for money						0.845
Is an inexpensive destination						0.744
Eigenvalue	5.68	2.15	1.66	1.43	1.30	1.04
Variance explained (percentage)	25.8	9.8	7.5	6.5	5.9	4.7
Cumulative variance explained (percentage)	25.8	35.6	43.1	49.6	55.5	60.2
Cronbach's alpha	0.80	0.72	0.72	0.69	0.71	0.64

more likely to agree with this dimension than students who used different sources of travel information (Table 2).

MANOVA and one-way ANOVA procedures were also employed to determine whether individuals' responses to the general image dimensions differed depending on socio-demographic variables. The results of the MANOVA procedure indicated that image dimensions did differ with age. A follow-up one-way ANOVA showed that there was a significant difference for one of the six image dimensions, *infrastructure*. Respondents aged 18 were significantly more likely to agree with the *infrastructure* dimension than individuals aged 19 or older (Table 2).

4.0 APPLICATION OF RESULTS

Results suggest that the UK students studied were concerned with a destination's provision of outdoor recreation, infrastructure, events and attractions, safety and environment, transportation, and value and cost. Levels of agreement with the six image dimensions differed significantly depending on past travel experience, number of previous trips, age, trip purpose, and sources of travel information for the most recent trip.

Table 2.—Overall Scores on Image Dimensions by Travel Behaviors

Travel behavior	Outdoor Recreation	Infrastructure	Events & Attractions	Safety & Environment	Trans-portation	Value & Cost
Previous travel experience						
Yes	4.09(0.69)	4.02(0.58)	3.84(0.68)	3.19(0.68)	3.23(0.94)	3.08(0.84)
No	3.97(0.64)	3.85(0.57)	3.60(0.65)	2.81(0.60)	3.35(0.78)	2.73(0.80)
F	2.09	4.47*	6.98**	19.22***	0.98	10.05**
Number of previous trips						
1	3.88(0.66)	3.94(0.62)	3.81(0.69)	2.98(0.70)	3.28(0.84)	2.95(0.96)
2	4.30(0.55)	3.98(0.50)	3.91(0.61)	3.42(0.51)	3.18(0.89)	3.14(0.79)
3+	4.07(0.77)	4.18(0.59)	3.69(0.81)	3.27(0.76)	3.36(1.13)	3.17(0.66)
F	3.65*	1.26	0.65	4.07*	0.24	0.64
Purpose of trip						
Entertainment/ sightseeing	4.00(0.69)	4.10(0.58)	3.91(0.73)	3.23(0.67)	3.50(0.82)	3.11(0.84)
Visit friends or relatives	3.91(0.81)	3.98(0.56)	3.85(0.50)	3.04(0.63)	2.58(1.09)	3.17(0.57)
Other pleasure or personal reasons	4.31(0.47)	3.89(0.55)	3.85(0.58)	3.35(0.47)	3.23(0.90)	3.04(0.63)
Outdoor recreation	4.36(0.45)	3.93(0.42)	3.55(0.71)	3.18(0.65)	2.91(0.97)	3.00(1.12)
F	1.764	0.66	0.88	0.64	4.78**	0.12
Sources of travel information						
Recommendations of friends or colleagues	4.11(0.63)	4.00(0.47)	3.74(0.82)	3.08(0.61)	2.91(1.02)	2.98(0.73)
Recommendations of parents or relatives	3.93(0.75)	3.85(0.60)	3.79(0.91)	2.92(0.77)	3.46(0.78)	3.00(1.09)
Previous experience with the same destination	4.17(0.67)	3.93(0.59)	3.66(0.44)	3.324(0.63)	3.24(0.71)	3.35(0.61)
Internet/newspapers or magazines/TV program	4.40(0.43)	4.00(0.65)	4.23(0.58)	3.29(0.67)	3.04(1.03)	2.67(0.72)
Recommendations of a travel agent	4.08(0.79)	4.20(0.69)	3.92(0.69)	3.38(0.85)	3.88(0.74)	3.13(1.03)
Other	3.72(0.73)	3.96(0.59)	3.73(0.62)	2.98(0.48)	2.70(0.95)	3.20(0.82)
F	1.29	0.48	1.15	1.05	2.77*	1.11
Age						
18	3.94(0.68)	4.08(0.53)	3.78(0.71)	3.17(0.52)	3.42(0.80)	3.08(0.67)
19	4.13(0.58)	4.03(0.56)	3.85(0.63)	2.93(0.67)	3.33(0.86)	2.82(0.89)
20	3.95(0.62)	3.86(0.59)	3.63(0.65)	2.99(0.72)	3.38(0.89)	2.88(0.86)
21+	4.03(0.75)	3.76(0.58)	3.54(0.69)	2.88(0.67)	3.11(0.84)	2.79(0.82)
F	1.10	3.56*	2.59	1.75	1.28	1.15

Standard deviations are in parentheses. Dimension scores were coded on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree; *significant at .05 level, **significant at .01 level, ***significant at .001 level.

When UK students visit the U.S., they are mainly concerned with events and attractions located in a safe and friendly environment; thus, destinations desiring to attract these students need to emphasize these factors in their promotion, addressing students' active social lifestyle and their aspiration for entertainment and sightseeing.

Since the majority of previous visitors to the U.S. indicated their intention to visit the same and/or (re)visit another U.S. destination, newly developed destinations and destinations that offer new tourism products should aim their promotion specifically at previous visitors. UK students who visited the U.S. were concerned with the provision of natural resources and cultural and historic

attractions; therefore, new tourism attractions could be developed based on these assets.

The results of the study showed that there were significant differences in image perception between visitors and non-visitors. Visitors indicated a more positive image of the U.S. than non-visitors; thus, visitation appears to have a positive impact on image. For example, visitors reported higher scores on the following image dimension: the "U.S. has many parks and open spaces." Therefore, destinations need to emphasize their natural resources in their marketing communication campaigns aimed at the UK college student market. In addition, UK students who have visited the U.S. on multiple occasions were mostly concerned with outdoor recreation activities; as such, they represent a potential market segment for U.S. destinations that offer outdoor recreation activities and facilities. Additionally, the majority of students went on a self-organized trip; thus, they could become a potential target market for vacation and/or tour packages if these were designed to meet their needs and concerns as indicated in this study.

UK students who have never visited the U.S. before were concerned with cost more than were previous visitors. Therefore, marketers should emphasize student rates and discounts in promotions targeted at the youth and college markets. In addition, they should use fluctuations in the U.S.:UK currency exchange rate to their advantage.

Finally, regardless of previous visitation, UK college students were concerned with outdoor recreation and transportation. Destinations need to place a greater emphasis on promotion of these factors. Criteria indicated by this study should be taken into account by tourism planners and destination marketers to develop and promote their tourism products more effectively to the college student market.

5.0 CONCLUSION

Crompton (1979) defined image as "the sum of beliefs, ideas, and impressions that a person has of a destination" (p. 18). Since visitors often have very little experience with destinations, their decision is usually based on the image of the destination, rather than objective reality. While image may not be a true representation of what a given destination has to offer to visitors, this image nevertheless does exist in the mind of the tourist (Mayo 1973). Since image has been established to have a key influence on destination choice (Crompton 1979, Gartner 1996, Son & Pearce 2005), image studies can assist destinations' planning, development, and management endeavors to establish and/or expand their market share. Marketing communication campaigns can be used to strengthen destination image by presenting images that attempt to appeal to their target markets. Destinations that desire to become successful vacation locations need to promote an image that is unique and attractive, and that appeals to a larger vacation market segment (Mayo 1973).

In the ongoing competition for new international customers, travel and tourism researchers and marketers should pay more attention to youth and college student travelers because they represent a distinct and growing international travel market segment (Chadee & Cutler 1996, Field 1999, Richards & Wilson 2004). Though measuring the youth market is difficult, several studies have identified youth and college student markets' travel behavior, preferences, and determinants of their destination choice. A few studies have explored college students' image of a travel destination; however, studies focusing specifically on international youth and college students' perceptions of the US as a travel destination are lacking, and it is this deficiency that the current study has attempted to address. This lack of reliable information regarding youth and student travelers' perceptions and image of a destination is significant because it has deterred the effective target marketing of these travel segments.

As mentioned above, a large number of British youth travel internationally during their gap year (Simpson 2005). Similarly, Chadee and Cutler (1996) found that 90% of students in New Zealand planned on traveling overseas after their graduation. Field (1999) concluded that the college market is lucrative (if positioned properly), and should be targeted by destinations' tourism marketers. Since the youth and college student markets are the major growth segment in the international travel market, studies examining their perceptions of vacation destinations will enable destinations to effectively

position their marketing strategies to enhance their appeal and attractiveness to the youth and college student markets, distinguish themselves from their competitors, and increase their market share.

Though the results of this study cannot be generalized to the entire student population, this study does contribute to the limited research available concerning college students' images and choices of travel destinations. The results show that there is a relationship between students' perceptions of the U.S. as a travel destination and their travel behavior. The study also found that students' perceptions of the U.S. varied with number of previous trips to the U.S., trip purpose, sources of travel information, and age. Findings such as these can help U.S. tourism developers, planners, and managers seeking to increase their market share of UK and other students. Further, identification of students' images, preferences, and expectations can assist in the more effective positioning and marketing of U.S. destinations. Given the growing size and importance of the youth and student travel market, further analysis of this market segment appears highly warranted.

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AN EXAMINATION OF CONSTRUCTS IN DETERMINING BEHAVIORAL INTENTION TO VISIT A FESTIVAL AMONG VISITORS WITH DIFFERENT DEMOGRAPHIC VARIABLES

So Yon Lee
Assistant Professor
State University of New York at Brockport
Department of Recreation and Leisure Studies
350 New Campus Drive
Brockport, New York 14420-2914
slee@brockport.edu

1.0 INTRODUCTION

Gender and age are traditional variables used to segment travel markets. The study reported here evaluated where there were different perceptions between males and females, and between younger and older visitors, of quality and related constructs, and if such differences influenced their intention to revisit a festival. A conceptual model was developed and the study investigated how it was operationalized differently by different gender and age cohorts. Walmsley and Jenkins (1993) found that place images of Australian resorts differed accordingly to visitors' age and gender. Baloglu (1997) reported a relationship between perceived image and tourists' age, marital status, and occupation, and a subsequent study similarly reported the relationship between tourists' ages and their perceived image of various tourist destinations (Baloglu & McCleary 1999). A relationship between gender and perceptions of image of a rural tourist destination was reported by Chen and Kerstetter (1999).

Tourism research has tended to incorporate female behavior into that of male travelers. Wearing and Wearing (1996) observed that tourism marketers tend to assume similar behavior among all tourists regardless of their gender, race, sexuality, or ethnicity. Pearce (1989) suggested that women often play the lead role in choice of family vacations, yet many tourism providers continue to appeal to the male norm (Pritchard 1993). It has been observed that researchers have neglected the gender differences among tourists (Kinnard & Hall 1996, Richter 1995).

Gender differences have been reported in many facets of tourism. Vacation motivations among male and female have been found to be different (Ford 1991, Gibson 1996). It has been suggested that male travelers are likely to engage in more passive pursuits such as relaxing, sunbathing, and visiting purpose-built tourist facilities, while female travelers are more likely to engage in active behavior such as historical and cultural visits, walking and rambling, and going on shopping trips (Laing 1987).

Despite the intuitive sense that it is likely there will be differences between younger and older tourists, there has been relatively little research regarding the older population (Clarke 1992). In the developed world, many visitors aged 55 and older are likely to possess relatively large amounts of discretionary income since their children are grown and their house mortgage has been paid off (Anderson & Langmeyer 1982, Chon & Singh 1995). Older visitors are considered as an important market because of their frequency of trips and magnitude of expenditures. For example, Rosenfeld (1986) found that older travelers are likely to travel more frequently, have more money to spend, and rely more on travel agents than do younger travelers. Many of them are retired, which means they have a flexible schedule and can travel at off-peak seasons (Capella & Greco 1987).

1.1 The Relationship of Perceived Service Quality, Service Value, and Satisfaction to Behavioral Intention

The model which was developed conceptualized the relationships among perceived service quality, service value, and satisfaction and their relative influence on behavioral intention. Perceived service quality and satisfaction have been shown to be good predictors of visitors' future behavioral intentions (Baker & Crompton 2000, Tian-Cole et al. 2002). It has been suggested that perceived service quality and perceived service value are cognitive responses to a service offering, while overall satisfaction is an emotional response based on a holistic view of a phenomenon (Cronin et al. 2000). Bolton and Drew (1991) provided empirical support for the linkage between perceived quality and perceived value. Their findings suggested that perceived service quality explains a major portion of variance in service value, and that

perceived value was a better measure of visitors' overall evaluation of a service than perceived service quality. For practitioners and researchers, perceived service value has become an increasing interest (Parasuraman 1997). Parasuraman and Grewal (2000) supported the claim that perceived service quality enhances perceived service value which, in return, contributes to visitors' loyalty. They also noted that perceived service value plays the key role as a determinant of customer loyalty. The relationship between visitors' perceptions of price, quality and value was tested by Zeithaml (1988), who reported that perceived service quality led to perceived service value, which led to purchase intentions.

Visitor satisfaction is not achieved exclusively through quality of service. Service quality does not directly measure satisfaction, but it is likely to be the key medium determining the level of satisfaction. MacKay and Crompton (1990, p. 49) stated that "service quality relates to opportunities, that is, to the gestalt of the tangible and intangible attributes of the service, while level of satisfaction relates to the psychological outcome which emerges from experiencing the service." Thus, visitor satisfaction reflects the quality of visitors' experiences, and these may be enhanced by improving the quality of facilities and services.

The purpose of the study was to examine how well a conceptual model explained the relationship between the three evaluation constructs and behavioral intention, while identifying the differences and similarities in responses of female and male visitors, and of younger and older visitors. For female and male visitors (a), and then for younger and older visitors (b), the following hypotheses were tested:

Hypothesis 1 (a): Satisfaction, perceived service value, and perceived service quality will be related to behavioral intention.

Hypothesis 2 (b): Perceived service quality will be the best predictor of behavioral intention.

2.0 METHODS

Data were collected from the Conroe Cajun Catfish Festival in Conroe, Texas. The Festival has live music, craft booths and exhibits, and a variety of Cajun-style food. Every fifth visitor who entered the gate was approached and asked to participate in the survey. After agreeing to participate, participants were given a questionnaire with a pre-paid envelope and a cover letter explaining the purpose and the importance of the study. In the first week after distributing the questionnaire, a reminder postcard was sent to all respondents. Two weeks after they were handed the initial questionnaire, a replacement questionnaire with a cover letter was sent to those who had not replied. The total response rate of the 427 visitors who agreed to participate in the study was 54.8 percent. Of the 241 visitors who responded, seven questionnaires were incomplete, which resulted in 234 usable surveys.

3.0 RESULTS

The median age of the respondents was 50. Of the 234 respondents, 48 percent were younger visitors (born after 1954) and 52 percent were older visitors. Of the respondents, almost two-thirds (64%) were female visitors. Respondents tended to be relatively highly educated with 64 percent having at least some college education. Almost all respondents (98%) resided in Texas. Forty-five percent (n=106) of respondents said they were visiting the Cajun Catfish Festival for the first time, while 55 percent (n=128) had visited other festivals previously.

The hypotheses were tested using structural equation modeling (SEM). The fit indices showed that the structural models for both female and male visitors, and younger and older visitors, were a reasonably good fit with the data (indices > .90) (Tables 1 and 2). All parameter estimates in both the female and male visitor models were significant at a = .05 and were positive, except for the paths between perceived service quality and satisfaction and satisfaction, and behavioral intention. For both the younger and older visitor models, all parameter estimates were positive, except for the paths between perceived service quality and satisfaction, and satisfaction and behavioral intention. In addition, for the younger visitor model, a path between perceived service value and behavioral price was not significant.

In the structural models for female and male visitors, 70 percent and 68 percent of the variance in satisfaction and 68 percent and 66 percent, respectively, of the variance in behavioral intention were explained by their

Table 1.—Goodness of fit indices: female vs. male visitors

Model	N	Chi-square	df	ρ	CFI	TLI	IFI	RMR
Female Visitors	234	436.79	394	< .001	.96	.95	.95	.05
Male Visitors	234	422.95	391	< .001	.98	.91	.90	.05

Table 2.—Goodness of fit indices: younger vs. older visitors

Model	N	Chi-square	df	ρ	CFI	TLI	IFI	RMR
Younger Visitors	234	446.92	394	< .001	.92	.91	.92	.05
Older Visitors	234	442.88	394	< .001	.93	.92	.93	.05

corresponding indicators. Thus, both models exhibited a reasonable level of explained variance. In the structural model for the younger and older visitors, 53 percent and 60 percent of the variance in satisfaction and 63 percent and 68 percent, respectively, of the variance in behavioral intention were explained by their corresponding indicators. Again, both models exhibited a reasonable level of explained variance.

Hypotheses 1a and 1b stated that satisfaction, perceived service value and perceived service quality were related to female and male visitors' and older and younger visitors' behavioral intention. The standardized path coefficients and the *t*-tests for each path coefficient were significant at $\alpha = .001$. Results in all four models were similar in that perceived service value and perceived service quality showed a significant relationship to behavioral intentions, but satisfaction showed a non-significant relationship to behavioral intentions. Thus, hypotheses 1a and 1b were only partially supported. Hypotheses 2a and 2b stated that perceived service quality would be the best predictor of visitors' behavioral intention. Tables 3, 4, 5 and 6 indicate that in all four models, the best predictor of behavioral intention was perceived service value with a total effect of .88, .79, .55 and .85, respectively. Therefore, hypotheses 2a and 2b were not supported.

4.0 DISCUSSION

Conceptual models for female and male visitors, and younger and older visitors, indicated a significant relationship between perceived service quality and perceived service value and behavioral intentions. However, satisfaction did not have a significant relationship with visitors' behavioral intentions. This supported the observation that visitors' satisfaction does not always lead to positive behavioral intentions (Jones & Sasser 1995, Mittal & Lasser 1998). The study confirmed the predictive power of perceived service quality and perceived service value on visitors' future behavioral intentions that has been reported by others (Cronin et al. 2000, Petrick 2004). However, in all four models the influence of perceived service quality on behavioral intentions was found to be weaker than that of perceived service value.

The study's results showed that all five dimensions were positively related to overall perceived service value. In the structural model for female visitors, among the five dimensions those of perceived service quality (.54), emotional response (.68), and behavioral price (.41) showed strong relationships, while the monetary price (.29) and reputation (.34) dimensions showed weak relationships with overall perceived service value. Among male visitors, the dimensions of perceived service quality (.40), emotional response (.53) and reputation (.45) showed strong relationships, while monetary price (.33) and behavioral price (.35) dimensions showed weak relationships with overall perceived service value.

Among the five dimensions the younger visitors' model indicated that perceived service quality (.40), emotional response (.39), monetary price (.46) and reputation (.50) showed significant relationships, while behavioral price showed a non-significant relationship with overall perceived service value. In the older visitors' model all five dimensions were positively related to perceived

service value with those of perceived service quality (.43), emotional response (.87), and reputation (.55) showing strong relationships, while monetary price (.40) and behavioral price (.36) showed weak relationships with perceived service value.

In previous studies, perceived service value was conceptualized as being a function of the interaction between perceived sacrifice and perceived service quality (Bojanic 1996, Chang & Wildt 1994, Jayanti & Ghosh 1996, Monroe 1990, Woodruff & Gardial 1996, Zeithaml 1988). However, the empirical results of the current study indicate that perceived service value was largely defined by perceptions of service quality. The perception of sacrifice was minimal for many visitors at this festival because older respondents were admitted free and over 90 percent of respondents were local residents with minimal travel and time costs. Further, the profile indicated that most visitors were from higher socio-economic groups, suggesting that among those who paid an admission price, most would consider it nominal. The study's results supported previous findings (Baker & Crompton 2000, Cronin et al. 2000) that perceptions of service quality had a stronger effect on behavioral intentions than satisfaction. Perhaps those who were most likely to visit again were more aware of service quality attributes and perceptions of service value, because these features were more pertinent to them.

Cronin et al. (2000) suggested that perceived service quality and service value were cognitive responses, while satisfaction was an emotional response to a service experience. A cognitive response is the first stage in Bagozzi's (1992) model, suggesting that the initial service evaluation (first impression) precedes an emotional reaction, which in turn, generates behavior. It suggests that the more cognitively-oriented service quality and value evaluations lead to satisfaction. Once visitors received a good first impression through service quality and service value, these two constructs may have a stronger effect on their behavioral intentions than satisfaction. This suggests that having a satisfying experience is desirable but it is more important to develop strong perceptions of service quality and service value for visitors. It emphasizes the importance of visual appeal of the festival atmosphere to make a good first and lasting impression on visitors. Providers/suppliers have the opportunity to elicit good perceptions of service quality from visitors since they can control or manipulate the attributes of a service. However, although visitors might have positive perceptions of the service quality, they may not be satisfied with their visit because of uncontrollable variables such as bad weather (too hot or raining) or dissonance among the people with whom they came. These results appear to support the conclusion that perceptions of good service quality do not always result in visitors having a satisfying experience.

Among the four service quality dimensions, the female and male visitors' models indicated that those of generic features (.62 and .52) and comfort amenities (.52 and .48) showed strong relationships, while specific entertainment features (.48 and .40) and information sources (.40 and .42) showed weaker relationships with overall quality. The structural model for younger visitors indicated that the service quality domains of generic features (.70) and specific entertainment features (.74) had stronger relationships with overall quality than information sources (.42) and comfort amenities (.52). However, the test results of older visitors indicated that the service quality domains of generic features (.50) and comfort amenities (.60) had stronger relationships with overall quality than specific entertainment features (.45) and information sources (.47).

Identifying the relatively strong effect of perceived service quality and perceived service value on behavioral intentions confirmed the findings of others that improving perceptions of these constructs could lead to enhanced repeat visitation and positive word-of-mouth. The current study examined the relationship among perceived service quality, perceived service value and satisfaction, and found that perceived service quality and perceived service value both had a direct and indirect effect on visitors' future behavioral intentions (Tables 3, 4, 5, and 6). The study's analyses indicated that the relative influence of dimensions on each construct (i.e., perceived service quality, perceived service value, and satisfaction) differed slightly for each group of visitors (i.e., female and male visitors, and younger and older visitors). However, the study revealed that the relative influence of three constructs (i.e., perceived service

Table 3.—Direct, indirect, and total effects of latent variables for the female visitors

	PSV			SAT			BI		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
PSQ	.54	--	.54	n.s		n.s	.40	.36	.76
PSV				.78		.78	.66	.22	.88
SAT		n.s						n.s	

Table 4.—Direct, indirect, and total effects of latent variables for the male visitors

	PSV			SAT			BI		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
PSQ	.40	--	.40	n.s	--	n.s	.38	.26	.64
PSV				.75		.75	.64	.15	.79
SAT		n.s						n.s	

Table 5.—Direct, indirect, and total effects of latent variables for the younger visitors

	PSV			SAT			BI		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
PSQ	.40	--	.40	n.s		n.s	.34	.16	.50
PSV				.64		.64	.41	.14	.55
SAT		n.s					n.s		n.s

Table 6.—Direct, indirect and total effects of latent variables for the older visitors

	PSV			SAT			BI		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
PSQ	.43	--	.43	n.s		n.s	.40	.29	.69
PSV				.79		.79	.68	.17	.85
SAT							n.s		n.s

quality, perceived service value, and satisfaction) on behavioral intention was consistent for each group of visitors.

From a managerial perspective, perceived service quality should be viewed as the most important construct of a service since quality attributes can be more easily controlled and manipulated by providers. To positively influence female and male visitors' future visitation, these results suggest that managers should focus on generic features such as visual appearance, live entertainment and a feeling of safety, and on providing clean and plentiful comfort amenities. For younger visitors managers should focus on the generic features and specific entertainment features rather than the comfort amenities. For older visitors, these results suggest providers should put more emphasis on comfort amenities, information sources, and generic features. If these are of poor quality, the overall perception of service quality is likely to be relatively low. The current study findings support the theoretical conceptualization that enhanced performance of quality attributes leads to stronger positive behavioral intentions (Baker & Crompton 2000).

Since perceived service quality and service value appear to be influential in predicting future behavioral intentions of the festival's visitors, they should be a central focus of the festival's marketing strategy. In order to improve perceived service quality and service value, festival managers should focus their attention on the perceived service quality dimensions and those dimensions that have a strong relationship with perceived service value since these are the significant reasons explaining visitors' intention to return to the festival.

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Fish and Wildlife I

A LONGITUDINAL COMPARISON OF ACTIVITIES AND MOTIVES OF VERMONT TRAPPERS: 1994, 2000, AND 2005

Rodney R. Zwick
Professor of Recreation Resource Management
Lyndon State College
Lyndonville, VT 05851

Bob Muth
University of Massachusetts, Amherst

David Solan
Mansfield University

Abstract.—Few longitudinal studies in the human dimensions of wildlife examine changes in values, motivations, and behavior of those involved in resource harvesting activities.; To contribute to this literature, this replicated study assesses changes in sociocultural characteristics, motives, and behavior of Vermont trappers from 1994 to 2005. Differences were found in expenditures, income, socialization into trapping, and the use of institutional resources to learn about trapping. Principle components analysis reduced the 25 motivation responses from each of the three survey years to five components, which showed considerable consistency. These components were used in a subsequent K-means cluster analysis to develop a typology of Vermont trappers. The three types (i.e., Wildlife- oriented Lifestyle, Uncaptured Motivation, and Committed) were used in two- way MANOVA used to examine the effect of year (1994, 2000, and 2005) and trapper type on total days participating in trapping and total species of furbearers harvested. The analysis indicated a significant main effect of both year and type on the dependent variable

1.0 INTRODUCTION

Most studies in human dimensions of natural resource and wildlife management are cross-sectional; there has been a dearth of longitudinal research. Longitudinal studies are vital to management and policy development because of the changes that occur over time in values, attitudes, motivations, and behaviors among those involved in natural resource harvesting activities. A prime example of harvest group members who faced with change are those involved in trapping. Successional changes leading to increased forestland, development of a conservation consciousness, habitat preservation, and implementation of furbearer management programshave resulted in the reestablishmentof many species of furbearers in northeastern North America. As a result, the harvest and use of furbearers by trappers continues, providing a variety of benefits and satisfactions to those who participate in such harvesting activities (Muth et al. 1996) Within the last 30 years, however, socioeconomic, demographic, and political changes have threatened the traditional harvesting of furbearers (Andelt et al. 1999). Changes in social values with regard to wildlife resources have spurred the animal welfare movement, which in turn has resulted in a politicization that has been directed—sometimes successfully—at prohibiting the harvest of furbearers by trappers (Siemer et al. 1994) For example, a ballot initiative in Massachusetts restricted the use of leg hold traps and other trapping techniques. Changes have also occurred in the economic valuation of large forestland holdings of timber management organizations, resulting in forest fragmentation, development, and habitat modification that have limited access to trapping and other harvesting activities. The spread of canine mange and rabies among some wildlife populations has decreased harvests and increased reluctance h to target some species. European Union market restriction of the importation of pelts from any country or state that did not prohibit certain types of traps, or had not adopted standards for “humane” traps depressed pelt prices in the early 1990s. Although pelt prices rebounded earlier in this decade, the market continues to be volatile.

Certainly these changes have impacted trappers,who participate for a variety of commercial, social, recreational, and cultural motives (Daigleet al. 1999). In response to these changes, recentresearch has begun to examine the sociocultural aspects and politicization of furbearer harvesting (Mason 1990, Glasset al. 1992, Siemeret. al. 1994, Daigle et. al. 1999). Understanding the motivations and behaviors of wildlife constituencies has become critical to wildlife management policy development, particularlyas conflicts over land use have increased, budgets have eroded, and wildlife

issues and agency decisions have been questioned. If wildlife management agencies are to be responsive to their human constituencies (e.g., trappers, hunters, anglers, wildlife viewers, etc.) and provide a variety of benefits and satisfactions to people engaged in both consumptive and non-consumptive activities associated with wildlife, further empirical research efforts need to focus on changes over time in the motives, meanings, and behaviors. This research is especially critical for trapping, one of the most effective methods for managing many wildlife species (Muth et al. 1996).

The purpose of this study is to assess the longitudinal changes in participation and motivations of Vermont licensed trappers over the three years of 1994, 2000, and 2005. Our objectives were: 1) to examine changes in the sociocultural and economic characteristics of Vermont trappers over the three survey years;2) to identify any changes in underlying motivations or motivational dimensions as a result of the changes in the cohort, land development, access, and economic and political climate; 3) to develop a typology of Vermont trappers based on the motivation dimensions; and 4) to examine the changes in trapping effort expended and success (as measured by the number of days spent trapping, and the actual harvest of a given species), and assess whether this differs by year surveyed and by trapper type (i.e., effectively testing the trapper typology).

2.0 METHODS

As part of a comprehensive 1994 six-state study of the sociocultural and economic aspects of trapping, 333 usable questionnaires (63% response rate) were obtained from Vermont (Daigleet. al. 1999). Using the Total Design Method (Dillman 1983), a replication of the 1994 questionnaire was mailed to a census sample of 682 licensed trappers in Vermont during the spring of 2000. A response rate of 69.8 percent (447 responses) was received from the 640 deliverable questionnaires after three waves of the survey (Zwick et al 2002). Using a similar method in 2005, the census sample of 637 Vermont trappers was mailed the replicated questionnaire; a response rate of 62.9 percent (383 respondents) was attained.

The questionnaire asked prospective respondents about the extent of their participation in trapping activities (days spent each month in trapping related activities), species targeted and harvested (the number of each of 15 species harvested, aggregated over all species), types of traps owned and employed for selected furbearer species, economic aspects of trapping, socialization into trapping, participation in other natural resource and harvesting activities, motivations for trapping and for leaving trapping, and social and demographic information on trappers and their households.

The sample profile, extent of participation, and motivations from the 2000 and 2005 respondents were compared to the data collected in 1994 to assess changes and trends associated with Vermont trappers. Principle Components analysis was used to ascertain underlying dimensions of motivations for participating in trapping. K-means Cluster analysis was employed to develop a typology of trappers based on the five components that emerged in the Principle Components analysis. Subsequently, a two-way Multivariate Analysis of Variance (MANOVA) was used to test effect of year (1994, 2000, and 2005) and trapper type on total days trapping and total species harvested (i.e., dependentvariable).

3.0 RESULTS

Trapper characteristics, in terms of gender, education, and type of community in which they grew up, changed very little from 1994 to 2005. Trappers from all three study years were primarily male, over half had a high school education, and about nine of 10 trappers grew up in a rural area (see Table 1). E ven though educational achievement and type of community differed statistically, effect sizes(φ) were small

As expected, the ages of trappers increased from 1994 to 2005. Expenditures and income also increased from 1994 to 2005. T he three respondent groups differed in their mean income earned from trapping. In 1994 respondents earned an average of $282.07, respondents from 2000 averaged $234.42, and those in 2005 averaged $448.55 (see Table 2).

Table 1.—Trapper characteristics

Characteristic	1994	2000	2005	φ
Gender (Males)	98.5%	97.4%	97.3%	.003
Educational Achievement				
Completed high school	63.3%	57.3%	54.8%	
Assoc, Bach or Grad degree	14.6%	23.0%	23.6%	.176**
Grew up (community type)				
Rural area	87.0%	91.1%	94.0%	
Suburban area	11.4%	6.7%	4.1%	
Urban area	1.9%	1.9%	2.2%	.113**

**p < .01

Table 2.—Trapper characteristics

Characteristic	1994	2000	2005	Sig.
Age	42.9	43.6	45.0	NS
Expenditures (1994 constant dollars)				
Licenses, permits, fees, etc.	$72.47	$61.15	89.64	NS
Memberships, subscriptions, etc.	$109.29	$78.61	149.01	< .025
Income (1994 constant dollars)	$282.07	$234.42	$448.55	< .025

The mean age at which Vermont trappers began setting traps was 15.9 in 1994, 17.1 for those responding in 2000, and 17.7 years of age for the 2005 sample (F= 3.063, p = .047). T he 1994 respondents differed significantly in age at which they began to set traps from the 2005 respondents. Friends or neighbors were most frequently identified as the agent of socialization in 1994; 53.8 percent were introduced to trapping by friends or neighbors In 2000, that percentage was 64.0 percent, and in 2005 it was 63.3% (χ^2 = 9.168, p = .010). The percent of trappers who said they also learned to trap through state or trapping association courses doubled in 2000 (29.6%) compared to those who listed such courses in 1994 (12.9%), and tripled by 2005 (37.3%); (χ^2 = 55.675, p < .001) There was no significant difference in the percentage of trappers who participated in other wildlife harvesting activities, such as deer and bird hunting, and fishing.

The number of trappers has rebounded since the 1994 study, stabilizing around 650 trappers for both 2000 and 2005. Data presented at the Northeastern Recreation Research Symposium in 2001 (Zwick et al. 2001) suggested that the motivations for participating in trapping were stable, so we hypothesized that stability would continue to the 2005 survey year. To assess our objective of comparing the sociocultural and economic motivations for trapping in 2005 with those of 1994 (Daigle et. al. 1999) and 2000 (Zwick et al. 2001), we employed Principle Components analysis. Trapper motivations were reduced from the 25 individual motives, replicated over the three study years, to linear combinations of the variables representing underlying dimensions. The motivations for trapping were assessed by 25 Likert-type questions requesting respondents to rate how important each item was to them as a reason for trapping. The items were scored from 1, "Not at all important," to 5, "Very important." The components were determined by eigenvalues > 1, an examination of a scree plot for each year, and interpretability of the components (factors). F actor loadings greater than .500 were used to interpret the components. Reliability of the motivation variables interpreting each component (dimension) was assessed using Cronbach's alpha.

A five component (factor) solution was selected as the best for each of the years. An ocular examination of each of the components was used to compare motivation variables and factor loadings across the three sample years (1994, 2000, and 2005).

The first component of 1994 "loaded" on motivations related to self-reliance and self-sufficiency, a result similar to the third component of the 2000 sample and the

Table 3.—Self-reliant

Motivation	Component Loadings		
	1994	2000	2005
Provide income for myself and family	.254	.589	.682
Opportunity to be my own boss	.700	.766	.768
Maintain a sense of self reliance	.761	.672	.670
Do something exciting or challenging	.627	.320	.131
Feel independence	.801	.707	.551
Demonstrate skills and abilities	.659	.469	.111
Cronbach's Alpha	.837	.758	.758

Table 4.—Lifestyle activity

Motivation	Component Loadings		
	1994	2000	2005
Learn about wildlife	.202	.203	.717
Observe wildlife	.143	.199	.706
Remain in touch with heritage of trapping	.557	.643	.564
Feel like a part of nature	.484	.507	.504
Do something exciting and challenging	.287	.475	.558
Maintain rural tradition	.553	.602	.512
Continue important part of my lifestyle	.730	.737	.670
Participate in a favorite outdoor activity	.836	.784	.746
Experience fun and pleasure of trapping	.744	.744	.718
Cronbach's Alpha (bold items)	.824	.845	.864

fourth component of the 2005 sample. For example, in 1994, this component or factor was found to be related (or loaded) on the following motivations: "for the opportunity to be my own boss," "to maintain a sense of self reliance," to do something exciting or challenging," "to feel my independence," and "to demonstrate or test my skills and abilities." For the samples of trappers from the year 2000 and 2005, the third and fourth strongest components respectively, were defined by three of these same motivations, but also included the motivation "to provide income for myself and my family." Unlike 1994, in 2000 and 2005 loadings on the motivations "do something exciting or challenging," and "demonstrate skills and abilities," were less than the threshold .500 component loading used to interpret the component. Subsequently, this component was labeled as "Self Reliant," because of the commonality of motivations between the three years.

The second component from 1994, and first (or strongest) component of 2000 and 2005, was defined by motivations related to the fun and pleasure of trapping, lifestyle, and traditions associated with trapping. This component was also defined in 2005 by loadings on "learn about wildlife" and "observe wildlife.," We will later see where this differs for interpreting the fifth component. This second component was labeled as a "Lifestyle Activity" component.

Social and affiliation motivations define the third component of 1994 and 2005, and the second component of the 2000 samples. The is component that they have in common was labeled "Affiliation."

The fourth component was defined as an "Animal Management Control" component. The motivations most strongly related to the factor were related to controlling vermin or predator populations, removing nuisance animals, providing the service of wildlife control for other landowners such as farmers, and keeping diseases such as rabies and canine mange from spreading (see Table 6).

Table 5.—Affiliation

	Component Loadings		
Motivation	1994	2000	2005
Share experiences with friends	.744	.726	.615
Share my skills and knowledge with others	.794	.748	.794
Share experiences with my family	.658	.733	.763
Interact with other trappers	.727	.541	.506
Cronbach's Alpha	.782	.773	.789

Table 6.—Wildlife control

	Component Loadings		
Motivation	1994	2000	2005
Control predator or vermin populations	.846	.814	.832
Remove nuisance or problem animals	.771	.790	.789
Keep diseases from spreading	.711	.743	.793
Provide a valuable service to landowners	.651	.660	.703
Cronbach's Alpha	.799	.816	.844

Table 7.—Wildlife orientation and self-challenge components

	Component Loadings		
Motivation	1994	2000	2005
Observe wildlife	.731	.886	Lifestyle
Learn about wildlife	.693	.889	Lifestyle
Cronbach's Alpha	.857	.941	
	Component Loadings		
Motivation	1994	2000	2005
Do something exciting or challenging	Self Reliance	Lifestyle	.586
Feel my independence	Self Reliance	Self Reliance	.574
Demonstrate or test skills and abilities	Self Reliance	Self Reliance	.719
Cronbach's Alpha			.783

The fifth component for both 1994 and 2000 sample respondents "loaded" on two motivations typically related to non-consumptive aspects of wildlife related activity; the component was labeled as a "Wildlife Orientation." As seen earlier in the 2005 sample, however, these motivations loaded in the Lifestyle component. The fifth component for the 2005 sample was labeled as a "Self Challenge" component because of its loadings on the motivations "do something exciting or challenging," "feel my independence," and "demonstrate or test my skills and abilities."

The ocular examination revealed similar linear structure of motivation sub-dimensions for 1994, 2000, and 2005, suggesting similarity in motivation structure among the three years, except for the fifth component. As many of the trappers from 1994 (about 80%) also were included in the 2000 and 2005 sample, the stability of motivations was not unexpected. Similar to other studies of recreation motivations, this study seems to confirm the relative stability of motivations for participation.

Based on the general stability of motivational components over the three years, a principle components analysis was then run on the total data set, and as expected, a five component solution emerged based on the scree test and interpretability. The five factors were labeled: Lifestyle (alpha = .845), Affiliation (alpha = .773), Self Reliance (alpha = .758), Animal Control (alpha = .816), and Wildlife Oriented (alpha

Table 8.—Multivariate and univariate ANOVA for total days trapping and total species harvested

	Multivariate	Univariate	F
Source		Total Days Trapping	Total Species Harvested
Survey Year	10.223*	19.199*	0.847
Typology	6.887*	9.999*	7.372*
Survey Year X Typology	0.695	0.163	0.939
MSE		2568.12	27977.53

Multivariate F-ratios were generated from Pillai's Trace, * p < .001

= .942). Those motivations that loaded > .500 on each component were indexed to the original response on the motivation (rating how important each item was to them, scored from 1, "not at all important," to 5, "very important"), for each respondent Aa mean score was calculated for each respondent over the motivations defining each component. Thus, each respondent had a mean score for each of the five motivation components (dimension).

The mean scores on the underlying motivation dimensions (indexed components) were used in subsequent hierarchical and k-means cluster analyses to develop the typology. First, a hierarchical technique was employed on 25 percent of a random sample of the entire data set (over all three years). An examination of the dendograms and interpretability of the clusters suggested a three cluster solution. A subsequent k-means analysis revealed that of the five components, wildlife orientation, lifestyle, and animal control were the strongest motivational components in all three clusters. The highest mean ratings on the five components relative to each of the clusters indicated that Cluster 1 (Wildlife-Oriented Lifestyle) was defined by the Wildlife Orientation component (μ = 4.39), Lifestyle (μ = 4.15), and Animal Control (μ = 4.02). Cluster 2 (Uncaptured Motivations) displayed low means on all five of the components (μ = 2.01 to 3.51). Cluster 3 (Committed) was defined by Wildlife Orientation (μ = 4.79), Lifestyle (μ = 4.59), Self Reliance (μ = 4.25), and Animal Control (μ = 4.07), and to a lesser extent by Affiliation (μ = 3.55).

McKinney (1966) suggests that types provide a structural frame of reference for ordering observations so they can be comprehended,and Hall (1972, p. 48) states that the function of a typology allows the researcher to examine complex phenomena in a relatively simple manner. Typologies can also be used as a frame of reference for understanding the specific or distinguishable aspects of a cultural context (Becker 1945), and have a value in identifying and simplifying cultural structure so their similarities and differences can be examined. We hypothesized that both the number of animals harvested and trapper's total effort (in days participating in trapping related activities) would vary by trapper type. In addition, we predicted that because there were some differences in the motivation structure by year, total species harvested and effort would vary over the three years.

A two- way MANOVA was calculated to examine the effect of trapper type (Wildlife- Oriented Lifestyle, Uncaptured Motivation, and Committed) and year (1994, 2000, and 2005) on total days participating in trapping and total species of furbearers harvested (see Table 8). MANOVA was selected as the most appropriate test because rarely is one aspect of behavior so isolated from other aspects that a comprehensive picture of how someone responds is obtained (Meyerset al. 2006, p. 366). We certainly would expect that trappers who expended more effort (total days in trapping related activities) would have more success in terms of total species harvested. Meyers et al. (2006) also suggest using MANOVA when the dependent variables are moderately correlated, such as here (r= .299).

A statistically significant Box's M test (p < .001) indicated a lack of equality of variance- covariance matrices of the dependent variables across the levels of the independent variables. As a result, Pillai's Trace was used to measure the effects of type and survey year on the dependent variable (Mertler &Vannatta 2002, p. 126). As Table 8 indicates, Pillai's Trace indicated the dependent variable

Table 9.—Days trapping and species harvested by survey year and typology (univariate analysis)

	Year	Mean	Std. Error.	F	Sig.
Total days trapping					
	2005	53.66	3.07		
	2000	64.45	3.13		
	1994	37.44	3.03	19.199	.000
Total species harvested					
	2005	53.70	10.13		
	2000	72.50	10.32		
	1994	63.97	10.18	0.847	.429
	Type	**Mean**	**Std. Error**	**F**	**Sig.**
Total days trapping					
	Wildlife Oriented	52.75	3.05		
	Uncaptured Motivation	41.58	3.50		
	Committed	61.22	2.67	9.999	.000
Total species harvested					
	Wildlife Oriented	55.15	10.13		
	Uncaptured Motivation	41.98	10.32		
	Committed	93.04	10.18	7.372	.001

(effort and success) was affected by the main effects of the typology (Pillai's Trace = .032, F = 6.887, p < .001) and survey year (Pillai's Trace = .047, F = 10.233, p < .001) There was no significant multivariate effect of Typology by Survey Year. Subsequently, univariate ANOVAs were conducted to determine the locus of the effect of year on total days participation in trapping related activities. Scheffe post hoc tests (see Table 9) revealed that all three years differed significantly in total days that trappers participated in trapping related activities and that trappers from 2000 (μ = 64.45, S.E. 3.13) had participated more than their counterparts in 1994 (μ = 37.44, S.E. 3.08) and 2005 (μ = 53.66, S.E. 3.07). No statistically significant effects were observed among the years for species harvested F = .847, p > .05). An inspection of typology means showed that the Uncaptured Motivation type of trappers ((μ = 41.58, S.E. 3.50) had a significantly lower number of days trapping than either the Wildlife Oriented type (μ = 52.75, S.E. 3.05) or Committed group (μ = 61.23, S.E. 2.67). The Committed type had a significantly higher mean (μ = 93.04) in total species harvested than either the Uncaptured Motivation (μ = 41.98) or Wildlife Oriented (μ = 55.15 types. There was no interaction effect between typology and year, suggesting that trapper type effects did not differ by year.

4.0 CONCLUSIONS AND IMPLICATIONS

Though trapping participation has traditionally fluctuated with the cycles in pelt prices and trapper effort often is a function of available time, personal health, and access (Zwick et al. 2002), this study shows that participation is also a function of the type of trapper, as defined by motivations. Those who are more committed, as shown by multiple motivations, engage in more trapping related activities than do other types—and appear to have more success.

Effort (i.e., days spent in trapping related activities) expended at trapping may be a better indicator of the extent of trapping than just the numbers of licensed trappers. Effort increased by over 70 percent from 1994 to 2000, while trapper number increased by 20 percent. Total days participating in trapping related activities, however, decreased 17 percent from 2000 to 2005, while total licensed trappers decreased by 7 percent Simple numbers of trappers would not have shown such nuances.

Trapping continues to be a central life interest by which people organize themselves, interact with each other and the natural environment, maintain traditions, and derive recreational satisfaction. Some trappers are motivated

by a sense of self- reliance and autonomy. Others are motivated by learning about and observing wildlife, by the services they provide to landowners through removal of nuisance animals, and by the challenge and testing of skills and abilities associated with trapping. Generally, the motivations have remained stable over 11 years. Rregardless of the motivations, trapping requires an intensity and commitment. Ninety percent engage in the activity both weekends and weekdays since traps, by law, have to be checked every 24 hours.

Even though the k-means cluster analysis did not produce an independent cluster or type of trapper that was affiliation- based, affiliation was important to trappers . Evidence of the importance of affiliation is seen in the approximately 50 percent of respondents who trapped with others at least part of the time, the 56 percent who were members of a trappers' association in 1994 and 2000, and the 65 percent who reported being members in 2005. This affiliation component may be important for establishing a community of meaning among trappers. Changes in trapping regulationsor access, or regulations that may restrict or eliminate this activity may result in undesirable effects on maintenance of social networks, life satisfaction, and continued participation.

While more than 90 percent of trappers hunt and fish, such activities appear to part of an activity bundle rather than a substitution for trapping. Hunting and fishing , lack the intensity and effort participants associate with trapping.

The mean age of trappers is increasing, but the number of years that respondents have been actively setting traps has been decreasing since 1994 ($\mu = 20.06$), through 2000 ($\mu = 19.22$), to 2005 ($\mu = 17.62$). This finding suggests that either new trappers are coming into the activity or existing trappers are not actively setting traps. Support for the latter account may be seen in the 47.5% of 2005 licensed trapper respondents who said they were not actively trapping during the 2004-2005 season.

Future research needs to continue to monitor these motivations and sociocultural aspects of trapping, and trapper type should continue to be empirically tested, much like all typologies (McKinney 1966), to determine whether there are differences in the cultural context of trappers distinguished by their motivations.

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STATE GAME AND WILDLIFE AREA RECREATION USE ASSESSMENT: MICHIGAN'S MAPLE RIVER STATE GAME AREA, FALL 2005

Charles M. Nelson
Associate Professor, Department of Community, Agriculture, Recreation and Resource Studies
Michigan State University
131 Natural Resources Building
East Lansing, MI 48824
nelsonc@msu.edu

Eric Steffey
Michigan State University

Eric Clark
Michigan State University

Abstract.—Michigan state game and wildlife areas (SGA) provide the most public land in southern Michigan, where 8.5 million people reside. These areas are managed for wildlife habitat and wildlife associated recreation. They charge no entry fee, have many access points, and have little or no on-site staff. Recreational use on SGAs has not been assessed since the 1970s. This paper reports on a use assessment on the 8,000-acre Maple River SGA during fall 2005. It follows past methods of assessing on-site use by counting parked vehicles and leaving a business reply mail postcard with the vehicle. It also uses a mail questionnaire to all adjacent private ownerships to determine game area use not involving vehicles parked on public land/roads. Results show the game area had 52,000 person-use hours from September 15 - December 15, 2005. Of those, 76 percent were by on-site users parking vehicles on the game area or adjacent public roadways and 24 percent were by adjacent owner households and their guests parking outside of the game area. Hunting was the most common recreational activity. On-site users were generally satisfied with their experience. Key sources of satisfaction included exceeding expectations of seeing wildlife, quality habitat, and a place to hunt. Sources of dissatisfaction included vandalism, litter, conflicts with others, and not seeing expected wildlife. Adjacent landowners were less satisfied with their interactions with game area users and managers. Key sources of dissatisfaction included trespassing, vandalism, and litter by users and lack of responsiveness to concerns by managers. Recommendations to improve the situation include additional policing, emphasizing stewardship and ethics in hunter safety training, establishing a game area watch program, and regular, well publicized citizen clean-ups of the SGA.

1.0 INTRODUCTION

Michigan has 100 state game and wildlife areas (SGA) encompassing approximately 340,000 acres. They are primarily located in southern Lower Michigan, where 85 percent of the state's 10 million residents live, and provide the region's largest acreage of public land open to outdoor recreation. They are generally undeveloped lands managed for wildlife habitat and wildlife oriented recreation. SGA acquisition and management is funded provided a user pay system of hunting licenses and federal excise taxes on sporting arms and ammunition (Pittman-Robertson). Understanding the recreational use and management challenges and solutions regarding these wildland-urban interface public lands is important to managers of generally undeveloped public lands near population centers.

The last study of recreational use of Michigan game and wildlife areas was done in the 1970s (Belyea & Lerg 1976). Since that time the range of non-wildlife oriented outdoor recreation activities has expanded to include mountain biking and geocaching. Wildlife oriented recreation opportunities in southern Michigan have also expanded to include wild turkey hunting, resulting from successes in reintroducing wild turkey to their former Michigan range. Also included are wildlife viewing for recovering and expanding populations of bald eagles and other raptors as well as documented significant interest in wildlife viewing by a broad spectrum of the population (US Fish and Wildlife Service 2002). In addition, previous studies of game area recreation use did not sample adjacent residents concerning the use of game area by their household and guests when they did not park on the game area (Gordineir 1957, Palmer 1967, Belyea & Lerg 1976).

To update information on recreational use of Michigan state game and wildlife areas accounting for new uses

and the activities of adjacent households, the Michigan Department of Natural Resources (DNR) contracted with Michigan State University's Department of Community, Agriculture, Recreation and Resource Studies to pilot improved methodology and assess game area use on 11 of Michigan's game areas in 2006. This paper reports on the fall 2005 (September 15 - December 15) pilot study at the Maple River SGA. The area has approximately 8,000 acres of publicly owned land in central Lower Michigan along approximately 20 miles of the Maple River in Gratiot, Clinton and Ionia counties. It is primarily composed of river floodplain and is a mixture of lowland hardwoods, open marsh, lowland grasslands, and agricultural fields managed to provide habitat for wildlife (game and non-game) and opportunities for wildlife oriented recreation. Facilities available include designated parking areas, wetlands with water management capabilities, a wildlife viewing platform overlooking two major wetlands, boat launches to wetlands and the Maple River (including some with concrete ramps for trailered boats), and access via county and game area roads. There are no designated trails, no developed campgrounds and no permanent restrooms.

1.1 Objectives

One of the objectives of the research was to serve as a pilot for the methodology to assess recreational use at selected Michigan state game and wildlife areas during 2006-2007. The second objective was to provide use and user information about the Maple River SGA to assist in developing its management plan. Third, the research would provide data to the Michigan Department of Transportation about recreational use as the department plans the upgrade of US127, a highway bisecting the game area.

2.0 METHODS

On-site use was estimated in a two step-process. The first step was to systematically count vehicles at all points accessible to a two-wheel drive car in the game area and public road shoulders adjacent to the game area. These counts were conducted on 23 selected days between September 15 and December 15, 2005, either during the morning, midday, or afternoon. Of the 23 days, 10 were weekend days (Saturday or Sunday), holidays (Thanksgiving and Friday after Thanksgiving) or opening days of a hunting season. As a group, they were characterized as "high-use" days. The 11 sample days were 33.3 percent of the 33 high-use days. A twelfth high-use sample day (weekend day) was lost due to deep snow and unplowed roads on December 10. The other 12 were on weekdays (Monday - Friday) that were not opening days of a hunting season or holidays. They were characterized as "low-use days." The 12 sample days were 20.3 percent of the 59 low-use days.

After each vehicle was counted and its GPS location noted, a business reply postcard questionnaire was placed on the windshield of each vehicle or given to the driver if he/she was present. In the case of inclement weather, the card was placed inside a clear plastic lab bag so it was not damaged by the weather. The card elicited information about the number of people in the vehicle, the primary and secondary activities in which they engaged while parked at the game area, their opinions about their experience that day, and background demographic and outdoor recreation participation information. Overall recreational use by those who parked on-site was estimated by extrapolating the mean number of people hours per vehicle across the sample period.

The questionnaire also elicited information about distinct users. To effectively report this information, the data must be weighted to account for frequency-of-use bias. For example, a game area visitor who visits the area 20 times during the sample period compared to one who visits only once has a 20 times greater chance to be sampled than the one-time visitor. Hence, to describe distinct users, the data is weighted by the reciprocal of the number of times a visitor came to the area during the previous 12 months.

Use by the households of adjacent properties and their guests when they did not park on the game area or on a public road right of way adjacent to the game area is important and was not estimated in previous SGA use assessments. In past studies of public land use, neighbors and their guests can be responsible for half or more of public land use without parking vehicles on public lands (Nelson & Lynch 1994, Nelson et al. 1994, Nelson & Lynch 1995). This adjacent landowner generated use was estimated using a mail survey. All private parcels

in direct contact with the game area were defined as adjacent and were identified by examination of county assessor records of the three counties (Clinton, Gratiot, and Ionia) in which the game area lies. Based on county assessor records, a total of 221 different households fit the definition of adjacent landowners. The mail questionnaire was sent to the property owners on December 15, 2005 at the conclusion of the study period, and the owners were asked to recall use emanating from their property as well as provide additional information about their interactions with game area users and managers and background demographic information. Those who did not respond to the first mailing received a reminder postcard two weeks after the initial mailing. If they had not responded in another two weeks, a second copy of the survey, a revised cover, letter and another business reply envelope were sent.

3.0 RESULTS

On-site results are presented by estimated use, characteristics of estimated uses, and distinct user characteristics. Estimated use is derived from vehicle counts and the number of people and the length of stay reported on questionnaires completed by drivers. Characteristics of estimated uses are drawn from un-weighted analysis of questionnaires (one questionnaire equals the characteristics of a use), and distinct user characteristics are drawn from completed questionnaires weighted to compensate for frequency-of-use bias.

Adjacent landowner use is not weighted as it is a census of all adjacent owners and was not sensitive to an adjacent resident's being a frequent, infrequent, or non-user of the game area. Of the 221 identified adjacent landowner households, 12 had bad addresses and were removed from the sample. Of the remaining 209 households, 130 (62%) responded.

3.1 On-Site Use Estimate

A total of 621 vehicles were counted on or adjacent to the game area during the 23 sample days in the period September 15 - December 15 in assessing on-site use. A total of 91 percent were parked in designated parking areas. A vehicle was counted when it was distinct for that sample day (had not been previously counted that sample day on the game area). Of those, 441 (71.0%) were on high-use days and 180 (29.0%) were on low-use days. Extrapolated for the full number of high-use days (33/11=3.0), the total vehicle estimate for high use days is 441 x 3.0=1,323. However, since vehicles were counted only once at each location on the game area, it is necessary to assess the possibility that on a sample day a vehicle would be counted. The mean number of hours respondents reported their vehicle was parked on the game area was 5.9. This is equal to approximately half the daylight hours of any given sample day. Hence, the possibility of sampling the mean vehicle present during some portion of a sample day is approximately one in two. Accordingly the number of vehicles estimated is doubled to 2,646 for high-use days.

Following a similar procedure for the full number of low-use days (59/12=4.92), the total vehicle estimate for low use days is 180 x 4.92=886. Multiplied by two to account for the influence of length of stay on being counted provides a total low-use day vehicle estimate of 886 x 2=1,772. For the September 15 - December 15 season, the total vehicle use estimate is 4,418, with 60 percent on high-use days and 40 percent on low-use days. Based on responses to the questionnaire, the mean vehicle had 1.52 persons. This extrapolates to 6,715 person uses by people who parked on the game area or adjacent to it on a public right of way during fall 2005.

3.2 Person Use Hours

Person use hour information was gathered through the postcard questionnaire left on the windshield of each vehicle sampled. Of the 621 questionnaires distributed to the drivers of parked vehicles, 182 (29.3%) were completed and returned by the cutoff date of December 27, 2005. Of those 182, 12 completed two questionnaires (were surveyed two different days and responded as requested both times). Person use hours are computed by multiplying the number of vehicles estimated by the mean person use hours per vehicle. Mean person use hours per vehicle are estimated by the mean number of hours a vehicle is parked multiplied by the mean number of people in the vehicle.

The mean number of person use hours per vehicle was 9.01 with a standard error of the mean of 0.63 hours. Two standard errors of the mean is 1.26 hours or ±14.0

percent at the 95 percent confidence interval. The maximum number of person use hours an individual could account for in one day was truncated at 15 hours. This is analogous to a person arriving at 5 AM to reach his/her deer stand, hunting all day, and returning to his/her vehicle after dark at 8 PM. Multiplying 9.01 person hours by the 4,418 estimated vehicles provides a person use hours estimate of 39,806 hours, plus or minus 5,573 hours (14%).

Adjacent-owner respondents reported that 73 percent of the households and their guests used the game area one or more times during fall 2005 without parking a vehicle on the area or on an adjacent public roadway. Across all respondent adjacent ownerships, the mean household and its guests used the area for 59.1 person hours during fall 2005, with a standard error of the mean of 11.2 hours (± 38%). When extrapolated across the 209 valid addresses, this amounts to 12, 352 hours ± 38 percent. In total, when aggregated with the 39,086 estimated hours for on-site users, this provides an estimate of 52,158 person hours of use during fall 2005 on the 8,000-acre game area. This amounts to approximately 6.5 person use hours per acre.

3.3 Characteristics of Uses

Each person use is made up of one or more recreational activities. On average, on-site respondents reported that the typical visit involved 3.5 different activities per visit. From these activities, respondents were requested to list the one primary activity for the people in their vehicle. Some form of hunting or trapping was the primary activity for 90 percent of the fall 2005 uses. This does not include hunting-related activities, such as scouting for game or exercising/training dog. Wildlife related activities (all hunting, trapping, fishing, scouting for game, and wildlife viewing), accounted for 97 percent of the primary uses. The 3 percent of primary uses that were non-wildlife related included hiking and other, non-specified uses.

For adjacent residents reaching the game area without a vehicle, 50 percent listed some type of hunting or trapping as the primary use, 27 percent did not use the area, and 23 percent noted a non-hunting/trapping as their primary use. Wildlife related activities (all hunting, trapping, fishing, scouting for game, and wildlife viewing) accounted for 60 percent of primary uses, 27 percent did not use the area, and 13 percent were non-wildlife related uses including hiking, picking berries/mushrooms, and target shooting.

3.4 Use Party Composition

The mean on-site party size per vehicle was 1.52 persons, with 98.1 percent of parties having less than four members. Forty-eight percent of vehicle parties consisted of a solo occupant, 52 percent of two or more people. A total of 98.7 percent of parties had one or more males and 7.9 percent of parties had one or more females. Of the total people in the parties sampled, 6.5 percent were female and 93.5 percent were male. Those under 18 accounted for 12.1 percent of uses, those aged 19-29 had 14.6 percent of uses, 30-49 were 42.9 percent of uses, 50-64 were 24.3 percent of uses and those over 64 the remaining 6.1 percent of uses. A total of 10.6 percent of the uses involved one or more persons in the vehicle party who had a physical impairment that seriously limited their participation in work or recreation.

For adjacent-resident households and their guests, the mean household had 2.5 members. Across all households, including those that did not visit the game area during fall 2005 from their property, a mean of 3.3 persons per ownership used the game area in fall 2005 without parking on or adjacent to it. This amounts to 690 distinct users from adjacent properties.

3.5 Satisfaction with Game Area Use, Users and Management

Of the 182 on-site respondents, 164 rated their satisfaction with the visit and provided the primary reason for their rating. The mean satisfaction rating on a scale of 1 - 9, where 1 was highly dissatisfied and 9 was highly satisfied was 6.8. When grouped by satisfaction category (dissatisfied = 1-3; neutral = 4-6; satisfied = 7-9), 8.5 percent were dissatisfied, 26.8 percent were neutral and 64.7 percent were satisfied. An open-ended question asked about the one most important reason for their satisfaction. Responses were read and then grouped by category. Across the three levels of satisfaction, the

Table 1.—One most important reason for on-site respondent satisfaction rating with Maple River State Game Area use, fall 2005

Most Important Reason for Rating (a)	Dissatisfied (% in column)	Neutral (% in column)	Satisfied (% in column))	Total (% in column)
Game/wildlife abundance	7 (50.0%)	19 (43.2%)	38 (35.8%)	64 (39.0%)
Land/habitat management/ condition	0 (0.0%)	10 (22.7%)	23 (21.7%)	33 (20.1%)
Opportunity/place to hunt	0 (0.0%)	1 (2.3%)	18 (17.0%)	19 (11.6%)
Crime/vandalism (b)	3(21.4%)	5 (11.4%)	4 (3.8%)	12 (7.3%)
Harvested game	0 (0.0%)	0 (0.0%)	8 (7.5%)	8 (4.9%)
Conflicts with others	2 (14.3%)	4 (9.1%)	1 (0.9%)	7 (4.3%)
Companions/solitude	0 (0.0%)	0 (0.0%)	5 (4.7%)	5 (3.0%)
Weather	0 (0.0%)	3 (6.8%)	0 (0.0%)	3 (1.8%)
Non-responsive (e.g. “good day”, “good hunting”, etc.	2(14.3%)	2 (4.5%)	9 (8.5%)	13 (7.9%)
Total	14 (100.0%)	44 (100.0%)	106 (100.0%)	164 (100.0%)

(a) Rating of 1-3=Dissatisfied; 4-6=Neutral; 7-9= Satisfied.
(b) Includes littering, trash dumping, theft of tree stands, shooting of signs, etc.

relative abundance of the game being sought was the most frequently reported reason for the satisfaction rating (Table 1).

For those hunters who were dissatisfied, many reported seeing none or less than expected of the target species. Conversely, for those who were satisfied, expectations for seeing target wildlife were often exceeded. Land management and habitat conditions were a source of satisfaction for some (beautiful, natural, good water levels, etc.) or dissatisfaction for others (too many ponds and not enough upland, need more food plots, etc.). Crime and vandalism were always seen as negative. However, even some users who rated their experience as a 7 or an 8 cited crime and vandalism, one noting “would have left a higher rating, but some pig people left trash, fire debris and garbage at 3 parking sites.” Some responses were connected with only one level of satisfaction rating. Harvesting game and enjoying one’s companions were noted only by satisfied users. Weather concerns were noted only by those who were dissatisfied.

Adjacent owners were asked about their interactions with game area users and game area managers. Their interactions with game area users were often less than satisfying. The mean satisfaction rating on a scale of 1 - 9, where 1 was highly dissatisfied and 9 was highly satisfied was 4.7. When grouped by satisfaction category (dissatisfied = 1-3; neutral = 4-6; satisfied = 7-9), 36.1 percent were dissatisfied, 34.5 percent were neutral and 29.4 percent were satisfied. Key sources of dissatisfaction included trespass, illegal/unethical behavior, litter/trash on their land or adjacent state land, partying (generally at night), shooting in a safety zone (450-foot radius from any dwelling), or increased traffic on roadways. Sources of satisfaction were encountering no problems, and the perception that most game area users were ethical and well behaved.

Regarding satisfaction with game area managers, two key DNR functions are involved, wildlife/property management and conservation law enforcement. Using the same satisfaction scale, the mean satisfaction rating regarding interactions with DNR personnel was 5.9. When grouped by satisfaction category (dissatisfied = 1-3; neutral = 4-6; satisfied = 7-9), 22.5 percent were dissatisfied, 30.4 percent were neutral and 47.1 percent were satisfied. Key sources of dissatisfaction included unfriendly, non-responsive, or unfavorable response to question/concern, don’t see them/no interaction, too many deer, and too few deer and other wildlife. Key sources of satisfaction were friendly, prompt/favorable response to question/concern, see DNR personnel patrolling/working, and like not seeing DNR personnel.

Table 2.—Purchase of selected Michigan outdoor recreation related licenses, permits and registrations during the past 12 months by distinct Maple River State Game Area on-site users, fall 2005

License, Permit or Registration [a]	Percent Purchasing [a]
Firearm Deer Hunt	86.6%
General Fish	77.9
Small Game Hunt	71.6
Archery Deer Hunt	65.4
Boat Registration	46.2
Turkey Hunt	33.7
Daily State Park Motor Vehicle Permit	33.6
Trout/Salmon Fish	29.9
Waterfowl Hunt	23.8
Annual State Park Motor Vehicle Permit	18.7
Off-road vehicle license	11.3
Managed Waterfowl Area (daily or annual)	10.2
Snowmobile Trail Permit	9.2
Fur Harvester	4.7

[a] Many purchased multiple licenses

3.6 Distinct On-Site Users

While each completed on-site questionnaire is from a distinct user, those who are more frequent visitors to the game area are more likely to be sampled than infrequent visitors. To compensate for this frequency-of-use bias, data for questions where individuals are considered as distinct users (an individual) verses distinct uses (an event) are weighted with the reciprocal of the number of uses at the game area the previous year. Hence, a distinct user who visited 10 times in the past year has a weight of 1/10. A person who visited only once last year has a reciprocal of 1/1. This assumes that last year's visitation patterns are similar to the current year. In the case of a new visitor (one who did not visit last year), a weight of 1/1 is assigned. Of the 182 respondents, 12 had responded for two different days. Their second responses were eliminated from analysis as this would be double counting. Of the 170 remaining, 152 provided a number of days they used the Maple River SEA during the past 12 months. The 18 respondents not providing these data were eliminated from further consideration as distinct users as it was not possible to weight those cases.

The mean distinct on-site respondent used the Maple River SGA 4.4 times during the past 12 months and any Michigan SGA (including Maple River SGA) 12.3 times in the same period. However, this mean is unduly influenced by frequent users, who visited game areas up to 160 days in the past 12 months. The median provides a more realistic estimate of typical use, with two as the median number of uses at Maple River SGA and 10 for all Michigan game areas during the past 12 months. When asked about the most important activity for which the DNR manages state game and wildlife areas, 97.5 percent cited some form of wildlife associated recreation (hunting, fishing, wildlife viewing, trapping).

Distinct users at Maple River State Game Area purchased a wide variety of permits and licenses from the DNR and the Michigan Secretary of State to legitimately pursue outdoor recreation in Michigan. Firearm deer, general fishing, and archery deer were the three most common license/permit purchases during the past 12 months for distinct users (Table 2). The mean distinct user had purchased 5.2 licenses/permits/registrations during the past year.

4.0 MANAGEMENT IMPLICATIONS

Recreational use by those driving a vehicle and parking on or adjacent to the Maple River SGA in fall 2005 accounted for an estimated 76 percent of person use hours. It was dominated by wildlife related activities, with hunting being by far the most common. An estimated 91 percent of vehicles parked on the area were

parked in designated parking lots. As parking is readily available along roadsides (available shoulder, no parking restrictions), this high percentage of vehicles parked in designated lots suggests that these parking areas are strategically placed and provide adequate access to the game area.

Overall, while the majority of on-site respondents were satisfied with their recreational experience, key sources of dissatisfaction were identified. They were lack of target species, crime and vandalism such as theft of tree stands and littering/trash dumping, and conflicts with others. Each of these dimensions is within the purview of SGA managers to influence as they involve wildlife management, people management, property maintenance, and law enforcement. For those who were satisfied, the abundance of target species, good land management/habitat, and having a place to hunt accounted for three-quarters of the satisfied uses. Again, each of these factors is influenced significantly by SGA management.

The vast majority (97.5%) of distinct Maple River SGA on-site users cited wildlife related recreation as the key activity for which the DNR should manage. This clearly fits the purposes of game area management. It will be interesting to see if those sampled other times of the year (outside of hunting seasons) have similar views and SGA activities as the study continues for spring and summer. With the mean distinct fall user purchasing more than five licenses/permits/registrations during the past 12 months, SGA users are extremely important in supporting not only SGA management, but also the entire conservation effort of the DNR. For fiscal year 2005-06, 92 percent of the DNR's budget came from user pay licenses and permits and related expenditures (e.g., gasoline sales tax from fuel used in watercraft, federal excise taxes on sporting arms, ammunition, archery equipment, fishing equipment, etc.) and only 8 percent from general tax monies.

Adjacent landowners, their household and guests, when not parking on the game area or an adjacent public roadway, accounted for 24 percent of the person use hours on the game area during fall 2005. Seventy-three percent of ownerships had one or more individuals use their property as a gateway to game area land. These adjacent properties represent many unmonitored access points to game area lands for recreational users. Considering that this is a rural location with the mean adjacent ownership being 90 acres in size and slightly more than half (52%) classified as farms, it may be expected that in a more densely populated area, with fewer large adjacent private ownerships, public use of these private land gateways to SGAs is even greater.

Adjacent owners' satisfaction with game area users and with game area managers is a source of concern. Regarding game area users, the only positive comments are that lack of trouble is viewed as positive and that some believe most users to be ethical. There are a number of substantive problems with game area users, most of which are related to illegal activities including trespassing, vandalism, litter/trash dumping, and shooting in safety zones. The DNR needs to make a well publicized management response to improve both game area user behavior and relations with game area neighbors. This response can be characterized by sources of satisfaction neighbors noted as reasons for their relationship with the DNR. In particular, a friendly, timely response was a key factor in satisfied interactions with the DNR.

The response should take a four-pronged approach. First, the DNR should focus on improved law enforcement through more active patrols by conservation officers and improved working relationships with county sheriff departments. This effort would provide more visible enforcement presence and would improve the ability to apprehend and prosecute violations such as trespassing. Second, through hunter safety education, which is mandatory for all to obtain their first Michigan hunting license (if born after 1976), special emphasis should be put on hunters being good neighbors to those who own private lands adjacent to their hunting sites. Being a good neighbor includes respecting private property, not littering, and respecting all shooting safety zones around residences. Third, the DNR should make better use of its Report All Poaching (RAP) toll-free number to expand coverage beyond poaching to include other violations of public land rules (e.g., trash dumping and vandalism). This could be coupled with a "Game Area Watch" program, similar to neighborhood and park

watch programs, that heighten awareness in violators that they may be observed and turned in by a fellow game area user, not just uniformed law enforcement. This involvement greatly multiplies the "eyes and ears" of land management agencies. Fourth, the DNR needs to work with others to restore game area conditions to those that are desirable. In spring 2006, a local scout troop collected 60 cubic yards of trash and litter from selected parking areas in the game area. A friends group for the Maple River is organizing a summer citizen-oriented canoe trip to illustrate the values and problems of the river corridor within the game area and a corresponding September river cleanup.

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Place Meaning

A DECONSTRUCTION OF THE I-M-L COMMITMENT SEGMENTATION OF FOREST RECREATIONISTS

James D. Absher
Pacific Southwest Research Station
USDA Forest Service
4955 Canyon Crest Drive
Riverside, CA 92507
jabsher@fs.fed.us

Gerard T. Kyle
Texas A&M University

Abstract.—Previous work has established the general utility of segmenting forest recreationists according to their commitment profiles into Indifferents, Moderates, and Loyalists (IML) groups. Observed differences between these segments suggest that place identity and affect are more central to management than previously thought. This study extends this finding through the use of deconstruction analysis across common activity groupings that encapsulate use and lifestyle factors, namely visitor centers, trailheads, off highway vehicle (OHV) areas and developed sites. Results again show strong consistency in the IML segmentation itself, with only value congruence substantially not conforming. This analysis finds little evidence that alternative cultural values or social power issues are significant factors in the segmentation, and further reinforces the finding that the commitment profile segmentation is robust and stable.

1.0 INTRODUCTION

1.1 Background

In previous investigations, we explored the utility of commitment scales designed to measure recreationists' attachment to public leisure service providers and their service offerings (Kyle et al. 2005, Kyle et al. 2006). For land management agencies, the public's perception of them is often embedded in the qualities of the settings and facilities managed by the agency. Consequently, a salient element of recreationists' relationship with public agencies can be understood by examining the nature of their attachment to the settings and facilities they use. Additionally, the concept of commitment is integral for enacting management plans that positively impact recreationists' use of the resource, and it is important to understand how, or when, it may vary across settings and activity groupings. One key development from this work addressed in this paper is a segmentation scheme based on commitment profiles—Indifferent, Moderate, or Loyalist—which will be reviewed in more detail below.

1.2 Philosophical Foundations

The idea of studying the IML segmentation according to its underlying influences involves a form of deconstruction. Based in the phenomenological principles of Heidegger (1962), this is a type of validity challenge that searches for greater authenticity by placing a proposed theoretical construction (in this case the IML commitment segmentation) under detailed scrutiny of its inner workings or essential structures. This analytical approach was more explicitly brought forward into the realm of social science methodology through the work of Derrida (1973). He took Heidegger's philosophical ideals one step further to propose a practical approach to the epistemological problem of "taking apart" concepts that serve a particular social science theory. For our study, Derrida's process tells us that a scientifically sound phenomenon can be more fully understood by placing it at risk through a deconstructive process that is temporally and socially sensitive. Thus, in this paper we place the IML segmentation in a socially rich context or setting. The experienced reality and social worlds represented through place-based activity groupings is one way to check for variations in, and hence the validity of, the IML classification.

2.0 OBJECTIVES

Broadly stated, we test the differences across major use groups that reflect identity and affect issues through a deeper look at the linkages among the constituent meaning and commitment variables. More specifically this study a) reviews the IML segmentation and examines its differences across groups found at four main recreation settings, and b) analyzes the IML segmentation as a function of multiple sub-elements of place meaning and value congruence that constitute it.

3.0 METHODS

3.1 Dataset

Data were collected from visitors to the Chattahoochee National Forest (CNF) in northeastern Georgia. Eight sampling sites were chosen, representing four different user types (described below) with seven to eight sampling days allotted to each site. Use of a mailback survey instrument with an on-site contact plus a multiple mailing approach (Dillman 2000) yielded 562 respondents with a 43% response rate. Due to question branching and non-response, 286 of these respondents answered the questions necessary for this analysis.

3.2 IML Segmentation

Agency commitment was measured using 16 items (rated on a 1-5 scale, low to high) that measured five dimensions: place identity, place dependence, affective attachment, social bonding, and value congruence. These were adapted from earlier work in the following sets of sub-components: place identity (Proshansky 1978), place dependence (Stokols & Shumaker 1982), affective attachment (Low & Altman 1992), and social bonding (Kyle & Chick 2004). The incorporation of these sub-components into the IML segmentation is detailed in Kyle et al. (2005, 2006) and need not be repeated here. Other substantively related work on agency trust and value congruence components (e.g., Winter et al. 1999) are also reviewed in Kyle et al. (2005, 2006).

The IML segmentation placed respondents into one of three homogeneous groups based on their scores on the dimensions of agency commitment. Using a k-means clustering algorithm Kyle et al. (2005) placed respondents into homogeneous groups based on their scores on five separate scales that measured dimensions of agency commitment. These scales represent: place dependence (3 items, α=.79), place identity (3 items, α=.83), affective attachment (4 items, α=.87), social bonding (3 items, α=.81), and value congruence (3 items, α=.81). For this analysis there were 102 Indifferents, 130 Moderates, and 54 Loyalists. The groups' scores on the dimensions of commitment varied in a linear fashion from low to high. Tests of differences across the IML segments with regard to respondents' sociodemographic, behavioral, and service preference indicators were previously reported to be robust (Kyle et al. 2005). Overall, they provided evidence in support of the commitment scales' ability to identify distinct market segments.

3.3 Validity Concerns

Although the IML segmentation is robust in work reported so far, the underlying patterns of sensitivity to attachment and commitment need to be tested further. In particular, we wish to validate recreational lifestyle influences across four major use types that might be quite different in patterns of use or experience preferences. These four groups are: visitor center users, recreationists at an off highway vehicle (OHV) area, trail hikers (parked at a trailhead), and developed site users (campers and picnickers). The aim of this paper is to deconstruct, or take apart, the putatively coherent underlying segmentation to better understand the IML (commitment-based) differences, if any, across these four user groups.

4.0 RESULTS

First we present the IML segmentation by setting groups (Table 1). The first analysis cross-tabulates the user settings by IML commitment clusters (segments). Overall the IML groups are 36 percent, 45 percent, and 19 percent of all those sampled. As expected, there is an overall significant difference among the IML groups ($\chi^2_{6\ d.f.} = 22.18$, $p < .001$). On closer inspection, this result is attributable to a number of items. Visitor centers attracted more Indifferents and fewer Loyalists than the overall average. OHV areas were the opposite of the visitor center pattern: they had disproportionately fewer Indifferents and more Loyalists. Trailheads had fewer Indifferents and more Moderates. Developed sites had fewer Moderates and Indifferents, and many more Loyalists.

Next we present the breakout analysis based on each segmentation group's scores on the underlying, or constituent, variables used in the IML clustering algorithm (Figure 1). Our four use groups are representative of the major recreational uses in this forest environment and constitute a strong test for the deconstruction of the IML commitment segmentation, at least for this forest's summer recreation use. As presented

Table 1.—IML Segmentation by Setting-based Activity Groups

Setting		IML Segments			Total
		Indifferents	Moderates	Loyalists	
Visitor center	n	70	74	18	162
	%	43.2%	45.7%	11.1%	100.0%
ORV area	n	7	14	11	32
	%	21.9%	43.8%	34.4%	100.0%
Trailhead	n	14	30	13	57
	%	24.6%	52.6%	22.8%	100.0%
Developed site	n	11	12	12	35
	%	31.4%	34.3%	34.3%	100.0%
Total	n	102	130	54	286
	%	35.7%	45.5%	18.9%	100.0%

$\chi^2_{6\ d.f.} = 22.18$, $p < .001$

above, the underlying variables used for deconstruction are scales of place dependence, place identity, affective attachment, social bonding, and value congruence.

When these constituent commitment variables were analyzed, some patterns emerged that suggest causal linkages. For instance, Visitor Center Moderates (Fig. 1A) were most strongly linked to value congruence whereas OHV (Fig. 1B) and Trailhead (Fig. 1C) Moderates rated affect highest.

Given the results presented in Table 1 and the overall validity concerns outlined above, there is reason to look further into the pattern of the underlying sub-scales for each group. Recall that the segmentation is a combined function of five different sub-scales. For convenience these are called dependence, affect, identity, social, and value congruence components. The individual ANOVA statistics are noted at the bottom of each figure.

Figure 1A presents the ANOVA results for Visitor Center segmentation. For this paper we have chosen to represent the differences graphically in order to emphasize the patterns for each user group rather than describe the numerical and inferential mathematical detail of the actual ANOVA. Note that the component variables generally all trend together so that higher scores are linked increasingly to Loyalist group assignment. This is of course exactly what we expect overall and is why the original IML segmentation was robust. The only visually significant variation is in the identity and dependence components, where neither increases concomitantly with the other three sub-measures for the Loyalist group. Only one sub-scale, value congruence, was not significant for two of the four groups (OHV and Trail use).

Next observe the results of the OHV group (Fig. 1B). Again, identity falls off with the Loyalists (dependence doesn't), but also the social measure is dramatically lower for the Indifferents here. Figure 1C presents the results for trailhead users. Their pattern is the most monotonic. Again, only value differences show high initial values for Indifferents and a small increase across to Loyalists, again showing relatively constant scores across groups. Finally, Table 1D presents the results for developed site use, and here there is a relatively large jump in dependence and value scores with the Loyalist group after little difference between Indifferents and Moderates.

Overall, as might be anticipated, the IML clustering is consistent across user groups (settings), generally varying from low to high across I-M-L progression. Only value congruence was relatively flat across settings. Social, dependence, and affect sub-scales showed the strongest differences as measured by normalized scalar changes. Deconstructive analysis finds that while the sub-scales work to differentiate the IML segments, there is little evidence that alternative cultural values or social power issues contribute much to this segmentation. As concluded before, I-M-L seems robust and stable for all groups studied.

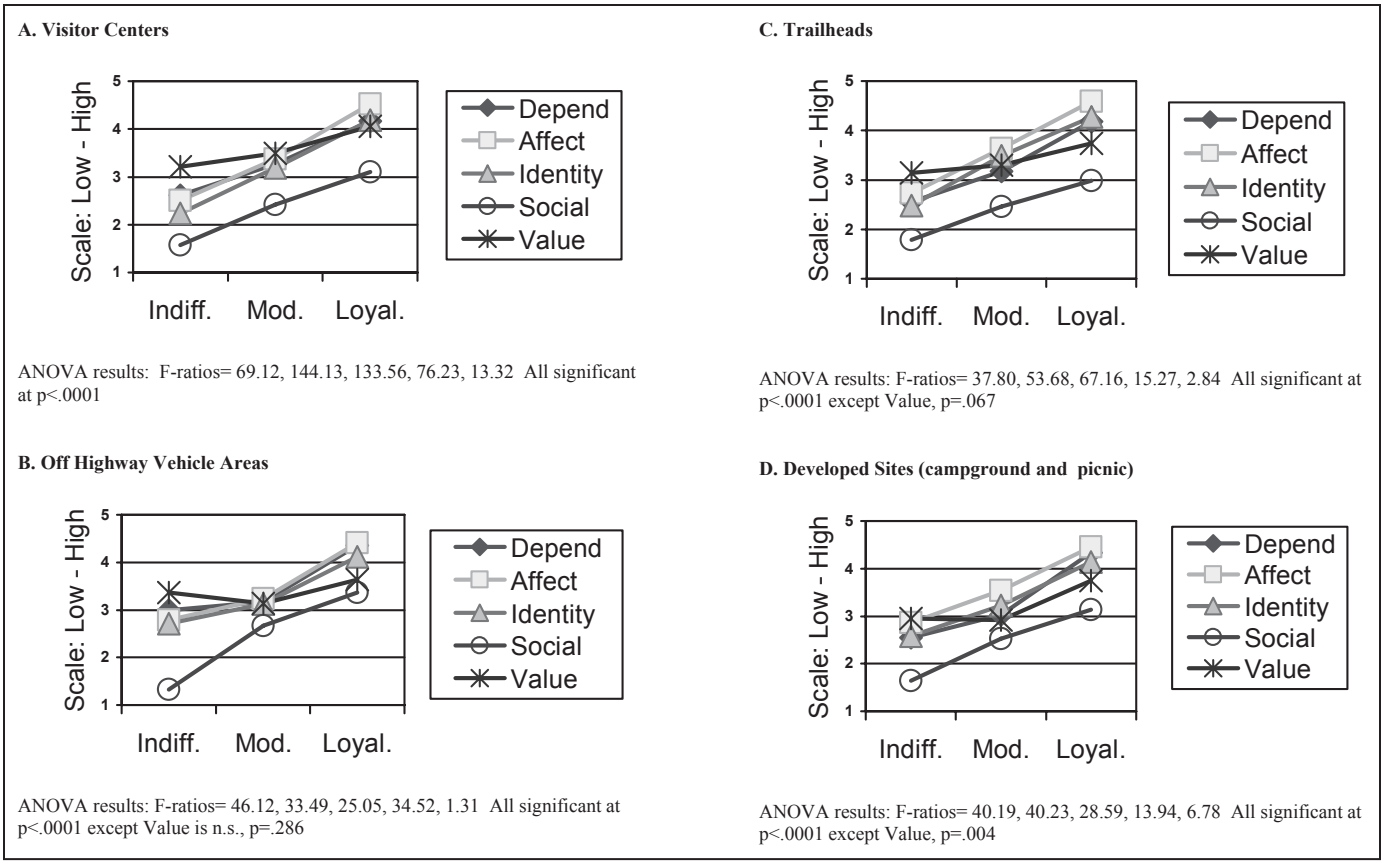

Figure 1.—ANOVA of Constituent Scales of IML Segementation by Setting.

5.0 CONCLUSIONS AND IMPLICATIONS

Previous work recommended a focus on understanding the needs and preferences of the Loyalists segment given their strong bonds and extensive use history. The differences found from a deconstructive analysis place equal, if not more, emphasis on Moderates. Also notable from this analysis are the observed differences in the component scales, which suggest that place identity and affect are more central to management than previously thought. This is especially evident for Loyalists.

Broadly, focusing attention on the linkages of component subscales to known user groups allows for more refined site management and perhaps better experiential quality outcomes. Also, these results suggest that recreational settings operate with an intrinsic set of social influences that may be complex and require setting specific (time, season, or place) study. Obtaining a truly authentic mirror of the experiential outcomes of a given user group will require attention to these dynamic influences. The first challenge for managers, however, remains to identify groups of users, along with the necessary setting attributes, that might be used to capture some of these social dynamics and thus enable them to manage distinct settings directly and effectively.

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THE ROLE OF TIME IN PLACE ATTACHMENT

David Smaldone
Assistant Professor, Ph.D.
PO Box 6125
Division of Forestry
West Virginia University
Morgantown, WV 26506-6125
David.Smaldone@mail.wvu.edu

Abstract.—Quantitative studies have found that the length of association is an important variable affecting place attachment (Kaltenborn 1998, Moore & Graefe 1994, Patterson & Williams 1991, Vorkinn & Riese 2001). These studies, however, have provided less insight into how and why time is involved in the process of forming place attachment, as well as the meanings that make up that attachment.

This study used a mixed methods approach to shed light on time and place attachment of both visitors and locals in Grand Teton National Park and Jackson Hole, WY. Results indicate that length of association plays an important role in the process that connects people with places, and the different ways that time influences place meanings are discussed.

1.0 INTRODUCTION

Many different conceptions of the bond between people and places have been hypothesized and studied. The most widespread terms include place attachment (Low & Altman 1992, Williams et al. 1992), sense of place (SOP) (Cantrill 1998, Hay 1998, Shamai 1991, Steele 1981, Williams & Stewart 1998). One consistent thread woven throughout most recent research on place attachment deals with the importance of time spent at a place (the length of association with a place). While both researchers and writers (Low & Altman 1992, Moore & Graefe 1994, Relph 1976, Tuan 1977) have made the case that time and experience in a place are important for deepening the meanings and emotional ties central to the person-place relationship, little in-depth research has studied these factors and their role in forging this connection. Accordingly, this study sought to provide a greater understanding of why and how time influences visitors' and residents' connections to places in Grand Teton National Park (GTNP) and Jackson Hole, WY.

2.0 PLACE ATTACHMENT CONCEPTS AND TIME—THEORY OVERVIEW

Place attachment, as defined as one's emotional or affective ties to a place, is generally thought to be the result of a long-term connection with a place (Low & Altman 1992). This is different from saying a place is special because it is beautiful, which is often a simple aesthetic response. For example, one can have an emotional response to a beautiful (or ugly) landscape or place, but this response may sometimes be shallow and fleeting. This distinction is one that Schroeder (1991) labeled "meaning" versus "preference." He defined meaning as "the thoughts, feelings, memories and interpretations evoked by a landscape," and preference as "the degree of liking for one landscape compared to another" (Schroeder 1991, p. 232). For a deeper and lasting emotional attachment to develop—in Schroeder's terms, for it to have meaning—an enduring relationship with a place is usually a critical factor.

Research has generally focused on describing two main aspects of place attachment, place identity and place dependence. Place dependence emerged from a framework proposed by Stokols & Schumaker (1981) and is described as the person's perceived strength of association with the place. The focus of place dependence has been on the functional aspects of one's connection to place: does it meet some functional or useful need? Length of association with the place, as well as past experiences, both play a role in creating and strengthening place dependence. Stokols and Shumaker (1981) argued that endurance and frequency are two critical objective properties of person-place association. Endurance refers to the length of place association, while frequency refers to the number of times the person and place are associated. Therefore, the person-place bond always encompasses a temporal element.

The concept of place identity was first elaborated upon with Proshansky et al.'s (1983) framework, and later modified by Korpela (1989), who proposed that it is a product of active environmental self-regulation, whereby an emotional attachment lies at the core of

place identity. Thus, place identity has been defined as a more emotional, or even symbolic, dimension of place attachment that is also formed and strengthened over time.

Relph (1976) and Tuan (1977) also discussed time-related concepts (insideness; rootedness) related to connections to places. Hummon's (1992) synthesis of works on community attachment found that long-term residence increases attachment feelings, partly through familiarity and experiencing significant events over time, but possibly even more importantly, through local social involvement (Gerson et al. 1977, Hummon 1992, Lalli 1992, Taylor et al. 1985). Studies of recreation places have also found that time seems to play a role in place attachment. Moore and Graefe (1994) quantitatively examined place attachment, dependence, and identity to recreational trails. They found that longer length of association, more frequent use, and greater proximity to the trails contributed to stronger scores on these measures of place attachment. They also noted differences in how these attachments form, with place dependence possibly developing quickly, while the more affective place identity required longer periods of time (Moore & Graefe 1994). Other studies have found similar relationships between place attachment and various measures of length of association (Kaltenborn 1998, Mitchell et al. 1993, Vorkinn & Riese 2001).

2.1 Change in Meanings Over Time

One issue has been that few studies have separated a place's significance to an individual from how attached the individual is to the place and its meanings. As Stedman (2002) noted, place attachment (a measure of strength) is different from the place meanings (the what and why) to which one is attached. While a person's place attachment is in part based on the meanings attributed to a place, he argued the constructs should be separated.

Some researchers have noted that place meanings may be influenced by one's length of association with a place (Brandenburg & Carroll 1995, Hay 1998, Cantrill & Seneca 2000, Kiteyama & Markus 1994). For example, Kiteyama and Markus (1994) suggested that a person's sense of place may change over time, with the salience of different features changing over the course of their time in a place. They proposed that newcomers might view their connection to a region as based more on environmental features, whereas those who have been in the region longer tend to view their connection more in the context of their social relations at the place. This hypothesis was partly supported by Mitchell et al.'s (1993) study on recreational users of a national forest. Cantrill (1998) and Cantrill & Senecah (2000) also found some evidence for this hypothesis in residents of a community in Michigan. Interview respondents who had lived in the community for less than 15 years were more likely to discuss the natural/environmental features of the area when describing their sense of place, while residents who had lived in the area for more than 15 years were more likely to reference their social relations. This reinforces the findings from various community studies (Gerson et al. 1977, Hummon 1992, Taylor et al. 1985).

2.2 Lingering Questions

Quantitative studies have found that length of association with a place—through time—seems to play an important role in place attachment (Kaltenborn 1998, Moore & Graefe 1994, Patterson & Williams 1991, Vorkinn & Riese 2001). But these studies provide less insight into how and why time is involved in the process of forming place attachment. Qualitative studies have begun to address these relationships. For instance, studies using interviews have pointed to aspects of time that influence the attachment process through the development of different place meanings, changes in those place meanings over time, and the role of continuity in strengthening person-place bonds (Brandenburg & Carroll 1995, Cantrill 1998, Cantrill & Senecah 2000, Gustafson 2001, Hay 1998, Mitchell et. al. 1993, Twigger-Ross & Uzzell 1996).

2.3 Study Purpose

In the present study, quantitative methods were used to confirm and further describe the role of time in place attachment, and qualitative methods were used to describe the underlying process of why and how time can influence the formation of place attachments and their associated meanings. Based on previous research, the key research question explored was: 1) Do people who have a longer length of association with a place (in Grand Teton National Park (GTNP) and elsewhere) express

more emotional or social meanings when describing that important place? In contrast, do people who have a shorter length of association refer to either the physical setting or an activity as more important when they describe their connections to that important place? In other words, is a person's length of association with a place related to the nature of his/her attachment to it?

3.0 METHODS

3.1 Study Area

Jackson Hole (JH) was the broad area of focus for this project. JH is located in northwest Wyoming, and encompasses the town of Jackson and Grand Teton National Park (GTNP). GTNP is one of the most recognized mountain areas in the world, offering incredible mountaineering, hiking, rafting, skiing, and other outdoor pursuits. GTNP receives over three million visitors a year, the majority during the summer. The town of Jackson, WY, has a year-round population of about 8,000 people (as of 2000), is located about 15 miles from the heart of the park, and is heavily dependent upon tourism revenues. In addition, over 95 percent of the immediate area is public land, protected by various degrees not only in GTNP, but also in National Forests, Wilderness areas, and the National Elk Refuge.

3.2 Data Collection

Two methodological approaches, a drop-off/mail-back questionnaire and personal interviews, were used to collect data for this study. A stratified random sampling approach (by date, time of day, and entrance gate) was used to distribute the questionnaire to one adult in private vehicles entering GTNP from July through October 2000. To increase the response rate, follow-up procedures were used based on Dillman's Total Design Method (Salant & Dillman 1994). The questionnaire collected information on the visitor's length of association with GTNP. Questions addressed both frequency and endurance (Stokols & Schumaker 1981) of this connection: 1) length of stay (in hours or days) on this visit to GTNP, 2) number of visits to GTNP, and 3) the number of years they had visited GTNP.

The survey also collected information on respondents' special places in GTNP and elsewhere in an open-ended format. Visitors were asked to list up to three important places in the park, describe the reasons why those places were important, and estimate how much time they had spent at each place. This open-ended approach was used in order to capture the depth of meanings, while the use of a survey allowed for a multitude of responses to better identify the range of visitors' experiences of GTNP.

The personal interviews were conducted with a purposive sample of visitors to GTNP and year-round residents of JH. Selection of individuals was based on key variables of interest for place attachment. Criterion sampling was used to access a diversity of visitors based on variables that included number of visits to the park and whether individuals had special places in GTNP (Miles & Huberman 1994). Nine separate interviews were conducted with GTNP visitors in August and September of 2001, four of which were "couple" interviews, where both members of the couple participated, for a total of 13 people participating in GTNP visitor interviews. In addition, 29 personal interviews were conducted with JH residents between August and November 2000. The key variable of interest was length of residency in JH; the number of years that these interviewees had lived in JH varied from 1½ years to more than 65 years. A snowball sampling approach was used to identify potential participants (Miles & Huberman 1994).

A total of 38 JH resident and GTNP visitor interviews were thus conducted, involving 42 individuals. These interviews were semi-structured in format (Newman & Benz 1998) and used an interview guide approach (Patton 1990). The interviews included discussion of an important or special place in the JH valley, and then of an important or special place elsewhere. A key objective was to ensure that interviewees used their own words or meanings to describe their connections to places. The GTNP visitor interviews lasted 20-45 minutes (averaging about 30 minutes), while the JH resident interviews lasted 30-60 minutes.

4.0 ITERATIVE ANALYSIS

The survey data provided a broad view of the role that time played for a large number of people. The interview data were then used to explore in-depth the meanings

of places and the role of time. The majority of places examined in this study were recreational places, but other types of places such as homes and communities were also described.

4.1 Survey Data Analysis

Analysis of the survey data took two forms, both quantitative and qualitative. Place meaning questions were first analyzed qualitatively. First, the GTNP places that were listed were categorized into 86 distinct places, based on the name of the place or the type of place. The types of places mentioned by respondents as special in GTNP varied greatly in terms of scale, from specific (Inspiration Point, the Chapel of Transfiguration), to more general (Jenny Lake, Antelope Flats Road), to very broad, such as the whole park. Respondents could list multiple reasons for the importance of places, resulting in a total of 1,299 reasons cited. Reasons for a place's importance were first coded in NVivo (QSR*NUDIST Vivo 1.0, 1999), a qualitative data analysis software program. To establish codes, an inductive approach was applied to develop categories of codes based on respondents' meanings. These categories were refined as analysis progressed.

After initial coding, a total of 36 separate categories of place meanings were identified. A reliability analysis was then conducted, and after further refinement and collapsing of these categories, coding based on 17 separate categories was finalized (see Smaldone et al. 2005 for complete code list and definitions). These codes were next transferred to SPSS for further analysis. All respondents who had mentioned a type of place categorized by place code were identified (for instance, "environmental setting or characteristics"), and then these cases were compared with those who had not identified this place code. Thus each place code was measured on a nominal level referring to the presence or absence of a code for each respondent. Certain meanings were double (or even triple) coded, as it was sometimes impossible to exclude overlapping meanings based on some of the respondents' answers. Responses that were double coded were placed in both coding categories during analyses. T-tests, cross-tabulations, and Chi-square statistics were used to analyze statistical relationships between the time (length of association) variables and the place meaning codes; all results reported here were statistically significant, $p<.05$.

4.2 Interview Data Analysis

Personal interviews were tape recorded with the permission of the interviewees and transcribed into a Word document, which was then also transferred into NVivo. The unit of analysis in this step was the words and phrases expressed by the participants. The interviews were first coded inductively, allowing the codes to emerge from the data, rather than being set *a priori*. After the first interview was coded, the coding scheme was then used for the next interview, which was then built upon and refined during this process. Each successive interview led to more categories and helped to distinguish and elaborate the overall coding scheme, as refined codes were applied to earlier interviews. Clusters and categories of codes were also established as the coding continued: NVivo allows for creating a hierarchical "tree" of codes.

5.0 RESULTS AND DISCUSSION

A total of 649 questionnaires were distributed during the sampling period in GTNP. Of these, 493 visitors returned completed questionnaires, yielding a 76 percent response rate. In addition, the analysis included questionnaires returned by the local and visitor interviewees (28 total).

In the following sections, results from the questionnaires and interviews are presented and discussed. First, differences in visitor characteristics are examined between people who had a special place in GTNP and those who did not, focusing on length of association. Differences in place meanings based on length of association are then explored. Finally, results from interviews are discussed in light of the findings from the questionnaires.

5.1 Who had a Special Place in GTNP?

Forty-eight percent of visitors said specific places in GTNP were special or important to them. Statistically significant differences between those who had a special place and those who did not were found based on trip characteristics including visitors' frequency of visits, endurance of association, and length of stay. Those reporting a special place had a statistically significant

longer length of stay (3.4 days vs. 2.2 days, t=3.134), greater number of visits to the park (9.6 visits vs. 2.0 visits, t=6.352), and longer association with the park (16.1 years vs. 9.7 years, t=4.317).

Statistical significance also was found between repeat visitors who had a special place and first-time visitors who did not. Of repeat visitors, 75 percent reported a special place, while only 45 percent of first timers did (X^2=44.72). To further assess if numbers of visits made to GTNP was related to special places, respondents were also categorized in terms of four groups: 1) first visit, 2) two to four visits, 3) five to nine visits, and 4) ten or more visits. Statistically significant associations were found, indicating that as the number of visits increased, so did the likelihood of reporting a special place. Of particular note, 97 percent of visitors who had visited ten or more times reported a special place in the park (X^2=54.53). This finding is consistent with the results of past research that longer lengths of association are associated with stronger measures of place attachment (Kaltenborn 1998, Moore & Graefe 1994, Taylor et al. 1985, Vorkinn & Riese 2001). While this study did not measure strength of place attachment, the finding that people who reported more visits and had more years of association with GTNP were more likely to report a special place lends support to prior findings and the proposition that greater association with a place leads to place attachment (Relph 1976, Tuan 1977).

5.2 Frequency, Endurance, and Place Meaning

Visitors described a variety of place meanings, as represented by the definitions of place meaning codes presented in Table 1. The most common meanings were: 1) the physical setting, 2) outdoor recreation activities, 3) emotional connections, 4) wildlife viewing, 5) escape, 6) social ties, 7) special moments, 8) the undeveloped nature of the park, and 9) tradition/time spent.

Statistically significant differences were found between visitors' length of association and the place meanings they reported (Table 2). Using Chi-Square analysis, repeat visitors were significantly more likely than first time visitors to report the following place meanings as important (generally on at least a two-to-one ratio): outdoor recreation, solitude, social ties, special moments, and time or tradition. Differences were not found for such place meanings as the physical setting and visitors' emotional connections to places.

Table 1.—Frequencies of Place Meanings

Place Meaning Code	Number of respondents using meaning	Percent of respondents with a special place
Physical setting	227	73
Outdoor recreation	165	53
Emotional connections	95	30
Wildlife	92	30
Escape	85	27
Social aspects	76	24
Special moments	49	16
Undeveloped	31	10
Time or tradition	26	8.3
Lodging or dining facilities	25	8
Inspire	16	5.1
Culture or history	15	4.8

Table 2.—Differences in place meanings between repeat & first time visitors

Place meaning	Percent of repeat visitors using the place meaning	Percent of first time visitors using the place meaning	Chi-square statistic
Physical setting	71%	77%	NS
Outdoor recreation	60%	34%	*X^2=16.715
Emotional connections	32%	27%	NS
Social ties	29%	12%	*X^2=9.521
Special moments	19%	7%	* X^2=6.267
Solitude	15%	5%	* X^2=5.832
Time or tradition	11%	2.4%	* X^2=5.271

* Statistically significant, at least p<.05.

T-tests were also used to test differences between place meanings and the variables associated with time. In relation to number of visits, place meanings significantly associated with more visits (frequency) included outdoor recreation (t=2.465) and the physical setting (t=2.295). Certain place meanings were more likely to be reported by those who had been coming to GTNP longer (endurance) and thus had stronger connections with park places: outdoor recreation (t=3.434), social ties (t=3.117), special moments (t=2.091), time or tradition (t=2.181), and lodging (t=1.984).

Taken together, these findings only partly support previous research. Both theory (Cantrill & Senecah 2000, Kiteyama & Markus 1994) and research evidence (Gerson et al. 1977, Hummon 1992, Lalli 1992, Taylor et al. 1985) suggest that longer associations with a place may shift the basis of attachment from physical aspects of the place to social aspects of the place. In support of previous research, repeat visitors (frequency), as well as those who had been coming for more years (endurance), were associated with more reports of social connections to places in GTNP. While the overall category of emotional connections found no differences between repeat and first-time visitors, the repeat visitors were more likely to report "special moments" and "solitude," both of which have emotional connotations.

Contrary to expectations, no differences were found between repeat and first-time visitors in regards to reports of the physical setting; this meaning was the most commonly reported one, across all visitors. In addition, those with more visits (frequency) were also more likely to report meanings involving the setting as well. Interestingly, repeat visitors, more visits, and more years visiting were also associated with higher reports of outdoor recreation, a meaning that could be hypothesized to be closely tied to the setting. One likely reason for these differences may be the type of place studied in the present research. Most previous research of this type was based on community studies, not recreation destinations or national parks. The physical setting was most frequently reported by all visitors as the reason that GTNP was special, regardless of length of association. GTNP is a vacation destination of great scenic beauty, and also a place where outdoor recreation is important for visiting. Therefore, it is not surprising that most people repeatedly return to GTNP because of the park's scenic values and opportunities to recreate. This finding suggests the importance of considering the type of place under study and its relation to development of different place meanings. This relationship needs further study, given that the kind of place appears here to be a factor in the kinds of meanings people assign to that place and the process of place attachment itself.

5.3 Interview Results and Discussion

5.3a Interviews with Residents

In analyzing the interviews from the JH residents, every important place mentioned was a place where that person had a high level of "intensity" of visitation in terms of length of association; this use of the term "intensity" is similar to the concept of "experience use history" described by Schreyer et al. (1984). Intensity of visits describes how frequently a person visits the place in a certain number of years, and attempts to capture both the frequency and endurance of one's connection to a place. Each place discussed by interviewees was given an intensity ranking of low, medium, or high. For instance, examples of low intensity of association for interviewees might include a person visiting a place five times over 30 years, or two times over five years, while examples of high intensity of association might include a person visiting a place 50 times over 25 years, or 10 times over two years. Likewise, places outside the JH area were ones with which local interviewees had at least a moderate, if not high, level of intensity of association.

5.3b Interviews with Non-residents

The visitor interviews also revealed the role of time in place attachment. Eight of 13 interviewees described a special place in GTNP, whereas the other five did not have a special place. In looking at the intensity of association with GTNP, the intensity varied much more among visitors than locals. This would be expected because for the non-resident interviewees, GTNP is primarily a vacation destination (albeit a special one for some of them) and therefore not a place where they have spent a great deal of time, especially in comparison to the residents. In terms of intensity of association with GTNP, of the eight visitors who described an important place, one was high; one had a high level earlier in her life, but

recently was low; two were medium; and four were low. And for the five visitors who did not describe a special place, the intensity of association also varied: two were high, one was medium, and two were low.

However, when asked to discuss an important place outside the JH area, all of the visitor interviewees except one could easily think of a place, and four of the thirteen described their homes or a place where they had lived, revealing the importance of home places (Gunter 2000). The other interviewees talked about favorite or cherished vacation spots, and all were places they had visited a number of times, again revealing at least a moderate intensity of association in their connections to special places they discussed.

5.4 Discussion of Interviews and Place Meanings

Moore and Graefe (1994) hypothesized that the ways in which different types of place attachments form also differ. Place dependence seemed to develop comparatively quickly, while the more affective place identity seemed to require more time. Similarly, others (Cantrill & Senecah 2000, Kiteyama & Markus 1994) have hypothesized that over time, social connections to places become more salient and important; whereas in the beginning, it is often attributes related to the physical setting that are important.

These hypotheses were supported by the results of the interviews. One distinction made by a number of interviewees was that their feelings about a place changed over time as they gained experience with the place. They noted that the reasons for first moving to, or visiting places in, JH changed or had grown as they lived in the place and spent more time there. They seemed to be distinguishing between "preference" and "meaning" (Schroeder 1991), and this difference is presented in the next section as one of "attraction" as opposed to "attachment."

5.5 Attraction vs. Attachment

A number of the people interviewed for this study described how they became attached or connected to special places, both in JH and outside the valley. Many interviewees acknowledging place connections generally described differences in the meanings of places between their initial impressions of attraction to a place and their lasting attachment to that place (at least 12 interviewees explicitly discussed this difference, and another five implicitly alluded to it). They often said that the beauty of the physical setting was the first thing they noticed. However, this attraction was quite different from the meanings and stronger emotional attachments that developed through living in a place for a longer time, and it was this lengthier attachment that resulted in more meaningful emotional and social connections to that place. While many interviewees described this phenomenon in various ways, several quotes will serve to briefly illustrate this idea.

IC, a 25-year female who lived in JH 1½ years and has since moved away, commented that, "… I took the job here because I knew that I loved this place, in the sense that I loved the scenery. I mean I had no attachment to it yet." Another interviewee also discussed this difference between attraction and attachment in a similar fashion. OT, a 48-year old married woman who had lived in JH for 12 years, commented:

> Well certainly while visiting, one can't help but be amazed by the whole thing, it is a beautiful and all that—blah, blah, blah. So when we knew we were moving to Jackson of course we were excited. I tell you it is really different, I have a completely different feeling about Jackson than that feeling. Like the feeling I would imagine what a visitor feels like when they come here and it's just so beautiful. But now I feel, I feel attached, I feel responsible, you know it feels more like family and not just 'I'm on vacation' having a visit. It's just a really different feeling, and it grew slowly. No one can come here and not love this place in some ways. But the attachment feeling now for this place has definitely grown over time. You know it took years really. I think it probably started leaking in maybe after about five years, that I really felt like this was totally a home base.

For OT, as well as other interviewees, being in a place, spending time there, and having experiences there is

critical for a place to become emotionally significant, rather than just another pretty place—it becomes a place marked with personal and socially shared memories and events. These examples affirm earlier research and hypotheses emphasizing that over time, one's connections to places tend to expand beyond a focus on environmental or setting features to valuing deeper emotional or social aspects of the place (Cantrill & Senecah 2000, Kiteyama & Markus 1994, Moore & Graefe 1994).

6.0 CONCLUSIONS

The importance of time in connecting people to places was affirmed in the present study. The results from the questionnaires lend some support to prior findings and hypotheses that length of association with a place is an important factor in the development of place attachment. People who reported more visits and had more years of association with GTNP were more likely to report a special place than those with shorter lengths of association. The questionnaire findings also indicated that length of association affects the meanings of place attachment. The results revealed consistencies as well as discrepancies in regards to the research question addressed. Findings indicated that it is important to consider the type of place when assessing meanings—a critical consideration for recreation managers.

In regards to the interviewees, an important distinction a number of them noted was that their feelings about a place changed both over time and because of their experiences at the place. This aspect of person-place relationships was referred to as "attraction vs. attachment" in this study. Others (e.g., Cantrill & Senecah 2000, Hummon 1992, Kiteyama & Markus 1994, Lalli 1992, Moore and Graefe 1994, Schroeder 1991) have noted these kinds of changing place meanings over time, theorizing that different types of place attachments develop in different ways. Over time, more emotional or social connections to places seem to become more salient, in contrast to early stages of one's connections to places, when physical settings are often most important. Based on their inter-related conceptions, these frameworks suggest that every person-place bond has its locus within an ever-changing temporal scale that provides a critical context affecting that bond.

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WILDERNESS AS A PLACE: HUMAN DIMENSIONS OF THE WILDERNESS EXPERIENCE

Chad P. Dawson
State University of New York
College of Environmental Science and Forestry
Syracuse, NY 13210

Abstract.—Understanding the experiences sought by visitors to wilderness areas and how satisfied they are with their experiences is an important type of information for wilderness managers. Understanding how these dimensions are measures of the concept of "place" can help wilderness managers develop better visitor education and management programs. This paper briefly summarizes seven studies of wilderness visitors conducted during 1997 through 2000 in state and federal managed wilderness areas in the northeastern United States. These studies attempted to identify and measure the important variables and dimensions (i.e., factors) of the human experience in wilderness areas. The overall goal of these seven studies was to develop a multi-dimensional scale to better understand the relationship between people and wilderness as a place.

1.0 INTRODUCTION

A substantial body of anecdotal, personal, and popular literature exists about wilderness and the experiences people have had on those designated and managed lands. However, wilderness and the corresponding "sense of place" it invokes has not often been investigated through empirical research studies. Managers need to more systematically measure and understand the relationships that visitors are developing or have developed with the lands they manage as wilderness. "Place" is defined as both a physical location and the visitor's subjective experience or relationship with that place; the concept has been subdivided into a variety of factors, such as place meanings, attachment, identity, e.g., and dependence (Cheng et al. 2003).

Wilderness areas in the United States are public land areas designated as wilderness by federal and state governments (Hendee & Dawson 2002). Wilderness areas were chosen as the study areas because the emphasis is on protecting them for their ecological, cultural, and scientific values for present and future generations. Visitors entering these wilderness areas are seeking to be immersed in an ecological setting that is different from human development and mechanical and motorized use. Some visitors come for short or long hikes that last only one day or less, while other visitors carry their camping equipment and stay several days within the area using only primitive means of travel and living.

The primary objective of these studies was to develop a multi-dimensional scale to better understand the relationship between people and wilderness as a place, including the importance of and satisfaction with multiple dimensions of that place.

2.0 METHODS

This paper is a brief summary based on seven studies of visitors conducted during 1997 through 2000 in state and federal wilderness areas in the states of New York, New Hampshire, and Maine. These studies attempted to identify and measure the important variables and dimensions (i.e., factors) of the human experience in wilderness areas.

The study areas were different size wilderness areas with varying densities of visitor use and proportions of user types (such as day hikers and backpackers). Also, the study areas were geographically distributed so that visitors would be arriving from different residential and rural areas to ensure that a variety of visitors' interests, needs, and attitudes were included in the survey results. There were multiple areas to select from during different phases of the four-year study: 16 wilderness areas in the state-owned lands of the Adirondack Park in northern New York State, and seven wilderness areas in the White Mountain National Forest in New Hampshire and Maine. The studies were conducted in three phases or stages with each developing the research information needed to conduct the next phase.

Phase One of the wilderness visitor studies was based on four focus group discussions with visitors to several wilderness areas and a literature review that helped to

generate a list of visitor experience variables used in the first visitor surveys. Visitors in three Adirondack wilderness areas were surveyed to measure the importance of and satisfaction with wilderness experience attributes related to social, resource, and managerial conditions. Forty-eight variables on wilderness experience opportunities were developed and presented in a random list followed by 15 variables on conditions in the wilderness area; other variables about visitor use and characteristics were also developed for the questionnaire. The data collection involved two parts: (1) a brief interview at the access points to the wilderness areas to ask for their participation in a mail survey; and (2) a mail questionnaire that was sent to them by U.S. mail carrier with up to two reminder notices to visitors who did not complete their questionnaires within several weeks of their trip.

Phase Two of the wilderness visitor studies was based on the results and exploratory factor analysis of the visitor surveys in the first phase. Visitors in one Adirondack and one White Mountain wilderness area were surveyed to measure the importance of and satisfaction with wilderness experience attributes related to social, resource, and managerial conditions. The 48 variables on wilderness experience opportunities were used from the first phase and presented in a list organized under eight factor dimensions, followed by 15 variables on conditions in the wilderness area in a list organized under four factor dimensions; other variables about visitor use and characteristics were also developed for the questionnaire. The data collection involved two parts: (1) a brief interview at the access points to the wilderness areas to ask for their participation in a mail survey, and (2) a mail questionnaire that was sent to them by U.S. mail carrier with up to two reminder notices to visitors who did not complete their questionnaires within several weeks of their trip.

Phase Three of the wilderness visitor studies was based on the results and analysis of the visitor surveys in the second phase. Visitors in all 16 Adirondack and seven White Mountain wilderness and backcountry areas were surveyed to measure the importance of and satisfaction with wilderness experience attributes related to social, resource and managerial conditions.

Eight variables (dimensions) on wilderness experience opportunities were used from the phase two studies and followed by four variables (dimensions) on conditions in the wilderness area; thus, only 12 variables were measured in this phase. Other variables about visitor use and characteristics were also developed for the questionnaire. The data collection involved only brief structured interviews at the access points to the wilderness areas and along the visitor hiking trails of the wilderness areas.

The response categories for the importance and satisfaction variables and dimensions remained the same throughout the three phases of the project. The importance rating responses categories were: 0 = not important, 1 = slightly important, 2 = somewhat important, 3 = moderately important, 4 = very important, and 5 = extremely important. The satisfaction rating responses categories were: -2 = very dissatisfied, -1 = dissatisfied, 0 = neutral, 1 = satisfied, and 2 = very satisfied. All interviews and mail surveys were conducted during the high-use summer season from late May through mid-September. All data analysis was conducted using the Statistical Package for the Social Sciences (SPSS); statistical techniques ranged from simple descriptive statistics to exploratory factor analysis to determine the experience dimensions for the surveys.

The complexity of the dimensions reported in this summary paper were studied and examined in a variety of publications (Johnson & Dawson 2004, Dawson & Alberga 2004, Dawson et al. 2002, Dawson et al. 2000, Dawson & Watson 2000, Newman & Dawson 1999, Dawson et al. 1998). Only the 12 final dimensions from Phase Three will be described in this paper.

3.0 RESULTS AND DISCUSSION

The visitors were very cooperative in all three phases of the studies and between 95 and 100 percent of those visitors asked to participate in a brief interview agreed to participate. High response rates of 60 to 75 percent were obtained from visitors who were sent a mail questionnaire and who completed and returned it for analysis (Table 1). A high percentage of visitors (95 to 98%) willingly participated in the Phase Three interview studies (Table 1). These high response rates (and low non-respondent bias based on a comparative analysis of interview data

Table 1.—The number of visitors interviewed and sent a mail survey (First and Second Phases) and those only interviewed (Third Phase) and their response rates by year of study and wilderness or backcountry area

Year of Study and Wilderness or Backcountry Area	Number Visitors	Response rate
First Phase (Interview and mail survey)		
1997- High Peaks in Adirondacks	710	67%
1997 - Siamese Ponds in Adirondacks	98	74%
1997 - Ha-De-Ron-Dah in Adirondacks	93	75%
Second Phase (Interview and mail survey)		
1999 - High Peaks in Adirondacks	586	64%
1999 - Great Gulf in White Mountains	317	60%
Third Phase (Interview)		
2000 - 16 Adirondack areas	104	98%
2000 - 7 White Mountain areas	403	95%

from respondents and non-respondents to the mail survey) allowed us to conduct the statistical analyses with little concern for non-respondent biases (i.e., these are representative samples).

A reliable 12-dimension survey was developed and successfully tested in field conditions for use with visitors to wilderness areas to understand their relationship to wilderness as a place. The importance of the 12 dimensions and the visitor satisfaction with those dimensions is presented for wilderness experiences and management conditions.

The eight dimensions of wilderness experiences (and examples) that were developed based on the Phase One and Two studies were:

1. **Personal and Social Experiences:** Get away from daily routines; Develop a sense of self confidence; Chance to think and solve problems; Simplify daily priorities and needs.
2. **Solitude:** A small, intimate group experience, isolated from all other groups.
3. **Connections with Nature:** Get in touch with my true self; Opportunity for self discovery; Develop a sense of oneness with nature.
4. **Exploration and Remoteness:** An environment free of man-made noises; Develop a sense of remoteness from cities and people; Having an adventure and sense of discovery; Feel like I was one of the first people to experience this place.
5. **Connection with Other Wilderness Users and Inspiration:** Feel connected to a place that is important to me; Celebrate wilderness as a symbol of naturalness; Feel a sense of an earlier and rugged time.
6. **Physical Activity:** Physical exercise and health; Physical challenge.
7. **Remote Travel Skills:** Improve travel skills; Learn to travel to a remote destination and return successfully; Develop a sense of self-sufficiency; Recreation in a primitive environment.
8. **Natural Environment:** Enjoy the view from a mountain top; Experience the scenic quality of nature; Observe and hear wildlife in a natural setting; The tranquility & peacefulness of the remote environment.

The four dimensions of area management conditions that affected wilderness experiences (and examples) that were developed based on the Phase One and Two studies were:

1. **Information on Wilderness Area**: Finding safe drinking water; Information on where other users are likely to be; Find an unoccupied campsite.

Table 2.—Average visitor importance and satisfaction ratings of eight dimensions of the wilderness experience in 16 areas in the Adirondack Park and seven White Mountain areas in 2000

	Importance		Satisfaction	
Dimension	Adirondack	White Mtn.	Adirondack	White Mtn.
Natural environment	4.5	4.5	1.5	1.6
Personal/social experiences	4.3	4.1	1.4	1.6
Physical activity	4.0	4.2	1.6	1.7
Exploration & remoteness	3.9	3.9	1.0	1.1
Solitude	3.8	3.7	1.1	1.2
Connections with nature	3.7	3.7	1.2	1.4
Remote travel skills	3.6	3.3	1.0	1.2
Connections with others	3.1	3.3	1.0	1.1

2. **Management Conditions**: Condition of the trail system; Publicized rules and regulations at entry point; The number of visible places where others have hiked and camped.
3. **Litter and Waste**: Amount of litter along the trails and at campsites; Campfire rings; Human waste.
4. **Numbers of Users**: The number of hikers you saw on trails; The number of large groups you saw on trails; The number of groups that camped within sight or sound of your campsite.

The survey results of the eight dimensions of wilderness experiences documented that these were all moderately to highly important and that visitors were satisfied to very satisfied with their experiences. The visitor interviews in the wilderness areas of the Adirondack Park and wilderness and backcountry areas of the White Mountains reported very high average scores for the importance of these eight dimensions (Table 2). Also, the visitor response patterns regarding these eight dimensions for the Adirondack areas were similar as shown in Figure 1; the exception was the higher importance of the natural environment over other dimensions. Overall, the experience sought by visitors is complex and multi-dimensional. They have sought out these experiences and come to the wilderness area with many types of attitudes and needs that they expect to be fulfilled.

The survey results of the four dimensions of wilderness area management conditions reported that these were moderately to highly important and that visitors were neutral to satisfied with their experiences. The visitor interviews in the 16 areas of the Adirondack Park and wilderness and backcountry areas of the White Mountains reported high average scores for the importance of and low satisfaction with these four dimensions (Table 3). These data demonstrate that the visitors have higher expectations for management performance than are being achieved (i.e., visitor

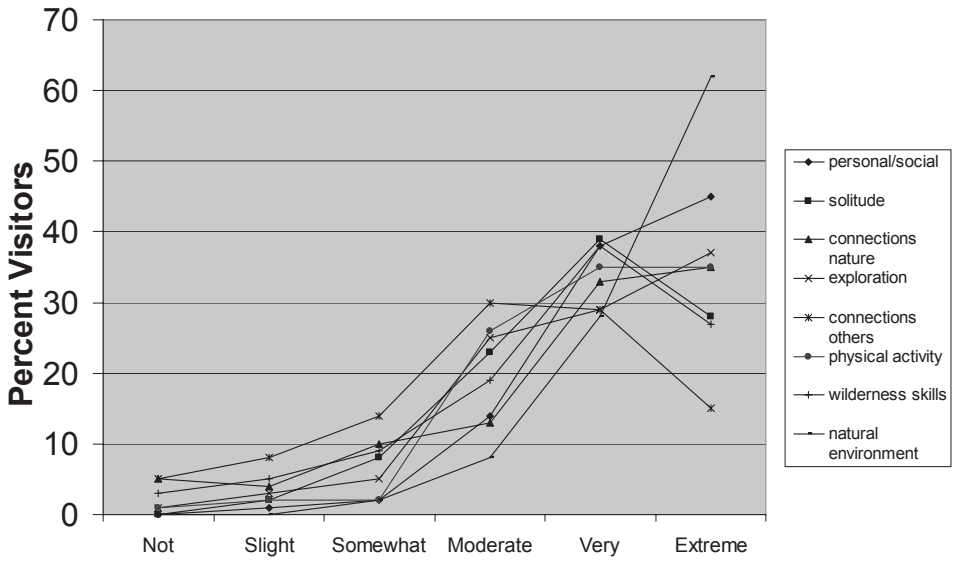

Figure 1.—Distribution of visitor responses to the importance of eight dimensions of the wilderness experience in 16 areas in the Adirondacks in 2000.

Table 3.—Average visitor importance and satisfaction ratings of four dimensions of the wilderness management conditions in 16 areas in the Adirondack Park and seven White Mountain areas in 2000

	Importance		Satisfaction	
Dimension	Adirondack	White Mtn.	Adirondack	White Mtn.
No litter and waste	4.3	4.4	0.8	1.5
Wilderness area information	3.8	3.2	0.8	0.8
Management conditions	3.5	3.6	1.0	1.2
Number of other users	3.4	3.2	0.7	1.0

satisfaction is not high). Also, the visitor response patterns regarding these four dimensions for the Adirondack areas were similar as shown in Figure 2; the exception was the higher importance of no evidence of litter and human waste over other dimensions.

4.0 CONCLUSIONS AND IMPLICATIONS

Managers can use the 12-dimension survey instrument developed to more systematically measure and understand the relationships that visitors have developed with the lands they manage as wilderness. More clearly understanding the importance of those dimensions and visitor ratings of their satisfactions provides more input to management activities. The survey instrument could be used in a variety of ways:

- Monitor visitor responses over time to see if high levels of importance and satisfaction continue to be reported across all eight dimensions of the wilderness experiences.
- Monitor visitor responses over time to see if high importance for management conditions and lower satisfaction with the actual conditions continue to be reported for the four management condition dimensions.
- Conduct an importance-satisfaction analysis to check the relationship between visitor satisfactions and their relative importance from the perspective of the visitor (e.g., are managers focused on what is important to visitors and are visitors satisfied).
- Conduct comparisons between management areas and comparisons before and after management actions have been taken or conditions have changed.

These study results have many implications for wilderness management from visitor marketing to information programs to management of the conditions in the wilderness area. For example, marketing and information programs need to provide accurate and realistic information about the wilderness area and expected visitor experiences to prepare visitors for their experiences and help to set realistic expectations about the natural and social conditions present in the area.

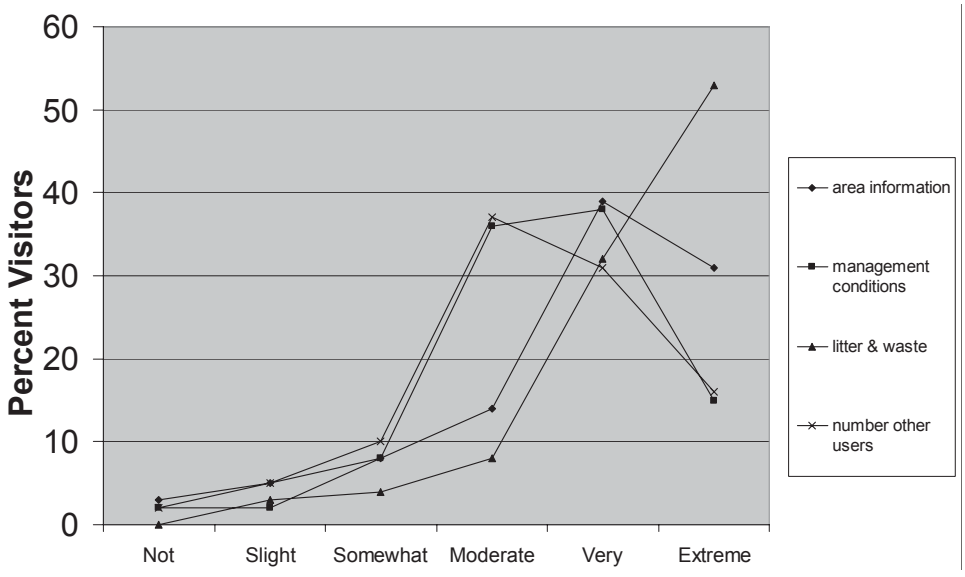

Figure 2.—Distribution of visitor responses to the importance of four dimensions of the wilderness area management conditions in 16 areas in the Adirondacks in 2000.

Visitor satisfactions are related to maintaining a high quality of resource and social conditions. These types of study results may suggest to managers that information programs are an important indirect management tool. Also, managers can use the importance and satisfaction data to help them understand the situations and conditions that most support or detract from satisfying visitor experiences. The general application of this research is for managers to be able to understand when they need to : (1) inform and educate visitors about the existing opportunities and conditions, appropriate behaviors, and rules and regulations; (2) know when and how to adjust management to increase visitor satisfactions that are legal and appropriate within the legislative mandate for management; and (3) know when to redirect users to other areas for a more appropriate type of experience that is better provided elsewhere or to help them meet their expectations.

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EXAMINING THE RELATIONSHIP OF PLACE ATTACHMENT WITH PRO-ENVIRONMENTAL INTENTIONS

Elizabeth Halpenny, Ph.D.
Assistant Professor
Faculty of Physical Education and Recreation
W1-34 Van Vliet Centre
University of Alberta
Edmonton, AB
T6F 2H9 CANADA
elizabeth.halpenny@ualberta.ca
elizabeth.halpenny@elmtreeisland.com

Abstract.—Place attachment, the emotional, functional, and cognitive bond that an individual has with a specific setting may play a role in an individual's choice to engage in environmentally-responsible behavior. This is particularly true for behaviors which directly benefit the place that the individual has a positive attachment with. This study examines the relationship between place attachment and pro-environment behavioral intentions. Utilizing Likert-type scales to measure these phenomena, this study found place attachment to be a strong and positive predictor of place-specific pro-environmental intentions. Additionally, place attachment positively predicted individuals' planned engagement in environmentally-responsible behaviors associated with their daily routines (e.g., recycling or investing in green companies). A causal relationship between place attachment and place-specific and general pro-environmental behaviors cannot be confirmed because of the cross-sectional nature of this study. Further research using longitudinal and experimental research designs are called for.

1.0 BACKGROUND & OBJECTIVES

This paper describes a study that investigates how the relationships or attachments people have with particular places, settings that have meaning and value to individuals, may affect how individuals make choices about environmental actions and give practitioners a greater understanding of how to encourage pro-environmental behavior.

Pro-environmental behaviour can be defined as the action of an individual or group that advocates the sustainable or diminished use of natural resources (Sivek & Hungerford 1989/1990). Place attachment is a bond with a setting (Low & Altman 1992). Place theorists speculate that individuals who are emotionally, cognitively, or functionally attached to a place will act to protect that place (Tuan 1997, Relph 1976). Empirical research has shown this is true in several different contexts. These settings include neighbourhoods and communities (Mesch & Manor 1998, Shumaker & Taylor 1982), parks and protected areas (Kaltenborn & Williams 2002, Walker & Chapman 2003), and recreation landscapes (Bricker & Kerstetter 2002, Kaltenborn 1998, Kyle et al. 2003, Stedman 2002, Vaske & Korbin 2001, Vorkinn & Riese 2001). An increased understanding of the link between place attachment and pro-environment behavioral intentions needs to be explored in different settings and for different groups of individuals (Stedman 2003). However, based on known theoretical and empirical research, the following relationship is proposed for a protected area leisure-based setting:

> P1. High levels of place attachment will encourage place-specific pro-environment behavioral intentions towards the place of attachment.

The relationship between these two factors may be better understood through the measurement of place-specific pro-environment behavioral intentions. These can be compared with general planned pro-environment behaviors expressed by individuals to illuminate the salience and intensity of relations between place-specific environmental behaviours and attachments.

2.0 METHODOLOGY

The study was conducted at Point Pelee National Park in 2005 in partnership with Parks Canada. A quota sample of visitors who had visited the park in the previous four years was utilized. Questionnaires were mailed to Canadian and U.S. residents. A quota sample was used to achieve adequate response from individuals that were anticipated to demonstrate different levels of place attachment to the park (e.g., first-time visitors would have a lower attachment to the park than individuals

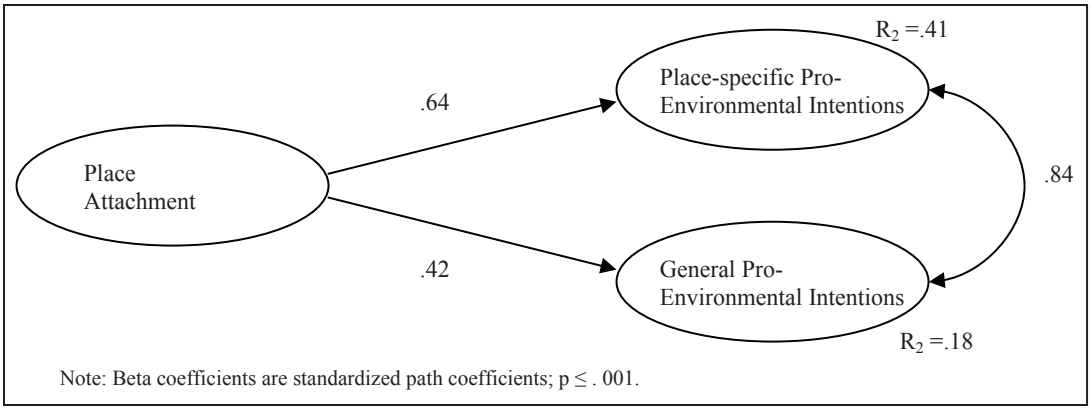

Figure 1.

who visit on a recurrent basis). To increase response rates, reminder post cards were mailed and incentives such as seasonal park passes were awarded.

Previously employed scales used to measure place attachment and pro-environmental behaviors were slightly modified and utilized to measure these two phenomena (Jorgensen & Stedman 2001, Smith-Sebato & D'Costa 1995, Stedman 2002, Vaske & Korbin 2001, Walker & Chapman 2003, Williams & Roggenbuck 1989, Williams & Vaske 2003). Sixteen items designed to measure place affect, place identity, and place dependence were selected. Twelve items designed to measure place-specific pro-environmental intentions (e.g., "Tell my friends not to feed the animals in Point Pelee N.P. or similar parks") and 12 items designed to measure general pro-environmental intentions (e.g., "Pay extra for transportation if it is environmentally-friendly [e.g., a fuel-efficient car]") were identified. All scale items were pre-tested (n = 80) and subject to peer review.

3.0 RESULTS AND DISCUSSION

A 33 percent response rate was achieved (n = 355). A non-response bias check was performed through the comparison of late versus early respondents. Late respondents are reported to share similar characteristics with non-respondents (Lindner et al. 2001). No major differences were observed between the populations. The place attachment (α = .918, 16 items) and pro-environmental behavioral intention scales (general environmental intentions: α = .848, 12 items; place-specific intentions: α = .869, 12 items) demonstrated high reliability scores. Significant correlations between aggregate measures of place attachment and place-specific pro-environmental behaviors (r = .565) and general environmental behavioral intentions (r = .328) were also found.

Structural equation modeling, utilizing Amos 5.0, was used to further explore this relationship. A structural model based on a priori theory was tested (see Figure 1). One respecification of the model was needed to achieve adequate fit: Two measurement errors associated with one of the general intentions indicators and one of the park-specific intentions indicators were correlated to achieve better fit. This correlation was integrated into the model because it also made substantive sense (i.e., both indicators share similar qualities in that they are behaviors that are more difficult for individuals to engage in, e.g., participation in environmental protests or public land planning meeetings). The final model fit was characterized by the following indices: x_M^2 = 30.342, df = 16, $p \leq .016$; CMIN/df = 1.894; CFI = .990; RMSEA = .050; AIC = 86.310.

In the examination of the relationship between the study's main constructs, place attachment was more strongly predictive of place-specific pro-environmental intentions (ß = .64, $p \leq .001$, R_2 = .41) than of general pro-environment behavioral intentions (ß = .42, $p \leq .001$, R_2 = .18). Place attachment was a statistically significant and positive predictor of both forms of pro-environmental intentions. In other words, place attachment may be an important factor in fostering individuals' decisions to engage in environmentally-responsible behavior. This is especially true for place-related behaviors.

However, this study may also document the presence of a "carry-over" effect in that positive bonds with specific places, especially nature-based settings, may encourage individuals to engage in pro-environmental behavior in their everyday lives. In short, as individuals build attachments with particular nature-based settings, they may in turn adopt this as part of their identity. Their place-based identity as a lover of a particular natural context may translate to a supporter of nature in general, and in turn could foster pro-environmental attitudes, intentions, and behaviors in their everyday lives (Vaske & Korbin, 2001).

The limitation with this study is that it is cross-sectional in nature; it documents one population at one time. As a result, the exact causes of pro-environmental intentions cannot be proven. It may only be speculated that place attachment, based on the strong relationship that it shares with general and place-specific pro-environmental behaviors, may play a role in encouraging pro-environmental behavior. The findings of this study appear to support similar results documented in related place-based research that focuses on place attachment and environmental concerns, attitudes, and behaviors (Stedman 2000, Walker & Chapman 2003, Vaske & Korbin 2001, Vorkinn & Riese 2001).

Much more work needs to be done to verify this relationship; in particular, longitudinal research which measures the evolution of an individual's choice to engage in pro-environmental behavior based on visitation to parks is needed. Pre- and post-experimental research design is one research approach which should be utilized to investigate this.

The attachments that individuals have for specific parks and natural spaces are an important phenomenon that park and conservation agencies need to understand. Place attachment is especially important because of its potential role in fostering park advocacy and citizen support of heritage conservation efforts, as well as anticipating points of conflict regarding the management of natural spaces and place.

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THE SUBJECTIVE EXPERIENCE OF SOLITUDE

Christopher Long
Department of Psychology
Ochuita Baptist University
Arkadelphia, AR 71998

Thomas A. More
USDA Forest Service, Burlington, VT

James R. Averill
University of Massachusetts, Amherst, MA

Abstract.—Solitude is a frequently cited motive for visiting parks, forests, and wilderness areas. But while visitors frequently say they achieve their solitude goals, most visit in groups of two or more, suggesting a conception that differs from the classical ideal of being profoundly alone with the universe. Moreover, solitude often can be experienced negatively, surrounded by feelings of loneliness and depression. In this paper, we explore both positive and negative solitude experiences as mental states rather than physical conditions. Results suggest that both states occur frequently, perhaps two or three times per week, and both tended to occur while the person was alone, although this was not a requirement. Both were preceded by a sense of stress, and were likely to occur in environments close to home. Women were more likely to experience solitude at home, while men were more likely to achieve it outdoors.

1.0 INTRODUCTION

Time alone is important both to individuals and society. Religious figures from Moses onward have actively sought solitude for meditation and inspiration, and major writers and poets have made solitude a regular part of their creative endeavors (e.g., France 1966, Koch 1994, Storrs 1988). Although many people might be reluctant to rank their own experiences with those of major cultural figures, solitude often plays a significant role in their lives: being alone gives people the chance to work out personal problems, to learn about themselves, or to gain creative or spiritual insights (Westin 1967, Hammitt 2002, Hammitt & Madden 1989).

Today, public parks and recreation areas provide significant solitude opportunities. This is most obviously true of wilderness areas, where solitude is a long-recognized primary motive for visiting (Hence et al. 1968, 1990). Patterson and Hammitt (1990), for example, found that 54 percent of backpackers in the Great Smoky Mountain National Park felt that solitude was either extremely or very important to their experience, while only 9 percent were neutral or felt it was unimportant. However, although solitude was explicitly cited as a reason for wilderness preservation in the Wilderness Act of 1964 (Shafer & Hammitt 1995), the Act never specified what solitude entails or how it might be experienced (Hammitt & Madden 1989). In offering conceptualizations of solitude to fill this gap, researchers adopted a social-spatial perspective drawn from the privacy, crowding, and normative encounter literatures (e.g., Hammitt et al. 2001, Manning & Valier 2001, Shelby et al. 1996). The closest of these to a direct analysis of solitude as a psychological state is the privacy literature as developed by Hammitt and colleagues (Hammitt 1982, Hammitt & Brown 1984, Hammitt & Madden 1989, Shafer & Hammitt 1995). For example, following Westin's (1967) four function model of privacy, Hammitt and Brown (1984) identified five dimensions of wilderness privacy among student backpackers: emotional release, personal autonomy, reflective thought, limited communication: personal distance, and limited communication: intimacy. Hammitt and Madden (1995) extended the initial study to a survey of 184 Appalachian Trail hikers in Great Smoky Mountains National Park. They identified five factors important in wilderness privacy: tranquility and natural environment, individual cognitive freedom, social cognitive freedom, intimacy, and individualism. From these results Hammitt and Madden concluded that the essence of wilderness privacy involved being in a remote natural environment free of human-generated intrusions, where people had freedom over their own time and actions, as well as control over everyday pressures and attention loads.

But the social dimensions of these results create a conundrum: Most wilderness visitors travel in groups of two or more. For example, of 117 groups of Shenandoah hikers studied by Hall (2001), only 11 percent were alone; the remaining 89 percent came in groups of two or more. Yet, 78 percent of all groups reported having

experienced solitude. Clearly, the social dimension of solitude reported by wilderness visitors differs from what might be termed "classical" solitude like that experienced by Thoreau (1981) or Admiral Byrd (1938), where one is profoundly alone with the universe. While a few wilderness visitors (for example, those described by Krakauer 1996) may seek this classical ideal, wilderness is a social experience for most visitors. The classical state of solitude is more narrowly defined by Hollenhorst and Jones (2001). Drawing on an historical framework derived from classical antiquity and modified by the romantic and transcendental movements, they view solitude as a striving for independence and detachment from social constraints, norms, and expectations. They define solitude as:

> ... psychological detachment from society for the purpose of cultivating the inner world of the self. It is the act of emotionally isolating oneself for self-discovery, self-realization, meaning, wholeness, and heightened awareness of one's deepest feelings and impulses. It implies a morality that values the self, at lease on occasion, as above the common good (p. 56).

It is this detachment, isolation, and the emphasis on self that we find difficult to reconcile with the social solitude reported by wilderness users who travel in groups of two, three, four, or more. This emphasis on solitude as a mental state offers a somewhat different perspective from that offered by the crowding or normative literatures. If solitude is, in important respects, a mental state or attitude, then it should be possible to attain that state in a range of environments, from public parks to sidewalks and even retail stores. While the absence of others may facilitate both achieving and maintaining solitude, we believe it is not strictly necessary for this state to occur; in many respects, solitude is a personal rather than a place-based concept.

In contrast to Hollenhorst and Jones' (2001) conception, solitude often is experienced negatively. For example, solitary confinement is considered one of the worst possible punishments, and many unconfined people suffer from loneliness and a sense of isolation when alone—what the poet Baudelaire (1926, p. 61) referred to as "the dreary solitude of your room." Or, as Abbey (1990, p. 109) phrased it: "There are times when solitaire becomes solitary, an entirely different game, and the inside of the skull as confining and unbearable as the interior of the house trailer on a hot day." According to a recent reanalysis of market research data (Fetto 2003), 12 percent of Americans spend Friday night alone and they are 1.5 times more likely to say they feel "very alone in the world" than are those who spend Friday night with others. They spend their evening watching TV or a video, sleeping, eating, reading a book, surfing the Web, doing housework or other work, or listening to the radio. Women are twice as likely as men to read, while men are twice as likely as women to spend time catching up on work. Because feelings of social isolation can drastically impact psychological functioning and quality of life, much psychological research has been aimed at mitigating negative consequences of solitude (see Ernst & Cacioppo 1999, for a review).

Solitude, then, can be a joyous state linked deeply to creativity and spirituality, or it can be negative and problematic. In this paper, we summarize the results of a descriptive, exploratory study of the subjective state of solitude, designed to identify its varieties, the frequency and durations with which they occurred, events preceding a solitude episode, what people did during it, and the outcomes they obtained from it. We also explore gender differences in solitude experiences.

2.0 METHODS

Since we considered solitude to be a subjective mental state attainable in a wide variety of activities and environments, our approach to its study differed substantially from those employed in previous studies. We began with a pilot study in which undergraduate student volunteers from the University of Massachusetts, Amherst were asked to write a brief, detailed essay about either a positive or negative solitude experience that they had experienced within the past year. The experience was to have lasted for at least an hour, but not more than three days, nor was it confined to any particular activity. Experiences reported both in the pilot main studies, varied widely. For example, some study participants sought natural areas, but others went shopping or took long baths. One even reported driving to Florida, while

another simply lay on the bed and cried. What these diverse activities shared in common was that those reporting them felt profoundly alone. Consequently, the questions we asked dealt with exploring and describing this subjective mental state: When and where did it occur? How long did it last? What events/feelings precipitated it? What did people do and feel during it? And, what outcomes occurred as a result of it?

In the primary study, 206 student volunteers (median age = 20, range 18 to 48) at the University of Massachusetts, Amherst were randomly assigned to one of two groups in which they used questionnaires to describe either a positive solitude experience (n = 105, 76% female) or a negative experience (n= 101, 73% female). The initial parts of both questionnaire versions were the same, asking participants to describe two episodes of solitude that they had experienced in the past year--one positive and one negative. Positive experiences were defined as having been generally worthwhile, although some aspects may have been painful at the time. The negative experience was to have been neither beneficial nor pleasant, but did not have to be entirely negative. Each experience was to have lasted more than an hour but less than three days. Then, depending on the version, the next 30 items focused on either the positive or negative experience using: (a) a series of questions about when and where the experience occurred, others present, and duration, (b) a 7-point scale that assessed participants' overall evaluation of the experience before, during, and after the episode; (c) checklists of specific thoughts, feelings, and actions related to the experience; and (d) open-ended items that provided additional detail about the experience. Both the scale and checklist items were derived from the pilot data supplemented with standardized descriptions of emotions drawn from other emotion research (see Lewis & Haviland-Jones 2000). The final portion of the questionnaire described participants' general conceptions of solitude, plus demographic data, and was the same for all participants. The data were analyzed using t-tests and binary correlation coefficients for dichotomous variables.

3.0 RESULTS

3.1 Frequency and Duration

Solitude is a common experience: over half of the study participants (57%) indicated they experienced solitude at least once a week, and the modal response (40 participants out of 206) was two or three times per week. Participants estimated (in retrospect) that half the episodes they had experienced in the past year were positive and half were negative. Most respondents were alone when the experience occurred (67% for the positive group and 68% for the negative group, difference not statistically significant). However, the remainder reported experiences where they "felt alone," such as eating alone in a crowded restaurant, or shopping alone in a crowded mall. Positive episodes were more likely to occur during the day (51% vs. 35% $p < 0.01$), while negative episodes tended to occur at night. Seventy percent of the episodes lasted between 4 and 16 hours.

3.2 Settings

Although both positive and negative episodes occurred in a variety of settings, the most common location for both was at home (or in one's room) (Table 1); 78 percent of the negative episodes described occurred at home, while only 46 percent of the positive episodes did. However, positive episodes were significantly more likely than negative episodes to have occurred in a non-home location (54% vs. 72%, $p < 0.1$). For example, positive episodes were significantly more likely than negative episodes to have occurred outdoors in a natural setting like a forest or beach (32% versus 3%, $p < 0.01$). Participants described positive episodes as occurring in comfortable, relaxing places where they felt free of responsibility. Negative episodes, by contrast, were described as occurring in locations that were dull or boring, and where they had considerably less control.

3.3 Before, During, and After the Episode

Typically, both positive and negative episodes of solitude were preceded by a sense of stress associated with job or school difficulties, questioning priorities, thinking about the past, and feeling stressed or frustrated (Table 2). However, those describing positive experiences tended to be in a positive mood before the episode, experiencing feelings of freedom, happiness, and independence, while negative episodes were often preceded by feelings of depression, sadness, and uncertainty. Those describing positive episodes also said they felt extremely busy with little time to be alone (62%) and were actively seeking solitude (64%) when the episode occurred.

Table 1.—Solitude settings

Setting	Experience Type		
	Positive (n = 105)	Negative (n = 101)	Total (n = 206)
	- - - - - - - - - - Percent - - - - - - - - -		
At home/in room	46	78	63
Outdoors in a natural setting	32	3	17
Outdoors in an urban setting	9	7	8
Indoors in a space lacking personal meaning (e.g., classroom, office)	6	10	8
Outdoors in a landscaped setting	6	1	3
At a place with spiritual significance (e.g., church, cemetery)	1	0	0
Totals:	100	99	99

Table 2.—Feeling/activities preceding the solitude episode[a]

Feeling/activity	Positive Episode	Negative Episode
	- - - Percent of Participants - - -	
School/job difficulties	54	51
Questioning goals or priorities	52	50
Thinking about the past	49	50
Stressed	47	52
Frustrated	34	48
Actively seeking solitude	64	29*
Extremely busy, without time to be alone	62	31*
Free	45	4*
Happy	45	13*
Independent	44	13*
Content	41	10*
Good relationship with significant other	41	15*
In control	39	10*
Doing well in school or on the job	39	19*
Depressed	23	57*
Sad	27	56*
Uncertain or confused	38	53*
Worried or anxious	37	52*
Angry	13	40*
Everyone left and I was alone	19	39*
Difficulties with significant other	24	39*
Conflict with friend, co-worker, or family	23	36*
Scared	16	34*

[a] Participants could endorse as many feelings/activities as were applicable.
* The difference between positive episodes and negative episodes is significant, $p < 0.01$.

During both kinds of episodes, a majority of participants spent time contemplating personal issues, questioning priorities, and hoping for things (Table 3). However, those experiencing negative solitude reported spending significantly more time in diversionary activities like watching television, reading, or surfing the Web. They described the episode as involving sadness (77%), loneliness (68%), and depression (67%), and experienced a sense of anxiety (55%), confusion (55%), and isolation (54%) during it. They also said they tended to feel stressed or tense (52%) and afraid (51%). By contrast, those describing positive episodes, characterized them as

Table 3.—Feeling/activities that occurred during the solitude episode[a]

Feeling/activity	Positive Episode	Negative Episode
	- - - - - - Percent - - - - - -	
Contemplating personal issues/decisions	58	63
Thinking about people or events from the past	54	53
Hoping/wishing for things	49	58
Happiness/contentment	79	1*
Daydreaming, fantasizing, letting one's mind wander	76	41*
Feeling free from social pressure	74	20*
Relaxation/calmness	73	3*
Freedom	67	5*
Optimism/hope	57	7*
Increased concentration	57	7*
Collecting and organizing thoughts	56	27*
Listening to music	52	35*
Joyful	54	1*
Self-confident	50	3*
Harmony (or unity) with nature	41	1*
Heightened sense of awareness or vivid imagery	40	10*
Feeling the adventure or meeting a challenge	34	6*
Sadness	20	77*
Loneliness	12	68*
Depression	16	67*
Missed someone to share thoughts with	14	62*
Emptiness	13	56*
Anxious or worried	17	55*
Confused	21	55*
Isolated	9	54*
Stressed/tense	19	52*
Afraid	14	51*
Oppressed by aloneness or silence	2	44*
Missing the comfort or predictability of a normal routine	2	41*
Coping with loss or coming to terms with change	19	40*
Difficulties concentrating or focusing	4	34*
Watching TV or movies	20	34*

[a] Multiple endorsements were possible.
* The difference between positive episodes and negative episodes is significant, $p < 0.01$.

times of happiness, relaxation, freedom, and optimism, as opposed to times of feeling sadness, loneliness, and emptiness. They spent time daydreaming or fantasizing (76%), collecting their thoughts (56%), and listening to music (52%). They also reported an increased ability to concentrate.

Study participants also addressed the outcomes of the episodes (Table 4). Those experiencing positive episodes were more likely to rate them as beneficial than those experiencing negative episodes. However, the groups did not differ significantly in the amount they said they learned from the episode. Many said they had gained new perspectives on a problem (44% for positive, 37% for negative) and were stronger as a result (40% positive, 30% negative). The major benefits of positive solitude were goal clarification (70%), increased self-understanding (58%), and a sense of self-renewal (55%). While nearly a third of respondents describing negative episodes reported increased clarification and understanding, they also believed that they overanalyzed problems without reaching a solution (55%), focused on

Table 4.—Outcomes of solitude episodes[a]

Outcome	Positive Episode	Negative Episode
	- - - - - Percent - - - - -	
Gained insight or new perspective on a problem	44	37
Became a stronger, more resilient person	40	30
Clarification of goals and priorities	70	32
Noticed no detrimental effects of solitude	66	9*
Increased understanding of oneself	58	33*
Self-renewal	55	13*
Over-analyzing problems, becoming uncertain	16	55*
Focusing on negative things that can't be changed	8	52*
Feeling drained or tired	11	51*

[a] Multiple endorsements were possible. Difference between positive and negative episodes is significant, $p < 0.01$

things that could not be changed (52%), and found the experience tiring and draining (51%).

3.4 Gender Differences

We hypothesized that the experience of solitude was likely to be influenced by gender. However, there were no statistically significant differences between women and men in the frequency and duration of solitude experiences. Across both positive and negative experiences, women were more likely than men to have felt sad ($p<0.05$) or stressed ($p<0.05$) prior to the experiences. As compared to men, their solitude experiences occurred more frequently at home (or in their room) ($p<0.05$), where they had a tendency to listen to music ($p<0.01$). By contrast, men tended to feel more independent than women prior to the experience ($p<0.05$). Their experiences tended to occur outdoors ($p<0.01$), in a beautiful place with wind, water, and trees around ($p<0.01$) where they felt at peace with nature ($p<0.01$). Men also were more likely than women to have experienced solitude in a spiritual setting ($p<0.05$) and to report a spiritual experience ($p<0.05$).

Gender differences for both positive and negative experiences are consistent with these findings. For positive experiences, women were more likely than men to have felt stressed ($p<0.05$) and anxious ($p<0.05$) prior to the episode. Men were more likely than women to say that they had been thinking about spiritual or religious issues prior to the episode ($p<0.05$), and to have had the episode occur outdoors ($p<0.05$) where they felt at peace with nature ($p<0.05$). For negative episodes, women were more likely than men to have been at home or in their room ($p<0.05$) or in a new/unfamiliar place ($p<0.05$), and were more likely to say that feeling afraid was central to their experience ($p<0.05$). Men, by contrast, were more likely than women to have been outdoors ($p<0.05$) in a beautiful place ($p<0.05$).

4.0 DISCUSSION AND CONCLUSION

These results require a substantial caveat: study participants were undergraduate students with a median age of 20 and were primarily (75%) women. Although they may be well equipped to articulate their feelings and experiences, as students they may have limited experience in dealing with the challenges presented by solitude. Moreover, the campus setting in which most respondents lived is dense and highly social, suggesting that our results may underestimate the extent of negative solitude in the general population. Despite these limitations, we believe the data offer implications for both research and for park and recreation management agencies.

Solitude is a frequently occurring, complex, multifaceted mental state that can be either positive or negative depending on situational determinants. As a mental state, it can be compared to flow (Csikszentmihalyi 1990) in that it can be attained in a variety of activities and environments; with both solitude and flow, an external observer would see only an individual engaged in some particular activity with no indication of their mental state. In flow, however, the sense of self is submerged: the person is totally immersed in the demands of the immediate activity. In solitude, by contrast, the sense

of self--and its isolation from others--is acutely present. Our data suggest that the physical absence of others can facilitate a sense of solitude, but is not strictly necessary for it to occur.

For positive solitude, the "classical" ideal is that of reflective thought—a state of disinterested contemplation of any of a wide range of topics (Westin 1967, Hammitt 1982, Kaplan & Kaplan 1989). This ideal of classical solitude is perhaps best captured by the spirit of Wordsworth's poem "Daffodils": "I wandered lonely as a cloud ..." It is evident that many study participants describing positive solitude experiences achieved this state, using their time in solitude to contemplate a diverse range of personal issues.

As noted above, many studies of outdoor recreation and wilderness users report that solitude is often a primary motive for visitation, and the encounter literature suggests that solitude is an important factor in the quality of their experience. However, classical solitude/reflective thought seems somewhat unlikely to occur in a group setting and there is substantial research to show that, with the possible exception of activities like hunting and fishing, outdoor recreation is profoundly social, generally occurring in small groups of family and/or friends. It is difficult (although not impossible) to imagine classical solitude occurring often in such circumstances.

This raises a broader question about the extent to which privacy and solitude can be equated. Westin (1967) suggests that solitude is a subcategory of privacy. Yet privacy seems to be a somewhat objective state with legalistic overtones, while solitude is completely subjective: It is possible, for example, for someone to invade your privacy without your knowledge, but it would be impossible to have your solitude so invaded. Future research should consider separating the concepts, focusing on Hammitt and Madden's (1989) emphasis on privacy as intimacy, as distinct from solitude.

The ideal of classical solitude also raises gender issues. As noted, women were more likely to have experienced solitude at home or in their rooms, while men were more likely to have been outdoors. This finding probably reflects women's concerns about safety; many women may prefer to seek solitude in private spaces such as the home or in well frequented public spaces where they can feel alone while still being visible to many others. In this respect, vegetative management to enhance visibility in urban parks may be helpful (e.g., Schroeder 1986). Another strategy that some women adopt is to visit natural areas with a dog. It is interesting (but well beyond the scope of this paper) to speculate if the ideal of classical solitude is attainable in the company of animals. Clearly, gender differences in solitude experiences deserve greater exploration in future research.

Another area deserving exploration is the potential relationship between solitude and leisure. The emphasis placed by our student participants on being either at home or outdoors suggests that both positive and negative solitude experiences tend to occur during leisure. It seems likely that the same would be true for working adults, since, for most of us, the workplace is a highly structured, social environment. Although it is possible to feel alone and isolated while at work, the relationship between solitude and leisure deserves further exploration.

Also worthy of additional exploration is the social context of solitude experiences. Although it may seem incongruous, solitude is, by nature, a social phenomenon that needs to be understood within the broader context of society (i.e., what people are seeking solitude from), and there may well be cross-cultural differences in solitude experiences.

The frequency of solitude experiences and their tendency to occur at home suggests a link to local environments. Moreover, the distinct sub-emphasis on natural environments and aesthetics may prove to be an important justification for the preservation of urban open space. Hammitt (2002) has recently extended his privacy work in this direction: In a survey of Cleveland Metropark users, he found that 67 percent of his respondents came either alone or with one other person. Their visits lasted from 20 minutes to a maximum of 9 hours ($\bar{\chi}$ = 2 hours, 12 minutes) and they engaged in walking (34%), picnicking (10%), biking (8%), jogging/running (7%), and swimming (7%). Respondents indicated that they had been able to achieve their desired degree of privacy, and they rated reflective thought as the

most important of the privacy functions they achieved. Although our focus was on the subjective aspects of solitude rather than privacy, we believe our results to be consonant with Hammitt's findings. Both studies suggest that local areas play in important role in providing settings for solitude.

There also may be a link between social class and solitude in the broader population. Wealthy people may have large homes with private yards, while low-income families may live in much more crowded conditions, making them dependent on public space to fulfill solitude/privacy needs. As Taylor (1999) points out, the working class in the 19th century often used public space for activities like lovemaking and drinking that they could not do in their crowded homes, and there is little reason to suppose that such dependence does not exist today.

Negative solitude—an intense feeling of isolation often accompanied by sadness, anxiety, or depression—also is a common leisure experience. Negative episodes appear to be precipitated by a sense of stress and a questioning of priorities. When caught in such a state, our student participants tried to divert themselves by watching television, reading, or surfing the Web. In the broader community, people may differ in the resources—both internal and material—that they can bring to bear on such problem states. Those particularly likely to suffer from negative solitude include the elderly who live alone, poor rural women (e.g., Giesen 1995), and newcomers. Local parks and recreation agencies may have a role to play in alleviating such stress through the provision of community centers and other social outreach programs. Again, Abbey (1990, pp. 110, 111) summarizes well:

> For there are the bad moments, or were, ... when I would sit down at the table for supper inside the house trailer and discover with a sudden shock that I was alone. There was nobody, nobody at all, on the other side of the table. Aloneness became loneliness, and the sensation was strong enough to remind me (how could I have forgotten?) that the one thing better than solitude, the only thing better than solitude, is society.

Unfortunately, our data suggest these negative episodes occur most frequently at night, when many community social resources may not be available. Further research is needed to confirm these effects.

In conclusion, both positive and negative solitude experiences are common, often occurring as frequently as two or three times per week. Both are precipitated by a sense of stress and usually, although not always, occur when a person is alone. The frequency and duration of both suggest the importance of local environments close to home. Women, in particular, were more likely to achieve solitude at home, while men were more likely to experience solitude in an outdoor, natural setting. Further research should extend the examination of solitude experiences between solitude, gender and social class. Finally, researchers need to clarify the relationship between classical solitude/reflective thought and the social character of many outdoor recreation activities.

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Tourism Marketing II

NEW ENGLAND'S TRAVEL AND RECREATION MARKETS: TRENDS IN THE GEOGRAPHIC TARGET MARKETS BEYOND 2000

Rodney B. Warnick
Hospitality and Tourism Management Department
Flint Lab, 90 Campus Center Way
University of Massachusetts at Amherst
Amherst, MA 01003-2710

David C. Bojanic
University of Massachusetts at Amherst

Abstract.—The purpose of this paper was to re-examine and update geographic travel and lifestyle activity market trends for those areas targeted by New England destinations beyond the year 2000. The central theme was to examine in detail the primary, secondary and tertiary geographic markets targeted by New England destinations through both travel behavior and lifestyle behavior from 1995 through 2005.

1.0 INTRODUCTION

In 2000, a multi-year analysis (1993 to 1999) identified the trends in the major geographic markets targeted by New England destinations (Warnick 2000). A great deal has changed in the past six years. In a post 9/11 era, the U.S. is now engaged in a global war on terrorism, interest rates have begun to creep upward; the price of gasoline has exceeded $3 per gallon; and the front end of a huge market of active retirees—the Baby Boomers—is just being to impact the travel markets. A great deal of speculation and concern was stated post 9/11 as to the long-term impacts on travel and tourism. New England as a relatively compact region with major markets within easy driving distances was felt to be less vulnerable to substantial downturns in the travel sectors. However, this was also the geographic area where the terrorism had its most devastating impact—on New York City, Washington, D.C., and rural Pennsylvania. Furthermore, long-term trend analysis has not been conducted to truly monitor the geographic market conditions for travel and related recreational lifestyle pursuits in a post 9/11 environment.

Studies in the 1990s (Warnick 1992a, 1992b, 1993, 1996, 1999) indicated domestic travel in the Northeast and New England had become a mature market and finally showed signs of recovery in the mid-1990s. The 2000 study (Warnick 2000) of New England geographic travel markets indicated travel had rebounded and increased between 1993 and 1999 for each of the geographic markets (primary, secondary, and tertiary) and was especially strong in the vacation travel sector. From that study, six major findings documented lifestyle activity preferences and trends. Tennis and bicycling held strong growth patterns in the major markets and golf continued to grow across a number of the geographic markets but at a slower pace then documented in previous studies. Skiing activities still held higher than national average household participation rates, and these markets continued to grow at a more moderate pace. Interest in camping, hiking, and fishing held strong growth patterns in the region. Activity interest in hunting, snow skiing, and camping and hiking varied widely across the various New England geographic markets. The trend analysis data also revealed that interest in fitness activities remained stable and interest in cultural activities and heritage continued to grow across a number of geographic markets.

New England remains easily one of the nation's most definable regions, is a relatively compact region, is close to the megalopolis of East Coast cities, and is a highly desirable and nostalgic geographic market to visit in most consumers' minds. New England's tourism and recreation attraction industry is very well defined, and four of the six New England states possess significant tourism- and recreation-based economies. Thus, careful monitoring of trends in tourism and recreation activities by geographic markets is critical.

2.0 PURPOSE OF STUDY

The purpose of this study is to examine in detail the geographic markets targeted by New England destinations through the lifestyle and geographic profiling. The first trend study (Warnick 1996) of geographic markets covered the period only through the mid-1990s and then the next study (Warnick 2000) covered the period from the mid-1990s through 1999. This study updated those findings and provided trend

analysis from 1995 through 2005 and examined the impacts of 9/11 in the participation rates of households within the various geographic markets of New England.

3.0 METHOD

In the previous studies, the major database employed to examine trends was Standard Rate and Data Service's (SRDS) *Lifestyle Market Analyst* (1993 through 1996; then 1993 through 1999). With data now available through 2005, the line of research and trend analysis was updated and expanded. The SRDS data are collected consistently the same way each year and provide an excellent foundation for long-term trend analysis. These data provide activity patterns for 17 geographic metro markets that New England destinations would commonly target. For the purposes of this study, several statistical variables were used to describe the trends in these data.

The descriptive statistics used included an average annual adjusted percent change rate and a three-year moving average for the SRDS data. Participation rates of households were used as primary variables to examine the overall trends. The trends analysis of the geographic target markets of New England-based destinations included three major sub-regions—primary, secondary, and tertiary markets. The analysis examined the associated lifestyle trends within these markets both combined and separately. Primary markets included those target market metro areas within a three-hour drive of the center of New England, and included the geographic metro areas of Albany, NY; Bangor, ME; Boston, MA; Burlington, VT; Hartford/New Haven, CT; New York, NY; Portland/Auburn, ME; Providence/New Bedford, RI/MA; and Springfield, MA. Secondary markets included those target mentor areas from a three- to six-hour drive of New England and included the geographic metro areas of Philadelphia, PA; Scranton/Wilkes-Barre, PA; Harrisburg, PA; and Syracuse, NY. Tertiary markets include those target market metro areas in excess of six hours' drive time and included the geographic metro markets of Baltimore, MD; Cleveland, OH; Pittsburgh, PA, and Washington, DC. These markets (primary, secondary and tertiary) collectively will be referred to as the "New England market area." Activity clusters for each geographic market were grouped into travel, recreation and sport, outdoor recreation, fitness, and cultural/heritage markets. The travel market lifestyle includes activities of domestic travel (100 miles or more, overnight) and vacation travel. The recreation and sport market lifestyle includes activities of golf, tennis, skiing, and bicycling. The outdoor recreation lifestyle includes activities of interest in wildlife and environment, hiking and camping, hunting and shooting, and fishing. The physical fitness lifestyle includes fitness walking and fitness programs. The cultural and historic interests lifestyle includes activities of attending cultural/arts events and interests in our nation's heritage.

These targeted metro or geographic market areas for New England destinations were examined to determine if changes in these lifestyle interests had occurred fbetween 1995 and 2005. Household participation data are reported here for 1995, 2000, and 2005 due to space limitations although each year was included from 1995 through 2005 in the overall analysis. The lifestyle interests within these markets were also compared by a within market area analysis, (e.g., metro areas within the primary markets were compared), to the national market, and to the entire region examined (e.g., the primary, secondary, and tertiary geographic markets combined or the New England market area). Trends were identified on a change scale of strong decline (decline of 2% or more per year); decline (0 to –2% per yr); no growth (at or near 0% per year or less than 1% per year); stable (positive, but less than 2% per year); growth (2% to 4% per year) and strong growth (>4% per year) during the 1995 through 2005 period. For comparative purposes, rates and trends were also reported at the national level and overall New England market area for 1995 to 2000 and 1995 to 2005. Household growth rates were about 1 percent per year, so growth not exceeding this rate should be classified as "no growth." SRDS data are presented as household participation data expressed as a three-year moving average. Thus, data from 1995 are an average of data from 1993, 1994, and the new year 1995 and so on for each new year. The data actually also represent household participation as far back as 1992 even though the data reported are labeled as 1995 data. This is due to how the data are collected and reported. The actual reporting year data was collected from the period of November through November of the previous year; so, actual reporting data for 2005, for example, would

Table 1.—Travel activities rates for New England markets for 2005 with trends for 1995 to 2005

	Travel	Travel Trend	Vacation Travel	Vac. Trav Trend
1995 National Rates	34.9%	--	37.5%	--
2000 National Rates	42.5%	G	37.9%	SG
2005 National Rates	36.8%	G	39.5%	G
1995 All NE Markets (Prim, Sec., Tert,)	36.1%	--	39.4%	--
2000 All NE Markets (Prim, Sec., Tert,)	39.0%	S	46.6%	SG
2005 All NE Markets (Prim, Sec., Tert,)	37.7%	S	42.1%	NG
2005 Primary Markets:	38.2%	S	44.6%	NG
Albany, NY	36.8%	NG	42.3%	NG
Bangor, ME	32.2%	NG	29.7%	D
Boston	38.8%	NG	48.1%	G
Burlington/Plattsburgh, NY	35.7%	S	43.1%	G
Hartford/New Haven, CT	38.2%	NG	44.0%	NG
New York City Metro	38.8%	S	46.2%	NG
Portland/Auburn, ME	35.1%	S	36.7%	D
Providence/New Bedford, RI/MA	36.4%	NG	44.6%	D
Springfield, MA	35.9%	NG	39.8%	NG
2005 Secondary Markets:	36.6%	S	37.8%	D
Philadelphia	37.8%	NG	40.0%	D
Scranton-Wilkes Barre, PA	33.8%	S	31.5%	D
Harrisburg, PA	35.4%	S	34.5%	D
Syracuse, NY	33.8%	D	39.1%	NG
2005 Tertiary Markets:	37.5%	S	39.8%	D
Baltimore	37.5%	S	39.6%	NG
Cleveland	37.6%	NG	34.9%	D
Pittsburgh	34.4%	S	32.3%	D
Washington, DC	39.0%	S	47.2%	G

Key: SD=Strong Decline (>-2%/yr). D=Decline (>0 to -2%/yr). NG= No Growth (at or near %/yr). S=Stable (positive, but less than 2%/yr). G=Growth (2% to 4%/yr.). SG=Strong Growth (>4%/ yr). National and regional 2000 trends measure 1995 to 2000.

reflect data collection from the November 2003 through November 2004. The reporting year representing the first real impact of 9/11 would then be 2003, when data were reported from November 2001 to November 2002 and reported in 2003.

4.0 SELECTED FINDINGS

The findings here are grouped into travel markets, sports and recreation, outdoor recreation, fitness activities, and interest in cultural and history/heritage events by primary, secondary, and tertiary markets of the New England Region.

4.1 Travel Lifestyle Activity by Geographic Markets

In this study, overall national travel trends indicated a growth pattern from 1995 through 2000, but the trends depicted no growth between 1995 and 2005. While domestic travel did grow nationally, the overall New England travel markets were stable or no-growth markets within the primary, secondary, and tertiary markets. Vacation travel, however, was much more volatile in terms of overall trend patterns. Table 1 contains the participation and trend data for domestic travel and vacation travel.

4.2 Domestic Travel Lifestyle

New England's primary markets were overall stable for domestic travel. No markets actually grew over the period. While each of the main geographic markets (primary, secondary, and tertiary) indicated a stable trend between 1995 and 2005, no major metro area experienced a growth trend. Metro areas with the highest participation rates for travel were Boston (38.8%), New

York Metro (38.8%), and Washington, DC (39.0%). The primary and tertiary geographic markets of New England held overall rates that were higher than the national average. Washington, DC, with the highest participation rate for domestic household travel, held only a stable trend. A better indicator for tourism travel is "vacation travel" as collected by SRDS.

4.3 Vacation Travel Lifestyle

The national vacation travel market increased in excess of 4 percent per year by households from 1995 through 2002 and the regional participation rate for vacation travel was nearly eight percent higher than the national average for the same period. However, this trend changed drastically after 2002 for the overall New England geographic market, when 42.1 percent of all households participated in vacation travel. The downturn in participation appears to have caused the overall trend to slow for the period of 1995 through 2005. The trends indicated no growth for the primary market and declines in both the secondary and tertiary markets. Within New England's primary markets, only two metro areas held growth trends in excess of 2 percent per year—Boston and Burlington/Plattsburgh. Four metro areas experienced no growth over the period (Albany, Hartford/New Haven, New York City Metro, and Springfield) while three markets actually declined in household participation in vacation travel (Bangor, Portland/Auburn, and Providence/New Bedford). New England's secondary and tertiary geographic markets both experienced overall decline in vacation travel for the period of 1995 to 2005. The only metro area within these two regions to actually experience any growth in vacation travel was Washington, DC where the household vacation participation rate stood at 47.2 percent in 2005.

4.4 Recreation and Sport Lifestyle Market Activity by Geographic Markets

The activity with the strongest growth during this period was biking. Over 19 percent of all households in the total market area participated, and the growth trend exceeded 2 percent per year, reflecting the national average. All four activities experienced strong national growth trends from 1995 through 2000; however, these trends slowed after 2000. Recreation and sport lifestyle markets may be found in Table 2.

4.5 Golf Lifestyle

The regional rates were slightly lower than the national participation rates for golf, and the regional trend pattern indicated overall decline. There were no growth markets throughout the regional markets. In fact, 11 of the 17 metro markets indicated a decline in participation rates for golf from 1995 to 2005. Only three markets (Bangor, Portland/Auburn, and Scranton-Wilkes Barre) were stable. However, substantial variation existed within the areas for golf even in the recent years. For example, Albany, NY (21.5%); Boston (20.2%), and Springfield (20.1%) held household participation rates higher than the national average (19.2%) for golf and even the overall New England regional average of 17.7 percent in 2005. Other markets, New York City (14.9%) and Bangor, ME (15.7%), held much lower rates even though these markets were not declining. Overall, the secondary and tertiary markets are more active golf markets than the primary markets for golf with several of these metro markets holding rates in excess of 20 percent (Syracuse, NY-23.9%; Cleveland, OH-23.5%; and Pittsburgh, PA-21.2%). However, even these markets actually experienced a decline from 1995 to 2005.

4.6 Tennis Lifestyle

Tennis sustained some growth in the 1995 to 2000 trend period; but remained stable throughout the period of 1995 to 2005. The New England regional market held rates that were higher than the national averages. The stability in the participation rates for tennis appeared to be supported by the three major metro areas of New York City (9.1% rate and stable trend); Boston (8.6% rate and growth trend); and Washington, DC (9.8% rate and stable trend) over the period of 1995 to 2005. Bangor and Portland/Auburn both experienced strong growth trends during the period. All other secondary and tertiary market areas experienced either stable or moderate growth for tennis from 1995 to 2005.

4.7 Bicycling Lifestyle

All metro areas in the New England market area either grew or remained stable and the regional participation rate equaled the national rate for biking. Primary metro areas with high bicycling rates in 2005 include Springfield, MA (21.1%) and Burlington, VT (23.7%);

Table 2.—Recreation and sport activity rates for New England markets for 2005 with trends for 1995 to 2005

Markets	Golf	Golf Trend	Tennis	Tennis Trend	Ski	Ski Trend	Bike	Bike Trend
1995 National Rates	19.8%	--	5.8%	--	7.4%	--	17.1%	--
2000 National Rates	21.6%	SG	7.8%	SG	9.5%	SG	24.2%	SG
2005 National Rates	19.2%	D	6.8%	G	8.3%	G	19.3%	G
1995 All NE Markets (Prim, Sec., Tert,)	18.3%	--	6.9%	--	8.8%	--	16.2%	--
2000 All NE Markets (Prim, Sec., Tert,)	20.4%	G	9.1%	SG	11.0%	G	24.3%	SG
2005 All NE Markets (Prim, Sec., Tert,)	17.7%	D	7.7%	S	9.6%	S	19.3%	G
2005 Primary Markets	17.0%	NG	8.2%	S	10.9%	NG	19.8%	S
Albany, NY	21.5%	D	4.8%	D	12.5%	D	20.9%	G
Bangor, ME	15.7%	S	4.6%	SG	12.4%	NG	17.2%	S
Boston	20.2%	D	8.6%	G	14.5%	S	20.0%	S
Burlington/Plattsburgh, NY	17.7%	NG	6.7%	S	20.4%	NG	23.7%	G
Hartford/New Haven, CT	19.7%	D	7.5%	NG	10.7%	D	19.2%	G
New York City Metro	14.9%%	NG	9.1%	S	12.1%	NG	19.6%	G
Portland/Auburn, ME	17.7%	S	6.3%	SG	16.0%	NG	20.4% G	SG
Providence/New Bedford, RI/MA	18.6%	D	6.9%	G	9.6%	NG	19.9%	S
Springfield, MA	20.1%	D	5.7%	S	10.3%	D	21.1	S
2005 Secondary Markets	17.9%	D	6.5%	S	8.0%	S	18.2%	G
Harrisburg, PA	18.5%	D	5.8%	S	6.6%	S	17.4%	G
Philadelphia	17.3%	D	7.3%	S	8.2%	S	18.9%	S
Scranton-Wilkes Barre, PA	16.8%	S	4.2%	G	7.4%	S	15.5%	G
Syracuse, NY	23.9%	D	5.6%	S	10.4%	D	19.2%	G
Tertiary Markets	19.4%	D	7.3%	S	7.8%	S	19.0%	G
Baltimore	15.9%	D	7.7%	S	7.9%	S	18.0%	S
Cleveland	23.5%	D	5.4%	G	6.3%G	G	20.5%	G
Pittsburgh	21.2%	D	4.8%	S	7.1%	S	16.4%	SG
Washington, DC	17.2%	NG	9.8%	S	9.2%	S	19.5%	S

Key: SD=Strong Decline (>-2%/yr). D=Decline (>0 to -2%/yr). NG= No Growth (at or near %/yr). S=Stable (positive, but less than 2%/yr). G=Growth (2% to 4%/yr.). SG=Strong Growth (>4%/ yr). National and regional 2000 trends measure 1995 to 2000.

seven of the nine areas have rates in excess of the national rate of 19.3 percent. The overall rates in the secondary markets are not as high. Philadelphia (18.9%) and Syracuse (19.2%) are highest here. In the tertiary markets, Cleveland has the highest rate of 20.5 percent and Pittsburgh the lowest with only 16.4 percent participating; but Pittsburgh also experienced a strong growth trend from 1995 to 2005.

4.8 Skiing Lifestyle

Skiing has traditionally enjoyed higher participation rates in the New England market area due to the proximity of many ski resorts and facilities. The market area rates maintained higher participation rates than the national rates throughout the 1995 to 2005 period. However, the growth trend rates appeared to be not as strong in the New England market as compared to the national markets. Four of the major metro area (Albany, Hartford/New Haven, Springfield, and Syracuse) actually experienced declines in participation rates during the review period. Rates for skiing do vary considerably even within the primary market. Primary metro areas with high skiing rates in 2005 include Burlington/Plattsburgh (20.4%), Portland/Auburn (16%), and Boston (14.5%). This compares to a regional participation rate for skiing in the primary market area of 10.9 percent in 2005. Overall, the primary area experienced no growth in participation from 1995 to 2005. The secondary and tertiary market areas maintained stable participation rate trends from 1995 to 2005.

Table 3.—Outdoor activity rates for New England markets for 2005 with trends for 1995 to 2005

Markets	Wildlife	Wildlife Trend	Camp/ Hike	Camp/Hike Trend	Hunt	Hunt Trend	Fish	Fish Trend
1995 National Rates	16.4%	--	22.6%	--	15.4%	--	23.8%	--
2000 National Rates	18.6%	D	28.4%	G	18.2%	S	30.6%	SG
2005 National Rates	15.1%	D	28.0%	G	18.0%	S	29.6%	G
1995 NE Mrkts (Prim,Sec.,Tert,)	16.9%	--	17.0%	--	11.0%	--	17.3%	--
2000 NE Mrkts (Prim,Sec.,Tert,)	18.6%	D	24.2%	SG	12.8%	S	22.9%	SG
2005 NE Mrkts (Prim,Sec.,Tert,)	14.9%	D	21.4%	G	12.6%	S	22.0%	G
2005 Primary Markets	15.7%	D	20.5%	G	10.0%	S	20.3%	G
Albany, NY	18.9%	NG	32.3%	G	18.5%	S	27.6%	G
Bangor, ME	21.1%	D	40.4%	G	31.6%	S	40.2%	S
Boston	16.3%	D	24.8%	G	9.3%	S	20.7%	G
Burlington/Plattsburgh, NY	22.0%%	NG	37.8%	SG	27.7%	S	33.9%	G
Hartford/New Haven, CT	16.3%	NG	23.5%	G	11.0%	S	22.5%	G
New York City Metro	14.5%	D	15.3%	G	7.7%	S	18.2%	G
Portland/Auburn, ME	20.8%	D	37.9%	S	22.1%	S	32.5%	G
Providence/New Bedford, RI/MA	14.9%	D	22.5%	G	8.7%	S	21.9%	G
Springfield	17.8%	NG	27.6%	SG	12.9%	S	25.3%	G
2005 Secondary Markets	15.9%	D	22.3%	G	16.5%	S	24.6%	G
Harrisburg, PA	16.9%	NG	28.5%	G	25.1%	S	27.0%	G
Philadelphia	15.1%	D	18.8%	G	11.8%	S	22.1%	G
Scranton-Wilkes Barre, PA	17.7%	S	27.4%	G	28.3%	S	31.8%	S
Syracuse, NY	18.3%	NG	32.3%	G	20.3%	S	29.3%	G
2005 Tertiary Markets	14.7%	D	22.7%	G	15.3%	S	23.6%	G
Baltimore	15.0%	D	20.1%	G	12.2%	S	22.5%	G
Cleveland	14.6%	D	25.3%	G	14.7%	G	25.7%	SG
Pittsburgh	14.8%	NG	25.0%	G	22.7%	SG	26.6%	G
Washington, DC	14.5%	D	21.1%	G	13.3%	G	21.1%	G

Key: SD=Strong Decline (>-2%/yr). D=Decline (>0 to -2%/yr). NG= No Growth (at or near %/yr). S=Stable (positive, but less than 2%/yr). G=Growth (2% to 4%/yr.). SG=Strong Growth (>4%/ yr). National and regional 2000 trends measure 1995 to 2000.

4.9 Outdoor Recreation Lifestyle Market Activity by Geographic Markets

The activities with overall national growth trends during this period were fishing and camping/hiking, and the same activity trends were noted in the New England market area for this review period. This cluster of activities also revealed wide variability in household participation rates within the metro markets. For example, the rates for camping and hiking topped 40.4 percent in Bangor, ME, and grew during the period. In contrast, only 15.3 percent in the New York City metro area participated in camping and hiking. Similar patterns of wide variability were also found in hunting and fishing. After years of growing interest in wildlife and the environment, the rate of interest within the New England market (14.9%) has declined. Hunting enjoyed a stable pattern of activity during the 1995 to 2005 period both nationally and in the New England market area, but in 2005 the rate was 18 percent nationally while only 12.6 percent in the New England market. Although the fishing rates for the overall region demonstrated growth, the household rate for the New England region (22.0%) is still below the national rate (29.6%). Participation rates and trends for the outdoor recreation activities may be found in Table 3.

4.10 Interest in Wildlife & Environment

The household participation rate (14.9%) for interest in the environment and wildlife in the New England market area in 2005 was about the same rate as the national rate (15.1%). Rates in nine of 17 metro areas declined with only one metro area in the secondary market (Scranton-Wilkes Barre) experiencing a stable trend in interest. However, all but two metro areas (Providence/New

Bedford and New York City) had rates above the regional and national rates for the activity.

4.11 Camping/Hiking Lifestyles

Fourteen of the 17 metro areas in the New England market area showed growth trends patterns for camping and hiking. Two metro markets (Burlington/Plattsburgh and Springfield) within the region experienced strong growth trends, but rates varied widely across the region. New York held a 15.3 percent household participation rate and Bangor, ME, a 40.4 percent rate in 2005. In the primary market, all markets except New York City held higher participation rates than both national and regional rates. All market areas in the primary geographic region experienced growth in participation rates with the exception of Portland, ME (37.9% in 2005), where the trend remained stable. Rates for camping and hiking also varied widely in the primary market. Rates were highest in Bangor (40.4%), Portland/Auburn (37.9%), and Burlington/Plattsburgh (37.8%), and lowest in Boston (24.8%), and New York City (15.3%). The secondary market area had only one market area (Philadelphia) with below-average participation rates for camping/hiking. All markets revealed growth trends. All of the tertiary markets held strong growth trends for camping/hiking. Cleveland (25.3%) held the highest participation rate for camping and hiking.

4.12 Hunting Lifestyles

The New England regional trend pattern for hunting was stable and increased slightly from 11.0 percent in 1995 to 12.6 percent in 2005, but these rates were still lower than the national rates. The overall rates within the region were stable across the primary, secondary, and tertiary markets for hunting. The only region with sustained growth within metro areas was the tertiary region, including Pittsburgh (2005 participation rate of 22.7 percent and strong growth trend, Cleveland (2005 participation rate of 14.7 percent and growth trend pattern), and Washington, DC (2005 participation rate of 13.3 percent and growth trend pattern). Rates varied widely within the region, too. New York held a 7.7 percent household participation rate for hunting while Bangor, ME held a 31.6 percent rate. No metro markets within any of the market areas experienced decline in participation rates for hunting from 1995 to 2005.

4.13 Fishing Lifestyles

The New England regional trend for fishing also indicated growth, and participation increased from 17.3 percent in 1995 to 22.0 percent in 2005. The overall rates within the region also grew across the primary, secondary, and tertiary markets. However, the only metro area with strong growth (in excess of 4% per year) was Cleveland, where fishing participation rates stood at 25.7 percent in 2005, up from 20.9 percent in 1995. Participation rates also varied considerably even within the regional market. For example, in the primary geographic market, New York held an 18.2 percent household participation rate for fishing while Bangor, ME held a 40.2 percent rate. None of the 17 metro markets experienced overall decline trends for fishing from 1995 to 2005.

4.14 Fitness Lifestyle Market Activity by Geographic Markets

Over 31 percent of the New England market area households engaged in fitness walking in 2005, but this participation rate is down from a peak of 38.6 percent in 2000. For fitness and exercise program participation, the trends within the New England region market area remained stable over the 1995 to 2005 period. In 2005, 40.7 percent participated in a fitness/exercise program within the New England region market area. All markets experienced a decline in fitness walking, but stability was maintained in exercise and fitness program participation for the region.

4.15 Fitness Walking Lifestyles

In the primary markets, eight of the nine markets actually declined in participation; only Portland/Auburn actually grew during this period and held the highest participation rate (36.3%) for fitness walking of all the metro areas within this market area. In the secondary and tertiary markets, all metro areas experienced declines in fitness walking.

4.16 Fitness/Exercise Program Lifestyle

The collective primary, secondary, and tertiary markets overall remained stable from 1995 through 2005. Thirteen of the 17 the metro market areas were stable in fitness and exercise program participation trend patterns. Within the primary market, both Portland, ME (36.3%) and Bangor (35.0%) were growth markets.

Table 4.—Fitness and cultural/historic activity rates for New England markets for 2005 with trends for 1995 to 2005.

Markets	Fitness Walk	Fit Walk Trend	Fit./Exer	Fit/Ex. Trend	Cult. Activity	Cult.Act. Trend	Hist. & Heritage	Hist. Herit. Trd
1995 National Rates	34.3%	--	34.0%	--	13.6%	--	4.9%	--
2000 National Rates	36.9%	S	41.9%	S	19.8%	SG	7.4%	G
2005 National Rates	31.3%	D	39.3%	S	14.8%	S	6.8%	G
1995 All NE Markets	34.6%	--	35.3%	--	15.6%	--	5.0%	--
2000 All NE Markets	38.6%	S	44.1%	S	22.9%	SG	7.8%	G
2005 All NE Markets	31.1%	D	40.7%	S	17.1%	S	6.8%	G
2005 Primary Markets	31.6%	D	41.2%	S	17.9%	S	6.4%	G
Bangor, ME	35.0%	D	36.2%	G	12.6%	G	6.5%	G
Portland/Auburn, NE	36.3%	G	39.7%	G	14.9%	G	7.2%	G
Boston	32.5%	D	42.5%	S	17.8%	S	6.5%	G
Burlington/Plattsburgh, NY	33.8%	D	38.9%	S	14.6%	S	7.0%	G
Albany, NY	33.2%	D	38.2%	S	15.7%	S	7.8%	G
Springfield, MA	34.1%	D	39.7%	S	16.0%	S	6.6%	G
Hartford/New Haven, CT	32.9%	D	40.9%	S	17.5%	S	6.7%	SG
Providence/New Bedford, RI/MA	33.8%	D	39.3%	S	15.5%	S	6.3%	G
New York City Metro	30.4%	D	41.7%	S	18.9%	S	6.2%	G
2005 Secondary Markets	30.8%	D	39.0%	S	15.2%	G	7.2%	SG
Harrisburg, PA	31.0%	D	36.6%	G	13.6%	S	8.2%	SG
Philadelphia	30.7%	D	40.9%	S	16.5%	S	7.2%	SG
Scranton-Wilkes Barre, PA	32.2%	D	34.6%	G	11.8%	G	6.9%	G
Syracuse, NY	31.9%	D	38.6%	S	14.0%	G	6.9%	G
2005 Tertiary Markets	30.3%	D	40.9%	S	16.6%	S	7.2%	G
Baltimore	29.7%	D	40.5%	S	16.8%	S	7.3%	G
Washington, DC	29.1%	D	43.7%	S	19.3%	NG	8.0%	G
Pittsburgh	32.5%	D	37.8%	S	14.0%	S	6.9%	SG
Cleveland	31.0%	D	39.3%	S	14.3%	S	6.2%	G

Key: SD=Strong Decline (>-2%/yr). D=Decline (>0 to -2%/yr). NG= No Growth (at or near %/yr). S=Stable (positive, but less than 2%/yr). G=Growth (2% to 4%/yr.). SG=Strong Growth (>4%/ yr). National and regional 2000 trends measure 1995 to 2000.

All others were stable. Boston (42.5%) held the highest participation rate for fitness programs. In the secondary markets, Harrisburg (36.3%) and Scranton-Wilkes Barre (34.6%) grew. In the tertiary markets, all metro areas were stable. Washington, DC (43.4%) held the highest participation rate in 2005. Table 4 contains these data.

4.17 Cultural Activity and History/Heritage Interest Activity by Geographic Markets

Interest in history and America's heritage in the New England market area mirrored the national trends; history and heritage interest activity grew at identical rates. The overall interest in the market area was higher for cultural activities (17.1% in 2005 compared to the national rate of 14.8 percent in 2005) even though the rates of change were the same. See Table 4 for these data.

4.18 Cultural Activity Lifestyles

In the primary markets, seven of the nine markets remained stable for cultural activity interest. Interest was strongest in Boston (17.8%) and New York City (18.9%). Growth occurred in two metro markets in this region (Bangor and Portland/Auburn). Although Growth was also experienced in the secondary market area overall, the tertiary market interest for cultural activities remained stable. Philadelphia held the highest interest rate (16.5%) and Scranton-Wilkes Barre grew the least (11.8%) during the period. In the tertiary market, Washington, DC (19.3%) held the highest rate but experienced no growth, and the other metro areas were stable.

4.19 History and Heritage Interest Lifestyles

In the primary market, eight of nine metro markets grew in their interest and involvement for history and heritage and one market area, Hartford/New Haven, actually experienced strong growth overall during the review period. The primary market overall held a household participation rate of 6.4 percent—slightly below the national rate of 6.8 percent in 2005. Both the secondary and tertiary regions experienced growth from 1995 to 2005. Each registered a household participation rate of 7.2 percent for interest in history and heritage. Both Harrisburg (8.2%) and Philadelphia (7.2%) were found to have strong growth trends. Washington, DC held the highest interest rate (8.0%) in history and heritage in the tertiary markets, but Pittsburgh experienced the strongest growth trend of the metro areas within this region.

4.20 Impact of 9/11 on Travel and Recreation Trends

This data set provided one of the first review opportunities to examine the impact 9/11 had on travel and recreation trend activities over time. The measured impact of 9/11 on the travel and recreation data does not appear here until 2003. Travel activities, both domestic travel and vacation travel, peaked in 2000 or 2001. Domestic travel dropped from a national household participation rate of 42.5 percent in 2001 to 38.0 percent in 2003, and the national vacation travel rate dropped from a peak of 37.9 percent to 35.1 percent in 2003. The losses were not as dramatic as expected but were indeed more pronounced in the New England market area. The New England overall domestic travel rate dropped from a peak of 43.5 percent in 2000 to a 38.8 percent participation rate in 2003 while vacation travel dropped from a peak of 46.6 percent in 1999 to 31.2 percent in 2003. Further analysis, though, saw these rates rebound in 2004, when vacation travel for the New England region was 43.4 percent and held steady in 2005 at 42.1 percent. Domestic travel, on the other hand, did not rebound, but slowly declined to 38.0 percent in 2004 and continued down to 37.7 percent in 2005.

Only four of the 12 recreation activities and interests experienced losses in participation rates exceeding two percent at the national level in the post 9/11 era. Fitness walking dropped from a peak of 36.9 percent to 31.3 percent in 2003; attending cultural events dropped from 19.8 percent to 16.8 percent in 2003; camping and hiking dropped from 28.4 percent to 26.2 percent in 2003, and biking dropped from 24.2 percent to 21.7 percent in 2003. The losses in these same activities in the New England market area were slightly higher. Fitness walking dropped from a a peak of 38.6 percent to 31.6 percent in 2003, attending cultural events dropped from 22.9 percent to 18.8 percent in 2003, camping and hiking dropped from 24.2 percent to 20.2 percent in 2003, and biking dropped from 24.3 percent to 21.0 percent in 2003 for each of these New England market area activities. Only the outdoor recreation activities (camping and hiking, hunting, fishing, and interest in wildlife and the environment) collectively rebounded in participation rates after 2003. The recreational activities of golf, tennis, skiing, and biking continued to slowly but steadily decline in household participation rates post 9/11. Consequently, the largest losses came in the travel activities, although some recreation activities were affected, not all were affected as negatively as the travel activities during this review period.

5.0 CONCLUSIONS AND IMPLICATIONS

Earlier studies indicated that the New England travel markets had rebounded in the mid-1990s and then grew into the late 1990s. The areas targeted by New England destinations, however, revealed further trends in the market post-2000. The SRDS *Lifestyle Market Analyst* provides an excellent source of secondary data about these markets. In this study, New England's markets were grouped and examined into primary, secondary, and tertiary areas. Findings from these markets provided additional insights into the markets and trends within them. The data are current and because yearly data are provided, trend analyses are both possible and timely.

Travel, and particularly vacation travel, in the New England Region revealed no growth over the entire period and growth primarily only in the early half of the decade. There was evidence that 9/11 impacted the data with large drops in vacation travel for the New England Region from its peak year to the first full measurement year after 9/11, 2003. However, rebound in participation was found to occur in 2004 and 2005. For recreation and sport markets, biking experienced a growth trend in

New England during the study period while tennis and skiing remained stable and golf declined. The primary market for skiing in the New England region experienced no growth overall; however, the rates were still above the national averages. For outdoor recreation, interest in the environment and wildlife had declined across all markets while interest in camping, hiking, and fishing grew. Furthermore, participation in these activities and individual metro markets varied widely. However, the activity interests in outdoor activities in the overall New England market analysis found each of these activities to lag behind national rates. The fitness markets were stable and interest in history and cultural activities continued to grow in interest overall.

We should note, however, that the information collected through the SRDS data does not indicate whether these markets either have traveled or actually will travel to New England. The link to activity participation and travel is only an association. There are no links in the data to actually show where the households traveled—only that they did take domestic or vacation travel trips in the last year. The associations would be expected to be strong. People who travel on vacation are likely to go on trips that are within a reasonable distance from home. Though it is likely that a portion of this travel was to New England, one cannot be conclusive on this assumption. These market figures reveal only the propensity to travel and engage in the activities monitored here. Furthermore, data in the SRDS only highlight the number of households and participation rates and do not address individual participation rates or the volume of participation or actual number of trips taken.

When these findings are combined with a look at the target markets regions—primary, secondary, and tertiary—we more fully understand where the markets may actually exist. We know that the vacation travel market was strong, was dramatically impacted by 9/11, but has rebounded within the two most recent years. We also now know that the primary markets of New England have the highest participation rates for this activity. Furthermore, we know that six of nine metro markets in the primary target region are taking vacation trips at rates higher than the national average even though their rates are not growing. Knowing that New England-based travelers participate at levels well above national participation rates for selected sport and recreation activities is encouraging and helpful in the targeting process.

In other activities, it was clear that some markets are changing and great differences exist between major metro areas and smaller areas. For example, we found that interest in the environment and wildlife had slowed over the last half of the decade. On the other hand, other significant differences existed. For example, in hunting and fishing, household participation rates in Bangor, ME (the rate for hunting in the most recent year, 2005 was 31.6% and for fishing 40.2%) were more than twice the rates of the New York City metro area for the same activities (hunting rate - 7.7% and fishing rate - 18.2%). However, the number of hunting households in Bangor was 44,748 in 2005 while in the NYC metro area the number of hunting households was 578,708 in 2005. While rates are indeed important, overall market size cannot be overlooked and should be carefully understood and examined. But, it is clear that reaching the market in Bangor would be easier than in New York City. The market is simply more concentrated even though it is less than 13 times the size of the New York market.

Within recreation, travel, sport, and cultural activity markets, more insights were gained by examining the geographic markets where people live and participate. Finding markets that are active and markets that are growing in activity interest is critical to market successes. New England destination markets have been shown to be travelers who came from active households. This research tells where visitors are likely to come from and whether those same markets are growing, are stable, or are declining within these lifestyle pursuits. This review of New England destination travelers and their respective markets further enhances our understanding of the market potential of the area and opportunity to attract those travelers. We also see that the markets are changing. A simple review of national, regional, and metro trends and activity patterns can be misleading unless one examines carefully each of the individual markets. These markets are dynamic—some drastically different even within a region—and are ever changing. This monitoring of trends and activities by markets will continue to be

necessary if New England is to maintain its status as a major destination tourism region.

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PORTFOLIO ANALYSIS OF A DESTINATION'S TOURISM "PRODUCT LINE"

Harold Daniel, Ph.D.
Associate Professor, Marketing
Maine Business School
5723 DP Corbett Business Building
University of Maine
Orono, ME 04469-5723

Abstract.—If we think of a tourist destination as a platform from which a variety of tourist experiences can be delivered, we could conceptualize these experiences as the "product line" offered by or associated with the tourist destination. That conceptualization enables the manager of the destination to employ the logic and discipline associated with product line optimization within the realm of physical products. This paper seeks to explain the value of optimizing tourism product lines, using a portfolio logic based on satisfying target market segments. Optimization benefits the destination and its visitors by providing valued tourism experiences for the broadest market. The proposed method for achieving that optimization employs methods applied to product lines based on physical products. This paper offers results of a pilot test, executed as an MBA class project (Spring 2005) focused on the state of Maine as the tourist destination.

1.0 INTRODUCTION

If we recognize a tourist destination as a platform from which many different experiential products can be delivered, the tactics associated with managing physical and non-physical product lines may be appropriately applied. One of the key elements of the development of a marketing strategy for any type of product is the development of the product strategy. This may also be true for tourist destinations. It is widely acknowledged that the choice of product line offerings or product mix and their subsequent management has widespread influence on the marketing performance of organizations (see Dwyer & Tanner 1999; Cravens 1997). A common practice is the creation of groups of related products in product lines (Dwyer & Tanner 1999). This practice is common to producers of both physical and non-physical products offered to consumers as well as business customers. Thus, one of the major determinants of a firm's long-term success is the care with which its management is able to build and maintain the firm's product mix in accordance with the overall marketing strategy and the needs, wants, and desires of its buyers. This may also be true for the development of tourist destinations, which capitalize on the local natural and cultural assets to create experiential products designed to appeal to important target-market travelers.

One of the major responsibilities of business managers is the alignment of their product mix with the needs, wants, and desires of the portfolio of target customer segments. They add new, more appealing products to the mix, while removing weaker, less appealing products, as well as altering their promotion strategy with respect to underutilized products to enhance customer awareness. The substantial investment often required for introducing new products, the costs of maintaining weaker performing products, and the associated risks of losing members of valued customer segments when deleting weaker-performing products (Dwyer & Tanner 1999) magnify the importance of making high-quality choices regarding the composition of a firm's product mix. Further, the marketing manager has responsibility for determining which products in a product line or mix will receive enhancements in marketing strategy, such as support for increased communication or intensified distribution.

The managements of self-contained destinations such as state and national parks, or various resorts, control the mix of experiences offered within their parks or resorts. The managers of other types of tourist destinations, which are not self contained (e.g., towns or tourist regions), may not have complete control over the mix of products offered by businesses creating the experiential products associated with their destinations. In the latter case, the destination management would still realize value in identifying gaps in the mix of experiences associated with their destinations (i.e., high-value needs, wants, or desires among members of a key target market segment). They may be able to help the management of businesses located in that destination fill those gaps with the addition of appropriate experiential products.

In practice, many organizations use sales analysis to evaluate their product lines. Products generating the lowest sales are typically identified as the weakest. They then become vulnerable to removal from the product line or to replacement by newer products. Such one-dimensional approaches to product-line management can damage the line's overall performance as members of target customer segments, who may exclusively rely on the apparently weak product, are lost when it is discontinued. The same may be true for the mix of experiential products offered by a tourist destination.

Sales measurements, by themselves, often mask the underlying nuances of marketing strategy failures and customer usage patterns, increasing the potential for alienating sizable portions of a firm's customer base, or a destination's visitor base, potentially yielding substantial real and opportunity losses. Assessment of the performance of existing product lines must, therefore, maintain sensitivity to the potential losses and the damage that can occur to existing customer franchises from careless removal of products in a firm's or destination's product line. The questions for the organization become: "How do we identify and remove products that represent true redundancy in the product line?" "How do we identify products in the product line that would benefit from improvement in their execution or enhancements to their marketing strategies?" "How do we strike a balance between sales and customer retention?" While these are questions that are particularly important for the management of the mix of experiences delivered by a state park, national park, or resort, these are issues that are germane to the management of the mix of experiences offered by or associated with many other tourist destinations.

One immediate consequence of failures in the management of a destination's mix of experiential products is opportunity loss, as portions of the target market fail to visit the destination, potentially leading to underutilization of important assets and failure to capitalize on the relatively narrow window of opportunity for attracting tourists that may be common to seasonal destinations. The destination and its businesses may invest resources in delivering weaker products, depleting resources that could be used for supporting the development of better-performing new products or for supporting their more profitable existing products.

Careless deletion of experiential products that may appear to be weak, on the other hand, may result in the potential loss of valued visitors for whom the deleted experience was important and for which they perceive no close substitute in the remaining mix of products. Such deletions also eliminate any opportunity to realize the true potential of the product if the weakness is due to failures in the supporting promotional strategy as opposed to any intrinsic lack of appeal. Some of these weak products may not be the result of any failure of their basic concepts and may require only enhancements to their promotion strategies in order to improve their sales performance. Such enhancements may include increasing advertising support to improve awareness. On the other hand, some of these products may have achieved a high level of awareness, but still lag in terms of sales. These products might benefit from improved execution to improve the ease with which visitors can experience them. Without fundamental investigation, such insights are elusive. Many promising products, even in successful mixes of products, may be lost due to careless deletion from the product mix, based on one-dimensional product-line evaluations.

Another area of concern is the introduction of new products to a destination's existing product line. The creation and marketing of new products is a well-developed area in the marketing literature. There are numerous stage-based models for the planning of new products (see Cravens 1997, p. 248; or Cooper 1993). Designed to manage risk, these models typically include concept screening as well as concept development and testing at the early stages of the creation of a new product or product line. The substantial investment in creating product prototypes and testing them is saved for later stages in these processes after an opportunity for considerable concept refinement. This is particularly important for management of a tourist destination where the idea of a product prototype has little or no meaning. The product either exists fully developed, or not. The concept-screening phase or stage typically entails having key employees identify the new product ideas that most leverage the firm's strengths and appear to

be most commercially viable (see Cravens 1997, p. 253). When there are numerous new product ideas that highly leverage the firm's strengths, some firms may involve consumer input in the process to reduce the number of ideas to two or three high-value concepts. These are then further developed for concept testing. This process of concept screening with consumer input would seem to have value for destination managers seeking to add to the mix of experiential products offered by or associated with their destinations.

Management failures in product development often result in additions to a product line that not only fail to increase the product line's breadth of appeal, but also increase redundancy, increasing costs without offsetting increases in sales. How, then, are new products to be identified that will both broaden the appeal of the overall product line and attract substantial numbers of new tourists? How do we reduce the potential for introducing new products that are destined to become resource-consuming stragglers and end up being removed from the product line at a later date? How can consumer input be used to optimize the configuration of new product lines?

This paper identifies a research method that can support the management of the mix of experiential products offered by or associated with a tourist destination toward the goal of achieving optimal breadth of appeal, while identifying and serving key target markets. An example is shared to demonstrate the value of the research method and management discipline involved. This aspect of destination management is particularly important given the consequences for failure to optimize the product mix with respect to the portfolio of target customer segments that a destination management organization might like to attract to their location.

2.0 THE RESEARCH METHOD

While not normally associated with products or product lines, the concepts of *reach* and *frequency* are meaningful in modern marketing beyond the advertising evaluation context (Arens 2004, pp. 281-282). In the context of advertising, *reach* refers to the proportion of a target audience that is exposed to a commercial message at least once. In the context of product line construction, we might think of *reach* as referring to the proportion of a target market attracted to at least one product in a product line, i.e., as the product line's overall breadth of appeal. In the advertising context, *frequency* refers to the average number of exposures to a commercial message received by each member of a target audience. In terms of the product line, we might refer to *frequency* as a target market "attraction index," e.g., the number of products in a product line that appeal to the members of a target market. This might be considered the product line's depth of appeal. Like the advertising agency, the product manager's goal is to find the appropriate balance of *reach* (breadth of appeal) and *frequency* (depth of appeal). The question for the management of a firm or tourist destination, then, is how to build mixes of product offerings that feature an optimal balance of reach and frequency, i.e., breadth and depth of appeal.

2.1 Research Design

The proposed approach is based on a data collection method involving concept screening, i.e., having respondents simultaneously evaluate more than one product concept or description (see Crask et al. 1995, p. 279; Cravens 1997, p. 255). A concept is a description of a single new or existing product or experience. While concepts can be more or less finished (presenting more or less detail about the focal product), in this context, relatively brief descriptions (less finished concepts) are used to facilitate exposure of multiple product concepts to each respondent. This method may require a respondent to evaluate more than 30 such descriptions in a single data collection session.

Traditionally concept screening utilizes personal interviews to enable a concept-sorting task. Descriptions of the focal products are typed on index cards. Respondents then sort the cards across a purchase interest scale, indicating the likelihood of purchasing the products described on the cards. In a mail-delivered or online, self-administered questionnaire setting (a less preferred approach), the respondent may simply be asked to rate each concept included in the questionnaire on a purchase interest scale.

Given the number of descriptions that a respondent may have to evaluate, the amount of data collected regarding any one concept is, by necessity, quite limited. Often no

more than simple awareness, trial, and purchase interest measurements for each concept are collected. This type of research is ill suited, then, for in-depth evaluation of new product ideas. It is, as described earlier, ideal for prioritizing product ideas, reducing the number of concepts for further consideration and greater depth of research.

2.2 Data Analysis

While this is a common approach to data collection, the unique feature of the proposed research method is the analysis of the resulting data. This analysis relies on portfolio logic in that the focus of analysis is balancing reach and frequency, i.e., breadth and depth of appeal, across the entire set of product concepts. The logic employed is similar to that employed in media allocation models (Belch & Belch 1998). Media allocation models seek to optimize the allocation of resources across different media by seeking to maximize reach and then frequency, when there are no longer economical alternatives for increasing reach. That is, these models attempt to structure ad campaigns to reach the most target-market consumers while maximizing the average number of times those consumers will see a campaign ad.

In this method for optimizing product lines, this is accomplished via cluster analysis of the purchase interest ratings or factor scores based on purchase interest ratings. The analysis identifies common patterns of interest across the concepts included in the research. Each pattern identifies a group of respondents (cluster) with a common set of concepts in which they are more or less interested. Concepts of broad interest among the sample, appealing to more groups (clusters) are considered to offer greater reach, i.e., greater breadth of appeal. Concepts that are uniquely and highly interesting to a single group (cluster) are often considered for addition to a product line to offer increased frequency, i.e., greater depth of appeal, for a given group (cluster).

Larger sample sizes with larger sets of concepts are aided by factor analysis of the concept interest measurements to simplify the cluster analysis, yielding an appreciation of the underlying dimensions of the portfolio of tested concepts. Factor analysis identifies groups of concepts (factors) that are perceived to offer similar benefits, addressing similar needs. Cluster analysis is then applied to the factor scores to identify the preference groups (clusters of potential customers sharing common patterns of interest or preference) for the conceptualized product groups (factors).

Central to the overall analysis is profiling each preference group (each of which may be regarded as an important market segment) to identify the specific concepts of highest interest. The goal of the analysis is to identify a set of product concepts that would ensure each preference group would find at least one product that it would consider highly attractive, maximizing the reach (breadth of overall appeal) for the resulting product line. Additional product concepts can then be added to the prospective product line that add highly interesting products with narrow appeal to a few or even a single preference group, thereby adding depth of appeal for the respective preference groups or target customer segments.

3.0 AN EXAMPLE OF THE CONCEPT SCREENING METHOD

This example is based on a project conducted as part of an MBA-level marketing research class. The state of Maine was identified as a tourist destination, and the tourist activities in which visitors could engage were identified as the product line. Some of the product concepts described very popular tourist activities, like hiking or swimming, while others described tourist activities that do not have a very broad appeal, like hunting. Some concepts described tourist activities that are not available in the state, like visiting theme parks or destination aquariums. The project represented a pilot test of a method for identifying important market segments in the tourist market identified by the Maine Office of Tourism.

3.1 Research Design

The research design reflects a focus on identifying gaps in the state's existing product line, i.e., tourism experiences that represent a high value to one or more target markets but which are unavailable in Maine. As a pilot test, the project did not include an exhaustive listing of the entire existing product line. Instead, 22 product concepts

featuring potential and existing products (experiences) were included in the research. As mentioned above, the existing products were selected to demonstrate a range of sales performance. Some were very broadly popular experiences in the state, while others were of interest to a narrower target market.

Given the project's status as an MBA course requirement (Spring 2005) and the resulting limitation of resources, there was no opportunity to execute personal interviews (either in a shopping mall intercept or door-to-door setting). Instead, an online survey approach to data collection was used involving an e-mail panel offered by a major supplier of commercial survey samples to provide the sample.

3.2 Sample

In order to assess the ability of the new product to attract new tourists, thereby broadening the appeal of the state's overall product line, research was conducted with a general population sample, recruited from an e-mail panel. Invitations were sent to panel households in the geographic area that the Maine Office of Tourism regards as the state's primary tourist market. The area included the U.S. states of Connecticut, Maine, Massachusetts, New Hampshire, New York, New Jersey, Vermont, and Rhode Island, as well as the Canadian provinces of New Brunswick, Nova Scotia, and Quebec. Each state and province was sampled according to its relative population size based on the U.S. and Canadian censuses. This yielded an ending sample of 598 general population respondents.

3.3 Questionnaire

The questionnaire featured 22 concepts representing a range of vacation experiences in the state. Two versions of the questionnaire were created in which the order of presenting the concepts was rotated to reduce the potential for introducing an order bias. The questionnaire included measurements of claimed awareness and trial for the respective experiences as described in the concepts, as well as a 5-point usage intent scale for each respective concept. The questionnaire also included demographic measurements as well as measurements of vacation travel behavior.

3.4 Data Analysis

The data analysis featured factor analysis of the usage intent ratings for each concept to yield classes of tourist activities or experiences. K-means cluster analysis was applied to the resulting factor scores to identify groups of potential visitors sharing common patterns of interest in the classes of conceptualized experiences. The interest ratings for each concept across the preference groups were profiled to identify the specific concepts of high interest to each group. As mentioned earlier, the number of preference groups that were highly attracted to a given concept correspond to the concept's breadth of appeal or *reach*.

An analysis of the claimed awareness and trial for each conceptualized activity among members of the overall sample was also valuable in identifying the specific concepts representing opportunities for increased marketing support. This was evidenced by a pattern of high interest and low awareness, or a pattern of high interest and awareness, but low trial. The former pattern suggests a need to increase promotional support to increase awareness and usage potential. The latter pattern would suggest a conceptualized experiential product might benefit by directly encouraging trial via sales promotions.

This analysis also featured demographic profiles of the resulting preference groups. Identification of important differences in demography and other classification measurements helped identify strategic implications for marketing the destination's product line.

3.5 Findings

3.5.1 Overall Performance

New Products. "Visiting Aquariums" and "Visiting Amusement or Theme Parks" represent tourism experiences that are unavailable in Maine. They were the only concepts for truly new tourist experiences in the state. Generating average interest ratings that exceeded 3.75 on the 5-point interest scale placed them in the top third of interest ratings across all concepts. The 4.06 average rating for the aquariums concept placed it at the top of the interest ratings for all concepts included in the research.

Existing Products. With a 4.03 average interest rating out of 5, "Visiting Nature Parks" generated the second-highest interest and second-highest level of trial among all of the concepts included in the research. Other tourist experiences traditionally associated with Maine generated high levels of interest, including: Historical tours (3.97), train touring (3.86), and country fairs (3.83). Train touring, which has seen limited availability in the state and ranks fifth in terms of interest, also demonstrates higher interest levels than expected given that only 30 percent of the sample claimed to have ever tried it. This suggests that efforts to expand touring by train may be appropriate.

3.5.2 Classes of Tourist Experiences in Maine

With the KMO test of sample adequacy yielding a .907, Bartlett's test of sphericity generating a p = .000 and 69.5 percent of the variance in the interest ratings for the 22 concepts explained, there is evidence that factor analysis was appropriate in this case. Eight factors were identified based on the patterns of interest in the concepts. These are identified below with the respective concepts that defined them:

Factor 1: Passive Tours
Historical Tours
Lighthouse Tours
Art Galleries

Factor 2: More Active Outdoor Tours
Sea Kayaking
Rafting
Skiing
Climbing

Factor 3. Less Active Outdoors
Hiking
Camping
Nature Parks

Factor 4: Sailing
Schooner Cruise
Sailing

Factor 5: High Risk Sports
Hunting
Motorcycle Tours
Snowmobiling

Factor 6: Shopping
Country Fairs
Shopping
Antiques

Factor 7: Amusement Parks
Amusement Parks
Aquariums

Factor 8: Golf
Golf

Note that Train Touring did not factor. So it is not represented in the classes of tourism experiences identified in the factor analysis above.

3.5.3 Preference Clusters

Three preference groups or clusters were identifiable. These groups are detailed below:

Less Active Tourists (43%): Representing almost half of the tourist market, this group has a high level of interest in passive tours, less active outdoor, sailing and shopping. "Historical Tours" (4.27 average interest rating) and "Train Tours" (4.27 average interest rating) represent the most interesting experiences for this group, uniquely identifying their preferences. This market is largely composed of women with a high level of education.

Amusement Park Tourists (33%): Representing another third of the market, this group shows relatively high levels of interest in "Visiting Amusement Parks" (4.01) and "Visiting Aquariums" (3.84). This market largely comprises young women who are identifiable as students. The members of this market tend to reside in the New York metropolitan area, home to several major theme parks. Not surprisingly, this group is least likely to have visited Maine.

More Active Tourists (24%): Representing the remaining quarter of the market, this group is defined by its relatively high interest in "More Active Outdoor" and "High Risk Sports," as well as its relatively low interest in "Shopping" as classes of tourist experiences. "Historical Tours" (4.31), "Visiting Nature Parks" (4.27), and "Visiting Aquariums" (4.21) represent individual tourist experiences of the highest interest. However, it is

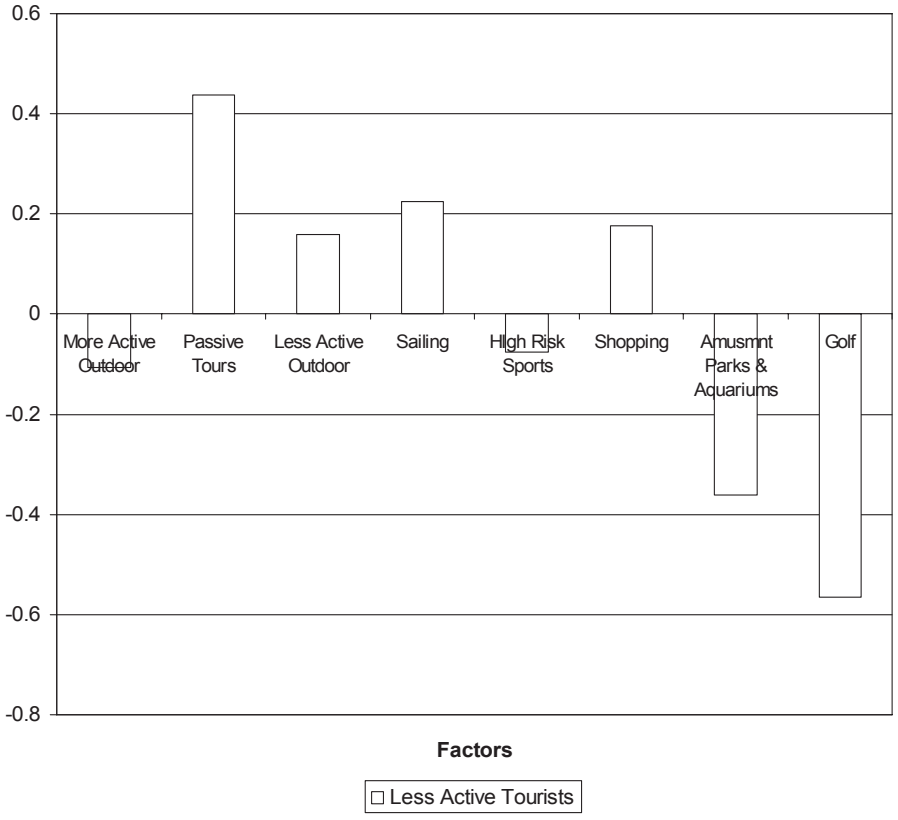

Figure 1.—Average Factor Interest Scores by Market Segment.

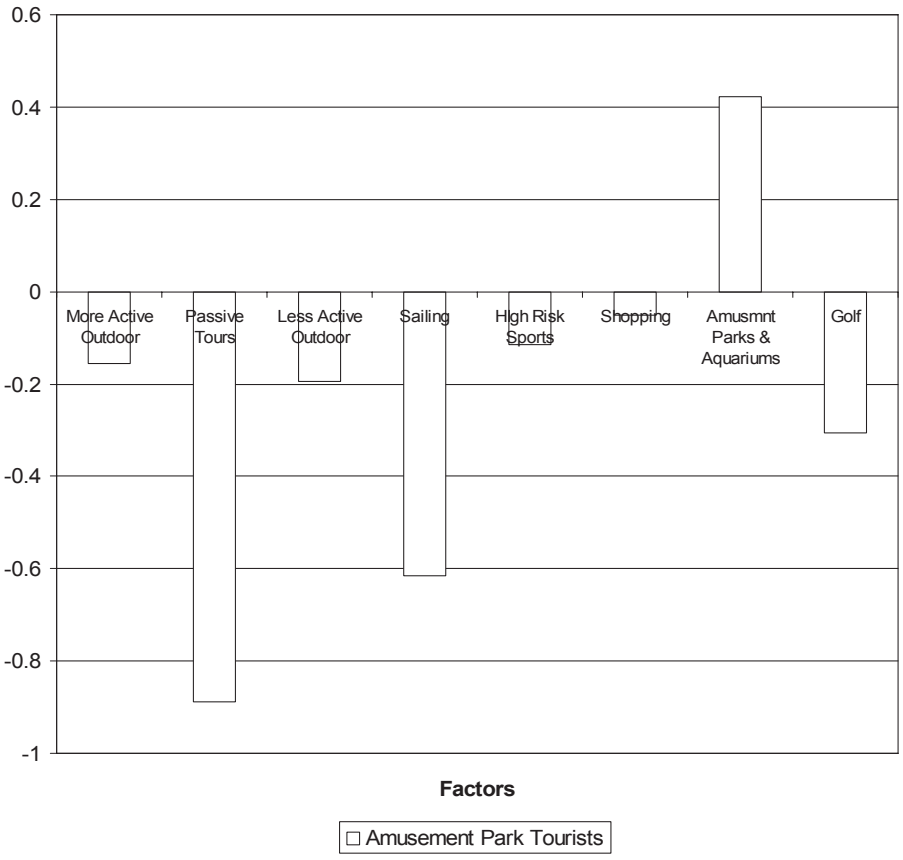

Figure 2.—Average Factor Interest Scores by Market Segment.

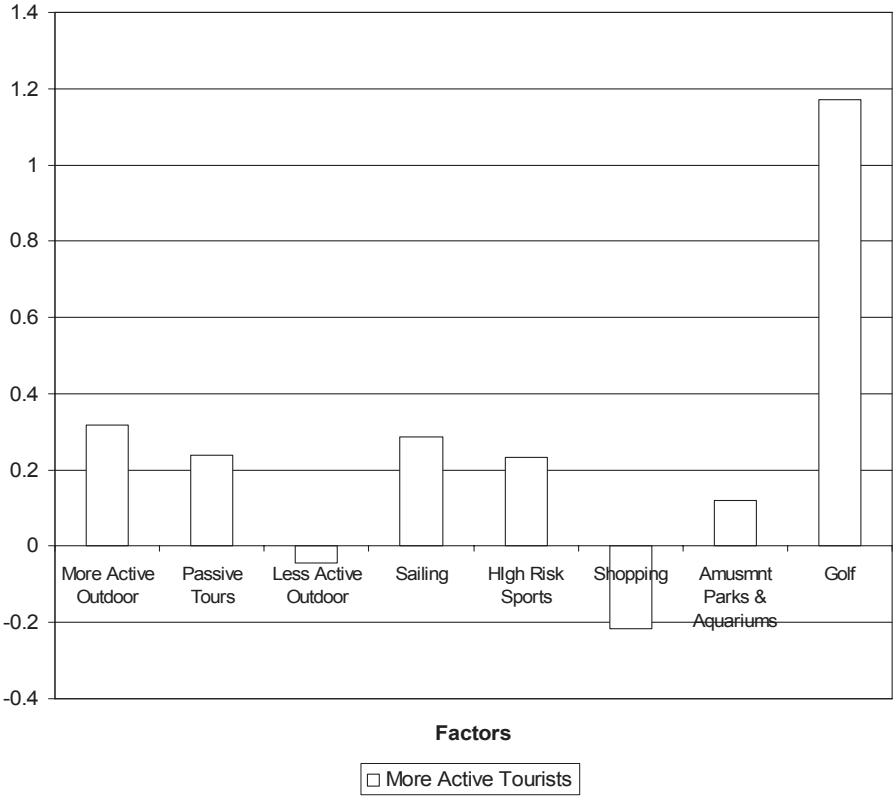

Figure 3.—Average Factor Interest Scores by Market Segment.

the relatively high interest in "Golf" (3.89) compared to the low interest in golf among the members of the other two markets (average interest ratings less than 2), that uniquely identifies this market. Its membership is largely male.

4.0 CONCLUSIONS AND IMPLICATIONS

1. **By virtue of their broad *reach*, the 2 new experiences should be considered for potential addition to the state's tourism product line.** These include investments in one or more Theme Parks and/or Aquariums. These represented highly attractive options for two of the three market segments. Overall, interest levels also exceeded the interest levels for most of the other concepts. Assuming consistency with the tourism philosophy driving the state's sanctioning of destinations and experiential products, these findings warrant debate about the appropriateness of attempting to attract such a business to the state. Business considerations such as the state's short tourism season, however, may make attracting such a business difficult.
2. **The investment in adding one or more high-profile amusement parks and/or aquariums could broaden the appeal of the state of Maine as a tourist destination, attracting a market segment that has historically been underserved by the state.** Members of the market segment that is exclusively attracted to amusement parks and aquariums have historically avoided travel to Maine. The addition of these attractions may encourage them to visit the state for the first time and, assuming delivery of a satisfactory experience, return to the state and encourage others to do so.
3. **Attracting this market segment would not be easy.** Given the close proximity of this market segment to strong competition from major theme parks, the amusement parks or aquariums in Maine would probably have to offer uniquely high-value experiences to attract the members of this target market to what would be a distant destination for most.

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DEMOGRAPHIC CHARACTERISTICS AND MOTIVATIONS OF MICHIGAN AGRITOURISTS

Deborah Che
Assistant Professor, Department of Geography
Kansas State University, 164E Seaton Hall
Manhattan, Kansas 66506

Ann Veeck
Western Michigan University

Gregory Veeck
Western Michigan University

Abstract.—Michigan agricultural producers, faced with declining commodity prices, rising production costs, and increased global competition, have looked at agritourism as a way to save the farm as well as provide customers with personalized service; high-quality, fresh food; and farm, nature, and family experiences. While previous research on agritourism indicates that it taps into consumption-related trends in American society, this research assesses who patronizes Michigan agritourism operations and what brings them on-site. This paper reports our survey findings on such visitor demographic characteristics and consumption decisions. Survey results indicated the family and broader market appeal of agritourism among households with annual incomes exceeding $30,000, the importance of local and return visitors, and the draw of purchasing/picking fresh, local produce. This paper also suggests ways to attract new, regional visitors and underrepresented age groups and to raise awareness about Michigan's agritourism destinations as sources of fresh, Michigan agricultural products.

1.0 INTRODUCTION

Agritourism, or the act of visiting a working farm or any agricultural, horticultural, or agribusiness operation for enjoyment, education, or active involvement in the activities of the farm or operation (Lobo, n.d.), is an increasingly important segment of the $3 trillion worldwide tourism industry. Demographic trends such as the aging of America favor future growth of the agritourism market. Seniors are a key market for agritourism, given their disposable income and leisure time. Agritourism, which involves hands-on, educational activities for children and adults, also benefits from the growing trend of multigenerational travel (Rosenberg 2000, Gardyn 2001, Thrasher 2003). Agritourism attracts the increasingly urban and suburban boomer and senior populations who hold nostalgic views towards farms. According to one sixth-generation farm proprietor outside St. Louis, Missouri agritourism appeals to urbanites who want to "reconnect with the land and have an opportunity to experience what, for them, is a lost world" ("Agritourism Helps" 2004, p. 32). Finally, changes in U.S. domestic travel patterns from traditional, two-week vacations to long weekend trips also favor agritourist operations.

Farmers' traditional orientation toward commodity production, however, has hampered the growth of agritourism. While farmers look for innovations such as new hybrids, chemicals, tillage practices, and equipment to improve production, agritourism marketing and development require new, interdependent ways of doing business (Holmlund & Fulton 1999). Agritourism destinations facing stiff competition from alternatives for leisure time and food purchases benefit from cooperative linkages such as brochures and web linkages, information sharing, referrals, and purchasing linkages that help sustain a critical mass of producers who offer diverse goods, maintain land in agriculture, and thus reinforce a region's image for agritourism (Che et al. 2005). Additionally, traditional agricultural marketing channels, which are based on industrial coordination, financially reward quality efforts that are reflected in tangible product features (Verhaegen & Van Huylenbroeck 2001). But intangible quality characteristics are key to agritourism development. According to the owner of the Red Apple Farm in Phillipston, Massachusetts, the intangible, emotional connection is critical in agritourism since customers are buying a lifestyle, not just a product (Morris 2004). Furthermore, many independent producers of homogenous commodities often lack interpersonal skills and innovative value-added product development that can differentiate farm destinations (Busby & Rendle 2000).

Michigan agricultural producers, faced with declining commodity prices, rising production costs, and increased

global competition (McCallum 2003, Churchill 2004, "State Apple Industry" 2004), have looked at agritourism, a growing segment of the tourism industry, as a way to save the farm as well as provide customers with personalized service; high-quality, fresh food; and farm, nature, and family experiences. While previous research on agritourism indicates that it taps into consumption-related trends in American society, it is important for Michigan farmers to assess who patronizes Michigan agritourism operations and what brings them on-site so that operators can better serve them. Thus as part of a larger, joint Western Michigan University (WMU) and Michigan Department of Agriculture (MDA) agritourism project supported by the U.S. Department of Agriculture (USDA), visitors to Michigan agritourism destinations were surveyed to determine their demographic characteristics and consumption decisions. The methodology of and results from the WMU/MDA agritourism consumer survey study follow.

2.0 METHODOLOGY

To obtain specific information on the demographic characteristics and consumption decisions of visitors to Michigan's agritourism destinations, a comprehensive consumer survey was developed by researchers at WMU in conjunction with experts at the MDA. This survey was developed from ideas and opinions of agritourism operators gathered as part of three focus groups conducted in 2002 in Kalamazoo, Ellsworth, and Flint, Michigan. Each focus group consisted of six to nine firm owners. The consumer survey contained questions regarding the respondents' traveling party, distance traveled, home ZIP code of residence, site-specific visiting patterns (past, present, and future), visitation to other agritourism operations within the last 12 months, means of learning about the agritourism operation, activities enjoyed and products purchased on the day of visitation/survey, and Likert-type questions designed to identify opinions related to the reasons for the visit. In-person surveys were then conducted on-site at 31 agritourism operations (both farm and farmers markets) around the state of Michigan from August to October 2003. The WMV/MDA survey had 1,550 respondents. The following section features results from the data analysis.

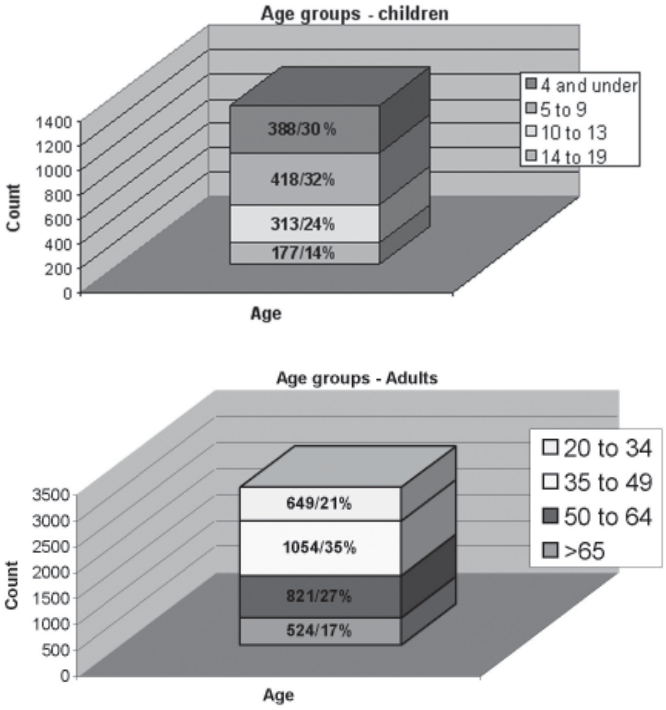

Figure 1.

3.0 RESULTS

3.1 Characteristics of Michigan Agritourists

An average group of Michigan agritourism visitors included 2.82 persons (standard deviation = 2.825), with a range from one person to 52 persons. Groups of one or two persons accounted for 957 of 1,550 surveys (61.9%), while three-person groups accounted for 12.8 percent of the sample. Groups of four persons accounted for 12.0 percent of the sample. Groups with five or more persons in their party accounted for 13.3 percent of the survey. Two different types of customers visited these businesses: 1) younger or older couples or individuals, and 2) families with one or more children. sixty percent of the persons in the sample of 4,360 persons who provided information on gender in the survey were female.

Taking the sample as a whole, 29.5 percent of visitors were children or young adults under the age of 20. Of these children, 62 percent were under 10 years of age, while only 14 percent were between 14 and 19 years of age (Figure 1). Turning attention to the adults that comprised 70.5 percent of total visitors, the largest group by our age categories was those between 35 and 49 (35%) (Figure 2). In many cases, these were families. The number of 20-somethings was low (21

percent), suggesting that this segment of the population is less interested in agritourism activities. Alternately, more age-specific forms of advertising or programs may be required to increase their participation rates.

Once self-reported household income was over $30,000 per year, there was no significant difference in attendance rates by income group (Figure 3). Families reporting annual incomes of below $29,999 were underreported in the sample. This finding may indicate that lower-income families do not currently shop at on-farm venues, but it may also simply be an artifact of the survey.

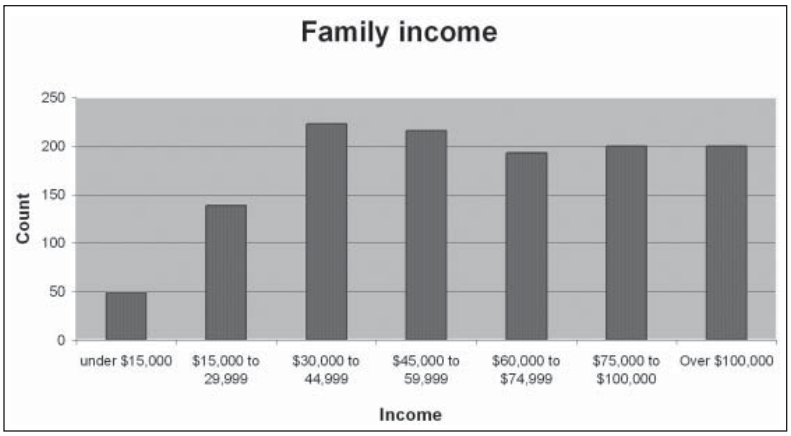

Figure 2.

3.2 Customer Reasons for Visiting Agritourism Operations

Survey respondents were asked, in an open-ended question, to state "the most important reason why you came here today" for the operation where they completed the survey. While there were a variety of answers incorporated in the 1,528 responses, the most frequent answers related to the products the operations were centered on, or to a view that the visit was a family activity. The answers related to the particular places (i.e., cider mills) at which the surveys were distributed. The top answer, yielding over one-quarter of the responses (26%), related to procuring vegetables, such as "to buy fresh vegetables," "to get fresh produce," and "to pick vegetables." The second most popular response (16.6%) related to obtaining apples, such as "to pick apples" or "to buy apples." The third most cited response (7.3%) involved viewing the trip as a family activity, with answers such as "family outing," "family fun," "family party," and "family trip" (Table 1).

Respondents were also asked to list the activities which they participated in while at the operation. The most popular activity mentioned by respondents, picking fruit or buying fresh vegetables, not surprisingly centered on fresh fruits or vegetables. Of respondents, 14.6 percent listed it as at least one of their activities. The activity that was second most likely to be cited was shopping, in general, with 13.4 percent of respondents listing "shopping" or "browsing." Other activities frequently listed included picking or buying apples, eating, hay rides, and petting or looking at animals (Table 2).

3.3 Importance of Returning and Local Customers

From questions included in the survey to determine the visitation pattern of the typical adult filling out the survey, it was clear that customer loyalty and repeat business were critical to the economic health and well-being of these operations. Of this question's 1,550 respondents, 85.9 percent reported a previous visit to the business prior to the day of the survey. Results indicated that 76.1 percent of respondents had visited

Table 1.—Most important reasons for coming to the agritourism site

Reason	Frequency	Percent
To get fresh vegetables, fresh produce, to pick vegetables	397	26.0
To pick or buy apples	253	16.6
Family outing, family fun, family party, family trip	111	7.3
To buy cider	90	5.9
To buy pumpkins	88	5.8
Fun for kids, kids' activities, kids' trip	72	4.7
To buy corn	70	4.6
To buy fresh fruit	67	4.4

Table 2.—Activities at the Agritourism Site

Activities	Percent
Picking or buying fresh produce	14.6
Shopping, browsing	13.4
Picking apples, buying apples, buying caramel apples	12.1
Eating food, eating snacks	8.0
Petting, looking at animals	6.7
Hay rides, wagon rides	6.8
Buying pumpkins	5.5
Buying or making cider	5.4
Eating or buying donuts	4.5
Sightseeing, looking around	3.0

the business within two years, but only 57.6 percent of respondents came during the previous year. Visits may be cyclical. However, 96.9 percent reported that they would return during 2003 or 2004. The use of home mailings, common among the firms participating in our surveys, would seem to be well founded in light of the "brand loyalty" exhibited by the respondents. Most people participating in the survey also regularly visited other agricultural tourism businesses. Of the 1,548 people responding to this question, more than 70.8 percent reported visiting other agricultural tourism operations in the past 12 months. Direct mailings can be used to assure return business, but other forms of advertising should be used to expand the customer base. Once people visit these operations, there is a very high probability that they will return.

Each respondent was asked to provide information on the trip that included their visit to the agritourism business where they completed the survey. Information on the actual miles traveled, as well as the ZIP code information assuming that not all customers were coming directly from home or alternately returning to their home after their visit, was collected. More than 95.8 percent of our respondents reported a Michigan ZIP code for their residence. The average number of miles traveled was 22.0 miles (standard deviation = 54.66). As reflected by the standard deviation, the range, however, was very large (from one mile to 1,200 miles), reflecting the impact of out-of-state customers on the agritourism businesses of Michigan. While the long-distance customers certainly grab our attention, it should again be noted that many of the customers for these businesses were neighbors. Many customers lived within 25 miles of the firms where they were surveyed. Thus, these "home-grown" customers are critical to the financial success of many of these operations. More than one-half of the respondents to this consumer survey lived within 10 miles of the business. But there is still considerable potential for increasing customers living within 30 to 50 miles of the businesses.

3.4 How Customers Found Out About Agritourism Operations

To learn how customers found out about the agritourism operations that they were visiting, respondents were given six options, of which they could select as many as applied. These options included "saw when drove by," "saw ad," "read about in tourist literature," "word-of-mouth," "saw on Internet," or "saw on sign." Once again, the answers reflect the local nature of the customer base. The most popular response was "word-of-mouth" (37.9%), followed by "saw it when drove by" (25.9%). Very few respondents learned about any of the operations from the Internet or through the tourist literature.

4.0 CONCLUSIONS AND RECOMMENDATIONS

From the WMU/MDA consumer survey conducted at Michigan agritourism destinations, conclusions can be drawn about visitor demographic characteristics and consumption decisions. Customers include families across the $30,000+ income groups. Reflecting the family nature of agritourism, many visitors (survey respondents and members of their accompanying parties) were part of families with young children. To attract teenagers and 20-somethings, whose numbers were low, more age-specific

programming might be necessary. Michigan agritourism operators could perhaps learn from the experience of Cedar Hill Farm in Hernando, Mississippi, which has successfully attracted teenage boys with a paintball course. This age-specific programming can be successful as long as the five or 10 acres dedicated to it are set away from activities such as pony rides and the petting zoo. For this farm, paintball has expanded the business from a one-day activity primarily for families with young children to one with activities for all members of the family. Such non-traditional activities may also expand a farm's operating season (Warren 2004).

While the Michigan survey results revealed the importance of local and return visitors to the success of agritourism operations, potential exists to attract both more customers living 30-50 miles away from the business and out-of-state visitors. To attract these individuals, who may be less likely to drive by a location or hear about the business from a family member or friend, the Internet, travel brochures, and greater promotional linkages with convention and visitor bureaus are critical to raising awareness about Michigan's agritourism destinations. For instance, by working with the Grand Rapids, Michigan, Convention and Visitors Bureau, Robinette's Apple Haus & Gift Barn is now on regional familiarization tours for motorcoach operators. Consequently, over 50 percent of the tour companies that have visited Robinette's on a familiarization tour have later booked a tour stop. Additionally, through its membership in the Grand Rapids Convention and Visitors Bureau, Robinette's is also represented at the American Bus Association and the National Tour Association conventions, giving it exposure that this individual business could not otherwise afford (Eckert 2004).

To reach new customers, agriculture could also be better integrated into existing state tourism promotion campaigns by using a Michigan fruit (e.g., cherry or apple) as a focal point or symbol for visitors who are interested in the many activities connected to agriculture. Tourism promotion material could also stress the agriculture-related activities possible in Michigan such as visiting a cider mill or farm and picking your own pumpkin. Visiting cider mills could be highlighted as a Michigan's tradition one could take part in while participating in another tradition, the fall leaf color tour. Agritourism could thus reach new people, who could then become return visitors and word-of-mouth promoters of Michigan agritourism.

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UNDERSTANDING TRAVEL INFORMATION SEARCH BEHAVIORS BY LEVELS OF INFORMATION TECHNOLOGY ADOPTION

Junghye Angela Kah, Ph.D. Student
Department of Community, Agriculture, Recreation, and Resource Studies
131 Natural Resources Building
Michigan State University
East Lansing, MI 48824-1222
E-mail: kahjungh@msu.edu

Christine A. Vogt, Ph.D.
Michigan State University

Kelly MacKay, Ph.D.
University of Manitoba

Abstract.—Although the significance of the Internet has been widely discussed in previous studies, the research of e-commerce has focused primarily on organizational and business perspectives (Sigala 2004). The growing number of Internet users allows a better understanding of online tourists who seek travel information and book or purchase travel products. The levels of Internet innovativeness also must be understood, since research indicated that 79 percent of Internet users have had four or more years of online experience (The Pew Internet & American Life Project 2005). In this study, 273 respondents were classified as innovators, early adopters, or late adopters by the time element of the Internet diffusion process and compared based on their travel information search behaviors, booking/purchasing of travel products, intentions of using various types of travel information sources, and perceptions and current usage of Information Technology. There were differences among the groups in terms of general information seeking and booking/purchasing, and perceptions of information technologies, whereas similarities were found in certain types of tourism products sought and booked/purchased and actual usage of information technologies.

1.0 INTRODUCTION

Most travelers try to reduce uncertainty of travel and improve the quality of trips through information search before leaving home (Fodness & Murray 1997). The Internet makes it possible for travelers to search and compare information on travel choices, as well as to purchase services or goods (Jang 2004). Since the travel industry has been identified as an industry greatly affected by the advent of the Internet (Weber & Roehl 1999), it is important to understand the distinct features of prospective travelers who search for information online. In order to understand Internet use for travel, this study focuses on online information seeking and purchasing/booking of travel products from a quantitative perspective of the Internet experience.

The purposes of the study are to provide insights on web-based information search and reservation or purchase of travel products, intentions to use various types of travel information sources, and perceptions and current usage of Information Technology (IT) among those who were classified as innovators, early adopters, or late adopters according to how long they had used the Internet. This segmentation can aid travel marketers in providing more customizable information to travelers with different online experiences, and assist the leisure market in responding to the diffusion processes of other travel information technologies.

When a new technology emerges, there are differences between initial users and those who wait to use the technology until the technology is well established (Ono & Zavodny 2003). This finding supports the earlier work of Rogers (1962) on product and idea of diffusion. Rogers (2003) defined "innovativeness" as the speed at which individuals adopt new ideas compared to others. Based upon the relative time at which an innovation is adopted, members of a social system could be classified into different adopter categories. Individuals in the different adopter categories for products and services showed differences in several aspects, such as demographics, socio-economics, product usage, media access, and purchase involvement (Mahajan et al. 1990). For example, innovators sought new information and new ideas. They have been exposed to a great deal of mass media, and have extended communications with a wide variety of resources.

At the end of 2005, Canada had 21.9 million Internet users or 68 percent of the population; at the turn of the

21st century only 40 percent of the population reported Internet use (Internet World Stats 2006). Rai and colleagues (1998) attributed this growth to the diffusion of the Internet and an informed customer base. Dutta and Roy (2003) pointed out that while descriptive statistics of Internet use were widely available, models explaining Internet diffusion were infrequently discussed in literature.

This paper compares travelers' web-based information search behaviors and travel products reservation or/ purchase by the time element of the Internet diffusion process and considers perceptions and current usage of IT.

2.0 METHOD

Individuals for this research were recruited to participate in a panel study from lists of individuals who consented to be contacted for research purposes, which were provided by a provincial tourism marketing agency, a provincial government tourism department, and Parks Canada (N = 1,026). Participants completed a questionnaire to provide information on their vacation planning, types and sources of information, and demographic characteristics, as well as a list of upcoming trips. Three hundred thirteen (n=313) respondents completed the survey in fall of 2005. Based on a series of questions about their Internet experience, respondents (n=273) were classified into three adopter categories: innovators, who have used Internet for 11 years or more (n=38), early adopters, who have used the Internet for 6 to 10 years (n=163), and late adopters, who have used the Internet for 1 to 5 years (n=72). Users with no expereince (n=12) were excluded from this group following Rogers' original adoption categories, which also eliminated nonadopters of innovation (Rogers 2003).

The questionnaire asked about web-based information search behaviors and online booking/purchasing of tourism products regarding flight/airline, other transportation, attractions, activities, equipment used for trips, accommodations, events, travel packages, and local/regional tours. A series of questions also asked current availability of information technologies such as desktop computer, cell phone, laptop computer, Personal Digital Assistant (PDA), GPS, and other. Based on the types of technology available to respondents, perceptions of their own technology use were measured on a 7-point scale (1=low; 7=high). Finally, to obtain background information on the respondents based on Internet adoption, the three group profiles were examined based on socio-demographic characteristics of gender, education, income, martial status, and age.

A series of analyses appropriate to the level of data was used to test relationships between Internet use and demographics, web-based information search behavior, online booking/purchasing of tourism products, perceptions and current usage of IT.

3.0 RESULTS

Chi-square analyses were used to determine whether the Internet adopter groups differed significantly in education, gender, marital status, and income (Table 1). ANOVA analysis was used to determine whether there was a significant difference in age among the three groups (Table 2). There were no significant differences in demographics and Internet adoption as shown in table 1. Innovators, and late adopters ages, on average, were both 50 years old and early adopters were 47 years old, as shown in table 2.

All three groups reported high levels of use and there was a significant difference in general vacation planning via the Internet among the Internet adopter groups ($X^2(2) = 8.3$, $p<.05$), as shown in Table 3. In terms of web-based information seeking for travel plans, online information about equipment used for trips showed a significant difference between the three groups ($X^2(2)=8.9$, $p<.05$) as shown in Table 3. Regarding online travel booking/ purchasing behaviors, 195 respondents (about 71% of the Internet adopters) reported having booked or purchased. A similar significant result with general vacation planning via the Internet was found in general online travel booking/purchasing behaviors ($X^2(2) = 13.3$, $p<.001$) as shown in Table 3. No differences in certain types of tourism products booked/purchased by the three groups were found.

Table 1.—Internet adoption and gender, education, income and marital status

		Internet adoption					
		Innovators	Early adopters	Late Adopters	Total	x^2	p^a
Gender N=273	Female	55.3%	49.1%	59.7%	52.7%		
	Male	44.7	50.9	40.3	47.4	2.4	.304
	No bachelor degree	45.9	61.0	62.9	59.4		
	Bachelor degree	54.1	39.0	37.1	40.6	3.3	.193
	Less than $40,000	8.1	16.0	13.0	14.1		
Income N=262	$40,000~79,999	35.1	36.5	43.5	38.2		
	$80,000 or more	56.8	47.4	43.5	47.7	3.0	.556
Marital status N=266	Single	7.9	18.2	21.7	17.7		
	Married/ living common law	92.1	81.8	78.3	82.3	3.3	.190

[a] Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom for gender, education, and marital status and 4 degree of freedom for income.

Table 2.—Internet adoption and age

		Internet adoption					
		Innovators	Early adopters	Late adopters	Total	F (2, 270)	p^a
Age	Mean	49.7	46.9	50.0	48.1	1.4	.241
	N	38	163	72	273		
	SD	13.2	14.4	14.2	14.2		

[a] Analyses were conducting using ANOVA.

The innovator group booked/purchased travel products an average of 3.4 times online whereas the early adopter group booked/purchased 4.5 times and the late adopter group 4.4 times in a 12-month period (see Table 4). However, statistically there was no significant difference in average number of online booking/purchasing of travel products among the three groups (F (2,135) =1.0, p=.381).

On perceptions of technology use, Internet use, and ownership of technology compared to his/her friends, ANOVA analyses were performed to investigate whether there were significant differences between the three groups. Innovators and early adopters rated themselves significantly higher in technology usage (mean= 4.9 and mean=4.7 of 7 pt scale), Internet use (mean=5.5 both), and technology ownership (mean=4.9 and mean=4.6) from late adopters (3.8, 4.3, and 3.5 respectively), as shown in Table 5. These differences were significant at the levels of (F (2, 270) = 9.8, p<0.001), (F (2, 267) =16.5, p<0.001), and (F (2, 267) =17.4, p<0.001), respectively.

Table 6 shows the result of current usage of information technologies and indicates that there were no significant differences in usage of information technologies, with the exception of a PDA (X^2 (2) = 6.0, p=0.049).

4.0 CONCLUSION AND APPLICATION

The study began with an attempt to find characteristics of Internet adoption groups; however, several results were contrary to what would be expected from the theory of diffusion of innovation regarding demographics, web-based information seeking for travels, booking/

Table 3.—Internet adoption and planning/information seeking and booking/purchasing

	Internet adoption					
	Innovators	Early adopters	Late adopters	Total	X^2	p[c]
Planning and Information seeking [a]	n=37 97.4%	n=160 98.2%	n=65 90.3%	96.0%	8.3	.016
Accommodation	83.8%	90.6%	87.7%	88.9%	1.6	.458
Attractions/sightseeing	83.8	78.1	69.2	76.7	3.3	.197
Flight/ airline	78.4	76.9	64.6	74.0	4.0	.133
Events	64.9	65.6	56.9	63.4	1.6	.461
Other transportation	59.5	48.1	44.6	48.9	2.2	.338
Activities	48.6	63.1	58.5	59.9	2.7	.259
Local/ regional tours	45.9	41.9	35.4	40.8	1.3	.530
Travel packages	32.4	45.0	47.7	43.9	2.4	.296
Equipment used for trips	13.5	33.1	18.5	26.7	8.9	**.012**
	Innovators	Early adopters	Late adopters	Total	X^2	p[c]
Booking/purchasing [b]	n=32 84.2%	n=123 75.5%	n=40 55.6%	71.4%	13.3	**.001**
Accommodation	71.9%	78.9%	75.0%	76.9%	0.8	.669
Flight/ airline	68.8	67.5	62.5	66.7	0.4	.814
Other transportation	31.3	28.5	17.5	26.7	2.3	.322
Events	21.9	22.0	25.0	22.6	0.2	.918
Activities	12.5	13.8	17.5	14.4	0.4	.803
Equipment used for trips	12.5	13.0	2.5	10.8	3.6	.166
Attractions/sightseeing	9.4	16.3	12.5	14.4	1.1	.571
Local/regional tours	9.4	8.9	5.0	8.2	0.7	.707
Travel packages	3.1	16.3	10.0	12.8	4.3	.118

[a] Percentage of respondents using the Internet for planning in past 12 months.
[b] Percentage of respondents using the Internet for booking.
[c] Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.

Table 4.—Internet adoption and the number of online booking/purchasing

		Internet adoption					
		Innovators	Early adopters	Late adopters	Total	F (2,135)	*p*[a]
Number of online booking/purchasing of travel products over 12 months	Mean	3.4	4.5	4.4	4.1	1.0	.381
	N	20	88	30			
	SD	4.3	5.2	2.7	4.7		

[a] Analyses were conducting using ANOVA.

purchasing of travel products, and usage of information technologies. Furthermore, Internet was used more for information search than for purchasing, regardless of Internet use grouping. This result suggested a pervasive integration of technology into the lives of travelers, particularly in at-home contexts. It is therefore critical for travel and tourism marketers to address the issues of online purchasing of tourism products through future

Table 5.—Perceptions of information technologies

		Internet adoption					
		Innovators	Early adopters	Late adopters	Total	F	p^b
Technology use	Mean [a]	4.9	4.7	3.8	4.5		
	N	38	163	72	273	F(2,270)= 9.8	.000
	SD	1.4	1.7	1.5	1.7		
Internet use	Mean [a]	5.5	5.5	4.3	5.2		
	N	38	161	71	270	F(2,267)=16.5	.000
	SD	1.3	1.5	1.7	1.6		
Ownership of technology compared to friends	Mean [a]	4.9	4.6	3.5	4.4		
	N	38	162	70	270	F(2,267)=17.4	.000
	SD	1.4	1.5	1.5	1.6		

[a] 7-point agreement scale (1=strongly disagree, 7=strongly agree)
[b] Analyses were conducting using ANOVA.

Table 6.—Internet adoption and usage on information technologies

	Internet adoption					
	Innovators	Early adopters	Late adopters	Total	X^2	p^b
Types of Information Technology [a]	n=38	n=163	n=72	N=273		
Desktop computer	92.1	87.1	80.6	86.1	3.1	.209
Digital camera	73.7	76.1	61.1	71.8	5.6	.061
Cell phone	71.1	71.8	62.5	69.2	2.1	.352
Laptop computer	39.5	27.0	18.1	26.4	6.0	.051
Laptop with wireless access	28.9	24.5	12.5	22.0	5.5	.065
PDA	23.7	14.7	6.9	13.9	6.0	**.049**
Cell phone with Internet access	18.4	22.7	15.3	20.1	1.8	.408
Cell phone with camera	18.4	7.4	6.9	8.8	5.2	.077
GPS/ GPS in vehicle	13.2	7.4	12.5	9.5	2.2	.332
OnStar service in vehicle	10.5	2.5	4.2	4.0	5.2	.074
Pager	5.3	4.3	5.6	4.8	0.2	.905
PDA with Internet access	0.0	3.1	0.0	1.8	3.4	.179

[a] Percentage of respondent using the IT.
[b] Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.

studies that examine barriers to online purchasing for different levels of Internet users. Their customized products and services can be provided for different market segments.

Regarding the adoption of other portable information technologies, it is noteworthy that Mahajan et al. (1990), who examined innovativeness across several product categories, found that innovators of one new product were not necessarily the innovators of the next product introduced into the category, and indeed, those who adopted the Internet may not even have been adopters of other information technologies. Therefore, the development of meaningful market segments with regard to behaviors such as the amount of time or money spent online could be of better assistance to travel companies that use online advertising and website booking systems. In addition, Internet adoption should be re-examined with a different categorical approach both to understand of consumer behavior and to develop marketing strategies in the tourism information system.

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Leisure and Gender I

EFFECTIVENESS OF METAPHORIC FACILITATION TECHNIQUES IN A CHALLENGE COURSE PROGRAM ON THE EMPOWERMENT OF WOMEN PARTICIPANTS

Penny A. James
Recreation and Leisure Studies Dept.
State University of New York Cortland
PO Box 2000
Cortland, NY 13045

Lynn Anderson
SUNY Cortland

Anderson Young
SUNY Cortland

Abstract.—Research has shown support for the efficacy of differing processing techniques, particularly isomorphic framing. Feminist practitioners contend this methodology disempowers participants. Proponents argue this could result only from improper implementation. This experiment employed a facilitation technique (control, derived, isomorphic) between-subjects design with time (pretest, acquisition, retention) as a repeated factor and utilized both quantitative and qualitative measures to further our understanding of the "process" of facilitation and transfer of learning in a women's challenge course program. It was hypothesized that all 47 women would benefit from participation but to varying degrees depending upon treatment group. Quantitative measures of locus of control, self-efficacy, and self-esteem served as indicators of empowerment. The absence of significant quantitative findings is attributed to insufficient sample size. A manipulation check verified participants' understanding of metaphoric manipulations and provided qualitative data. This study provides tentative support for the appropriate use of both derived and isomorphic metaphoric techniques.

1.0 INTRODUCTION

Outdoor and adventure education literature abounds with theory related to the use of metaphoric facilitation techniques (Luckner & Nadler 1997, Priest & Gass 1997). Research has shown support for the efficacy of isomorphic metaphoric framing (Doherty 1993, Miner 1993). Some feminist practitioners contend that this methodology is inappropriate for use with women's groups (Mack 1996, Mitten 1994). Mack (1996), in presenting an anecdotal account of her work with women's groups, argues that isomorphic framing serves to perpetuate patriarchal stereotypes, which ultimately disempowers the participants due to the prescriptive nature of the technique and the establishment of the facilitator as an "expert" with the answers to participants' issues. Instead, she advocates for a derived metaphoric approach by which participants are trained in creating their own metaphoric connections between the adventure experience and their personal issues (Luckner & Nadler 1997, Mack 1996). Conversely, Stopha (1994) and Hart and Silka (1994) present anecdotal accounts of their work with women's groups on challenge courses and extol the efficacy of isomorphic framing in empowering these groups. In response to Mack's (1996) article, Gass (Priest & Gass 1997) purports that only in the case of improper implementation on the part of the facilitator could isomorphic metaphoric framing result in disempowerment of participants, irrespective of gender. There remains an unresolved question regarding the appropriateness of the utilization of isomorphic framing techniques with women. This study empirically tested the efficacy of isomorphic and derived metaphoric facilitation techniques on empowering women within the context of an 8-hour developmental challenge course program.

2.0 METHODOLOGY

This experiment employed a facilitation style (control, isomorphic, derived) between-subjects design with time (pretest, acquisition, retention) as a repeated factor (Campbell & Stanley 1963). Sixty-two women from Central New York State volunteered to participate in one of three scheduled women's retreat programs, of which the challenge course experience was the major component. Despite recruitment efforts within the general community, most of these women were not representative of the general population in this area of New York State. Most were affiliated with area universities and demonstrated higher levels of education, employment, and socio-economic status. The mean age of the participants was 38 years, though ages ranged from 18 to 62 years. These women were randomly assigned

to one of two groups for each of the three intervention levels. Due to attrition, only forty-seven women completed the follow-up measures and are included in the following quantitative analyses. Two female facilitators were counterbalanced across intervention levels such that each led one group for each intervention method. The facilitators followed scripts prepared in advance by the researcher and presented the challenge course elements to the groups in identical order in an effort to hold programmatic issues constant between groups and program dates.

2.1 Interventions

Facilitators followed a traditional funnel debrief (What? So What? Now What?) in processing the challenge course elements with the women in the control groups (Priest 1996). They were instructed to avoid making any metaphoric references themselves and if the women spontaneously created their own metaphors to not encourage the use of the metaphor nor reference the use of the metaphor in their dialogue with the participant. Women in the derived groups received some initial training in the use and creation of metaphors at the beginning of the challenge course program (Luckner & Nadler 1997). Facilitators encouraged these women to develop and express their experiences in terms of their derived metaphors throughout the program. Scripts for the framing and discussion of challenge course elements for the isomorphic metaphoric framing groups were created by the researcher based on the personal goals that each of the women participating in the programs had provided prior to the first retreat session and in accordance with Bacon's (1983) criteria for effectiveness. Their personal goals were thematically analyzed. The researcher sought to develop isomorphic metaphors that were general enough to be identifiable to women with differing personal goals yet specific enough to be meaningful and relevant to the process of empowering them to achieve their personal goals. Facilitators encouraged the women to discuss their experiences in terms of the prescribed metaphoric frames.

2.3 Quantitative Measures

The dependent variable for this study was empowerment, a broad and general concept. Three measurable constructs for which reliable and valid instrumentation was available were selected as indicators of empowerment. These constructs were selected on the basis of their prevalence in previous research with women and/or adventure programming: self-esteem, self-efficacy, and locus of control (Brody et al. 1988, Hans 2000, Israel 1989, Pfirman 1988). Participants completed the following Likert-type scale items: Rosenberg (1979) Self-Esteem Scale (SES); Generalized Self-Efficacy Scale (GSS) (Sherer et al. 1982); and a modified version (Presson et al. 1997) of The Levenson (1973) Locus of Control Scales consisting of three eight-item scales [Chance (LOC-C), Internal (LOC-I), and Powerful Others (LOC-P)] approximately one month prior to participation in the program (pretest), at the conclusion of participation in the program (acquisition), and approximately one month following the program (retention). Cronbach alphas of (0.77) and (0.88) are reported by Rosenberg (1979) in two separate studies for the ten-item SES. Sherer et al. (1982) report a Cronbach alpha of (0.86) for their 17-item GSS scale. Levenson (1981) states Kuder-Richardson reliabilities were 0.78 for the LOC-C scale, 0.64 for the LOC-I scale, and 0.77 for the LOC-P scale. While specific hypotheses will be addressed with the accompanying results, it was generally expected that all women would be empowered from participation in the challenge course program but to varying degrees, depending upon intervention method, and that these results would be maintained a month following the program. It was expected that women in the derived group would be the most empowered, followed by the isomorphic group, and lastly the control group.

2.4 Qualitative Measures

A Manipulation Check was developed to verify participants' understanding of the metaphoric manipulations and to provide qualitative data to further a subjective understanding of the women's experiences. The women completed the manipulation check immediately following each challenge course element, making it effectively another processing technique. However, completion procedures were held constant across all participants in all groups. The women were told that their feedback on the challenge course program would be valuable to improving future programs for women. They were also encouraged to use the booklet as a reflection tool that would be returned to them at

the follow-up meeting, enabling them to later reflect on their thoughts and experiences during the program. Psychologists routinely incorporate manipulation checks into their research when investigating cognitive processes. The manipulation check developed for this study is an effort toward strengthening research in outdoor education in terms of understanding participants, perceptions and thought processes related to the facilitation techniques routinely employed in adventure programming. Arguing the efficacy of differing processing methodologies is meaningless if there is uncertainty as to whether or not participants comprehend the subtleties of these techniques. The women also completed a program evaluation at the completion of their participation, which yielded additional qualitative data for analysis. The manipulation check responses were transcribed by the researcher for later analysis and the booklets were returned to the participants.

3.0 FINDINGS

Quantitative data were analyzed using SPSS version 11.5 ANOVAs for repeated measures. The alpha level for this study was .05. Post hoc analyses for the one significant finding (LOC-C) was conducted with the Fisher's LSD. Qualitative data from both the manipulation check and the program evaluation were analyzed through constant comparison to draw out specific themes related to the women's perceptions of their experiences and enumerated for comparison.

3.1 Quantitative

Descriptive statistics for the SES and the GSS are presented in Table 1 and for the Chance LOC-C, LOC-I, and LOC-P in Table 2. Results are broken down by intervention level and time of testing. It can be seen in these tables that more women from the derived group completed retention measures. Attrition rates were higher for the isomorphic and control groups, seven and five respectively, compared to one for the derived group, though this produced no statistically significant differences between these women as compared to those who did not complete retention measures.

Specific hypotheses are presented here with the corresponding findings. In addition to predictions for mean changes at acquisition, it was anticipated that these changes would be maintained at retention. In reviewing the findings, retention measures more closely approximated the hypothesized acquisition changes for most of the measures. Repeated Measure ANOVAs for all quantitative measures and corresponding mean changes are presented in Table 3. The Pretest-Retention column represents the accumulated mean changes that occurred from pretest to acquisition and from acquisition to retention as these mean changes are cumulative. The only significant finding was for the LOC-C Scale. However, trends in mean changes were frequently consistent with the stated hypotheses.

Table 1.—Descriptive Statistics for Rosenberg Self-Esteem Scale (SES) and General Self-Efficacy Scale (GSS)

SES		N	M	SD
Control	Pretest	14	5.62	0.83
	Acquisition	14	5.73	0.88
	Retention	14	5.93	0.80
Isomorphic	Pretest	14	5.93	0.65
	Acquisition	14	6.14	0.48
	Retention	14	6.28	0.55
Derived	Pretest	19	5.91	0.61
	Acquisition	19	5.70	0.58
	Retention	19	6.04	0.65
GSS		N	M	SD
Control	Pretest	14	5.33	0.92
	Acquisition	14	5.41	0.98
	Retention	14	5.58	0.83
Isomorphic	Pretest	14	5.30	0.77
	Acquisition	14	5.23	0.47
	Retention	14	5.56	0.46
Derived	Pretest	19	5.28	0.78
	Acquisition	19	5.28	0.64
	Retention	19	5.54	0.58

SES: It was hypothesized that all women's scores would increase, with the greatest increase occurring for the derived group and the least increase for the control group. The control and isomorphic groups demonstrated the predicted incremental increases in SES at acquisition and continued to increase through retention. Despite a rebound at follow-up, the derived group scores did not recover from the unanticipated decrease at acquisition.

Table 2.—Descriptive Statistics for Levenson Locus of Control Scales: Chance (LOC-C), Internal (LOC-I), Powerful Others (LOC-P)

LOC-C		N	M	SD
Control	Pretest	14	2.02	0.59
	Acquisition	14	2.36	0.98
	Retention	14	2.44	0.96
Isomorphic	Pretest	14	2.34	0.61
	Acquisition	14	2.12	0.50
	Retention	14	2.43	0.71
Derived	Pretest	19	2.32	0.60
	Acquisition	19	2.12	0.50
	Retention	19	2.43	0.71
LOC-I		N	M	SD
Control	Pretest	14	4.71	0.88
	Acquisition	14	4.92	0.91
	Retention	14	5.05	0.65
Isomorphic	Pretest	14	4.49	0.61
	Acquisition	14	4.64	0.65
	Retention	14	4.70	0.60
Derived	Pretest	19	4.88	0.67
	Acquisition	19	4.78	0.56
	Retention	19	5.05	0.65
LOC-P		N	M	SD
Control	Pretest	14	2.32	0.72
	Acquisition	14	2.47	0.73
	Retention	14	2.20	0.69
Isomorphic	Pretest	14	2.25	0.64
	Acquisition	14	2.42	1.01
	Retention	14	2.54	0.60
Derived	Pretest	19	2.58	0.84
	Acquisition	19	2.41	0.81
	Retention	19	2.36	0.76

GSS: It was hypothesized that all women's scores would increase, with the greatest increase occurring for the derived group and the least increase for the control group. Negligible changes occurred at acquisition for all groups with an unanticipated decrease for the isomorphic group. Ultimately, while all groups demonstrated increases on this measure overall, these mean changes were virtually identical for all of the intervention groups.

LOC-C: It was hypothesized that all women's scores would decrease, with the greatest decrease occurring for the derived group and the least decrease for the control group. This was the only significant finding of the study but as seen in Table 2, it can be attributed to the low pretest score for the control group, despite random assignment to the intervention groups. The Fisher LSD bore this out in the post hoc analysis, revealing significant differences between the pretest-acquisition change for the control group and both the derived and isomorphic groups, T(31) 3.51 and T(26) 3.40 respectively. The anticipated decreases for the isomorphic and derived groups did not hold and actually rose at retention, resulting in increases on this measure. The control groups "rebound" at acquisition resulted in an elevated overall change on this measure.

LOC-I: It was hypothesized that all women's scores would increase, with the greatest increase occurring for the derived group and the least increase for the control group. There was an unanticipated decrease from pretest-acquisition for the derived group that rebounded from acquisition-retention. While overall, all groups demonstrated a mean increase on this measure, the results are inverted from predictions in that the control group demonstrated the greatest increase and the derived group the least.

LOC-P: It was hypothesized that the women's scores would increase for the isomorphic group and decrease for the derived and control groups, with the greatest decrease occurring for the derived group. There was an unanticipated mean increase for the control group that was smaller than that of the isomorphic group. However, this increase continued only for the isomorphic group from acquisition to retention. Overall mean changes are consistent with the original hypotheses for acquisition testing in that the isomorphic group was the only group to increase on this measure.

3.2 Qualitative

Table 4 demonstrates the result of enumeration of the thematically analyzed responses of the women on the manipulation check and program evaluation. Where similar themes emerged, the results have been combined and are indicated by (MP). The isomorphic and derived

Table 3.—Facilitation Style by Time Repeated Factor ANOVA and Mean Changes for Quantitative Measures

SES	F (2,44) = 0.68, p < 0.51		
	Pretest - Acquisition	Acquisition - Retention	Pretest - Retention
Control	0.11	0.20	0.31
Isomorphic	0.21	0.14	0.35
Derived	-0.21	0.34	0.13
GSS	F (2,44) = 0.01, p < 1.00		
	Pretest - Acquisition	Acquisition - Retention	Pretest - Retention
Control	0.08	0.17	0.25
Isomorphic	-0.07	0.33	0.26
Derived	0.00	0.26	0.26
LOC-C	F (2,44) = 3.67, p < 0.03*		
	Pretest - Acquisition	Acquisition - Retention	Pretest - Retention
Control	0.34	0.08	0.42
Isomorphic	-0.22	0.31	0.09
Derived	-0.20	0.31	0.11
LOC – I	F (2,44) = 0.39, p < 0.68		
	Pretest - Acquisition	Acquisition - Retention	Pretest - Retention
Control	0.21	0.13	0.34
Isomorphic	0.15	0.06	0.21
Derived	-0.10	0.27	0.17
LOC-P	F (2,44) = 2.72, p < 0.08		
	Pretest - Acquisition	Acquisition - Retention	Pretest - Retention
Control	0.15	-0.27	-0.12
Isomorphic	0.17	0.12	0.29
Derived	-0.17	-0.05	-0.22

groups made virtually the same number of references to metaphors; substantially more than the control group. Interestingly, some women in the control group did generate spontaneous metaphors. The isomorphic group made the greatest number of references to the program's relevance to their personal goals for their own lives. This was followed by the derived group, which also demonstrated more references to their personal goals than the control group. The isomorphic group made more references to considering the processing of the elements as being effective while these results were almost identical for the control and derived groups. Only in the control group did any of the women state that they believed processing of an element was ineffective. No one in the control group made reference to empowerment or feelings of validation as a result of their participation in the program. While the derived group made more references to empowerment, references to validation were equal for the isomorphic and derived groups.

4.0 DISCUSSION

The lack of statistically significant findings is attributed to a lack of statistical power due to an insufficient sample size (Cohen 1988, Hattie et al. 1997). Given the number of dependent measures in this study and the anticipated effect sizes from participation in a one-day challenge course program, double the number of participants would have been required to achieve statistically significant results (Gall et al. 1996). It could be argued that the acquisition-retention findings paralleled hypothesized effects of participation in the challenge course program due to the commonly accepted

Table 4.—Frequency of Responses by Theme for Qualitative Data: Manipulation Check (M) and Program Evaluation (P)

Reference to Metaphors (MP)			Relevance to Life/Personal Goals (MP)		
	N	%		N	%
Control	14	8%	Control	37	14%
Isomorphic	82	46%	Isomorphic	128	49%
Derived	83	46%	Derived	95	37%
Reference to Group/Social Interactions (MP)			**Reference to Debrief (M)**		
	N	%		N	%
Control	113	28%	Control	28	27%
Isomorphic	127	31%	Isomorphic	40	39%
Derived	170	41%	Derived	35	34%
Processing Considered Effective (P)			**Processing Considered Ineffective (P)**		
	N	%		N	%
Control	8	26%	Control	4	100%
Isomorphic	14	45%	Isomorphic	0	
Derived	9	29%	Derived	0	
Reference to Empowerment (P)			**Reference to Validation (P)**		
	N	%		N	%
Control	0		Control	0	
Isomorphic	3	38%	Isomorphic	2	50%
Derived	5	62%	Derived	2	50%

belief that participants' learning continues beyond actual participation in adventure programming because time is needed to reflect and assimilate learning into their daily lives. It is more plausible in the present case, that fatigue negatively impacted the pretest-acquisition results. Acquisition measures were generally completed late in the evening. Virtually all of the women expressed fatigue and were visibly exhausted.

Though no significant differences between the intervention groups were found, the accumulated increases in self-esteem, self-efficacy, and internal locus of control are consistent with demonstrated outcomes of adventure programming in previous research (Hans, 2000; Hattie et al., 1997). While the quantitative findings produced no evidence of the merit of either metaphoric technique over the control group, differences were found in the qualitative results. Qualitative data demonstrated that both the isomorphic and derived groups saw more relevance in the challenge course program to their personal goals, and made some references to feeling empowered and validated by the experience. The derived group made the greatest number of references to group/social interactions during the challenge course program and demonstrated almost no attrition from the study.

Perhaps of greatest interest was the near significant finding for the LOC-P scale, which was consistent with pretest-acquisition hypotheses for both the acquisition-retention and accumulated pretest-retention results. Despite enduring increases on this measure, which is consistent with Mack's (1996) portrayal of isomorphic framing as establishing facilitators as powerful others with the answers to participants' issues, women in the isomorphic group demonstrated feelings of empowerment in their qualitative responses. This raises an interesting question: Is it possible that patriarchal values and practices such as seeking expert advice rather than relying on more feminine practices such as relying on one's intuition, self-knowledge, and inner strength are so ingrained in women's self-concept that they do not perceive that they may very well be disempowered?

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EXPLORING GENDER DIFFERENCES IN INFORMATION SEARCH AMONG DOMESTIC VISTORS TO YELLOW MOUNTAIN AND GUILIN, PRC

Hui Xie
Ph. D. student
201 Mateer, Department of Recreation, Park, and Tourism Management
The Pennsylvania State University, University Park, PA 16802

Jigang Bao
Sun Yat-sen University, Guangzhou, P. R. China

Duarte B. Morais
The Pennsylvania State University

Abstract.—In the dynamic global environment of today, understanding how consumers acquire information is important at the micro level for marketing management decisions and at the macro level for public policy decisions. Gender has been identified as a factor influencing information search and other meaningful consumer behavior constructs. Therefore, understanding gender differences in information search is critical. Based on the questionnaire survey on domestic tourists in Yellow Mountain and Guilin, China, this article explored the gender differences in tourist information search behavior by using independent sample t-tests and Chi-square analysis. Results indicated that male and female tourists differ significantly in terms of 1) the number of information topics searched; 2) which information topics are searched; and 3) which information sources are searched ($p<.05$). No significant differences were observed in the number of information sources searched ($p>.05$).

1.0 INTRODUCTION

Information search has been one of the most enduring issues in consumer behavior research (Beatty & Smith, 1987). In today's dynamic environment, understanding how consumers acquire information is important at the micro level for marketing management decisions and at the macro level for public policy decision-making (Srinivasan 1990). For marketing departments, it is crucial to understand the determinants of information search behavior for designing effective marketing communication. Information search is the primary stage of the purchasing process; at this step consumers' decisions are influenced by marketing deliveries (Wilkie & Dickson 1985). Information search when purchasing tourism products is even more important than information search before buying manufactured goods. Tourism products and services are seldom routine purchases (Swarbrooke & Horner 1999). Choices of tourism products usually involve considerable emotional significance and perceived and actual risk for the individual. As a result, individuals usually carry out extensive information search before they make their final purchase decisions (Swarbrooke & Horner 1999).

Previous research on information search behavior has identified a number of factors affecting this construct, such as, the nature of decision making (Fodness & Murray 1999), residency (Pennington-Gray & Vogt 2003), family life cycle (Fodness 1992), socio-economic status (Fodness & Murray 1999), involvement (Cai et al. 2004), travel expenditures (Snepenger et al. 1990) , prior knowledge (Kerstetter & Cho 2004), and search cost (Gursoy & McCleary 2004).

Gender has been identified as a factor influencing information search and other meaningful consumer behavior constructs (Putrevu 2001). However, this issue has been relatively neglected in the context of tourism. Consequently, this research tried to explore gender differences in tourist information search behavior based on a questionnaire survey on domestic tourists in Yellow Mountain and Guilin, China.

2.0 GENDER DIFFERENCE IN INFORMATION SEARCH BEHAVIOR

According to Social Role Theory (Eagly 1987), to accommodate gender-specific roles, each gender tries to acquire specific skills and resources for successful gender role performance and adapt its social behavior to meet the requirements set by gender roles. Previous research (e.g., McKee & Sherriffs 1957, Broverman et al. 1970) identified a series of traits differentially ascribed to men and women, among which McClelland's work (1975)

is especially relevant to information search behavior. According to McClelland (1975), males tend to be assertive, independent, and self-centered; females tend to seek approval from others, create nurturing relationships with others, and maintain interpersonal harmony. These observations yielded the following implications: 1) males spend less effort in information search, thus probably searching fewer information sources and topics, due to their higher confidence; 2) females are more inclined to seek information from friends and relatives because of their greater inclination to gain approval from others.

Further evidence of gender differences in information search includes the reported male/female dichotomy in processing information. As indicated by some research (e.g., Haas 1979, Meyers-Levy & Maheswaran 1991), females are more subjective, intuitive, comprehensive, and relational processing while men are more logical, analytical, selective and item-specific processing. Males' selectivity and item-specificity predict that they may search less comprehensively than females and focus on certain information sources and topics.

Based on the reasoning above, we made the following hypotheses:

H1 There are gender differences in terms of the number of information topics searched.
Females search more information topics than males do.

H2 There are gender differences in terms of the number of information sources searched.
Females search information from more sources than males do.

H3 There are gender differences in terms of which information sources are searched.
Females are more inclined to search from personal information sources.

Despite a lack of evidence from previous studies, we expected females to differ from males in terms of the information topics of interest, owing to differences in perceptions of social roles and information-processing characteristics. Therefore, we made our last hypothesis as below:

H4 There are gender differences in terms of which information topics are searched.

3.0 METHOD

Data in this research come from a domestic tourist questionnaire survey in Yellow Mountain and Guilin, Peoples' Republic of china. Yellow Mountain and Guilin are two famous Chinese destinations. While dominated by nature-based tourism resources, these two destinations offer comprehensive tourist attractions. In Yellow Mountain and Guilin, data were collected at major tourist sites in November and December 1999 and at the airport and railway station in April 2004. In both surveys, survey staff approached the tourists and asked for their willingness to complete the questionnaire. Tourists finished the questionnaire with the help of survey staff. In Yellow Mountain, 149 out of 200 valid questionnaires were obtained, with a rate of 74.5 percent[1]. In Guilin, 531 out of 950 valid questionnaires were obtained for a response rate of 55.9 percent.

Two questions in the questionnaire relate to current research (See Appendix 1). The first question asked for the information sources the respondents searched before visiting Yellow Mountain or Guilin. The options for this question are generally consistent. The second question, only appearing in Yellow Mountain's survey, asked for the information topics the respondents searched before visiting Yellow Mountain. Independent sample t-tests and Chi-square analysis were used to test the gender differences in terms of information search variables.

4.0 RESULTS

Demographic characteristics of the tourists surveyed are listed in Table 1.

4.1 Number of Information Topics and Information Sources Searched

Table 2 showed that females searched significantly more information topics than males in Yellow Mountain (p=.020). As for the number of information sources searched, no significant gender differences were observed in either Yellow Mt. (p=.112) or Guilin (p=.287). Therefore, H1 is accepted, while H2 is rejected.

[1]The response rate for two questions are different in the Yellow Mountain survey

Table 1.—Sample demographic characteristics

Gender	Yellow Mt. (%)	Guilin (%)	Education	Yellow Mt. (%)	Guilin (%)
Female	39.2	33.7	Junior or below	6.6	9.9
Male	60.8	66.3	High school	18.9	28.8
Age			Secondary school	30.1	32.9
Below 18	3.4	3.0	Bachelor	36.4	
18-40/35	72.4	60.6	Graduate school	8.0	28.4
41/36-60	20.3	33.4			
Above 60	3.8	3.0			

Table 2.—Independent sample t test for gender difference in No. of information topics searched ($N_{Yellow\ Mt.}$=75)

Sample	Gender	*n*	Mean	*SD*	*Df*	*t*	*p*
Yellow Mt.	Female	30	3.37	1.40	46.66	-2.40	**.020**
	Male	45	2.33	2.06			
Independent sample t-test for gender difference in No. of information sources searched ($N_{Yellow\ Mt}$= 149; N_{Guilin}=531)							
Yellow Mt.	Female	64	1.85	.89	113.11	-1.60	.112
	Male	85	1.58	1.18			
Guilin	Female	177	2.61	1.39	529	-1.07	.287
	Male	354	2.47	1.46			

4.2 Information Sources Searched

Table 3 showed that "Other persons" is associated with gender with a p value of .002 in Yellow Mountain and .022 in Guilin. In both destinations, females are more inclined to obtain information from "other persons" than are males. "Travel agency" is associated with gender in Guilin (p=.005), but not in Yellow Mountain. Therefore, H3 is accepted.

4.3 Information Topics Searched

As presented in Table 4, three information topics, namely "travel cost," "lodge and food," and "travel route," were associated with gender with respective p values of .039, .019, and .018. Females are more inclined to search these topics than are males. Therefore, H4 is accepted.

5.0 CONCLUSION AND DISCUSSION

This study made an initial exploration on gender differences in tourist information search and found that male and female tourists differ significantly in terms of 1) the number of information topics searched; 2) which information topics are searched; and 3) which information sources are searched (p<.05). No significant differences were observed in the number of information sources searched (p>.05). Compared to males, female tourists search more information topics and are more inclined to search topics related to travel cost, lodging, and food and travel route. Moreover, female tourists are more inclined to ask for information from other persons than males are (in Yellow Mountain and Guilin) and from travel agencies (in Guilin). These results confirmed females' comprehensiveness and tendency to obtain others' approval in the process of information search. These findings are consistent with previous theories (e.g., McClelland 1975, Meyers-Levy & Maheswaran 1991).

Gender is the only independent variable considered in this research. Therefore, the size of gender's effect may not be correctly measured because other possible determinants were ignored. Future research should try to examine gender's effect on information search by using multivariate approaches and should try to explore gender's effect on other meaningful information search behaviors. Moreover, cross-cultural comparisons of gender differences will be interesting since gender role and stereotypes vary across cultures.

6.0 MARKETING IMPLICATION

According to this research, gender differences should be considered when marketing messages are delivered. More

Table 3.—Pearson chi-square analysis for gender difference in which information source is searched

Information source		Gender F (n/%)	Gender M (n/%)	N	χ^2	df	p
Yellow Mountain							
Internet	Search	20(13.4%)	31(20.8%)	51(34.2%)	.442	1	.506
	Not search	44(29.5%)	54(36.2%)	98(65.8%)			
TV/Broadcasting	Search	23(15.4%)	33(22.1%)	56(37.6%)	.130	1	.719
	Not search	41(27.5%)	52(34.9%)	93(62.4%)			
Newspaper	Search	12(8.1%)	13(8.7%)	25(16.8%)	.312	1	.576
	Not search	52(34.9%)	72(48.3%)	124(83.2%)			
Magazine	Search	13(8.7%)	9(6.0%)	22(14.8%)	2.743	1	.098
	Not search	51(34.2%)	76(51.0%)	127(85.2%)			
Travel agency	Search	15(10.1%)	15(10.1%)	30(20.1%)	.761	1	.383
	Not search	49(32.9%)	70(47.0%)	119(79.9%)			
Books/Brochure	Search	14(9.4%)	17(11.4%)	31(20.8%)	.078	1	.780
	Not search	50(33.6%)	68(45.6%)	118(79.2%)			
Other persons	Search	44(29.5%)	76(51.0%)	120(80.5%)	9.944	1	.002
	Not search	20(13.4%)	9(6.0%)	29(19.5%)			
Guilin							
Internet	Search	5(0.9%)	22(4.2%)	27(5.1%)	2.768	1	.096
	Not search	171(32.3%)	332(62.6%)	503(94.9%)			
TV	Search	108(20.4%)	197(37.3%)	305(57.7%)	1.231	1	.267
	Not search	69(13.0%)	155(29.3%)	224(42.3%)			
Broadcasting	Search	33(6.21%)	66(12.4%)	99(18.6%)	.000	1	1.000
	Not search	144(27.1%)	288(54.2%)	432(81.4%)			
Books	Search	98(18.5%)	206(38.8%)	304(57.3%)	.385	1	.535
	Not search	79(14.9%)	148(27.9%)	227(42.7%)			
Maps	Search	46(8.7%)	95(17.9%)	141(26.6%)	.043	1	.835
	Not search	131(24.7%)	259(48.8%)	390 (73.4%)			
Travel agency	Search	44(8.3%)	53(10.0%)	97(18.3%)	7.726	1	.005
	Not search	133(25.0%)	301(56.7%)	434(81.7%)			
Newspaper & Magazine	Search	62(11.7%)	104(19.6%)	166(31.3%)	1.753	1	.186
	Not search	115(21.7%)	250(47.1%)	365(68.7%)			
Telephone	Search	7(1.3%)	8(1.5%)	15(2.8%)	1.235	1	.266
	Not search	170(32.0%)	346(65.2%)	516 (97.2%)			
Other persons	Search	70(13.2%)	105(19.8%)	175(33.0%)	5.221	1	.022
	Not search	107(20.2%)	249(46.9%)	356(67.0%)			

information, especially information related to travel cost, food and accommodations, and travel route, should be delivered to female tourists for better decision-making and marketing effectiveness. Another implication is that marketing with a personal communication approach is more effective with female tourists than with male tourists. Therefore, marketing managers should create opportunities for such personal communication, for example, increasing face-to-face sales to female customers, or encouraging current customers to introduce the product to others by giving them incentives.

Table 4.—Pearson chi-square analysis for gender difference in which information topic is searched

Information topic (Yellow Mountain)		Gender					
		F (n / %)	M (n / %)	N	χ^2	df	p
Travel cost	Not search	15(20.0%)	33(44.0%)	48(64.0%)	4.253	1	.039
	Search	15(20.0%)	12()16.0%	27(36.0%)			
Lodge & food	Not search	14(18.7%)	33(44.0%)	47(62.7%)	5.471	1	.019
	Search	16(21.3%)	12(16.0%)	28(37.3%)			
Transportation	Not search	20(26.7%)	29(38.7%)	49(65.3%)	.039	1	.843
	Search	10(13.3%)	16(21.3%)	26(34.7%)			
Site	Not search	14(18.7%)	30(40.0%)	44(58.7%)	2.969	1	.085
	Search	16(21.3%)	15(20.0%)	31(41.3%)			
Public security	Not search	25(33.3%)	36(48.0%)	61(81.3%)	.132	1	.717
	Search	5(6.7%)	9(12.0%)	14(18.7%)			
Travel route	Not search	20(26.7%)	40(53.3%)	60(80.0%)	5.556	1	.018
	Search	10(13.3%)	5(6.7%)	15(20.0%)			
Whether & climate	Not search	14(18.7%)	20(26.7%)	34(45.3%)	.036	1	.850
	Search	16(21.3%)	25(33.3%)	41(54.7%)			
Local culture	Not search	17(22.7%)	34(45.3%)	51(68.0%)	2.951	1	.086
	Search	13(17.3%)	11(14.7%)	24(32.0%)			

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APPENDIX 1 QUESTIONNAIRE

Question 1

Which information sources did you search before visiting Yellow Mountain?
1) Internet; 2) TV/broadcasting; 3) newspaper; 4) magazine; 5) travel agency; 6) books/magazine/ brochure; 7) other persons
Which information sources did you search before visiting Guilin?
1) Internet; 2) TV 3) broadcasting; 4) books; 5) maps; 6) travel agency; 7) newspaper/magazine;
8) telephone; 9) other persons

Question 2

Which information topics did you search before visiting Yellow Mt.?
1) travel cost; 2) lodge and food; 3) transportation; 4) site/resort; 5) public security; 6) travel route;
7) weather/climate; 8) local culture

Recreation Resource Allocation

OPEN SPACE PRESERVATION, PROPERTY VALUE, AND OPTIMAL SPATIAL CONFIGURATION

Yong Jiang
Dept. of Environmental and Natural Resource Economics
University of Rhode Island
Kingston, RI 02881
Email: yjia6796@postoffice.uri.edu

Stephen K. Swallow
University of Rhode Island

Abstract.—The public has increasingly demonstrated a strong support for open space preservation. How to finance the socially efficient level of open space with the optimal spatial structure is of high policy relevance to local governments. In this study, we developed a spatially explicit open space model to help identify the socially optimal amount and optimal spatial configuration of open space in a two-dimensional coordinate system. Preservation of open space can cause real estate values to rise and thereby generate an increment in property tax revenues (a "tax increment'). Our simulation results for the spatially explicit open space model not only show the existence of an optimal amount of open space that can be financed by the property tax increment, but also illustrate to what extent the spatial configuration of open space could matter in terms of the net value of community developable land and the capacity of tax increment financing. Our simulation suggests that being evenly distributed and centrally located is very likely to characterize the optimal spatial configuration of preserved open space in terms of net social value and the capacity of tax increment financing.

1.0 INTRODUCTION

Citizens have been concerned with preserving open space in their neighborhood for decades. The Trust for Public Land finds that in both robust and challenging economic times, American voters have strongly supported conservation finance measures that preserve natural lands, create parks, and protect farmland; since 1996, more than 77 percent of the conservation finance ballot measures were approved, generating a total of $27 billion. For such strong support, how can local governments respond to improve the general welfare of the local public? If public investment in open space is socially efficient, how can local governments finance open space preservation in a politically desirable, economically efficient way? Moreover, how can planners construct open space to maximize its social value?

Some studies have pointed out acquisition of open space land may be financed by the increment in tax revenue that is generated by increased property value in response to the preservation of open space. Crompton (2001) explores the possibility of using the tax increment to retire bonds issued for acquiring open space land by examining empirical literature regarding the effect of parks and open space on property value. Based on a review of approximately 30 studies, Crompton (2001) found that a positive impact of 20 percent on property value abutting or fronting a passive park area is a reasonable starting point. In contrast, Brueckner (2001) developed a theoretical model to analyze the approach of tax increment financing (TIF) for provision of public goods. He found that TIF may allow the city to implement the public improvement without an increase in its tax rate, but it is not always viable as a financing method. TIF's viability is ensured only when the public good is at least moderately underprovided relative to the socially optimal level and when TIF is used for a marginal public improvement; the public-good level ultimately chosen under TIF, however, may not be efficient.

The idea that acquisition of open space may be financed by preservation seems promising since a large literature has demonstrated the positive effect of open space on local property value (see McConnell & Walls (2005) for a review). However, empirical studies also found in many cases the appreciated property (land) value induced by open space preservation bears a spatial pattern, and this spatial pattern is attributed to the spatial characteristics of preserved open space, such as size, shape, and spatial location. How do these spatial factors of open space affect the possibility of using the property tax increment to finance the acquisition of open space land? What is the optimal spatial structure of open space that can be self-financed?

This study is intended to shed some light on the above questions. Specifically, we developed a spatially explicit open space model to identify the socially optimal amount and optimal spatial configuration of open space in a two-dimensional coordinate system. We relate the spatial structure of open space to the practical questions of how large, how many, what shape, and where to locate, which local land managers are most concerned with for preserving open space. We use simulation to examine the effect of the spatial configuration of preserved open space on the total value of developable land and the property tax revenue in a community, which would allow implications for the optimal structure of socially efficient, self-financed open space preservation.

Our simulation results for the spatially explicit open space model not only show the existence of an optimal amount of open space that can be financed by the property tax increment even for a weak preference for open space (with a utility elasticity of 0.04 with respect to open space), but also illustrate that the spatial configuration of open space does matter in terms of the net value of community developable land and the capacity of tax increment financing. More importantly, our simulation suggests that being evenly distributed and centrally located is very likely to characterize the optimal spatial configuration of preserved open space in terms of net social value and the capacity of tax increment financing.

2.0 A SPATIALLY EXPLICIT OPEN SPACE MODEL

Consider residential communities or towns in a metropolitian area with varying average distance *d* to the central business district (CBD). These residential communities are characterized by varying amounts of open space *a*, and thus each community can be represented by *(d, a)*. Following the traditional monocentric urban model, each household chooses a residential community, represented by *(d, a)*, and a location in the community relative to preserved open space, house size *q* in units of land area in the selected residential community, and a numeraire good *z* to maximize their utility U = U(z, q, A), where A is a location-specific open space amenity depending on the level and spatial configuration of preserved open space. Each household is subject to a budget constraint z + Rq + td = y, where *R* denotes land rent, *t* denotes transportation cost per unit distance, and *y* is household income.

Assume the utility function of local residents is in the form of a Cobb-Douglas function, $U(z, q, A) = z^{\alpha}q^{1-\alpha}A^{\beta}$, where α and β are preference parameters with $0 < \alpha < 1$ and $\beta > 0$. For community *(d, a)*, the utility-maximizing choice of numeraire good z^* and house size q^* at each location *(x,y)* for given land rent *R* and travel cost *t* are

$$z^* = \alpha(m - td) \quad (1)$$

$$q^* = (1- \alpha)(m - td)/R \quad (2)$$

Substitute the optimal consumption bundle (z^*, q^*) into the utility function

$$U^* = \alpha^{\alpha}(1-\alpha)^{(1-\alpha)}(m - td)A^{\beta}/R^{(1-\alpha)} \quad (3)$$

For an open city model, household utility *U* at equilibrium is exogenously determined when migration is costless. Therefore, land rent R has to change such that the maximized utility U^* at equilibrium is equal to the maximum utility attainable elsewhere in the economy. Denote the exogenous utility level by *V*, and substitute V into (3) to solve the equilibrium land rent as

$$R = [\alpha^{\alpha}(1-\alpha)^{(1-\alpha)}A^{\beta}(m-td)/V]^{1/(1-\alpha)} \quad (4)$$

which represents the bid rent of each household per unit land in community *(d, a)* at market equilibrium. For a community with preserved open space *a*, the equilibrium price per unit land *P* is the present value of the flow of equilibrium land rent net of property tax in an infinite horizon, i.e., $P = (R-P\tau)/\delta$, where δ is the discount rate, and τ is the property tax rate. Further, equilibrium land price P can be solved as

$$P = R/(i+\tau) = [\alpha^{\alpha}(1-\alpha)^{(1-\alpha)}A^{\beta}(m-td)/V]^{1/(1-\alpha)}/(i+\tau) \quad (5)$$

which describes how equilibrium land price varies spatially with respect to open space amenity *A*, income *m*, distance to the CBD *d*, the exogenous level of utility *V*, and preference parameters, α and β.

In a two-dimension coordinate system, the location-specific open space amenity A at location (x,y), within the community, can be expressed as A(x,y), which depends on the distance to the location (x_0,y_0) and the configuration of open space $a(x_0,y_0)$. To examine the effect of the size, shape, and location of preserved open space, we need to further specify the location-specific

Table 1.—The value of parameters used in simulation

Parameter	Value	Interpretation
α	0.5	The proportion of disposable income adjusted by travel cost spent on housing
β	0.04	The relative elasticity of utility with respect to open space amenity
γ	0.002	Dissipating parameter of open space amenity
δ	0.05	Discount rate
τ	0.15	Property tax rate
T	5 years	Financing period
P(0)	$2000	Land price without open space amenity

open space amenity in relation to the spatial structure of open space. Unfortunately, precisely describing open space amenity is an empirical question, and there is no theoretical *a priori* description on their quantitative representation except some empirical findings regarding the spatial pattern of land value. Generally, empirical studies have agreed that 1) the further a property is from preserved open space, the lower is the real estate value; and 2) the larger a parcel of preserved open space is, the larger is its effect on real estate value (e.g., McConnell & Walls 2005, Mahan et al. 2000). Since land price is a monotonic function of open space amenity on that land, these empirical findings indicate an empirically effective measure of open space amenities that is consistent with people's perception. We adopted, with some modification, a function used by Wu and Plantinga (2003) to describe open space amenity that is consistent with those empirical observations:

$$A(x,y) = 1 + e^{-\gamma D(x,y|x0,y0,s)} a(x_0,y_0) \quad (6)$$

where $D(x,y|x_0, y_0, s)$ denotes the distance from any location (x,y) to the open space at (x_0,y_0) with shape s, and γ is a dissipating parameter that scales the effect of the distance $D(x,y|x_0, y_0, s)$ on open space amenity. By this specification, open space amenity decreases with the distance from and increases with the size of preserved open space. The shape s affects amenity level through its effect on local accessibility of open space measured by the distance from each land parcel to the edge of preserved open space. Finally, the equilibrium land price function can be expressed as the product of the land price $P(0)$ with no preserved open space and the open space amenity function $A(x,y)$,

$$P((x,y), a(x_0,y_0), s, P(0)) = P(0)(1 + e^{-\gamma d(x,y|x0,y0,s)} a(x_0,y_0))^{\beta/(1-\alpha)} \quad (7)$$

Consider a community with a total land area L but with no preserved open space. The land manager promotes a "livable community" plan to preserve open space to maximize the total value of community land. The land manager plans to allocate the increased tax revenue from preservation-induced property-value appreciation to the conservation fund designated for acquiring open space land. To maximize the social value of open space, the land manager is also concerned with the spatial configuration of open space such as the size, shape, and location. Correspondingly, the spatially explicit open space model can be represented as maximizing the value of land available in the community for development minus the cost of acquiring open space land subject to the increase in property tax revenue:

$$\underset{a(x_0,y_0),s}{Max} \quad \pi(a(x_0,y_0),s) = [\iint_{\Omega} P((x,y),a(x_0,y_0),s)dxdy - P(0)a(x_0,y_0)] \quad (8)$$

$$\text{s.t.} \quad \int_0^T [\iint_{\Omega} \tau P((x,y),a(x_0,y_0),s)dxdy - \tau P(0)L]we^{-\delta}dt \geq P(0)a(x_0,y_0) \quad (9)$$

where Ω is the set of (x, y) within the community but not belonging to the preserved open space $a(x_0, y_0)$, and w is a factor between 0 and 1 representing the proportion of the increased tax revenue allocated for the conservation fund.

We simulate the effect of some commonly-considered spatial configurations of open space on the net value of community land and the capacity of tax increment financing for a rectangle-shaped (4000m×8000m) community, centered at coordinate origin, with x ranging from -2000m to 2000m, and y ranging from -4000m to 4000m. Table 1 presents the value of parameters we used for simulation.

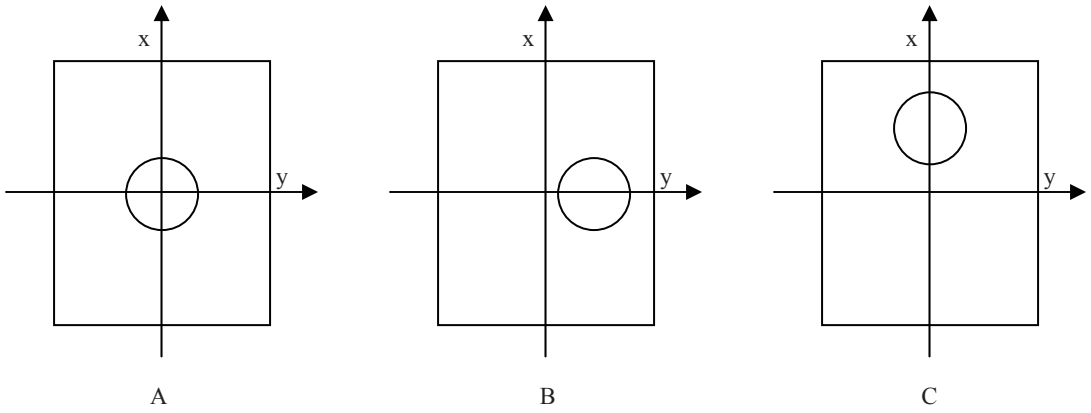

Figure 1.—Demonstration of Community Park and Spatial Location.

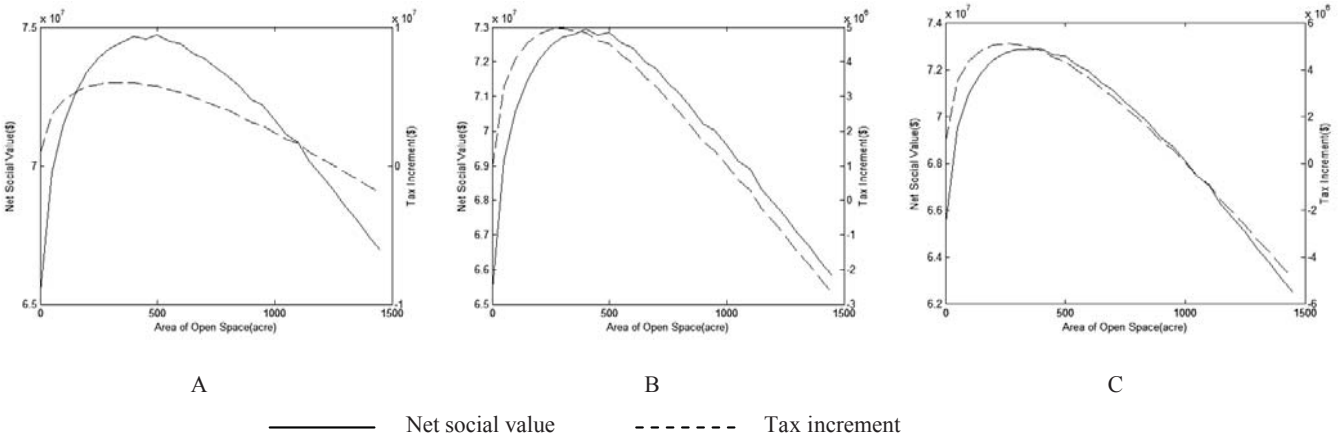

Figure 2.—Value Effect of Spatial Configuration of Circular Open Space.

2.1 Effect of the Location of Open Space

We first focus on one of the most common forms of open space, circular open space such as a community park. Figure 1 presents three scenarios with a community park located differently for simulation. Panel A describes the idea of providing a central park in the community with coordinate origin (0,0) at the park center. Panel B and C change the location of the community park to the right with park center at (1000,0) and to the upper community with park center at (0,2000) relative to community center, respectively. Figure 2 summarizes how the net value of community land and the associated property tax increment varies with respect to the size of open space for different spatial locations.

In Figure 2, Panel A shows the net value of community land reaches the maximum at 500 acres of preserved open space, while the increased tax revenue can cover up to 1,250 acres of open space. Panel B and C demonstrate the location effect, with the net value of community land and the capacity of TIF being highest for the central location. This simulation reveals that 1) if local residents desire the public open space like a community park, and do care about the size and accessibility of such open space, central location is more likely to generate higher social value and improve the capacity of tax increment financing for public investment in open space; and 2) exhausting the capacity of tax increment financing to provide the maximum possible amount of open space may not be socially desirable although such investment may not impose an extra fiscal burden on local government.

2.2 Effect of the Distribution of Open Space

Very often local policy-makers must decide between providing one large tract vs. several small pieces of

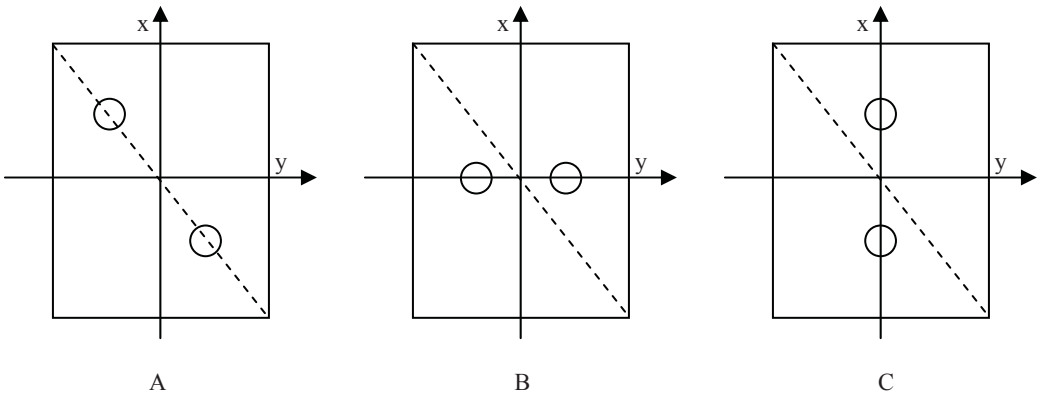

Figure 3.—Demonstration of Two areas of Circular Open Spaces and Spatial Locations.

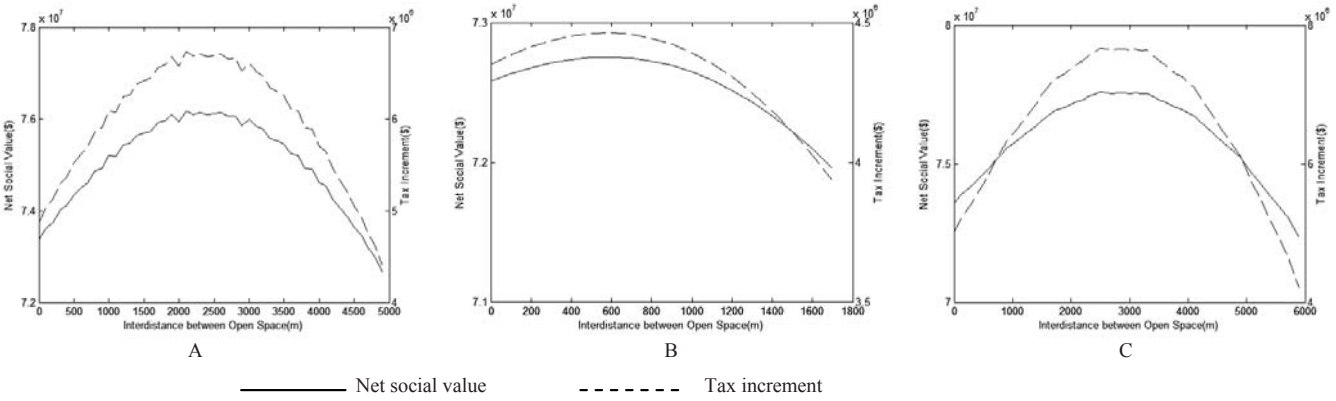

Figure 4.—Distributional Effect of Circular Open Space.

open space. We simulate this distribution effect in this subsection. We first focus on two areas of circular open space with equal areas and simulate the effect of location and the distance between them. We consider three locations: diagonal, *x* axis, and *y* axis (Figure 3). To compare with a single large area of circular open space, we equalize the total area of two areas of circular open space to the optimal amount of one area of circular open space as identified previously. Subsequently, we examine four areas of circular open space and simulate the effect of the total area.

Figure 4 demonstrates that the net social value of open space and property tax increment increases first and then decreases with the distance between open space. In all three locations, the peak-value interdistances tend to be more than evenly distributed. This property is implicitly consistent with the finding in the previous section. That is, a single area of open space should be located in the center of a community, and two areas of open space should be evenly distributed in the chosen direction. Furthermore, the interdistance between open space should be greater than the average distance in the chosen direction as long as the amenity effect of open space can reach half of the average distance.

The simulation of four areas of circular open space shows that the peak-value size of open space is smaller than its counterpart for a single area of open space, while the capacity of TIF is larger than that for one single large area of open space. The maximum net social values of four, evenly-distributed open space parcels is larger than that for one large tract of open space. This result seems to suggest that splitting one large open space parcel into several small pieces and evenly distributing these pieces may improve the net social value of open space and create a larger tax increment and thus a higher capacity for financing. The comparison between two pieces of open space and one large open space also supports this result. In other words, changing the distribution of open

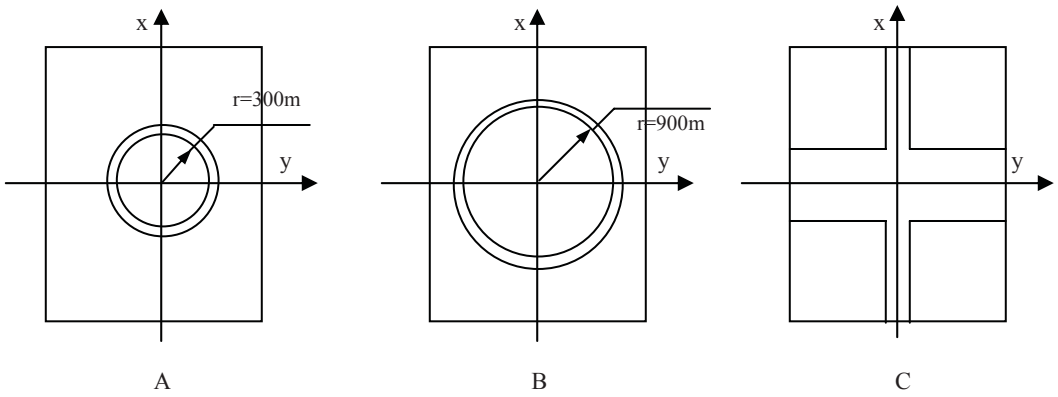

Figure 5.—Demonstration of Open Space Shape and Location.

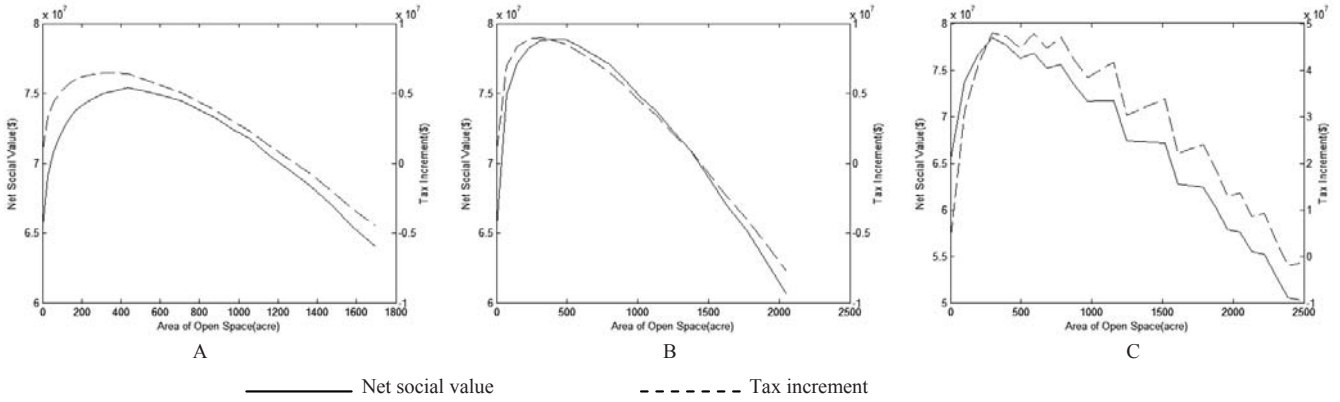

Figure 6.—Shape Effect of Open Space.

space can be a useful tool for policy-makers, especially in situations generating an insufficient tax increment to finance the optimal quantity of preserved open space.

2.3 Effect of the Shape of Open Space

In this subsection, we consider the effect of two other typical shapes of open space: ring (a circular belt), and cross (see Figure 5). For the shape of a cross, we focus on the area effect when open space is located across a community center, while for a ring-shaped green belt, we not only examine the area effect but also simulate the effect of spatial locations.

In Figure 6, Panel A and B compare different locations of an open space ring. The net social value reaches its maximum of $\$7.54\times10^7$ at 432 acres when open space is located at 300m from the center of community, while it can reach its maximum of $\$7.89\times10^7$ at 402 acres when open space is located at 900m from the center of community. This comparison demonstrates the interaction between area and location, and implies that the ring-shaped open space could produce a higher net social value and lower size of open space when located farther or the radius of the ring is larger, within a certain distance. This result is consistent with intuition since the larger the radius of the ring, the larger the perimeter and thus more developable land remains within close proximity to the open space amenity for a given acreage of open space. Because of this value effect, the capacity of TIF is larger when the radius is 900m than when the radius is 300m. Panel C reveals the cross shape may be more efficient with a similar maximum net social value ($\$7.84\times10^7$) reached at a smaller area (300 acres) of open space.

Combining these results with the case of circular open space, we find the shape of open space could affect the net social value of open space as well as the capacity of TIF. Which shape of open space is preferred depends on the policy objective of the local jurisdiction and other

constraints. In our simulation example, the ring shape among other shapes maximizes, at least for the given preferences, the net social value of open space without incurring extra cost for financing these investments. However, the ring-shaped open space may not be most efficient in terms of the net social value per unit investment because the cross shape can reach a similar net social value with a smaller amount of open space preserved. Nonetheless, a central large open space like a community park may be relatively easy to set aside and socially desirable with less administration or transaction cost or other political, legal, and fiscal constraints.

3.0 CONCLUSIONS

Preserving open space has been an important issue for local governments. How to finance the socially efficient level of open space with the optimal spatial structure is of high policy relevance to local governments. Based on the linkage between open space preservation and property (land) value, this study developed a spatially explicit open space model that could help identify the socially efficient level of spatially structured open space. This study used a simulation approach to examine the effect of some commonly considered spatial configurations of open space on the net value of community land and the potential of using the property tax increment to finance preserving open space. Our simulation shows the spatial configuration of preserved open space can affect the total value of land available for development and the capacity of tax increment financing. Our simulation suggests that an evenly distributed, centrally located open space can achieve greater net social value and stronger capacity of tax increment financing than other spatial configurations of open space. That is, a central location is better than non-central location, several small pieces are better than one large tract, a ring shape is better than a circle, and a cross shape may or may not be more valuable than a ring shape. A central community park, however, may be politically desirable because lower administration or transaction costs are involved in the acquisition of open space land if private ownerships of the land are relatively concentrated. In situations where there primary value of open space relates to the distance from a residence to the preserved land, these optimal spatial configurations, we suspect, are very likely to be robust, since they tend to internalize a distance-based positive externality from conservation land. Moreover, the people's preference and the description of open space amenity used in our simulation are representative, at least to the extent that they capture the basic characteristics of how people value open space as found in many empirical studies. Another important finding we believe valuable to local policy-makers is that exhausting the capacity of tax increment financing to acquire open space land may not be socially desirable and could lead to excess preservation. Of course, if the capacity for tax increment financing exceeds the cost of land conservation, then open space policy could enable towns to lower overall tax rates or to obtain previously unanticipated tax revenues for use on other projects; those details, however, remain for future analysis.

ACKNOWLEDGMENTS

This study was supported by the U.S. EPA STAR Grant GR829384-01-0, the USDA Grant 2002-35401-11657, and the Rhode Island Agricultural Experiment Station (AES contribution 5058). All opinions are the responsibility of the authors alone.

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THE PRIVATIZATION OF PUBLIC LANDS

Thomas A. More
USDA Forest Service
PO Box 968
Burlington, VT 05402

1.0 INTRODUCTION

In February, 2006, President Bush's proposed budget included a plan to raise money by auctioning 300,000 acres of national forests in 41 states for an estimated $800 million. A half million acres of Department of Interior land also would be auctioned to reduce the national deficit (New York Times, March 25, 2006, p. A22). In the past year, various members of Congress have proposed that public lands, and national parks that attract fewer than 10,000 visitors annually, be sold to pay for damages from Hurricane Katrina.

At present, these sales appear unlikely as the American public seems deeply committed to its public lands. This attachment may well increase as the population grows. Yet ideas like these arise regularly. For example, the Reagan administration proposed selling nearly 35 million acres of federal lands. That proposal was defeated handily, but what was unthinkable 20 years ago might be much more possible today. As Sax (1984) noted, such ideas are hardly surprising in a country that is firmly committed to the idea of private ownership of resources, capital, and industry. In fact, federal land acquisition (in the form of a Civil War Memorial) was considered to be a major constitutional question until the 1890s; we did not stop disposing of the public domain until the mid-1930s and federal management of most lands was not institutionalized until passage of the Federal Land Policy Management Act in 1976 (Sax 1984).

While selling the land may be the ultimate expression of privatization, privatization actually is a set of processes that exist on a continuum ranging from fully public agencies funded by tax dollars on one end to completely private companies that operate in a free market at the other (Crompton 1998, More 2005). These processes include applying and evaluating techniques such as user fees, outsourcing, marketing, and developing business plans, all of which have been discussed under the general term "marketization" (Lehmann 1995).

Today there are strong pressures toward privatization and a more market-driven approach to the management of public goods. Groups like the Cato Institute, Reason Foundation, and Property Environment Research Center have argued that public lands are inefficient and that the country as a whole would be better off if they were transferred to the private sector. Such claims remain controversial, and understanding them requires examining their theoretical basis. In this paper I present a brief history of the changing attitudes that led to the current interest in privatization, describe the theoretical case for the private and public sectors, and discuss marketization--the middle position between these two extremes.

2.0 HISTORICAL TRENDS IN PUBLIC LANDS

The idea of public spaces is probably as old as the idea of private property: people are social animals who cluster together in communities, and community requires space. But for practical purposes, the idea of public space on a large scale in the United States generally dates to the second half of the 19th century. In cities, members of the garden city movement saw parks and public spaces as a way to relieve congestion and reduce disease. Frederick Law Olmstead called parks the "lungs of the city." The romantic and transcendental movements created a sense of the purity of nature in contrast to urban corruption generally, and Olmstead's urban park designs reflected his belief that people could be improved by access to natural landscapes explicitly.

In the countryside, the garden city movement was paralleled by a desire to preserve the monumental landscapes of the American West as a contrast to Europe's "decadent" cities (Runte 1997). This desire is epitomized in the (perhaps apocryphal) story of the founding of Yellowstone: On September 20, 1870, Nathanial Pitt Langford, a leader of the second Yellowstone expedition, wrote in his diary:

> Last night in camp, the entire party had an unusual discussion. The proposition was made by some member that we use the results of our exploration to take up quarter sections of land at the most prominent points of interest [specifically, those that] would eventually become a great source of profit to their owners. But Cornelius Hedges declared that he did not approve of any of these plans—that there ought to be no private ownership of any portion of that region, but that the whole of it ought to be set aside as a great National Park, and that each of us ought to make an effort to have that accomplished. (in Runte 1997 p. 41).

Such sentiments, although rare in 1870, were becoming more common, eventually leading to passage of the Antiquities Act of 1906, which gave President Theodore Roosevelt the mechanism he needed (Dustin et al. 2004). Characteristically, Roosevelt acted immediately and with vigor, preserving multiple national monuments and nearly tripling the size of the national forest system (More 2005). By the end of his administration in 1909, Roosevelt also had issued 51 executive orders establishing wildlife reservations in 17 states and three territories. The Depression further solidified the government's role in conservation through works projects like the Civilian Conservation Corps and the Works Progress Administration, which completed over 20,000 projects nationwide (Steiner 1972). World War II required massive governmental operations and the war's success confirmed government's efficacy so that by 1950, the country was becoming middle class, people were optimistic, and attitudes about government were positive.

Outdoor recreation increased dramatically as Americans got on the road to visit the great parks and forests of which they had heard so much. They hunted, fished, camped, hiked, and vacationed in parks. The country's wild lands seemed to embody the American spirit, and the people who managed them were considered dedicated civil servants.

This view began to change in the 1970s as Americans' incomes ebbed. While the rich continued to get richer, globalization, technological developments, the decline of the unions, and immigration began taking their toll on the national economy and the middle class. Although these factors may have been the more deeply rooted causes of the decline, the public was encouraged to blame taxation and government spending. For the past three decades, agencies and civil servants have been seen increasingly as the source of America's problems rather than the solution, and budgets have declined dramatically. In the U.S. Forest Service, for example, the number of research positions dropped 50 percent in the two decades from 1985 to 2005 (USDA Forest Servie 2006). And in the National Park System, advocates note that budgets have increased steadily, but not nearly enough to keep up with inflation, newly mandated programs, and the system's growing complexity. The result has been an increasing net deficit. At Acadia National Park in Maine, for example, from 1995 to 1999 (a time when the economy was performing well) these combined factors resulted in a net budget decrease of 29 percent (USDI National Park Service 2001).

In sum, declining budgets and increasing demands of all kinds reduced the capacity of public land managers to solve problems and manage programs. And as the public sector faltered, privatization advocates were quick to take up the slack, developing powerful arguments for increasing the market's role in public land management.

3.0 THE CASE FOR THE MARKET

The central argument for privatizing public land is that privatization will increase the land's productivity. According to Lehmann (1995), who developed (and challenged) this argument, privatization theorists insist that institutions of all kinds should be judged on the basis of how productive they make resources. But what exactly does "productive" mean? Typically, the standard used to judge productivity is the satisfaction of consumer desires: uses of resources (including both natural resources and financial resources) that do a better job of satisfying consumer desires are considered superior to other uses. As sovereign individuals, each of us knows what goods and services will best satisfy our desires, and we can best express those desires by our willingness to pay for particular packages of goods and services in an unfettered, private market. In short, your dollars are like votes so that you can "vote" for one brand of soap

over another, one vacation package over another, etc. Your purchases signal producers, who then can make adjustments to fulfill your wants more efficiently. In time, this will result in the most efficient (productive) allocation of resources. But when government intervenes, artificially supporting some activities or restricting others, the signals will not operate well, and this efficiency will be hampered (Crompton & Lamb 1986).

Some of our consumer desires entail the use of land for recreation. Under the current system, individuals have rights to use public lands to fulfill these desires, but these rights are: 1) incomplete (because they cannot be controlled by the individual), 2) nontransferable (because they cannot be sold or traded), and 3) insecure (because they can be taken away by a different government decision) (Lehmann 1995). Privatization theorists argue that these flaws allow some people to benefit by shifting the cost to others. In recreation, this is the essence of the user/nonuser problem (see Grewell 2004). Why should nonusers be taxed to subsidize someone else's recreation? Wouldn't it be desirable to shift the burden of provision to those who obtain the benefit? While nonusers may derive some benefit from existence, option, and bequest values, these are likely to be small or nonexistent for all but the best known parks. And the value of these benefits received by any particular individual can hardly compare with the benefits of actual, direct use. Moreover, when there are external costs to be borne, existence values can be negative (Stevenset al. 1994). It is true that nonusers have the right to become users, but this right is incomplete, nontransferable, and insecure, while its cost is inevitable. In a market (or simulated market where the government sells the rights to defray the costs, these problems are avoided to the extent that the actual users pay for the benefit they derive, thereby reducing or eliminating the burden to nonusers.

Incomplete rights pose problems because they allow a third party to act on your behalf without necessarily obtaining your consent. Our current public land-management system regulates individual use of the land through a series of compromises among legislators, bureaucrats, and the judiciary (Lehmann 1995). In theory, each member of the public counts the same; but in practice, each of these groups which is supposed to act on your behalf actually has its own set of interests. Legislators and the judiciary may seek re-election, while agency officials strive to maximize budgets by seeking work for their agencies. Consequently, some people end up with great influence and can shape the system to maximize their own preferences while others are left out altogether. Privatization theorists believe this problem could be solved by private ownership: If you owned the land, you could be counted upon to put it to its most productive use—the one that is the most important to you.

Insecure rights are problematic because they create uncertainty, which works against the incentive to invest in the future. An example in recreation occurs when agencies contract out facilities like campgrounds to private management. Agencies need to review contracts periodically to ensure standards are met, but private operators may complain that the terms of their lease are too short for them to realize an adequate return for any improvements they might make. Why would a private operator make major capital improvements to a campground when the lease will be up in two years? Again, privatization theorists believe private ownership is the solution.

Sax (1984) summarized the case for privatization succinctly: "In essence, the argument for disposal of the public lands is this: Each person knows what is best for him or her, and, therefore, the best system is the one that permits the real preferences of individuals to be revealed and implemented. With rare exceptions, the ideal mechanism for implementing these preferences is a private marketplace where each individual expresses his or her desires through bidding. Private ownership advances this goal, and public ownership impedes it" (pp. 130-131).

In sum, privatization theorists argue that our present land management system divorces freedom from responsibility, enabling some to benefit at the expense of others. That is the case for the private sector. But what case can be made for the public?

4.0 THE CASE FOR THE PUBLIC SECTOR

The case for public sector land management rests on three related factors: community, equality, and compensation. To understand the importance of community, consider the picture of human behavior presented by the free marketers. They view people as isolated, atomistic individuals expressing their self-interested preferences through unconstrained trading in the marketplace. If an outcome of management differs from that which would have occurred through the expression of individual preference, then they assume it must be wrong, ipso facto (Sax 1984). But do people really behave like this? Public sector advocates think not. Rather, they believe there is more than one category of preferences (see Lehmann 1995). While they grant the self-interested consumer preferences that are typically expressed in the marketplace, they also believe that people have values and preferences that they hold as members of collectives and that find their expression only through the collective. These collectives include the family, community, church, state, or any group to which the individual can belong more or less voluntarily and which compels a loyalty. Who, after all, has not sacrificed their personal desire or preference for the good of their family? Parents sacrifice for their children, patriots for their country, martyrs for their religion. While privatization advocates construct torturous arguments to show how such actions serve individual welfare, it is difficult to imagine how martyrdom could result in a net increase in personal satisfaction! We are social animals and find some of our highest forms of expression through the groups to which we belong. By participating in these collectives, we do express our individual preferences, but these are then taken up and transformed in negotiation with others. The ultimate result of the process may differ from our personal preference, but we generally continue to participate; we do not act like small children who take their ball home when they do not get their own way. The participation process also provides feedback that helps us understand the quality of our own desires and alternatives that we may not have considered—we can, in fact, begin to "see ourselves as others see us." As Lehmann argued, what people do desire is not necessarily what they ought to desire or what they would desire given more information, and reflecting on this "ought" is an important facet of the "public" process that comes with participation in the collective. Our tastes develop. Experience and interaction lead to learning, growth, and development. In some respects, the public sector simply creates opportunities for people to better themselves.

Such an argument puts us on dangerous ground; at best it can sound like paternalistic social engineering. An example would be the old "Sports builds character!" argument that implies that athletes develop more "character" than non-athletes. At worst, it connotes the kind of "improvements" undertaken by Hitler or Stalin. Yet no such criticism delivers us from the need to deal with the value judgments—good/bad, right/wrong, beautiful/ugly—that occur naturally in the context of the group as well as the individual. Freedom of speech builds better people just as much as exercise programs or massage therapy, but it requires a social setting: You must be free to speak *to* someone else, and that individual must be free to listen and respond. So the idea of creating opportunities for people is not intended as a heavy-handed, top-down directed process but one that occurs naturally through interaction with others in social settings.

Nature, too, can stimulate personal growth by taking us outside ourselves. Olmstead believed that we all had a "contemplative faculty"--what today we might consider a sense of aesthetic appreciation. Writing of Yosemite, he noted: "Few persons can see such scenery as that of the Yosemite and not be impressed by it in some slight degree. All not alike, all not perhaps consciously…but there can be no doubt that all have this susceptibility, though with some it is much more dull and confused than with others" (Sax 1980 p. 19).

So both social and natural environments can take people outside of their own individuality and enable them to grow as people by being able to reflect more broadly. Parks are wonderfully social spaces, and natural beauty has the ability to astonish. Yet this is not sufficient reason to justify public sector action; after all, many collectives operate privately and Yosemite would continue to astonish if it were managed by a private corporation

rather than a public agency. Thus, we must look beyond community for a justification of the public sector ownership of land.

The second justification for the public sector is equality. To be a genuine member of any group, a person must have a stake in it. While groups sort themselves into different roles, membership generally entitles a person to equal treatment with other members, and this equality represents a big difference between the market and the community. In essence, equality and market efficiency exist as a tradeoff; you can treat people efficiently or you can treat them equally, but you cannot do both at the same time (Okun 1975). The market treats people efficiently by emphasizing their differences. It treats dollars like votes—the more dollars you have, the more votes you get. You can use those dollars to separate yourself from others, purchasing fancier homes or cars, club memberships, or higher service levels. By contrast, the community is expected to treat all of its members equally; it emphasizes what we have together, jointly, in common. And this is the second great justification for public lands: that we are all entitled to be there regardless of our circumstances. On private land, the owner has the right to exclude you—the land is his or hers, not yours. But on public land you have every bit as much right to be there as she/he has, and the differences between you are no basis for exclusion. The person sitting at the other end of the park bench could be far wealthier or far poorer than you, but at that time, on that bench, you are both equals.

The great economic idea behind equality is market failure. Markets actually serve as a mechanism for distributing the goods and services a society produces. But they are imperfect, especially given current levels of social inequality, and social action may be required to redress some of the market's failures. This leads to the third great justification for public lands and programs: compensation. Public programs exist because we need community, and group membership presupposes some sort of equal treatment. Thus, in a largely market-driven economy, public programs help mitigate some of the inequalities caused by the market. The ladies of the playground movement helped to establish public playgrounds to benefit poor children. While later historians have questioned the effects of their involvement, there can be little doubt about their sincerity at the time. Similarly, Caro (1975) wrote movingly about Robert Moses' attempts to establish public parks among the Long Island estates of the elites so that low income city families could have access to decent, unpolluted swimming and picnicking. And Yellowstone itself was established explicitly to keep it outside the market so that it would not be developed for private profit, but would be available to every citizen (Runte 1997). If Yellowstone were turned over to the market today, it seems likely that the market would deliver a mix of private estates, second-home developments, and high-end resorts rather than wildland. So in general, in a strictly economic sense, the public sector is inefficient when compared to the market, but that is because the problems with which it deals—community, equality, and compensation—are inherently inefficient. As Okun (1975) noted, there is a natural tension between efficiency and equality, and both have long traditions in our society.

4.0 MARKETIZATION

Can the public sector's efficiency be increased? That question lies behind the current emphasis on marketization. Marketization is a generic term for having public agencies behave like private companies, trying to simulate perfect markets, and becoming financially self-sustaining by selling the goods and services they produce (Lehmann 1995). It is in effect the middle position between the private market and fully public operations. Under this model, public lands would be kept in public ownership, but the agencies would use techniques like fees, outsourcing, and leasing. Although some environmentalists have argued that marketization can enhance conservation (see Lehmann 1995), I suspect that a good case can be made for its being the worst of all possible worlds: it preserves most of the inefficiencies inherent in the public sector while enhancing the inequalities associated with private markets. With recreation fees, for example, the data now seem fairly clear. Two-thirds to three-quarters of the people do not mind the fees; in fact, some are even eager to pay. But between one-quarter and one-third of recreation users struggle; these tend to be low-income users (More & Stevens 2000). Similarly, as agencies

have grown dependent on fees, some have raised prices to generate more revenue. But higher prices can reduce demand and lead to stagnant or declining visitation (Reiling & Cheng 1994). To counter that, many agencies have developed "friends" groups to do fundraising and promote volunteerism. But these groups can have their own agendas, and the very success stories necessary to convince potential donors to contribute may lead to further budget reductions in the public sector (Poppendieck 1998).

Marketization generally tends to defeat the goals of both the free marketers and the advocates of the public sector. It is important to remember that the market itself cannot be counted upon to produce any particular goal over time; what it does deliver is constant adaptation to ever-changing popular taste (Lehmann 1995). If preservation is the goal, neither privatization nor marketization is the solution.

5.0 CONCLUSION

Ideas from the philosophy of economics can be difficult for non-economists to understand, but the issues they raise have major implications for policy and eventually for the ways in which people lead their lives. After grappling with these issues for several years, I have drawn several conclusions:

First, one primary driver of the privatization argument is ideological. Lehmann (1995) pointed out that many of the people who produce such arguments seem deeply suspicious of government and social processes. They certainly question collective values. Of course, their questioning does not negate their logic but it should give us pause to think that other views are possible. More importantly, the logic behind privatization arguments often rests on assumptions that may not fit the real world well, and many of the criteria that economists have advocated to show that one state of affairs is superior to another—the Pareto Criterion, Pareto optimality, the Kaldor criterion, consumers' surplus, or wealth enhancement—also tend to function better in theory than in practice. For each argument there is a counterargument to be made.

While idealism is one driver, self interest is another. It is important to understand that there is a lot of money to be made with both privatization and marketization. For example, as the national parks have struggled with these issues, we have seen growing levels of commercialism, and many of the companies involved are in the resort development and tourism industries. It is perfectly understandable when they urge relaxation of regulations to promote visitation.

That leads to a subtle but important third point: Under both privatization and marketization, the idea is to give the "customers" what they want. But why should we accept this, especially if the goal of public programs is to help people improve themselves? Must we cater to all desires? Or is there some logical way that we can rule out some activities? This issue is central to the current debate over the validity of snowmobiles in Yellowstone, for example.

Once again, Olmstead suggested the answer. As summarized by Sax (1980), Olmstead never objected to development in the parks but he felt strongly that such development always should sustain appreciative use. Appreciative uses are those in which the individual is focused not upon the self but externally on the beauty of nature or the well-being of the group. When the focus is primarily on self gratification, Sax (1984) argued that these activities should be satisfied by the private sector. In the last analysis, it is this idea—that the preservation of wildland is important because it can contribute to our growth both personally and as citizens—that sustains the public ownership of land. To maintain this ideal, constant vigilance will be required.

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Founder's Forum

A GEOGRAPHER'S VIEW ON RECREATION: "ZUSAMMENHANG," THE CONNECTEDNESS OF IT ALL

Robert S. Bristow
Professor and Associate Vice President
Department of Geography and Regional Planning
Westfield State College
Westfield, MA 01086
rbristow@wsc.ma.edu.

Abstract.—This paper traces the history of geography to a present understanding of recreation geography. A synthesis of current trends in the research and teaching of the subject are also offered, and future research ideas are proposed.

1.0 INTRODUCTION

I am indeed honored to have been asked to speak to you in the Founder's Forum. However, in the interest of full disclosure, I must confess that I am not one of the original founders. In fact, I didn't even attend the first NERR meeting in 1989. I was at the SERR meeting that year, and I am pleased to recognize my friend and mentor, Dr. Kenneth Chilman, in the audience. If not for his support and encouragement while I was a grad student at Southern Illinois University, I would probably not be here today. Ken introduced me to Tom More when I moved to the northeast and the rest is history. So I would like to dedicate my talk to Ken Chilman.

So if I am not a founder, who the heck am I? Maybe I am an old timer, but one thing is for sure: I am a geographer. And I believe that while our educational backgrounds may be different, I hope that at the end of this talk you will feel like a geographer as well.

I have three things I want to share with you today. I want to give you a bit of geographic literacy through a quick and basic history of geography. Next, I want to define what I believe to be recreation geography. And then I want to pose what I consider to be the most pressing issues of recreation geography for our future.

2.0 BACKGROUND

The study of recreation is a discipline with a long history in geography. It has evolved over time and has unique and identifiable themes. Yet most recreation geographers tend to incorporate one or more of these themes in their teaching and research. The main themes emphasized in teaching recreation geography center around resources, including national parks and the like, economic studies like travel behavior, tourism, or regional geography, social factors including demographics and special populations, planning (applied), human dimensions, best exemplified by ecotourism, or some combination of these factors.

Since we may look at recreation or tourism through a different set of glasses, we may feel that our approach, say behavioral, sets us apart. Recreation geographers are different from the tourism specialists, possibly because of the outdoor recreation aspect of the former and regional geography for the latter. And yet, definitions for recreation, leisure, and tourism all generally have the same components. I use the Library of Congress Classification as the basis of the comparison. All our disciplines, Geography, Travel, Recreation, and Leisure fall under "Class G."

So let me get to the history of recreation geography from its humble roots to contemporary times. It is hoped that a synthesis of these ideas may unite us all under the theme Leisure Studies and allow us to employ our skills in an applied and theoretical field of inquiry.

3.0 HISTORY

The ancient Greek scholar Eratosthenes is often called the "father of geography." Eratosthenes was born around 276 B.C. in Libya. As head librarian and scholar at Alexandria, he wrote *Geography,* which means "writing about the earth" in Greek. Nearly 1,400 years later, Ibn-Khaldun wrote his history of the world titled *The Muqaddimah* in 1377. He is considered to be the first to study the human-environment relationship, which today is known as one of the five themes of geography.

So, when do we get to the recreation part? I am going to summarize the key events in geographic history that I suggest bring us to our present understanding of recreation. A history of recreation geography can be summarized in a series of interconnected stages. The

stages are exploration, concept, economic and custodial, mass use and descriptive, applied and environmental, social, and human dimensions.

3.1 Exploration Stage (pre-1850)

This early stage was important in the development of geography since it defined it as a separate and identifiable discipline. Early explorers who traveled did so because it was fun and exciting. Sure there were financial rewards, but the excitement of traveling to some new and exotic location might have fueled an interest in our world and perhaps so, for fun! What were the motivations of Columbus for his travels between 1492-1504? Magellan's voyages from 1519-1522 are noteworthy as well. And these guys did it all without GPS or even decent maps.

Speaking of maps, it wasn't until 1569 that Gerardus Mercator created his map of the world. As important as it was then, since it preserves conformality in maps—the shape of things in small areas—we still find the Mercator Projection map useful today, especially for marine navigational purposes. Maps, as we all know, help us find our way. And since travelers or explorers like to know the way, maps are the chief tool that geographers can share with the world. How many of you used a map to find your way to The Sagamore?

This brings up to the nineteenth century. I am going to claim that Alexander von Humboldt and Carl Ritter may be the first recreation geographers. Alexander von Humboldt's travels, experiments, and knowledge transformed science as it was known in the Western world in the nineteenth century. Charles Darwin described him as "the greatest scientific traveler who ever lived." He is widely respected as one of the founders of modern geography.

In 1820 Carl Ritter became the first chair of geography at the University of Berlin. His seminal work, *Die Erkunde*, or *The Science of the Earth in Relation to Nature and the History of Mankind; or General Comparative Geography as the Solid Foundation of the Study of, and Introduction, in the Physical and Historical Sciences* was published in 1817. Whew, and you thought your dissertation title was long! Anyway, he is credited as one of the founders of modern human geographers. Ritter's idea that the earth was created for human need had religious implications. Yet while controversial at the time, it is important since his idea connected humans and the environment.

During this time, disciplines began to branch off into the physical and social sciences. In fact, after the breakup of social sciences into smaller and defined groupings, Ritter declared the general failure of the new disciplines in recognizing "zusammenhang" or the harmony of interconnectedness.

There is little debate that von Humboldt and Ritter were instrumental in the development of modern geography (Martin and James 1993). Their search for knowledge led them to learn about the interconnectedness of all things found on the Earth. But the wealth of information describing the Earth was beginning to be much too much for a single scholar to absorb.

Though I refer to this as an exploration stage, we need to note some of the important events that were taking place in the new world. For instance, the Boston Commons were established in 1634, and who can forget the Great Ponds Act of 1641, which enabled the Massachusetts Bay Colony to protect inland waters for "fishing and fowling?"

3.2 Concept stage (1850-1912)

Technical advances began in this period with the first aerial photography in France and in the American Civil War. And William Morris Davis was born. William Morris Davis is often called the "father of American geography" for his work in not only helping to establish geography as an academic discipline but also for his advancement of the study of physical geography.

Also in the United States, George Perkins Marsh, a Vermont geographer published the important work titled *Man and Nature* (1864), perhaps the first definitive work on the human impacts on the Earth and obvious precursor to the environmental movement and carrying capacity issues in recreation some hundred years later. In 1874, the updated and revised *The Earth as Modified by Human Action* was published. The interconnectedness of humans in a natural environment was thus explained to a wide audience.

While the works of these geographers were setting the framework for geographic studies, Isaiah Bowman may be credited for really highlighting the importance of field work in leisure. I believe geographers by nature tend to be wanderers, willing to explore new regions and to seek information. Geography field trips are commonplace in today's classes. In 1929, the Secretary of the Interior, recognizing Bowman's contribution to scientific inquiry, invited Isaiah Bowman and others to serve on a National Park Service Educational Advisory Board.

Key events taking place during this stage include Frederick Law Olmstead's design of New York City's Central Park in 1853, and in 1886 Congress authorized the military to take charge and protect and manage Yellowstone and, eventually, other early National Parks.

3.3 Economic and Custodial Stage (WWI to WWII)

Following the First World War, geographers began to assess the importance of rural lands. Farm lands, forest and range lands were plentiful in the United States. Studies collected information about these lands in order to inventory the resource base of the nation. If the land was inappropriate for agricultural purposes, recreation alternatives were considered. McMurry (1930) investigated the land inventory in Michigan and noted the lack of undeveloped waterfront properties in the Great Lakes region, and coincidently, higher property values for waterfront lands. The economic advantage of nearby water resources is without question in the hydro-power industry, but this was a novel idea in the early twentieth century. The large expanses of undeveloped lands in northern Michigan had escaped this development, and McMurry argued that the lands could be appropriately used for recreational purposes. Yet a full geographic study would be needed, including a biogeography inventory.

A similar geographic assessment took place about the same time in Hawaii by Freeman (1929). This economic study, proclaimed "The third business, if it can be so-called, so far as bringing money into the territory is concerned, is the tourist business" (Freeman 1929 p. 274). Little was said about this new industry other than about its rapid growth, and the importance of some 20,000 military personnel nearby in the growing city of Honolulu. These two studies provided the first geographical inquiry into the potential of recreation use of land.

For our history lesson, the formation of the National Park Service in 1916 and the Tennessee Valley Authority in 1933, were instrumental public land management initiatives.

3.4 Mass Use and Descriptive Stage (1950-1969)

Following WWII, the economy strengthened, we had a chicken in every pot and the two-week vacation became the norm as mom and pop and 2.3 children hopped into the Chevy wagon to take a two-week vacation to our National Forests And Parks.

And we had The Multiple-use Sustained-use Act of 1960. Notice that word sustained. We need to be reminded about that. Anyway, this "Act declares that the purposes of the national forest include outdoor recreation, range, timber, watershed and fish and wildlife. The Act directs the Secretary of Agriculture to administer national forest renewable surface resources for multiple use and sustained yield." Pretty powerful stuff, eh?

A really important event during this period is the formation of the Outdoor Recreation Resources Review Commission (ORRRC) in 1958. I even got a hard copy of this reference. Basically, with all this increased use in a society free with time and income, we needed to conduct an inventory of outdoor recreation resources in the United States, evaluate national outdoor recreation requirements in 1976 and 2000, and prepare recommendations to meet those needs.

Years later I read the work of Clawson and Knetsch (1966) and their theory of the recreation experience. These guys really helped me make the connection between my passion for participating in recreation and the research of it. Consider the idea of an evolving recreation experience and five unique stages: anticipation and planning, travel to the site, on-site activity, return travel from the site, and recollection of the trip.

3.5 Applied and Environmental (1970-1983)

The country became unified around the environmental theme in 1970, and I believe geographer George H. Stankey is one of the chief proponents to advance recreation geography. He received his B.S. and M.S. degrees in geography from Oregon State University and his Ph.D. in geography from Michigan State University. His work in wilderness planning and management was through the eyes of a geographer (Stankey 1977).

This era ended on November 8, 1983 with the resignation of Interior secretary James Watt.

3.6 Social Impacts and Partnerships (1983-1993)

The classic *One Third of our Time* text by Chubb & Chubb (1981) may have really heralded the Social Stage I bring up now. Consider this premise. One third of our time was for work (or school), one third of our time was needed for our bodies (sleep and eating and so forth), leaving one third of our time for recreation. Gosh, how I miss the recreation. Other geographers like Dan Stynes at MSU looked at this free time in the form of second homes in upstate Michigan.

Several anthologies were published during this time, including several geographers from South Carolina. These papers were important since they offered a synthesis of current research, something that we all need to do every once in a while. This includes the work of Lisle Mitchell and Bob Janiskee (Mitchell & Smith 1985, 1989; Janiskee & Mitchell 1989).

3.7 Sustainable (1994-2006)

I am going to stop citing folks about now, so I will not offend anyone that I exclude from my list. But if we look at the evolution of the NERR Symposium and the International Symposium on Society and Resource Management, we can note the zusammenhang of our discipline with so many others. Key words in each title are geographic in nature. The Five Themes of Geography are Location, Place, Movement, Region, and Human - Environment Interaction. So let me read some of the titles from the NERR Proceedings. I have highlighted the words that are clearly "human-environment interaction' in nature by underlining them.

Level of Experience and Perception of Conflict Among Canoeists on the Delaware River (Todd and Graefe 1989).

Sport Fishing in New York State: Trends Toward the year 2010 (Dawson and Brown 1990).

Economic Effects of State Park Recreation in Pennsylvania (Strauss and Lord 1991).

Domestic Travel Trends: An Exploratory Review and Analysis of the Northeast Market (Warnick 1992).

Valuing Linear Trail Development: The Case of the Raccoon River Valley Trail (Robertson 1993).

Estimating Social Carrying Capacity Through Computer Simulation Modeling: An Application to Arches National Park, Utah (Wang, Manning, Lawson and Valliere 2001).

Public Perception of the Connecticut River's Quality and Suitability as a Recreational Resource (Mullens and McNally 1999).

Exploration of the Influence of Self-Efficacy on Recreation Participation Levels of Individuals with Visual Impairments Who Use Dog Guides (Harmon and Caldwell 2001).

Emotional Coping Response to Hassles and Stress Experience in Wilderness Settings (Schuster and Hammitt 2002).

Solitude, Nature and Cities (More, Long and Averill 2003)

A Comparison of Residents and Non-Residents on Perceptions of Off Road Vehicle Use and Carrying Capacity (Hughes and Voglesong 2004).

Constraints to Recreational Fishing: Concepts and Questions to Understand Underrepresented Angling Groups (Anderson, Loomis and Salz 2005).

4.0 TODAY AT THE NERR 2006

We note that with over 120 research papers to be presented, the NERR symposium has become the largest

natural resource-based recreation and tourism conference in North America (Kyle 2006). At the same time as we have experienced growth in this conference, we see a similar growth in the number of geographers, where a 50 percent growth in membership for the Association of American Geographers from 2000 - 2005 yields 9,000 plus members. Finally, this may be a new era in Recreation Geography with the resignation of Secretary of Interior Gale Norton on March 11, 2006.

5.0 RECREATION GEOGRAPHY DEFINED

I have taught a course in Recreation Geography for about 15 years, and my central definition of recreation geography is this. Recreation Geography is the study of humans participating in some activity at some resource. Three parts: people, activity and resource. For people, we consider the socio-demographic characteristics. Recall much of the ORRRC report dealt with these factors. But more recently, especially in the social impacts and partnerships stage, we find the motivations, desires, and interests being an interest of study.

For activity, this is what people do, be it hang gliding, hiking, driving for pleasure, or even golf. It might also be a shopping trip, or a visit to a museum, or hitting every micro brewery between Bolton Landing and State College.

Then we must do our activity at some place. It might be in our backyard, or the neighborhood park, but it could be Caulker Cay, Montego Bay, or the Arenal Volcano.

Finally, we must consider the job of the planner or manager, who must consider each of the previous three items and provide a safe and enjoyable experience.

6.0 CONCLUDING REMARKS

Let me conclude with recommendations for future research. These are the items that demand research and I challenge this group, as leaders participating in the largest natural resource-based recreation and tourism conference in North America.

6.1 Climate Change

Geographers have generally agreed that it is not really global warming but something more appropriately called climate change. That is, when we have a cooler summer in the northeast, we may feel that global warming is not really a problem. But when we measure the aggregate temperature of the earth (approximately 59 degrees Fahrenheit or 15 degrees Celsius) and that increases just a bit, we in the northeast may be a cooler summer. Barbara Carmichael's (1995) research on the potential of ski resort closings is chief on my concern regarding global warming.

I'm heading to Alaska in May to see the glaciers before they're gone!

6.2 Changing Demographics

Check out a population pyramid of Hispanics. Basically recall the length of the bar represents the percentage of Hispanics that are members of that five year age cohort. We see two distinct bulges: one at the bottom indicating infants and another in the mid-20s (coincidentally child-bearing age). What does this mean for recreation planners and managers? Well, it means we gotta' get with the program and acknowledge these recreators may be looking at our parks for something different. What are they looking for? That is for us to research.

6.3 MegaCities

Finally, and sort of tied with demographics, is something termed Megacities. If we look at one of those "night-time" satellite images of the Earth, we see where the developed areas of the planet emit light pollution. What is the largest city in the World? For a long time, I thought it was Mexico City, but I am wrong. Check out Tokyo with over 25 million residents. And with a world population at 6.5 billion, we are in for a fun ride over the next 50 years. Check out one of those dynamic population clocks on the web and you will be impressed.

So do we change the name of this conference to NERRg? I think not! But if I connected us through geography, the zusammenhang of it all, I have satisfied my purpose. Thank you.

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Solitude, Nature and Cities. More, Long and Averill 2003.

Exploration of the Influence of Self-Efficacy on Recreation Participation Levels of Individuals with Visual Impairments Who Use Dog Guides. Harmon and Caldwell 2001.

Poster Session

HIKING SHARED-USE SINGLE-TRACK TRAILS: A LOOK AT HIKERS AND HUNTERS ALONG THE FALLS LAKE TRAIL

Christopher M. Snow
Wake County Parks, Rec-reation and Open Space
Raleigh, North Carolina 27614
csnow@co.wake.nc.us

Roger L. Moore
North Carolina State University

Abstract.—The Falls Lake Trail, a 26.8-mile, single-track pedestrian trail located near the Research Triangle Region of North Carolina, traverses lands managed by the United States Army Corps of Engineers; North Carolina Division of Parks and Recreation; North Carolina Division of Wildlife Resources; and Wake County Parks, Recreation and Open Space. The non-profit trail advocacy group, Friends of the Mountains to Sea Trail, is responsible for the trail's upkeep and maintenance. For this study, use and user characteristics were examined along with trail appeal factors, users' motivations for utilizing the trail, and their satisfaction while there. Another important objective was to examine potential problems relative to hiker interactions with hunters. Hunting is permitted along approximately 20 miles of the trail. Although few trail users reported encountering hunters during their visit, approximately one third reported being "not at all comfortable" sharing the trail with hunters. There was a modest degree of discomfort overall.

1.0 INTRODUCTION

The Falls Lake Trail is a 26.8-mile, natural surface, single-track, pedestrian trail located along the south shore of Falls Lake in northern Wake County, North Carolina. It is located in the Falls Lake Project, which encompasses the 12,410-acre Falls Lake, a U.S. Army Corps of Engineers reservoir, and 25,580 acres of public land surrounding it. In the early 1980s, a local grassroots organization known as the Triangle Greenways Council proposed to the Corps of Engineers that their volunteers design and construct a hiking trail on the south shore of the lake that would become a segment of North Carolina's proposed Mountains to Sea Trail, a 900+ mile trail consisting of footpaths, roads, and state bike routes stretching across the state from Clingmans Dome in Great Smoky Mountains National Park to Jockey's Ridge State Park on the Atlantic coast. The Falls Lake Trail was installed in segments over the next 20 years, traversing land managed by four agencies: the Corps of Engineers; North Carolina Division of Parks and Recreation; North Carolina Division of Wildlife Resources; and Wake County Parks, Recreation and Open Space. The Friends of the Mountains to Sea Trail, a nonprofit trail advocacy group, is responsible for maintenance and upkeep of the Falls Lake Trail. In 2003, Wake County Parks, Recreation and Open Space led a collaborative planning process focused on communication and shared management responsibility of the trail among the four land managing agencies. Currently, these agencies operate under a Memorandum of Agreement regarding the collaborative management of the trail. Due to differing management objectives—the most obvious of which being that the largest portion of the Trail is on land managed by the Wildlife Resources Commission, an agency which does not typically build, manage or maintain trails—almost no data existed on the use or users of the trail nor their experiences. The purpose of this study was, therefore, to fill this information gap by investigating the use and users of the Falls Lake Trail. Of particular interest were users' motivations for using this particular outdoor recreation resource, and their experiences while there.

1.1 Background

Land managers along the trail had little data to assist in management decision even though some sections of the trail had been in existence for more than 20 years. In an effort to better manage the resource, investigators and managers attempted to answer the following questions: Who are the users of the Falls Lake Trail? How is the Trail being used and for what activities? What motivated the users to select the Falls Lake Trail? Are users satisfied with their experience on the Trail? Are user experiences or satisfaction levels related to sharing the Trail with hunters?

2.0 METHODS

Data were collected from trail users on site from November 6, 2004 through November 20, 2005. The Falls Lake Trail has a narrow, natural tread and allows

access to the more remote parts of the Falls Lake Project, making it a good example of a "traditional backcountry trail" (Moore & Ross 1998). For the purposes of this research, the trail was divided into four segments. These segments were chosen to represent land managed by the four primary land managing agencies and were distributed equally over hunting and non-hunting areas. Self-administered questionnaires were supplied in trailside distribution boxes and drop-boxes at four different trailhead locations. A fifth survey location was added during the research period when vandals destroyed one survey box. This box was replaced, but relocated to a different section of trail on gamelands. The survey instrument was developed with input from the Army Corps of Engineers; Division of Parks and Recreation; Division of Wildlife Resources; Wake County Parks, Recreation and Open Space; the Friends of the Mountains to Sea Trail, and faculty at North Carolina State University.

A total of 474 surveys were collected from November 6, 2004 through November 20, 2005, but 53 were not included in the analyses or results due to respondent's indicating having completed two surveys over the course of the study; only one (the first) from each of these users was included in the final data set of 421. There is no practical way to calculate an accurate response rate for a trailside self-administered survey. Actual response rates for compliance with voluntary trailside registration have been found to vary greatly. Lucas (1975) found a low-end compliance rate of 28 percent, while James and Schreuder (1972) found a high-end of 89 percent.

Variables examined included two related to trail user demographics (gender and age). Postal ZIP Code was asked to allow users' place of residence to be approximated. Respondents were also asked to indicate their primary activity from: dog walking, fishing/ canoeing, geocaching, hiking, hunting, nature study/ wildlife viewing, photography, picnicking, running, and walking. Respondents answering "dog walking" in combination with hiking, running, or walking were placed in the dog-walking category. Frequency of use was determined by having respondents provide their approximate number of visits to the trail during the last 12 months. Respondents were asked to indicate with whom they typically used the trail: alone, with one other person, with two-three people, or with four or more. Information on duration of visit was gathered by having respondents choose from four mutually exclusive choices ranging from less than 1 hour, to 4 hours or more. Eighteen variables were included in three other major topic areas: motivations for using the Falls Lake Trail (five variables), why the trail is appealing (six variables), and the respondent's satisfaction level with various aspects of the visit (seven variables). These 18 variables were each measured on 5-point Likert-type scales. All questions utilized in this survey focused on the respondents' trail visit on the day they completed the study questionnaire.

3.0 RESULTS

This section presents the results of the study and is organized into the following sections: user characteristics, trail use and activities, user motivations, trail appeal, hunting and respondent's comfort level sharing the trail with hunters, and user satisfaction.

3.1 User Characteristics

Results showed that of the 339 respondents completing the question on gender, 64.2 percent were male. Respondents also reported their age by selecting the appropriate age category, the 31-40 age category being the most common across both genders. Based on postal ZIP Codes provided, trail users tended to be local, with 37.0 percent of respondents living in the three postal ZIP Codes immediately adjacent to Falls Lake. Of the 409 respondents providing their ZIP Code on the survey, 82.0 percent lived within Wake County, and 94.67 percent within North Carolina. Twelve additional states were also represented including Washington and New Hampshire.

3.2 Trail Use and Activities

Respondents were asked to provide the date and time of their trail use for this visit. One assumption at the beginning of this survey was that the Falls Lake Trail was most heavily utilized on the weekends. The results of the survey supported this assumption, with 64.9 percent of the 393 respondents indicating that they had visited on either a Saturday or Sunday. Time of visit was examined in two-hour blocks from early morning (7:00 am and before) until after 9:00 pm. Two considerations

in choosing the time coverage were the fact that several facilities along the trail, including Blue Jay Point County Park and Falls Lake State Recreation Area, have year-round operational hours from 8:00 am to sunset, and that there are many trail access points that are not controlled, giving visitors almost unlimited access to some trail sections. Afternoons were the most popular time of day to use the trail, with the period between 1:01 pm and 5:00 pm accounting for 57.1 percent of all use. Actual trail distance covered is difficult for the average user to calculate. For this survey, distance was approximated as the use of one or multiple sections of trail during a visit. After a brief description of how the Falls Lake Trail is divided into sections, respondents were asked if they utilized one section or multiple sections during their visit that day. Over two-thirds of trail users utilized only a single section during their visit. A follow-up question asked whether respondents had hiked all of the Falls Lake Trail. Approximately 15 percent had hiked the entire trail at some point. With most respondents utilizing just one section of the Trail for their visit, it was not surprising that the duration for their activity was relatively short on average. Of the 416 respondents answering the question, "What is the expected duration of your activity today?" 55.0 percent chose 1 - 2 hours; this was the case regardless of the user's activity. When respondents were asked with whom they used the trail that day, "With one other person" was the most common response, at 41.9 percent, followed closely by "Alone," at 39.5 percent. Of the 419 respondents who indicated a primary activity that brought them to the trail, 43.0 percent chose hiking, followed by dog walking, walking, running, and geocaching. Although the question asked, "What primary activity brought you to the Falls Lake Trail today?" 9.5 percent of respondents chose multiple activities. Camping and herb hunting were two "other" activities written in on the survey form by respondents. In all, 2.1 percent of respondents chose an alternative to those activities listed (Table 1).

Table 1.—Primary activity

	Frequency	Percent
Hiking	180	43.0%
Dog Walking	112	26.7%
Multiple Activities	40	9.5%
Walking	28	6.7%
Running	26	6.2%
Geocaching	12	2.9%
Other	9	2.1%
Hunting	4	1.0%
Picnicking	3	0.7%
Fishing/Canoeing (Access)	2	0.5%
Photography	2	0.5%
Nature Study/Wildlife Viewing	1	0.2%
Total	419	100.0%

An open-ended question, "About how many times have you visited the Falls Lake Trail during the past twelve months?" generated a wide range of responses, from first-time users to those who reported that they used the trail every day. Many first-time users indicated zero as a response, but were coded to be included with first-time users. One visit during the last 12 months was the most common response with 94 of the 416 respondents, or 22.6 percent, indicating just one visit in that period. The median number of visits during the last twelve months was 6.0, with a mean of 26.1 visits.

3.3 User Motivations

Users' motivations for visiting the Falls Lake Trail were examined by having respondents rate the importance of each of five possible motives on a 5-point scale (1 indicating "not at all important" to 5 indicating "extremely important"). Two items had mean scores of 4.00 or higher, indicating a high degree of importance. Scenery/Natural Experience ranked highest with a mean of 4.62 (Table 2).

Skill development ranked lowest on the motivations scale overall (Mean = 2.42), but one respondent wrote in "Backpacking prep workout" as the primary reason for visiting the trail. Although many may not consider the trail for long-distance hiking, 55.5 percent of 416 respondents knew the Falls Lake Trail was a part of the North Carolina Mountains to Sea Trail.

Table 2.—User motivations for visiting the Trail

	Mean	Std. Dev.	n
Scenery/Natural Experience	4.62	0.624	416
Health/Fitness	4.36	0.955	412
Solitude/Escape	3.89	1.292	403
Social Time with Friends/Family	3.19	1.583	378
Skill Development	2.42	1.291	365

Scale from 1 (not at all important) to 5 (extremely important)

Table 3.—Trail appeal items

	Mean	Std. Dev.	n
Scenery	4.50	0.741	404
Natural Surfacing	4.36	0.911	391
Location/Proximity to Home	4.28	1.048	408
Foot Traffic Only	4.25	1.158	403
Solitude	3.97	1.100	285
Level of Difficulty	3.14	1.219	380

Scale from 1 (not at all important) to 5 (extremely important)

3.4 Trail Appeal

Respondents were also asked to rate the importance of various factors influencing the appeal of the Falls Lake Trail. This was also accomplished through a 5-point scale, (1 indicating "not at all important" to 5 indicating "extremely important"). Similar to the motivational rankings, scenery was found to be the most important factor for users overall (mean = 4.50). Additional appeal factors in rank order included: natural surfacing, proximity to home, foot traffic only, and solitude (Table 3). "Level of difficulty" ranked last. Hiking guides that include the Falls Lake Trail rate the route as moderately difficult (de Hart 1996, Setzer 2001).

3.5 User Satisfaction

Trail user satisfaction was examined by having respondents rate their satisfaction with six aspects of their visit; a separate question asked respondents to rate the quality of their overall experience on the trail (Table 4). Both the individual items and overall satisfaction were rated on 5-point scales (1 indicating "not at all satisfied" to 5 indicating "extremely satisfied"). Of the six individual items, all had mean scores greater than 3.5, indicating at least some level of satisfaction overall. It is interesting to note that satisfaction with trail safety had a mean of 4.15. It was thought that this factor might score lower due to some respondents' ratings of discomfort in sharing the trail with hunters. Overall, users were quite satisfied with their experience on the trail, with the overall mean satisfaction score being 4.47 on the 5-point scale.

3.6 Hunting and Respondents' Comfort Level Sharing the Trail with Hunters

Hunting is permitted along approximately 20 miles of the Falls Lake Trail, where it is located on gamelands

Table 4.—Satisfaction items

	Mean	Std. Dev.	n
Overall Experience Satisfaction	4.47	0.693	417
Trail Condition	4.26	0.864	410
Trail Safety	4.15	0.991	396
Parking	4.06	1.051	407
Trail Signage	3.82	1.066	399
Trail Map/Guide	3.67	1.293	396
Trail Amenities	3.52	1.260	378

Scale from 1 (not at all satisfied) to 5 (extremely satisfied)

Table 5.—Comfort level sharing the Trail with hunters

	Frequency	Percent
Not at all comfortable	136	32.90%
Somewhat uncomfortable	72	17.40%
Neutral	76	18.40%
Somewhat comfortable	60	14.50%
Extremely comfortable	70	16.90%
Total	414	100.00%

Table 6.—Comfort level sharing the Trail with hunters

	Mean	Std. Dev.	n
Comfort level	2.65	1.481	414

Scale from 1 (not at all comfortable) to 5 (extremely comfortable)

managed by the Wildlife Resources Commission. Various hunting seasons typically run from September 1 through May 15 each year in central North Carolina, including the gamelands along Falls Lake. Respondents were asked to rate their comfort level regarding sharing the trail with hunters (Table 5). This question was somewhat hypothetical in nature because hunting is allowed on only a portion of trail, and only during certain times of the year.

A total of 208 respondents or 50.3% were at least somewhat uncomfortable with sharing the trail with hunters, n = 414 (Table 6).

Only 3.1 percent of all respondents reported actually encountering hunters during their visit on that particular day. Twenty-nine respondents (6.1% of all respondents) included additional written comments regarding hunters and hunting. Eighteen were paired with comfort level ratings of 1 or 2, indicating at least some uncomfortable

feelings with sharing the Trail with hunters; common themes were: Lack of knowledge about hunting areas (where hunting is allowed), and hunting season (when hunting is allowed). Five were paired with comfort level ratings of 3, indicating neutral feelings in sharing the Trail with hunters; common themes were: knowledge that hunting is not allowed on Sunday and the infrequency with which hunters are encountered. Six were paired with comfort level ratings of 4 or 5, indicating at least some comfortable feelings in sharing the Trail with hunters; common themes were: knowledge of wearing blaze orange, knowledge that hunting is not allowed on Sunday and knowledge that most of the gamelands through which the Trail passes are in an archery-only zone.

4.0 DISCUSSION AND CONCLUSIONS

The most useful immediate product of this research for land managing agencies is the baseline use and user data for the trail. One interesting dynamic suggested by this research involves the interaction of hunters with other users of the public lands around Falls Lake. Temporal displacement of non-hunters may be occurring at Falls Lake during the hunting season; this presumption is based on the discomfort level of some users with sharing the trail with hunters and the high percentage of use on Sundays (when hunting is not allowed). If some trail users are uncomfortable with sharing the trail with hunters, as was found in this study, it is possible that other users who are even more uncomfortable, may be being displaced altogether. From the open-ended comments provided, increasing visitor knowledge regarding hunting may be a primary means to increase visitor comfort level in sharing the trail with hunters. Additional research that should be considered includes better exploring the relationship between hunting and other uses of the trail and surrounding public lands. Not only could hunters be encountered along the trail, but the more likely scenario of hunters being unseen in the gamelands surrounding the trail should be investigated.

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MOUNTAIN BIKES AND METROPOLITAN PARK DISTRICTS: ISSUES AND TRENDS IDENTIFIED BY STATE PARKS AND STATE PARK DISTRICTS IN OHIO

Eric L. Longsdorf, Ph.D.
Assistant Professor and Coordinator
Division of Recreation and Leisure Studies
MS 119, The University of Toledo
Toledo, Ohio 43606-3390
eric.longsdorf@utoledo.edu

Ruthie Kucharewski, Ph.D., CTRS
The University of Toledo

Abstract.—This study explored selected issues and trends related to mountain biking within Ohio State Parks and Park Districts. A convenience sample of 21 State Parks and 26 Park Districts completed a 24-item survey assessing mountain bike: (a) access, (b) activity levels, (c) planning, and (d) management. Results indicated that 86 percent of State Parks participating in the study allowed on-road or off-road mountain bike activity, compared to only 31 percent of participating Park Districts. Out of the 26 State Parks or Park Districts allowing mountain biking, 65 percent reported experiencing increased mountain bike activity, while 38 percent considered mountain biking either a resource-management or recreation-management concern. Of the 21 State Parks or Park Districts ***not*** allowing mountain biking activity, 57 percent indicated mountain bike users illegally trespassing on park grounds, and 52 percent indicated having discussed opening areas to mountain biking or including mountain biking in future management plans.

1.0 INTRODUCTION

Few outdoor activities have increased in popularity as rapidly as mountain biking over the last decade (National Sporting Goods Association [NSGA], 2004, Sporting Goods Manufacturing Association 2005). Estimates indicate that over 23 million Americans actively engage in both on-road and off-road mountain biking (NSGA 2004). Compared to traditional outdoor activities, mountain biking is a relatively new pursuit. As such, the use of mountain bikes has presented many new challenges for public land managers, including issues related to managing and monitoring activity levels, maintaining access, protecting natural resources, minimizing user conflict, and maximizing user safety. While literature has addressed the aforementioned issues related to mountain bike use on public land managed by federal land-management agencies (Chavez 1996, 1997; Chavez et al. 1993), an examination of the issues and trends related to mountain bike use and management within land-management agencies on the state or local level is extremely limited.

As our cities continue to expand and open space within our communities becomes more limited, it is likely that mountain biking enthusiasts will place greater demands on our metropolitan park resources to meet their recreational needs. Historically, particularly in the Midwest, mountain biking has not been well received within many state and local park districts primarily because many metropolitan-based park districts were established as urban wilderness areas and have traditionally managed these areas based on preservation-related management principles (S. Linnenburger, International Mountain Bicycling Association [IMBA], personal communication, October 25, 2005). As such, many state and local land-management agencies have established management policies prohibiting or limiting mountain bike activity. Currently, mountain biking enthusiasts identify the need for greater access to mountain biking opportunities in urban areas as a major challenge facing the mountain biking community and urban resource managers (IMBA 2005).

In response to what appears to be an increase in advocacy for mountain biking opportunities within urban areas, and limited research identifying issues and trends related to the management of mountain bikes on the state and local level, this study explored selected issues and trends related to mountain biking within Ohio State Parks and Park Districts. Specific objectives of the study included identifying mountain bike: (a) access, (b) activity levels, (c) planning, and (d) management within Ohio State Parks and Park Districts.

2.0 METHODS

2.1 Instrumentation

The survey used in the current study was developed based on a questionnaire used to examine mountain biking issues and actions within the U.S. Forest Service (Chavez 1996). Content items on the survey questionnaire were separated based on whether the respondent's park(s) allowed or did *not* allow mountain biking. Parks or park districts *not* allowing mountain biking were requested to respond to only five content items on the survey questionnaire that requested information pertaining to: (a) illegal mountain bike activity, (b) the consideration of future management strategies to provide mountain bike access, (c) whether their park(s) had been contacted by groups advocating for mountain bike access, (d) whether their park(s) perceived the prevention of mountain biking to be a top five resource-management concern, or (e) whether their park(s) considered the prevention of mountain biking a top five recreation-management concern.

Parks or park districts allowing mountain biking were requested to respond to 18 content items on the survey questionnaire that requested a breadth of information pertaining to: (a) mountain bike activity levels, (b) management issues and actions, and (c) park or park district demographics.

Mountain bike activity level was measured using seven content items requesting that respondents indicate: (a) the estimated number of mountain bike users visiting their park(s) annually; (b) the estimated percentage of annual riders who partake in on-road or off-road mountain biking; (c) if their park(s) had witnessed an increase in mountain bike activity over the last five years (yes/no); (d) if their park(s) experienced illegal trespassing in areas prohibiting mountain bike use (yes/no); (e) if their park(s) received any requests to permit mountain bikes on trails limited to foot traffic only (yes/no); (f) if their park(s) had encountered problems with mountain bike groups using their park(s) for sponsored tours, rallies, or races without notification or authorization (yes/no); and (g) if their park(s) had nearby concessionaires or businesses that rent mountain bikes (yes/no).

Mountain bike management issues and actions was measured using eight content items requesting that respondents indicate: (a) if their park(s) had conducted surveys to identify use patterns, impacts, or visitor feelings on mountain biking in their park(s) (yes/no); (b) if their park(s) had partnered with local, state, or national mountain biking organizations to discuss management issues (yes/no); (c) if their park(s) consider mountain biking a top five resource-management concern (yes/no), and if yes why; (d) if their park(s) consider mountain biking a top five recreation-management concern (yes/no), and if yes why; (e) if their park(s) had observed resource damage from mountain biking (yes/no), and if yes, what types of resource damage and what types of management strategies are used for prevention; (f) if their park(s) observed or received reports of mountain bike accidents resulting in injury (yes/no), and if yes, what types accidents and what types of management strategies are used for prevention; (g) if their park(s) observed or received reports of user-conflict (yes/no), and if yes, what types of conflict and what types of management strategies are used for prevention; and (h) if their park(s) observed or received reports of safety problems (yes/no), and if yes, what types of safety problems and what types of management strategies are used for prevention.

Demographic information was collected using three content items requesting that respondents indicate: (a) the estimated number of acres of recreation land within their park(s); (b) the estimated number of annual visitors to their park(s), and (c) within their park(s) the approximate number of miles of paved and unpaved roads open/closed to mountain biking, the approximate number of miles of all trails and the number of those miles open to mountain biking, and the approximate number of miles of specifically constructed bike trails.

2.2 Procedures

The researcher's Human Subjects Review Committee granted approval of the measurement instrument and permission to engage in the study. Ohio State Park Managers and Ohio Park District Supervisors were solicited to participate in the study February and March 2006. An initial mailing and follow-up reminder letter were instituted to maximize response rate. Solicitations

Table 1.—Total Number of Miles of Trails & Roads Open to Mountain Biking in Ohio State Parks

Road or Trail Type	Total Miles	Miles Open to Use	Percentage
Paved Road	315	303	96
Unpaved Road	53	49	92
Multi-Use Trails	322	89	28
Built MTB Trails	100	100	100

N=18

Table 2.—Total Number of Miles of Trails & Roads Open to Mountain Biking in Ohio State Park Districts

Road or Trail Type	Total Miles	Miles Open to Use	Percentage
Paved Road	87	86	99
Unpaved Road	41	36	88
Multi-Use Trails	210	50	24
Built MTB Trails	15	15	100

N=8

to all study participants were sent via US mail and included: a personalized cover letter indicating participant identification procedures, confidentiality procedures, and information pertaining to the study's purpose; a copy of the survey questionnaire; and a coded self-addressed, pre-stamped, envelope for survey questionnaire return.

2.3 Subjects

Thirty Ohio State Park Managers identified through the Ohio Department of Natural Resources and 40 Ohio Park District Supervisors identified through the Administrative Directory of the Ohio Parks and Recreation Association, were solicited to participate in the study. Out of the 30 Ohio State Park Managers solicited to participate in the study, 21 completed survey questionnaires were received, yielding a 70% usable response rate among Ohio State Parks. Out of the 40 Ohio Park District Supervisors identified to participate in the study, 26 completed survey questionnaires were received, yielding a 65% useable response rate among Ohio Park Districts. Overall the study produced a usable response rate of 67% following an initial mailing of the survey questionnaire to all study participants, and a mailing of a reminder post card to study participants who did not respond to the study solicitation within two weeks of the initial mailing.

2.4 Statistical Design

Measurement instruments were analyzed using the Statistical Package for Social Sciences (SPSS). All data reported in this article were analyzed and reported as grouped data. Not all participants responded to all applicable measurement items, resulting in some points of missing data. As such, the total number of respondents per item is noted within each results scenario. Data analysis was done using standard descriptive statistical methods.

3.0 RESULTS

3.1 Mountain Bike Access

Regarding mountain bike access, study results indicated that 86 percent (n=18) of the 21 Ohio State Parks participating in the study allowed on-road or off-road mountain biking and that 31 percent (n=8) of the 26 Ohio Park Districts surveyed allowed on-road or off-road mountain biking. Ohio State Parks allowing mountain biking ranged in size from 450 land-acres to 20,000 land-acres (*Mdn*=3,500) compared to Ohio Park Districts which ranged from 230 land-acres to 87,000 land-acres (*Mdn*=1,650). Overall, results indicated a total of 1,143 miles of roads and trails within the 26 Ohio State Parks and Ohio State Park Districts allowing mountain bike activity, out of which 728 miles (64%) were open to mountain bike use. The greatest available miles of roads and trails open to mountain bike use were reported by

Table 3.—Reported Trends in Mountain Biking Activity in Ohio State Parks

Activity Indicator	Yes	Percentage	No	Percentage
Experienced Increase in Mountain Biking Activity (Last 5 Years)	15	83	3	17
Experienced Illegal Trespass in Areas Prohibiting Mountain Biking	7	39	11	61
Received Requests to Mountain Bike on Foot Traffic Only Trails	15	83	3	17
Experienced Illegal Group Sponsored Mountain Bike Activity	0	0	18	100
Have Mountain Bike Rental Concessionaires Near Park	2	11	16	89

N=18

Table 4.—Reported Trends in Mountain Biking Activity in Ohio State Park Districts

Activity Indicator	Yes	Percentage	No	Percentage
Experienced Increase in Mountain Biking Activity (Last 5 Years)	2	25	6	75
Experienced Illegal Trespass in Areas Prohibiting Mountain Biking	4	50	4	50
Received Requests to Mountain Bike on Foot Traffic Only Trails	4	50	4	50
Experienced Illegal Group Sponsored Mountain Bike Activity	1	13	7	87
Have Mountain Bike Rental Concessionaires Near Park	0	0	8	100

N=8

Ohio State Parks. Table 1 and Table 2 report miles of roads and trails open to mountain biking by road type, trail type, and park classification for all study respondents reporting the allowance of mountain bike activity.

3.2 Mountain Bike Activity

Of the 18 Ohio State Parks reporting mountain biking activity, 83 percent (n=15) provided annual mountain biking visitation estimates. Annual estimated mountain bike visitation rates ranged from 50 to 6,000 riders (*Mdn*=775). Of the 16 Ohio State Parks estimating mountain bike activity by type (i.e., on-road vs. off-road), the reported median percentage of on-road mountain biking activity was estimated at 22.5 percent compared to an estimated median percentage of 77.5 percent for off-road activity.

Of the eight Ohio Park Districts reporting mountain biking activity, 63 percent (n=5) provided annual mountain biking visitation estimates. Annual estimated mountain bike visitation rates ranged from 100 to 50,000 riders (*Mdn*=250). Of the five Ohio Park Districts estimating mountain activity by type (i.e., on-road vs. off-road), the reported median percentage of on-road mountain biking activity was estimated at 40% compared to an estimated median percentage of 60 percent for off-road activity. Table 3 and Table 4 report additional mountain biking activity trends within Ohio State Parks and Ohio Park Districts.

3.3 Mountain Bike Management

Of the 26 Ohio State Parks and Park Districts allowing mountain biking, 15 percent (n=4) had completed at least one survey or project directed at identifying mountain bike use patterns, impacts, or visitor feelings within their park compared to 85 percent (n=22) who engaged in no such planning or management action. While only a small percentage of Ohio State Parks and Park Districts indicated engaging in mountain bike research, across the sample 46 percent (n=12) reported having partnered with a local, state, or national mountain biking organization to develop management strategies or engage in other mountain biking projects. When asked if their park(s) considered mountain biking a top five resource-management concern or a top five recreation-management concern, 15 percent (n=4) identified mountain biking as a high level resource-management concern and 23 percent (n=6) as a high level recreation-management concern. **Note: The identification of mountain biking as either a top five resource-management concern or top five recreation-management concern was reported by Ohio State Parks only.** Overall, reasons such as increased popularity, increased growth, increased demand, freeeriding (i.e., off-trail riding), and resource damage were cited as issues intensifying mountain bike resource-management or recreation-management concerns in Ohio State Parks. Table 5 and table 6 report additional mountain bike

Table 5.—Reported Trends in Mountain Bike Management in Ohio State Parks

Management Indicator	Yes	Percentage	No	Percentage
Observed Evidence or Resource Damage From Mountain Biking	6	33	12	67
Observed/Received Reports of Mountain Biking Accidents	7	39	11	61
Observed/Received Reports of User Conflict from Mountain Biking	7	39	11	61
Observed/Received Reports of MTB Safety Problems	4	22	14	78

N=18

Table 6.—Reported Trends in Mountain Bike Management in Ohio State Park Districts

Management Indicator	Yes	Percentage	No	Percentage
Observed Evidence or Resource Damage From Mountain Biking	3	38	5	62
Observed/Received Reports of Mountain Biking Accidents	1	13	7	87
Observed/Received Reports of User Conflict from Mountain Biking	2	25	6	75
Observed/Received Reports of MTB Safety Problems	0	0	8	100

N=8

management issues and actions reported within Ohio State Parks and Park Districts.

State Park Managers and Park District Supervisors who reported resource damage, accidents, user conflict, or safety problems related to mountain biking were also asked in open-ended questions to indicate types of resource damage, accidents, user conflict, or safety problems they had observed or had reported, as well as management strategies used to prevent each issue or action. Multiple responses could be provided. Commonly reported problems and management actions related to resource damage, accidents, user conflict, and safety are reported in Tables 7 through 12.

In addition to the management issues reported in Tables 7 through 12, respondents were asked to provide information related to mountain bike safety. Common problems related to mountain bike safety included the excessive speeds at which mountain bikes can travel (n=2), mountain bikers not wearing helmets (n=1), mountain bikers freeriding (n=1) or riding in areas posted as too dangerous for mountain bike use (n=1), and the opportunity for collisions between mountain bikers and hikers (n=3). Reported management strategies used to promote mountain bike safety included developing mountain bike safety programs (n=1), working with mountain biking organizations (n=1), separating different user groups (n=1), and clearing trail blind spots.

Selected information related to mountain biking was also collected from State Parks and Park Districts that did not permit mountain biking activity. Out of the three State Parks and 18 Park Districts indicating they did not allow mountain biking activity, 57 percent (n=12) reported experiencing illegal mountain bike activity in their parks. When asked if their park received any advocacy from national, state, or local mountain biking organizations to allow mountain biking, 43 percent (n=8) indicated advocacy for use of their park had occurred. In addition, 52 percent (n=11) of those parks currently not allowing mountain biking indicated that they had engaged in open discussions about allowing mountain biking or have already included the allowance of mountain biking in future management plans. One park indicated it was in the process of designating a trail for mountain biking to study the impacts of the activity for future management decisions.

4.0 CONCLUSIONS

Results from this study indicate that managers and supervisors of public lands in Ohio face the challenge of addressing both ecological and social issues when developing management strategies to meet the outdoor recreation needs of the public. Developing management strategies to meet the public's outdoor recreation needs while simultaneously protecting and sustaining natural resources is often difficult (Chavez 1997). Literature indicates that resource managers have primarily three

Table 7.—Evidence of Resource Damage

Resource Classification	Evidenced Damage
Trail (N=4)	General Damage
	Restructuring of Trail
Soil (N=3)	Erosion
	Digging/Mound Building
Water (N=1)	Wet Trail Riding
Vegetation (N=1)	Off-Trail Paths

Table 8.—Resource Damage Prevention

Prevention Category	Prevention Technique
	Signage
Education (N=2)	Trail Building
Hardening (N=2)	Trail Maintenance
	Meet MTB Groups
Cooperation (N=3)	Reroute Trails
Restriction (N=3)	Deny Access to MTB

Note: Responses were in an open-ended question format. Based on responses, categories of concerns were developed based on classifications used by Chavez (1996). Responses included information that would fit in more than one category.

Table 9.—Evidence of Accidents

Type of Accident	Evidenced Injury
Minor (N=1)	Cuts & Abrasions

Table 10.—Accident Prevention

Prevention Category	Prevention Technique
Education (N=4)	Signage/Brochures
	Request Helmet Use
Hardening (N=2)	Redesign Trails
	Create Switchbacks
Cooperation (N=1)	Request Injury Reports
Restrictions (N=1)	Require Helmets

Note: Responses were in an open-ended question format. Based on responses, categories of concerns were developed based on classifications used by Chavez (1996). Responses included information that would fit in more than one category.

Table 11.—Evidence of User-Conflict

Type of Conflict	Evidenced Conflict
	MTB Travel to Fast
Hikers v. MTB (N=3)	Hikers Don't Yield
MTB v. Hikers (N=3)	Startle Game
Hunters v. MTB (N=2)	Horses Ruin Trails
MTB v. Horses (N=4)	MTB Startle Horses
Horses v. MTB (N=2)	

Table 12.—User-Conflict Prevention

Prevention Category	Prevention Technique
	Signage/Brochures
Education (n=6)	Trail Announcements
	Clear Trail Blind Spots
Hardening (n=2)	User Group Meetings
	Dedicate Single-Use
Cooperation (n=1)	Enforce Regulations
Restrictions (n=1)	Close During Hunting

Note: Responses were in an open-ended question format. Based on responses, categories of concerns were developed based on classifications used by Chavez (1996). Responses included information that would fit in more than one category.

classifications of management strategies that can be used to balance ecological and social issues related to recreational impacts. These management classifications include behavior modification, resource hardening, and bridge building. Behavior modification strategies specifically attempt to change visitor behavior through direct (e.g., behavior regulation or restriction) and indirect (e.g., education) actions (Lime 1979, Peterson & Lime 1979). In contrast, resource-hardening techniques attempt to fortify natural resources so they can better withstand visitor behavior (Peterson & Lime 1979). Other management strategies such as collaborative problem-solving, resource sharing, and volunteerism, which represent cooperative actions between agencies and individuals, can be classified as bridge-building techniques (Wondolleck & Yaffee 1994).

Because mountain biking is a relatively new pursuit, literature related to the ecological impacts of mountain biking is scarce (Thurston & Reader 2001). As such, resource managers have often handled trail degradation through direct behavior modification strategies, such as closing entire areas and trails to mountain biking, or moving mountain biking activity to double-track trails such as roads (Morey et al. 2002). Results from this study suggest that Ohio State Parks and Park Districts are more actively engaged in indirect behavior modification and bridge-building management strategies.

Overall, results from this study indicted that opportunities for mountain biking, both on-road and off-road, are being demanded by mountain bike enthusiasts within Ohio, and that Ohio State Parks and Park Districts are taking an active role in providing mountain biking opportunities throughout the State.

5.0 LIMITATIONS AND FUTURE RESEARCH

There are a number of limitations to this study. One limitation is the response rate (67%) for the study. As a result, threats to external validity may exist due to nonresponse bias. A second limitation is that the questionnaire was self-administered; thus potential threats to internal validity may exist if respondents provided desirable rather than accurate data. A third limitation is that the findings of this study are specific only to the State of Ohio, and do not reflect mountain biking issues and trends or management strategies of other state or municipal parks. Finally, this study did not address mountain biking issues within Ohio State Forests because the researchers could not identify a means for collecting mountain biking data at the forest level rather than at the forest district level. Despite limitations, the results of this study have implications for all public land managers, as well as the mountain biking community. Although these data are most useful to park managers and supervisors in the State of Ohio, management information reported in this study does suggest planning directions that could be used by other public land managers supervising state, county, and local trail systems in the region, specifically as mountain bike management strategies relate to resource degradation, user conflict, and safety. Based on the low number of managers or supervisors indicating that mountain biking was a top management concern within their park, it appears that the management strategies reported in this study have proven to be effective.

Based on the findings of this research, future research could include studies that identify: (a) mountain biking issues and impacts in Ohio State Forests, (b) mountain bikers' perceptions of the management strategies used to promote or restrict mountain bike activity within the State of Ohio, (c) characteristics, preferences, and attitudes of mountain bike users in Ohio, and (d) economic impacts of mountain biking on community development within the State of Ohio.

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OUTDOOR EDUCATION IN THE MID-ATLANTIC STATES: AN ASSESSMENT OF MARKET SEGMENTATION

Stephanie L. Young
Recreation and Tourism Management
Concord University
1000 Vermillion Street
Athens, WV 24712-1000

Megan L. Hash
Concord University

Roy Ramthun, Ph.D.
Concord University

Abstract.—Programs that emphasize experiential learning in outdoor settings have a long history in the United States and have been offered by a wide range of organizations. This study focused on programming that included environmental education, experiential education, and outdoor education. The purpose of this study was to examine the range of services and programs that offer outdoor education and environmental education services in the Mid-Atlantic region and to identify underserved aspects of the market. Environmental education programs geared for elementary and middle school students are very common across the region, but programming for high school and college students and adults are offered much less frequently. The primary finding was the high degree of variability in environmental education facilities, programs offered, and associated costs.

1.0 INTRODUCTION

Programs that emphasize experiential learning in outdoor settings have a long history in the United States and have been offered by a wide range of organizations. Private camps, non-profit organizations, extension services, and government-sponsored programs may all be providers of outdoor education services. These organizations have traditionally had a wide range of missions and objectives and have tailored their programming efforts to different sub-sets of the population. While these programs often overlap a great deal, philosophical orientations are an important issue. The philosophical orientation affects the type of programs offered, which in turn impacts the number and qualifications of staff that will be required, the equipment, and the facilities necessary for operations.

2.0 BACKGROUND

This study focused on programming that included environmental education, experiential education, and outdoor education. Environmental education has five primary goals (Neill 2004). They are "to 1) help students develop factual knowledge about the natural environment, particularly with regard to how ecosystems work and human impacts on the natural environment; 2) foster more positive perceptions about the value of the natural world; 3) develop eco-friendly habits, such as getting people to recycle and to produce less waste; 4) engage students in environmental rejuvenation projects and action; 5) develop students' psychological and spiritual relationship with nature." Environmental education programs with these goals began to develop in the 1960s when Americans started to become concerned with problems of pollution and habitat destruction. Currently, environmental education programs may be a part of the curriculum of school districts or may be offered as an educational service by national or state parks or non-profit organizations. Many programs that operate primarily throughout the summer tend to offer environmental education programs to schools or individuals during their off-season in winter.

Experiential education is a term used to describe programs that emphasize challenging physical activities in outdoor environments as a way to help participants grow socially and physically. This form of education is very similar to adventure education as activities include kayaking, backpacking, rafting, rock climbing, and ropes courses. These types of programs are geared more towards teenagers or the young adult market, and the purpose of these programs is to help young people to develop self-confidence, self-awareness, and more mature group interaction skills (Miles & Priest 1999). Experiential education programming is offered by a variety of organizations for older clients (young adults). These adventurous programs have been extensively used, however, with special populations, particularly teens with alcohol and/or drug problems or who have been in the juvenile justice system.

Outdoor education refers to a variety of programs that incorporate environmental studies, recreational skills and interpersonal skills with an experiential learning philosophy (Gilbertson et al. 2006). Neill defined outdoor education as occurring "when small groups of people participate in organized adventurous activities in natural settings and primarily use themselves as the resource for solving problems." Outdoor education participation ranges across the spectrum from children to adults and is offered at programming organizations all across the world.

3.0. PURPOSE

The purpose of this study was to examine the range of services and programs that offer outdoor education and environmental education services in the Mid-Atlantic region and to identify underserved aspects of the market. This research was done as part of a feasibility study for Concord University in support of the university's efforts to develop an environmental research and education center. This phase of the feasibility project analyzed the current state of the industry.

4.0 METHODS

To organize information gathered on individual outdoor education and environmental education centers, researchers made worksheets of questions to collect consistent information from each center sample. Forty-six environmental education centers and similar facilities offering environmental education programs were chosen for use in this study. Seventy-five centers were reviewed and those with the most pertinent characteristics in what the researchers were looking for were chosen.

Initial research was conducted using public information via the Internet, in most cases from the center's website. Appropriate websites were located using the Google or Yahoo search engines with keywords, "outdoor education center" or "environmental education center" and the appropriate state. This information was supplemented by follow-up phone interviews or emails to clarify inconsistencies with individual center personnel. The Mid-Atlantic states were the primary focus. The study included the states of West Virginia, Virginia, Kentucky, Maryland, North Carolina, Kentucky, Tennessee, and

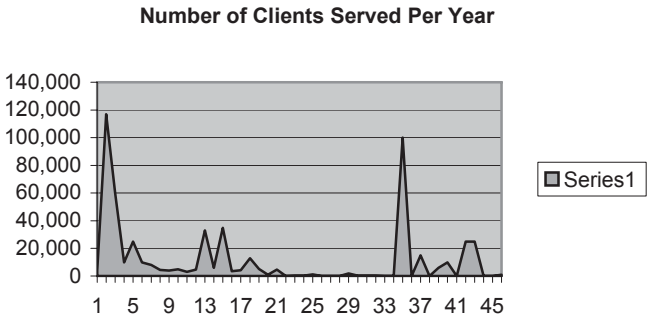

Figure 1.

Pennsylvania. The Yosemite Institute in California was also studied as a primary example.

5.0 RESULTS

5.1 Participation Levels

The programs and centers examined in this study varied greatly in the number of clients that they served each year (Figure 1). One center located near a large urban area served over 117,000 clients in environmental education programs. Conversely, another center reported having served only 98 participants per year. On average, centers served approximately 3,000 to 8,000 participants per year. Six centers were unable to provide this information.

5.2 Institutional Affiliation

Environmental education centers operate under a wide variety of institutional affiliations (Figure 2). Of the 46 centers examined in this study, 15 (32.6% of sample) were operated by a private, non-profit organization that was dedicated to the center's operation. The National Park Service (NPS) or state or regional park authorities operated 12 centers in the sample (26%). Colleges or universities operated four (8.6%) and a university in conjunction with the NPS or other park entity operated

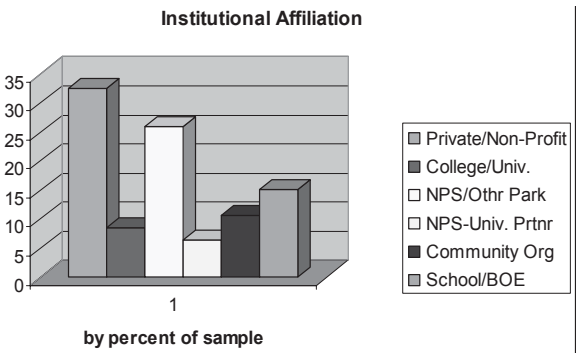

Figure 2.

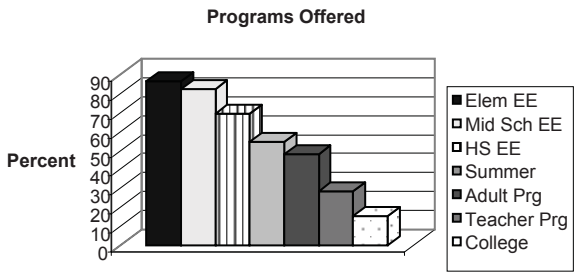

Figure 3.

three centers (6.5%). Community organizations such as churches or the YMCA operated five centers (10.8%) and public school systems operated seven centers (15.2%).

5.3 Program Offerings

The most common program format that was found was environmental education for elementary students, indicated by 86.9 percent of the centers (Figure 3). Environmental or outdoor education programs for middle school students were offered by 82.6 percent of the centers and high school programs were offered by 69.5 percent. Programs were offered 54.3 percent of the time in the summer, and 17.3 percent of the centers offered programs exclusively in the summer. Workshops and continuing education programs for teachers were offered by 28.2 percent of the centers. College student programming was offered by 15.2 percent of the centers, and programs for adults were offered by 47.8 percent.

5.4 Recreational Facilities

The various centers and programs examined in this study varied widely in the recreational and programmatic facilities available on site (Figure 4). Programs or centers that began as camps tended to have more extensive

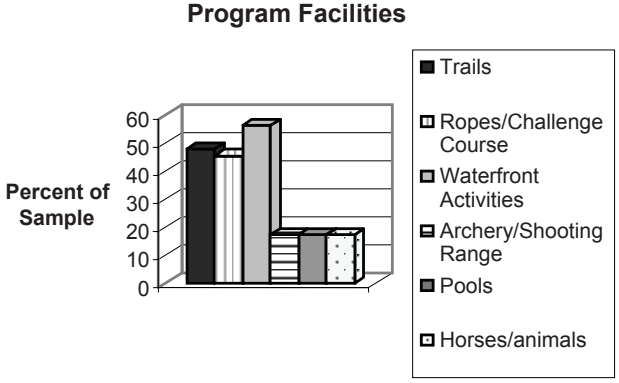

Figure 4.

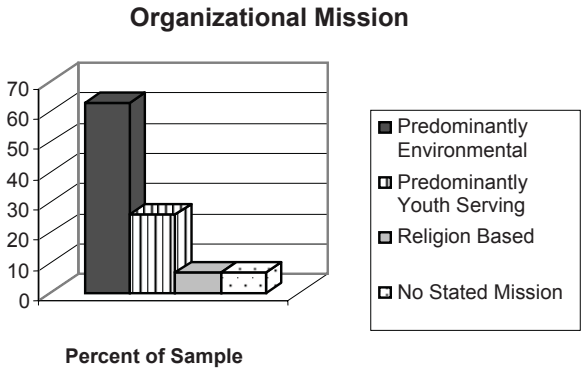

Figure 5.

facilities than those centers that were more oriented towards research and education. Waterfront activities such as kayaking and canoeing were the most common feature offered (56.5% of the sample). Hiking and biking trails (47.8%) and ropes/challenge courses (45.6%) were also very common. Other activities that were offered regularly (15%) included archery or shooting ranges, swimming pools, and horseback riding or petting zoos.

5.5 Organizational Missions

In addition to the organizations' affiliations, the mission statements of sampled programs were also analyzed (Figure 5). As may be expected, the majority of centers' mission statements focused predominantly on environmental protection and awareness (63% of the sample) while a smaller percentage (26%) had mission statements that focused on youth service (i.e., based more on experiential education). Three centers (6.5%) had religious mission statements and three others had no stated mission.

5.6 Residential Programs

Environmental education programming was available exclusively as a residential program at 36 percent of the centers and exclusively as a day program at 23 percent of the centers (Figure 6). Forty-one percent of the centers offered both day and residential programs.

5.7. Program Costs

The centers examined in this study charged a wide range of rates to participants for programs. Among day-priced programs, prices ranged from $10.00 to $152.00 per participant per day with an average of $42.00 for the whole day. One program, the National Youth Science

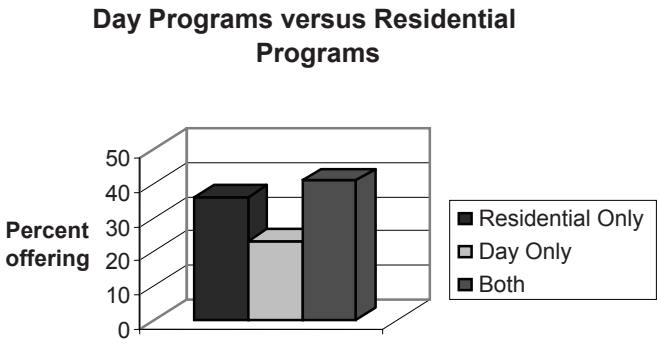

Figure 6.

Camp, was a completely sponsored program at no cost to participants whatsoever. However, a competitive application process was required to be eligible for that particular program. Most programs charged by the hour rather than by the day. The price per student per hour ranged anywhere from $2.00 to $14.00 with an average of $4.30 for a one-hour program. Five centers offered completely free hourly programs to participants. Of the 46 centers in this study, eight centers (17.4% of the sample) charged exclusively by the day while the other thirty-eight centers (82.6%) charged by the day or by the hour.

Residential environmental education or outdoor education programs were offered by 36 of the centers studied. The average per student per day cost of residential programs was $52.25 with a range from $11.00 to $143.00. As noted above, one of the programs in the sample was fully sponsored and did not charge participants.

There was obviously a wide variance in these participant costs. There are a number of factors that can explain this wide variance in costs.

1. *Sponsorship and Cost Recovery Philosophy.* Programs and centers that have external funding sources such as foundations or charitable organizations are not totally dependent on program revenue and may charge less than the cost of program provision. Some of these agencies operate on a mission to serve youth from disadvantaged areas and seek ways to operate programs without full cost recovery.
2. *Fixed Costs of Programs and Facilities.* As may be noted from previous sections, there is no "standard" outdoor education facility. Centers may offer a wide variety of features, some of which are more costly to offer than others. Swimming pools require high levels of attention and maintenance as well as special training for staff assigned to this maintenance. Horse/animal programs also require year-round care and supervision. Horseback riding programs also have very high liability insurance costs. In short, some features are costly to maintain and operate, and these expenses are transferred to clients.
3. *Staff Costs.* Some programs are able to use teachers and parents to assist in basic environmental education programming. In situations where this approach is appropriate, one paid staff member may be able to supervise a very large number of clients. In more specialized situations, a higher staff to client ratio will be required. Examples of these more specialized situations may include residential programs (where 24 hour supervision is needed), programs that include swimming or waterfront activities, or adventure/challenge courses. Typically, there are industry standards that specify the staff/client ratio for almost any activity, and programs must meet or exceed these ratios or face lawsuits for negligence in the event of an accident. Other situations where specialized or additional staff may be necessary include instruction in technical outdoor skills or programs that travel between multiple sites.

Other factors measured in this study included staff needs, facility acreage, meeting facilities, and management boards.

6.0 DISCUSSION AND CONCLUSIONS

This study facilitated many observations concerning trends in outdoor and environmental education in the Mid-Atlantic states.

A primary finding was the high degree of variability in environmental education facilities, programs offered, and

associated costs. Programs could be residential or day programming, and institutional missions varied widely. However, environmental education programs targeting elementary and middle school students are common across the map. Programs for high school students, college students, and adults are offered less frequently.

In regard to commonly shared features of successful centers (those that offer a wide range of programming, have well developed facilities, and high attendance) many have affiliations with government-owned parks and natural areas. Some successful centers also began when the public's concern with environmental issues was much higher than it is currently. Many of these centers also began during times when public funding was more readily available. It was further concluded that the largest, most developed, and most heavily used centers tend to be located closer to urban areas, while programs in rural areas were less common, smaller, and offered less frequently.

Researchers also found that some states had stronger environmental education infrastructure and programs than others. This difference may be tied to the role of environmental education in state standards of learning; states that value environmental education may support more programs and incorporate the study into state educational standards.

Finally, terminology of "environmental education center" is an issue. Many organizations, such as the Virginia State Park system, use the term "environmental education center" for what may better be described as a visitor center, that is, a small facility with interpretive displays and exhibits. This issue may need to be considered, as misuse of the term could lead to an inaccurate public image associating a visitor center with an environmental education center.

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RECREATION FEES: ATTITUDES AND PERCEPTIONS OF REGION 6 FOREST SERVICE EMPLOYEES IN RECREATION POSITIONS AND NON-RECREATION POSITIONS

Karen Robinson, Graduate Student
Recreation, Parks and Tourism Resources Program
Division of Forestry, PO Box 6125
West Virginia University
Morgantown, WV 26506
krobin12@mix.wvu.edu

Robert C. Burns
West Virginia University

Alan Graefe
The Pennsylvania State University

Abstract.—This study explored the attitudes and perceptions of U.S. Forest Service employees concerning the Recreation Fee Demonstration Program (RFDP) in the Pacific Northwest Region (Region 6, Oregon and Washington), and their perceptions of how recreation fees should be used once the money is collected. Employees who reported that they were in a recreation-related position accounted for 23 percent of the sample, while the remaining 77 percent of respondents reported that they were in non-recreation positions. The results of this study showed that there were significant differences in the perceptions of Forest Service employees in recreation positions as compared to those in non-recreation positions. Further study in this area looking at the standards of what constitutes an improvement to facility and services as well as how the Recreation Fee Program affects the non-recreation employees may give us a better understanding of the effects of the RFDP on non-recreation employees and recreation employees.

1.0 INTRODUCTION

In 1996, Congress authorized the implementation of the Recreation Fee Demonstration Program (RFDP) for U.S. Federal land agencies such as the Forest Service, the National Park Service, the Bureau of Land Management, and the Fish and Wildlife Service. This program came about due to the increasing use of these federal lands and the lack of resources to meet visitor needs while protecting the integrity of the natural environment. As part of the RFDP, the U.S. federal land agencies were required to evaluate the effectiveness of this program on visitor and management operations (Luloff et al. 2000).

Researchers from West Virginia University and the Pennsylvania State University conducted a study that focused on internal stakeholders to complement studies that they conducted with external stakeholders (Burns et al. 2003, Burns et al. 2002a, Burns et al. 2002b). The present study examined the attitudes and perceptions of Forest Service employees concerning the RFDP in Region 6. Among the objectives of this study, this paper focuses on understanding the differences in opinions and attitudes of Forest Service employees in recreation positions compared to Forest Service employees in non-recreation positions.

2.0 METHODS

In January 2002, approximately 7000 blank surveys were mailed to all employees in the Forest Service units in Region 6. Employees were asked to fill out the surveys and mail them back, anonymously, to a central Forest Service address. A total of 2,240 surveys were returned; of those, 2,215 usable, completed surveys were included in this analysis, yielding a 32 percent response rate. Variables used to compare the perceptions of Forest Service employees in a recreation position and Forest Service employees in a non-recreation position are: rate of support for fee program, information or actions that would make them more supportive of the fee program, managers' opinions on aspects of the Fee Program, adequate amount of information on the fee program provided to explain it to the public, and improvement in recreation facilities and services due to fee revenue.

Analysis of variance was used to examine group differences in job duties and support for the fee program. The Chi-square test was used to look at what information or actions would help improve support for the fee program across all job duties. One-way analysis of variance was used to observe differences in managers' opinions on aspects of the fee program. With respect to

whether all job duties the information was adequate to explain the Fee Program to visitors, chi-square analysis was used to determine the differences within the groups. Changes in services and facilities due to recreation fees were tested with chi-squares to see the differences within the groups' proportions.

3.0 RESULTS

3.1 Job Duties Represented and Support of Fee Program

A wide range of job duties was represented in the sample, with a sufficient number of respondents in each category. Those employees in land stewardship (30%) and administration (27%) positions were among the highest employees in fire (9%) positions represented the lowest percentage of the sample (Table 1). Respondents in recreation and visitor center (mean = 3.42) and administration (mean=3.38) positions expressed the strongest support for the Fee Program. This would seem to be normal in that the recreation employees as well as the administration employees recognize the need for the Fee Program and the positive influence that the Fee Program has on their facilities and services. Non-recreation positions (e.g., resource protection [mean = 2.84], land stewardship [mean = 2.77], fire [mean = 2.68], respectively) expressed the lowest support for the Fee Program (Table 2). These results portray a need to explore more about what knowledge the non-recreation employees have and how their positions are affected by fee revenue.

Table 1.—Job duties represented in sample

Job Duties	Percentage
Land Stewardship	30%
Administration	27%
Recreation and Visitor Center	18%
Resource Protection	16%
Fire	9%

Table 2.—Managers' support for the Fee Program

Job Duties	Mean
Recreation and Visitor Center	3.42
Administration	3.38
Resource Protection	2.84
Land Stewardship	2.77
Fire	2.68

Response Scale: 1 = Strongly Oppose - 5 = Strongly Support

3.2 Information or Actions to Make Forest Service Employees More Supportive

Forest Service employees were asked to choose which statements regarding information or actions would make them more supportive of the Fee Program. A Chi-Square test was used to determine which information or action items would make employees more supportive of the Fee Program (Table 3). Overall, none of the information and action items would make employees, across all job duties, more supportive of the Fee Program. The three statements that were significant across the different job duties were: *nothing, I am already supportive* (X^2 = 40.916***), *nothing, I cannot support the program* (X^2 = 29.328***) and *more opportunity to ask questions and get answers about the program* (X^2 = 15.530**).

Employees in the administration (21%) and recreation/visitor center (18%), rated *nothing, I am already supportive of the Fee Program* highest compared to all other job duties. Employees in fire, land stewardship, and resource management (26%, 25%, and 23%, respectively) reported that nothing would help them become more supportive as they do not support the Fee Program, larger percentages for employees in recreation/visitor center and administration positions. Employees across all job duties (land stewardship 9%; recreation/visitor center 9%; resource protection 9%; administration 4%; and fire 9%), equally reported *more opportunity to ask questions and get answers about the program* as least likely to make them more supportive. Perhaps employees are less interested in general information about the Fee Program, and more interested in information that allows them to better understand program management and operational actions. Similarly, employees in all job duties (land stewardship 48%; recreation/visitor center 49%; resource protection 50%; administration 45%; and fire 50%) were uncertain as to whether *more/better information about what is being accomplished with the money on my forest* would make them more supportive of the program; however, this item was also rated the highest as to what would make employees more supportive. Surprisingly, employees in fire, resource protection and land stewardship were more likely to support the Fee Program if they had more knowledge regarding accomplishments using the fee revenue while

Table 3.—Information or actions to make more supportive

Information or Actions	Land Stewardship	Recreation and Visitor Center	Resource Protection	Admin.	Fire	Test of Significance
	Percent Responding Yes					
Nothing, I am already supportive	9%	18%	12%	21%	9%	$X^2 = 40.916$***
Nothing, I cannot support the program	25%	13%	23%	16%	26%	$X^2 = 29.328$***
More opportunity to ask questions and get answers about the program	9%	9%	9%	4%	9%	$X^2 = 15.530$**
A broader use of the funds generated from the recreation Fee Program	15%	16%	13%	11%	14%	$X^2 = 4.965$
A better understanding of the law and Congress' intent in authorizing the Fee Program	20%	22%	24%	20%	24%	$X^2 = 3.055$
More/better information about what is being accomplished with the money on my forest	48%	49%	50%	45%	50%	$X^2 = 2.658$
A better understanding of how visitors feel about the Fee Program	22%	23%	24%	20%	23%	$X^2 = 1.852$

** = significant at the .01 level; *** = significant at the .001 level

these employees are least likely to see improvements in services and facilities. Further study needs to be done to explore what type of information would make a difference, as well as how fee revenue may indirectly affect their positions positively.

3.3 Managers' Opinions

A one-way analysis of variance examined 11 items related to manager opinions by job duties. Looking at different aspects of the Fee Program, job duties or positions held may be important in gaining a better understanding of attitudes and perceptions of the Fee Program. Significant differences were found in 10 of the 11 aspects of the Fee Program across the various job duties (Table 4). The top three managers' opinions employees agreed with the most, across all job duties, are the aspect that "*People should be able to recreate even if they can't afford the fee"* (overall mean = 4.26), "*Recreational fees are unfair to people with lower incomes"* (overall mean = 3.59), and "*I understand the reasons behind the Fee Program"* (overall mean = 3.58). The aspect of the Fee Program that employees in all job duties disagreed with the most was *corporate sponsorship with few or no restrictions* (overall mean = 2.02). Similarly, the top three aspects that non-recreation employees agreed with are "*people should be able to recreate even if they can't afford the fee"* (mean = 4.27), "*recreational fees are unfair to people with lower incomes"* (3.65) and *"I understand the reasons behind the Fee Program"*+- (mean = 3.49). Employees in FS recreation and visitor centers reported the highest level of agreement for many of the items that showed the greatest level of differences, clearly demonstrating the degree of support for the fee program by these employees. Interestingly, employees in the administrative job positions were most similar to the recreation employees in their support for the fee program opinions. Also noted is the consistency in the non-support of these items by respondents who reported that their job duties were fire related. Those in fire-related positions showed the least support for six of the items. Respondents in land stewardship positions showed significantly lower levels of support for three of the items.

The employees in recreation positions rated the item *people should be able to recreate even if they can't afford the fee* (mean = 4.17), *I understand the reasons behind the fee program* (mean = 3.90) and *charging fees helps the FS to achieve their mission* (mean = 3.54) within the top three aspects that they agree upon most. Although recreation/visitor center employees rated *fees should be used to make*

Table 4.—Manager's opinions by job duty

	Land Stewardship	Recreation and Visitor Center	Resource Protection	Admin	Fire	Overall Mean	F
I do not actively implement the fee program as I do not support the program	2.50	1.95	2.55	2.06	2.82	2.34	16.296***
Charging fees helps the FS to achieve their mission	2.98	3.54	3.13	3.37	2.80	3.15	14.662***
I understand the reasons behind the fee program	3.59	3.90	3.52	3.73	3.13	3.58	14.150***
I approve of the NFP program	2.67	3.15	2.70	3.12	2.61	2.86	11.995***
Fees are inappropriate as they may exclude some visitors	3.54	3.07	3.51	3.15	3.61	3.38	11.263***
Charging fees on NF will lead to over-commercialization	2.80	2.40	2.82	2.36	2.68	2.61	10.486***
People should be able to recreate even if they can't afford the fee	4.43	4.17	4.26	4.12	4.26	4.26	6.853***
Recreational fees are unfair to people with lower incomes	3.67	3.39	3.68	3.46	3.78	3.59	5.122***
Fees should be used to make up for declining agency budgets	2.50	2.61	2.40	2.71	2.38	2.53	3.162*
Corporation sponsorship with few or no restrictions	1.94	1.91	1.99	2.11	2.21	2.02	2.814*
Fees should only be charged where facilities are provided, such as picnic areas and trailheads	3.32	3.30	3.31	3.24	3.20	3.28	.361

* = significant at the .05 level; *** = significant at the .001 level
Response scale: 1 = Strongly Disagree to 5 – Strongly Agree

up for declining budgets the highest, it also shows stronger disagreement than agreement. Those in recreation/visitor center positions clearly support the Fee Program, understand the reasons behind it and see improvements to their facilities and services due to the fee revenue. It would be beneficial to better understand their views on how their budget relates to the Fee Program or whether it is merely that they feel charging fees is not a sufficient reason.

3.4 Enough Information Provided to Explain the RFDP Program

Chi-square analysis was used to determine significant differences in whether or not employees have enough information to explain the Fee Program to visitors, across all job duties (Table 5). Employees within non-recreation positions felt they did not have enough information provided in order to explain the Fee Program to visitors. Conversely, the majority (70%) of recreation/visitor center employees felt they had enough information to explain the Fee Program to visitors and just under half (45%) of administration employees felt that they had enough information to explain to visitors. A better understanding of the Fee Program and ability to explain the program to visitors is pertinent as they are most likely to come into contact with the visitors at ranger district offices. Significance was found at the .001 level when looking at if there was enough information to explain the Fee Program to visitors across all job duties (X^2 = 103.906***). Once again recreation/visitor center employees responded positively to the Fee Program than the other job positions.

Table 5.—Enough information to explain the Fee Program

	Yes	No	Test of Significance
Recreation and Visitor Center	70%	30%	
Administration	45%	55%	
Land Stewardship	41%	59%	
Resource Protection	40%	60%	
Fire	27%	73%	
Total	46%	54%	X^2 = 103.906***

*** = significant at the .001 level

3.5 Improvement in Services and Facilities Due to Recreation Fees

In order to examine if there were any significant differences in improvement to services due to the Fee Program by the five job duties, a Chi-square test was executed. Almost half of the respondents in all non-recreation positions reported that they didn't know if there was improvement to their unit's services due to funding from recreation fees. Just over half (54%) of the respondents in recreation positions expressed that there was improvement to services due to recreation fees (Table 6). Significance was found at the .001 level when looking at if employees in all job duties felt that there was improvement to services on their forest due to recreation fees (X^2 = 117.743***). Conversely, the distribution of responses to improvement of facilities on the respondent's unit is similar to those results presented in Table 6. Almost half of respondents in non-recreation positions reported that they didn't know if there was improvement in their unit's services due to funding from recreation fees. Two-thirds (66%) of respondents in recreation positions felt they saw an improvement in their unit's facilities due to funds from the recreation fee program; where the non-recreation employees reported that improvements to their facilities was unknown(Table 7). Significance was found at the .001 level when looking at if employees in all job duties felt that there was improvement to facilities on their forest due to recreation fees *(X^2 = 124.963***).*

Table 6.—Improvement to services due to recreation fees

	Yes	No	Don't Know	Test of Significance
Recreation and Visitor Center	54%	20%	26%	
Administration	38%	14%	48%	
Land Stewardship	27%	25%	48%	
Fire	25%	24%	51%	
Resource Protection	20%	26%		
Total	33%	21%		X^2 = 117.743***

*** = significant at the .001 level

Table 7.—Improvement to facilities due to recreation fees

	Yes	No	Don't Know	Test of Significance
Recreation and Visitor Center	66%	14%	20%	
Administration	46%	10%	44%	
Land Stewardship	34%	20%	46%	
Resource Protection	31%	20%	49%	
Fire	31%	20%	49%	
Total	42%	16%	42%	X^2 = 124.963***

*** = significant at the .001 level

4.0 DISCUSSION

The results in this study showed a common trend of non-recreation position employees had a lower degree of agreement and support for the Recreation Fee Program. Further more, recreation/visitor center and administration employees had the highest support and better understanding of the Fee Program and its benefits to their unit. Resource protection and fire position employees were continuously reporting the least support for the Fee Program as well as not knowing whether or not the Fee Program contributes positively to their unit, yet they felt manager's opinion items regarding fees displacing visitors as a concern or negative affect of the program. This may be due to the fact that their everyday management is not affected by the program or they do not deal with the affects of the program. Recreation position employees had a higher degree of support as well as reporting that funding from recreation fees have contributed to improvement in facilities and services. Recreation position employees also felt that the Fee Program will positively affect the forest and they understood the reasons behind the Fee Program, where non-recreation employees are more concerned for visitors to be displaced.

Recreation employees and non-recreation employees were similar in that the highest rated manager's opinion item is people should be able to recreate even if they can't afford the fee; however, recreation employees felt that they understand the reasons behind the fee program and that charging fees helps the Forest Service to achieve their mission. The results showed that both recreation employees and non-recreation employees are concerned about displacing visitors due to fees. Yet, recreation and administration employees also felt strongly about the

significance of the fee program in regards to achieving their mission and fee revenue making a positive difference in their facilities and services.

Non-recreation employees also reported that they do not actively implement the fee program as they do not support the program. This also portrayed how the non-recreation employees are not affected by the program in a positive way as they did not seem to feel that there is any benefit to the program. Non-recreation employees felt that the Fee Program is more of an obstacle for the lower income visitors. This lends to the notion that they may not have a clear understanding of the Fee Program or the benefits of the program. Further more, non-recreation employees may not have access to social science studies and information regarding the benefits of the Fee Program and the opinions and attitudes of visitors as well as those who do not visit National Forests. Results also showed that the non-recreation employees do not have enough information to explain the Fee Program to visitors, thus, feeling as though the Fee Program has no value to their management area or to the visitors.

This study portrayed the need for further study into why the non-recreation employees feel differently and what factors play into the difference. Items that showed mutual opinions were items that dealt with displacing visitors due to paying a fee. This demonstrated that employees across all job duties were concerned about the visitors and how the Fee Program may affect them and their decisions to recreate on their forest. Further more, results also illustrated that the information and action items would not make them more supportive of the Fee Program. *More/better information about what is being accomplished with the money on my forest* portrayed a split as to weather it would make them more supportive of the Fee Program. This established a better understanding as to why the non-recreation employees reported their opinions of the Fee Program in the manner that they did and that further information may have a bearing on their support of the Fee Program. In addition, it could assist their facilitation of explaining the Fee Program to visitors that they come into contact with in the field or office or for their own knowledge in management.

Further study in this area looking at the standards of what constitutes an improvement to facility and services as well as how the Recreation Fee Program affects the non-recreation employees may give us a better understanding of the effects of the Recreation Fee Program on Forest Service employees. This may also aid in a better understanding of how non-recreation employees view management of visitors to the forest. Further studies looking at the visitors' opinion will also facilitate a better understanding of how the visitors view the Fee Program and how the Fee Program affects them. Overall, this can allow managers to better market to the public as well as better education for the Forest Service employees.

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STAKEHOLDERS' RELATIONSHIPS WITH THE USDA FOREST SERVICE AT THE SPRUCE KNOB-SENECA ROCKS NATIONAL RECREATION AREA, WEST VIRGINIA

Katherine A. Thompson
Graduate Research Assistant
Recreation, Parks, and Tourism Resources Program
West Virginia University
P.O. Box 6125
Morgantown WV 26506-6125
kthomp12@mix.wvu.edu

Chad D. Pierskalla
West Virginia University

Steven W. Selin
West Virginia University

Abstract.—The Spruce Knob-Seneca Rocks National Recreation Area (NRA) is developing a collaborative management plan. To develop a public involvement strategy, it is necessary to assess the social conditions in the area. The purpose of this study was to determine the relationship local stakeholders in the NRA have with the USDA Forest Service (USFS) with regard to the collaborative management process. Study participants (N = 12) were selected based on their knowledge about and interest in the NRA, including those dependent on the economic benefits and amenities of the area. Study participants were asked to describe and rate the relationship that currently exists between stakeholders and the USFS. Stakeholders were primarily focused on future economic development, and generally rated their current relationship with the USFS as positive. The current relationship between stakeholders and NRA management was found to be suitable for a collaborative management approach to NRA planning.

1.0 INTRODUCTION

The Spruce Knob-Seneca Rocks National Recreation Area (NRA) was established in 1965 and is located in the Monongahela National Forest in West Virginia. The original recreation plan was revised during the forest planning process in 1986. Since then, many social and economic changes have taken place in the local communities, making the previous plans out-of-date (Stancil 2005). Managers are interested in developing a collaborative planning process to revise the existing plan. When the NRA was initially developed, the impression among local residents was that any property used for the NRA would be purchased only from willing sellers. The final legislation creating the NRA, however, authorized the use of eminent domain as a method of land acquisition. Furthermore, from the local residents' perspective, the initial planning process for the NRA favored "outsiders" and ignored local input. These and other NRA development issues created an atmosphere of mistrust that is only recently beginning to resolve itself (Stancil 2005, Thompson 2006).

The purpose of this study was to assess the current relationships between stakeholders and management, and the temporal and historical context of management issues associated with the NRA to help managers successfully develop conflict management strategies that build trust during the planning process.

2.0 METHOD

A snowball sampling method was used to identify potentially interested residents in the NRA area. Study participants were selected based on their knowledge about and interest in the NRA, and dependence on the direct economic benefits and amenities of the area. The sample included current and former USDA Forest Service employees, local business owners who gained direct economic benefits from the NRA, and local elected officials on the city and county levels. Twelve semi-structured, face-to-face interviews were conducted with NRA stakeholders in 2005. Each interview was tape-recorded and later transcribed; each interview lasted about an hour.

Study participants were asked to describe the relationship between stakeholders and the USFS. They were also asked to rate how the USFS values a collaborative approach to management on a scale of 1 (not collaborative) to 10 (collaborative) for the following attributes of collaboration: representation, access to management, information sharing, and encouraging citizen participation.

A qualitative analysis of the interview transcripts was performed using a combination of QDA Miner content analysis software and manual coding. Although other topics were discussed in the interviews, this study focused on the historical aspects of both the region and the stakeholders' relationships with NRA management. A raw count of word frequency in the transcriptions was conducted using QDA Miner. Initial examination of these frequencies was used to determine categories for content analysis. Based on the categories, data were analyzed and coded manually for content regarding history. The three initial categories were Past, Present, and Future. The Past category was then further broken down into two subcategories: Distant Past (10 Years or More) and Recent Past (9 Years or Fewer). Each of these categories was examined, and common issues and concerns were identified. Rather than examine specific word occurrences, responses were examined in context. Every time there was a change in discussion topic within the responses, it was determined whether that response corresponded with the Past, Present, or Future category. Past responses were further broken down into the two subcategories referenced above.

From the interview transcripts, 297 issues were determined to be temporally related. These data were then analyzed to determine the percentage of time respondents were focusing on different time periods as they related to the NRA.

Further, quantitative analysis was performed on the scores stakeholders gave to the various attributes of a collaborative management approach (representation, access to management, information sharing, and encouraging citizen participation). These scores were correlated with the scores respondents gave to their perception of how the USFS values a collaborative management approach.

3.0 RESULTS

3.1 Qualitative Analysis

Current and former USFS employees were excluded from this portion of the analysis. Issues (N = 297) coded in the text (N = 9) were most frequently presented in a present or future context. Interviewees mentioned the past 68 times (22.9%) out of the 297 times that specific time periods were mentioned in their interviews. Interviewees who had resided in or recreated in the NRA for more extended periods of time were more likely to mention the past. In contrast, interviewees mentioned the present 104 times (35%) and the future 125 times (42.1%). The number of references to the past varied among interviewees from a low of five responses out of 51 temporal references or 9.8 percent (Respondent 4) to a high of 13 responses out of 38 temporal references or 34.2 percent (Respondent 7).

Table 1.—Temporal references made by interviewees (N = 297)

	Temporal References			
Interviewee	Past	Present	Future	Total
1	5	5	15	25
2	7	12	19	38
3	3	6	8	17
4	5	23	23	51
5	4	13	10	27
6	8	10	9	27
7	13	9	16	38
8	13	16	15	44
9	10	10	10	30
Total	68	104	125	297
Overall percentage of references	22.9	35	42.1	100

When the Past category was divided into the categories Distant Past (10 Years or More) and Recent Past (9 Years or Fewer), a minority of responses (38.2%) were found to refer to the Distant Past; 61.8 percent of responses referred to the Recent Past. While two respondents did not refer to any events occurring more than nine years ago, one respondent referred to the Distant Past in twelve out of thirteen references to the past. Removing the outlier (Respondent 7) brought the percentage of references to the Distant Past to 25.4 percent. In the context of temporal references overall, 8.8 percent of those references related to the Distant Past. Adjusted for the outlier, however, that proportion decreases to 4.9 percent.

In the Distant Past category, the majority of references were to cultural history and heritage, ranging from a local Native American legend to generational landholding and

Table 2.—References to the past by time period (n = 68)

Interviewee	Distant Past (10 Years or More)	Recent Past (9 Years or Fewer)	Total
1	1	4	5
2	2	5	7
3	0	3	3
4	0	5	5
5	1	3	4
6	1	7	8
7	12	1	13
8	6	7	13
9	3	7	10
Total	26	42	68
Percentage of References to Past	38.2	61.8	100

local agricultural traditions. Additional comments were made regarding the history of climbing at Seneca Rocks, natural disasters, and regional stakeholders' approaches to providing private facilities in and near the NRA.

In the Recent Past category, respondents largely discussed the development of relationships with USFS representatives in the recent past. Most respondents expressed positive or improving relationships between stakeholders and the USFS. Other issues mentioned frequently in this category included increased visitation in some areas of the NRA and the accompanying impacts on those areas; the perceived lack of marketing of the NRA by county, state, and USFS officials; and the difficulty of getting local residents to volunteer in and around the NRA.

The most common topics mentioned by respondents were present and future economic development; the majority of responses in both the Present and Future categories were related to increased tourism, regional development, the Corridor H highway project and its predicted impact on tourism, and other commerce-related issues. Respondents were predominantly in favor of tourism development. It should be noted, however, that these results are representative only of those individuals who participated in this study; further research is necessary to determine whether this attitude is shared by other members of the NRA gateway communities.

3.2 Quantitative Analysis

3.2.1 Relationships Between Respondents and USFS Management

Respondents (N = 12) were asked to rate their relationship with USFS management as good, fair, or poor. The majority (83.3%) of respondents rated their relationship with the USFS as Good, and 16.7 percent of respondents rated their relationship with the USFS as Fair. No respondents rated their relationship with the USFS as Poor.

3.2.2 Attributes of Collaborative Management

In this portion of the analysis, current and former USFS employees were excluded. The remaining respondents (N = 9) were asked to rate how the USFS values a collaborative approach to management on a scale of 1 (not collaborative) to 10 (collaborative). They were then asked to rate the USFS for the following attributes of collaboration: representation, access to management, information sharing, and encouraging citizen participation.

The mean rating for how respondents thought the USFS valued collaboration overall was 7.39. The highest rating of the different attributes of collaboration was with Information Sharing ($\bar{x} = 7.33$) and the lowest ratings were for Encouraging Citizen Participation and Collaborative Decision Making (both $\bar{x} = 6.56$). Access to Management received a mean rating of 7.22, and Representation received a mean rating of 6.78.

When examined for correlation with the Overall rating of how much the USFS valued collaboration, all five attributes of collaboration were strongly correlated with respondents' overall ratings ($p < .05$).

Table 3.—Correlations of collaborative attributes and overall collaboration (N = 9)

Collaborative attributes	Pearson r	p
Representation	.684	.042
Information Sharing	.744	.022
Participation	.836	.005
Collaborative decision making	.883	.002
Access	.769	.016

4.0 DISCUSSION

Stakeholders generally have a positive view of their current relationships with the USFS; 83.3 percent of respondents rated their relationship with the USFS as Good and none rated their relationship as Poor. When asked how the USFS values a collaborative approach on a scale of 1 (not collaborative) - 10 (collaborative), respondents rated the USFS, on average, 7.39.

In addition, all five attributes of collaboration (Information Sharing, Access to Management, Representation, Encouraging Citizen Participation and Collaborative Decision Making) were found to be important to stakeholders with regard to the overall collaborative process. To build trust and a collaborative environment, all of these attributes must be present during the planning process. Stakeholders feel that the USFS is doing a good job with information sharing, but encouraging citizen participation and collaborative decision-making could improve.

Stakeholders are looking to the present and future regarding issues and concerns with the NRA. Stakeholders frequently mentioned the changing demographics of NRA visitors (see also Siniscalchi et al. 2004); the need to maintain the unique natural, cultural, and historical qualities of the NRA; and increased regional development, particularly the pending development of Corridor H, a highway that is expected to increase accessibility to the NRA from the Washington, D.C.-metro area. Various approaches to dealing with issues and concerns that stakeholders expressed in these interviews were addressed by West Virginia University in a series of white papers presented to NRA management in the spring of 2006.

When stakeholders focused on the past, their focus was not related to previous political issues between stakeholders and the USFS; rather, they tended to focus on the cultural history of the area and personal experiences recreating on the NRA. While the future development of the NRA and the surrounding areas is important, it is equally important to preserve the local cultural traditions and character of the area in order to maintain the qualities that make the area unique. That the interviewees are looking to the future without much thought about the past (with the singular exception of Respondent 7) indicates the need for an effort to record and preserve the cultural history of the residents in and near the NRA to preserve the area's unique character. NRA management is already moving in this direction with recent efforts to involve the local community in developing a heritage garden and presenting interpretive programming at the Sites Homestead, a homestead from the mid-1800s located at Seneca Rocks.

In conclusion, the time is ripe for a collaborative planning process at the Spruce Knob-Seneca Rocks National Recreation Area. Stakeholders are focused on future development in and around the NRA, and have a positive view of local USFS management. Managers could improve their encouragement of citizen participation and collaborative decision-making, but overall have developed a relationship with stakeholders that supports a collaborative planning process. We recommend that social relations with stakeholders be treated as an indicator to be monitored to ensure that good relations continue. Future research should include gateway community members who do not benefit directly from the presence of the NRA, as well as community members whose relationships with the USFS have not been historically positive.

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THE INFLUENCE OF LEISURE RESOURCEFULNESS AND RECREATION SPECIALIZATION ON LIFE SATISFACTION AMONG A SAMPLE OF SENIOR ADULTS

Jerry L. Ricciardo
Associate Professor
Eastern Michigan University

Abstract.—The quest for quality of life and individual happiness is, in part, associated with the individual's ability to identify his/her own needs at a point in time along the life cycle continuum and having the ability to translate those needs into activity spheres or recreation activities. This research is an examination of recreational career participants among a sample of senior adults. Each respondent's scores for leisure resourcefulness and recreation specialization were used as predictor variables to examine their relationship with the respondent's average score on a life satisfaction continuum. Results of the analyses indicate that leisure attitude and leisure companions are significant predictors of life satisfaction among the sample respondents. Moreover, higher recreation specialization, one's commitment, and one's involvement in a career or specialized recreation activity are significant predictors of life satisfaction.

1.0 PURPOSE OF THE RESEARCH

The purpose of this research is to provide researchers and practitioners additional knowledge concerning leisure services provision for senior adults by examining the influence of recreation specialization and leisure resourcefulness on life satisfaction. Over time senior adults who have developed a higher degree of involvement and commitment to a specific recreation activity and an ability to identify and engage in meeting his/her leisure needs will experience higher life satisfaction.

2.0 CONCEPTUAL BACKGROUND

2.1 Leisure Resourcefulness

Rapoport and Rapoport (1975) published a book titled, *Leisure and the Family Life Cycle*. This work has become a standard reference in this area of leisure research. In an exploration of leisure influences on individual lifestyles by way of case studies, the authors advance the concept of leisure resourcefulness. Presumably a person who has a higher degree of leisure resourcefulness will also experience a higher quality of life and greater life satisfaction. There are two basic tenets of this concept. First, one must know how to and be able to make a meaningful life for him/herself within the realities of his/her own existence, and, second, one must know how to and be able to change those realities to effect an appropriate leisure lifestyle or one's mode or manner of personal expression during nonwork time. The authors go on to state that leisure resourcefulness is not constant from one person to another nor is it constant over the life span. Personal or situational variables may intercede, such as the loss of one's spouse or birth of one's child, that may influence one's leisure resourcefulness. That is, leisure resourcefulness varies with one's adaptive abilities and one's personality across life cycle stages. If resourceful in their leisure, the elderly, having large blocks of free time, will recognize or at least be aware of their needs at a point in time and know how to and be able to translate their needs into spheres of action or meaningful recreation activities.

2.2 Recreation Specialization

The initial conceptualization of recreation specialization was Bryan's (1977) descriptive study of fishermen in the northwest United States. Bryan stated that characteristic patterns of participation occur as fishermen "move through stages in their 'fishing career'" from an occasional fisherman to a generalist, a technique specialist, and ultimately to a technique-setting specialist. Each stage is characterized by increasing degrees of sophistication in fishing equipment, specific resource types, and changing membership in the fisherman's social group—the fisherman moves from family participation to eventual membership in a group of fellow specialists. Bryan (1979) applied the concept of specialization to a wide variety of recreation activities. Bryan (2000) went on to state that concurrent with continued specialization in a recreation activity are clusters of attitudes and values as to the meaning of the activity and its centrality to one's identity. Scott and Shafer (2001) concluded from multiple studies of recreation specialization that

Table 1.—Life Satisfaction Scale Items[1] and Reliability Score

Scale Items
1. As I grow older, things seem better than I thought.
2. I have gotten more of the breaks in life than most.
3. I am just as happy as when I was younger.
4. These are the best years of my life.
5. *Most of the things I do are boring.
6. I expect some pleasant things to happen to me.
7. The things I do are as interesting to me as they ever were.
8. *I feel old and somewhat tired.
9. As I look back on life, I am fairly well satisfied.
10. I have made plans for things I'll be doing a month from now.
11. *When I think back over my life, I didn't get most of the important things I wanted.
12. *Compared to other people, I get down in the dumps too often.
Cronbach's Alpha=.803

[1] Adapted from R. J. Havinghurst, B. L. Neugarten, and S. S. Tobin. (1961). The measurement of life satisfaction. Journal of Gerontology, 16, 134-143.
Scale items were measured on a five point scale: 1=strongly agree, 2=agree, 3=neither agree nor disagree, 4=disagree, 5=strongly disagree.
*Items were reverse coded for internal consistency.

"beyond the recognition that recreational specialization includes a set of behaviors and attitudes, there remains little agreement about how precisely to characterize and measure the construct" (p. 326).

A 15-item scale was developed based upon Bryan's (1977) conceptualization of recreation specialization: the social group, knowledge of the activity, place of participation, equipment, commitment, and stage of development. The respondent was asked to either agree or disagree with each item (Ricciardo 2004).

The scale used to measure life satisfaction was a standardized scale adapted from Havinghurst et al. (1961). The scale items are provided in Table 1.

3.0 RESEARCH OBJECTIVES

Objectives of this research were to (1) examine the relationship between life satisfaction and leisure resourcefulness among the sample population, and (2) examine the relationship between life satisfaction and recreation specialization among the sample population.

4.0 DATA COLLECTION AND SAMPLE

The data collection instrument was a self-administered questionnaire. Data were collected by commuter students enrolled in recreation courses. Students enrolled in each of three courses are residents of a large metropolitan area. Each student was given five questionnaires with instructions to provide one questionnaire per household to an adult 65 years of age or older who may be a family member, relative, friend, or acquaintance. The sample size was 172 respondents.

5.0 RESULTS

5.1 Description of the Sample Population

Eighty-six percent of the sample respondents were Caucasian and approximately six percent were African American. The average age was 68 with an approximately equal number of males and females. Sixty percent of the respondents were married and 57 percent lived at home with their spouse. One-third of the sample had earned a college or advanced degree. Fifty-five percent had graduated either from high school, or tech school, or experienced some college. Forty percent of the respondents had an income of less than $40,000 and 36 percent had incomes between $40,000 and $70,000. Eighteen percent had incomes greater than $70,000. Fifty percent of the sample population reported having one or two sources of income in their retirement, and 50 percent experience three or four sources of income. Fifty-eight percent of the sample had worked at their occupations for 30 or more years. Seventy-two percent of the respondents reported their present health as excellent or good, and

Table 2.—Results of Multiple Regression Analysis of the Life Satisfaction Scale[1] and Average Scores for Each of Five Leisure Resourcefulness Scales

Leisure Resourcefulness Scales	Average Score	Alphas	Beta	t	p
Leisure Time	3.33	.693	.090	1.05	.295
Leisure Knowledge	3.27	.819	.002	.018	.986
Leisure Attitude	2.14	.824	.261	2.27	.025
Leisure Companions	2.62	.896	.182	2.15	.033
Leisure Equipment	2.35	.887	.103	1.14	.254
Model Summary					
$R = .493$ $R^2 = .243$ $R^2_{adj} = .216$ $F(5, 140) = 9.00$, $p<.000$					

[1] The respondent's average for the 12-item Life Satisfaction Scale (from 1, Strongly Agree, to 5, Strongly Disagree) was used as the dependent variable.

86 percent of the respondents stated that they have their own transportation.

5.2 Life Satisfaction and Leisure Resourcefulness

Five subscales were designed to measure leisure resourcefulness: Leisure time, leisure knowledge, leisure attitude, leisure companions, and leisure equipment. Each scale consisted of 10 items and each response was a five-point scale from strongly agree to strongly disagree (Ricciardo 2004). The subscales and the average score for each scale and associated reliability scores (alphas) are provided in Table 2. Multiple regression analysis was used to examine the relationship between life satisfaction and leisure resourcefulness (Table 2). The respondent's average score for the 12-item life satisfaction scale was used as the dependent variable. The respondent's average score for each of the five subscales of the leisure resourcefulness scale was used as an independent variable.

Both leisure attitude and leisure companions were significant predictors of the respondent's life satisfaction. The explained variance is 24 percent.

5.3 Life Satisfaction and Recreation Specialization

Results of factor analysis of the 15-item recreation specialization scale are in Table 3. Four factors account for 47 percent of the variance. Four factors were identified: knowledge, novice, commitment, and involvement. The scores for each of the four factors were saved and used as independent variables. The respondent's average score for the 12-item life satisfaction scale was used as the dependent variable. Results of multiple regression analysis indicate significance for three of the four factors from the recreation specialization scale: novice, commitment, and involvement (Table 4). The beta weight for novice is negative, so as the level of novitiate goes down, the level of specialization increases. The explained variance is 11 percent.

6.0 CONCLUSIONS

Earlier research of this sample population in light of recreation participation over the life span indicated that respondents had developed career or specialized recreation activities (Ricciardo 2004). In the data collection instrument the respondent was asked: "What leisure activity/hobby have you been participating in the longest, for example, you may have been fishing or collecting since childhood, play a musical instrument, play cards?"

Life span recreation participation indicted a variety of recreational pursuits, for example, sporting activities, crafts, table games, fishing/hunting, collecting, baking/cooking, and so on. The average reported number of years participating in all hobbies or career activities was 42.8 years with a range of one year (computers) to 67 years (baking/cooking).

Among the sample respondents leisure attitudes were a significant predictor of life satisfaction. Attitudes

Table 3.—Factor Analysis Results of the 15-Item Recreation Specialization Scale

Factor	Eigenvalue	% of Variance	Cumulative %	
1	2.516	16.775	16.775	
2	1.841	12.275	29.050	
3	1.459	9.725	38.775	
4	1.235	8.236	47.011	
Rotated Component Matrix and Factor Scores				
Component	1	2	3	4
Scale Item				
Taught[1]	.814			
Equipment[2]	.703			
Beginner[3]		.747		
Started[4]		.543		
Books[5]			.710	
Life[6]			.616	
Goodas[7]				.771
Vacations[8]				.691

[1] I have taught this activity to others.
[2] I require specialized equipment to participate in this activity.
[3] I am a beginner in this activity.
[4] I just started participating in this activity.
[5] I have read a lot of books about this activity.
[6] This activity is an important part of my life.
[7] I mostly participate with others as good as I am.
[8] I go on vacations just to participate in this activity.

Table 4.—Results of Multiple Regression Analysis for Life Satisfaction[1] and Four Dimensions of Recreation Specialization[2]

Specialization Dimension	Beta	t	p
Factor 1, Knowledge	-.124	-1.60	.111
Factor 2, Novice	-.161	-2.08	.039
Factor 3, Commitment	.217	2.81	.006
Factor 4, Involvement	.176	2.28	.024
Model Summary			
$R = .333$ $R^2 = .111$ $R^2_{adj} = .087$ $F(4, 150) = 4.66$, $p<.001$			

[1] The respondent's average for the 12-item Life Satisfaction Scale (from 1, Strongly Agree, to 5, Strongly Disagree) was used as the dependent variable.
[2] Factor scores for the four factor solution of the 15-item Recreation Specialization Scale were used as independent variables.

influence one's predisposition to behave or not to behave in a certain way and therefore act as determinants of human behavior (Fishbein & Ajzen 1975). To develop career recreation activities, attitudes over time remained sufficiently strong, with stability of beliefs in the value and benefits sought from participation in the career activity. Evident also are the persistent effort in engaging in the activity over time and the dedication of resources to identify a career recreation activity.

Leisure companions significantly influenced life satisfaction among the sample respondents. Cheek and Burch (1976) discuss the concept of leisure social worlds that are evident by a sense of social belonging (being

"at home") and a shared scheme of order where one participates with others similar enough to themselves that normative constraints, although not absent, are present at a very low level of awareness. Membership is often restricted to others having similar knowledge, commitment, involvement, and skill levels. The shared scheme of order provides stability and continuity to the group and serves to maintain the intragroup bond even over prolonged periods of time (Cheek & Burch 1976). Commitment and involvement among career recreation activity participants significantly influenced one's life satisfaction, according to the findings in this research. Research by Doty (1986) found that a positive self-concept and a sense of competence significantly contributed to life satisfaction among senior adults.

Rapoport and Rapoport (1975) identify these individuals as highly adaptive and resourceful in their leisure. The authors state that such individuals act as role models for other elderly. They are a resource in the community often untapped for their potential to provide knowledge, demonstrations, advice, instruction, and displays of individual ingenuity, creativity, and craftsmanship. As a means of pride and sharing with others in their leisure social worlds, the elderly will display their products and/or skills with others both as a point of pride and a display of their mastery and competency. Such expressions of competence and ability are important in providing a sense of selfhood and identity at any age (Freysinger & Kelly 2004).

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TOURISM IN NEW ENGLAND TOWNS: A THREAT TO THE RURAL FABRIC

Robert S. Bristow
Professor
Department of Geography and Regional Planning
Westfield State College
Westfield, MA 01086

Abstract.—A traditional tourist attraction in New England is the classic rural New England town. These small communities have a small-town feel bounded by family farms and wooded lands. These towns are heavily visited during the fall foliage season and during spring maple sugaring operations. The rural character of many New England communities is threatened by a growing population as citizens forego urban plight and move to pastoral environments to build "McMansions" on retired farmlands. This paper presents an analysis of changing demographic characteristics in one community and the preference for open space.

1.0 INTRODUCTION

This paper seeks to define one measure of quality of life related to open space preservation for Southwick, Massachusetts (see Figure 1), a community with a rapidly growing population. With a current population of 9,000, should the community be "built-out" to current zoning, we might find the population peaking at 29,000! A measure of "Green" is calculated to represent those citizens motivated to support open space provisions in the community. It is based on the households' preference for six strategies to acquire and protect open space lands. Data were collected for the Community Open Space and Recreation Demand Survey (Bristow et. al 2002).

New England has been the case study for land preservation for decades. As early as 1921 and reemphasized in 1962, Benton MacKay, a regional planner, proposed strategies for greenways (MacKaye 1921, 1962). Population growth in the region has an impact on natural resources.

In the following sections, the reader will find some summary information from the Community Open Space and Recreation Demand Survey. Next, the methods employed for this study are introduced followed by the results. Lastly, a discussion of some of the more insightful findings will take place.

2.0 BACKGROUND

During the fall of 2001, the author met with members of the Southwick Open Space Committee to prepare a survey instrument that could be administered to the citizens of Southwick, MA. The survey instrument was modeled after questionnaires used in previous community open space and recreation surveys and tailored to meet the specific needs of Southwick. The instrument solicited information about household characteristics (length of residency, number in family, and age), preferences for strategies to protect open space and recreation resources in the community, visitation patterns for local resources, and information about needed expansion and/or provision of recreation opportunities.

A random telephone survey was utilized for this project. Thus, this survey is a stratified (by listed residential telephone numbers) random sample. Given that the population of Southwick is 8,835 residents and 3,318 households, (U.S. Census 2000), the 892 total calls made represent a 26.8 percent attempt rate of contacting the residents of Southwick. The sample size of 251 represents an overall sample of 7.6 percent of the population.

2.1 Residency

The minimum amount of time any given participant lived in Southwick was one month, while the longest amount of time was 75 years. The mean was 18.7 years.

2.2 Importance of Land Use Strategies

Preserving farmland yielded a 'most important' response from 125 households (49.8%). In the preserving historical places strategy, 120 households (47.8%) specified that this is most important. For conserving land, natural and open space areas, 154 households (61.4%) showed that this is most important. The last strategy, creating new or expanding current recreational areas, 65 households (25.9%) felt that this is most important. Thus conserving land and natural and open space is the most important factor land use strategy for the community.

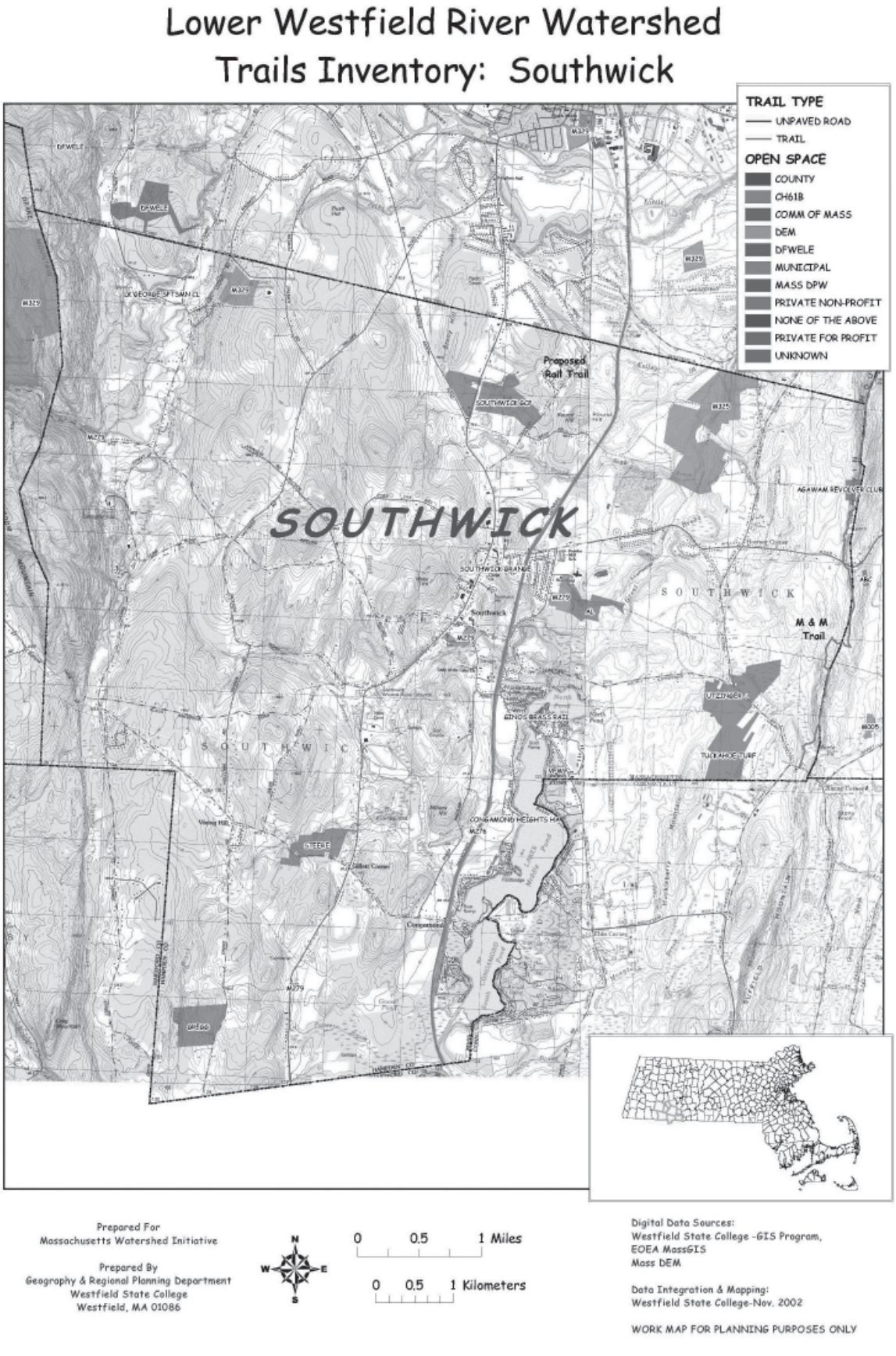

Figure 1.—Southwick, Massachusetts and open space.

2.3 Growth

Southwick citizens were most receptive to growth in the area of conservation and open space lands (90.8%), and business and commercial development (58.3%). The least interest in growth was found in the categories of residential (39%), industry/manufacturing (38.3%), and no growth (32.4%). Note also that the residents uniformly supported the preference for growth in conservation and open space; a low standard deviation of 0.29 indicates this wide support. The remaining growth strategies yield higher standard deviations (e.g., 0.46+), indicating greater variation in the responses.

2.4 Quality of Life

One hundred and eleven households (44.2%) rated housing costs only as fair. In the case of housing conditions, 142 households (56.6%) rated the condition as good. A majority of households (146 or 58.2%) rated the conditions of parks/playgrounds as good, and the vast majority of households (213 or 84.9%) rated the police service as good. Regarding the question of condition of streets, 115 households (45.8%) rated the condition as good. Public schools were rated as good by 147 households (58.6%). For fire protection, 198 households (78.9%) rated the protection as good. Lastly, 98 households (39.0%) rated shopping facilities as good and 99 households (39.4%) rated them as fair. Most citizens feel the services are good in the town, while housing costs and shopping opportunities are viewed by the citizens to be only fair.

2.5 Conservation Land Use

A majority of Southwick residents or 216 households (86.1%) agreed that the land should be kept in its natural state. There are 187 households (74.5%) who believe that land should be developed as passive recreational areas. Finally, the last type of land use strategy asked if people preferred the land to be developed as active recreational areas. Only 98 households (39%) favored this type of development. It is apparent that the citizens do not favor active recreation development.

3.0 METHODS

From this survey, a measure of environmental awareness was calculated. This "green measure" is the aggregate of several proposals to increase open space protection. The survey asked whether the household agreed or did not agree with the strategy. The measures are:

a. vote for strengthening zoning/development restrictions on wetlands and floodplains?
b. vote for town-supported land acquisitions?
c. sell or donate land to the town?
d. donate money to buy land?
e. vote for a tax increase specifically for open space preservation?
f. vote for a tax on real estate sales in Southwick to establish a land bank to fund town purchases of farmland or open space?

The more factors agreed with, the more "green" the family could be considered. Green households could represent groups with higher environmental sensitivity. A two-step cluster analysis determined the breakpoint between non-green and green households. Given six strategies on average, households needed to favor almost four to become green. Those who favored fewer actions were seen as non-green and those that favored the majority of actions could be green. This dichotomy was then evaluated with a t-test to see the significant differences.

4.0 RESULTS

Southwick is a "bedroom" community within commuting distance to large urban areas. And as such, the rural fabric of the region is threatened by urban sprawl. Individuals who have recently moved into the area have different expectations than do long-time residents. Results suggest the recent residents encourage residential and commercial growth within the community now that they live there, thereby changing the rural character of the area. There also appears to be a significant difference in the assessment of strategies to protect open space among the citizens

A majority of residents support the notion of strengthening zoning laws in the community. Next popular, citizens favor land acquisition as a mean to preserve open spaces. The four remaining strategies were equally supported and each received an approximate 50

percent approval. For the details, while 206 households (82.1%) are in favor of strengthening zoning/development restrictions on wetlands and floodplains and 179 households (71.3%) supported land acquisitions, only 122 households (48.6%) would sell and/or donate land to the town. Donating money or increasing taxes to preserve open spaces were options favored by only 51.8 percent and 37.5 percent, respectively. These environmental strategies were aggregated to create the Green measure.

A significant relationship is found between the length of residence and environmental sensitivity (independent samples t-test=-1.908, p=0.05). Investigating the individual strategies to protect open space found only one significant relationship, indicating that the aggregate measure of green is a powerful determinant. Specifically, a test of association for the cross tabulation of length of residence and favoring residential growth shows that longer-time residents appear to be against additional residential growth (Gamma = 0.213, p = 0.05). For example, households that have resided in the town for more than 21 years are more likely not to favor residential growth. Twenty-seven percent of the entire sample fall into this category, and 69 percent of all of the long-time residents are against residential growth. For the short-term residents (less than five years), the ratio of favoring residential growth and not is more like 50/50.

5.0 CONCLUSIONS AND IMPLICATIONS

The findings in this research suggest that the original character of rural communities that may attract citizens to settle in the first place may actually change as rural lands are transformed into building lots. This in turn may reverse the characteristics of the community and further discourage additional settlement as the region becomes a suburb.

Greenways, as MacKaye (1921) envisioned, would provide a mechanism for smart growth to address urban sprawl, while providing needed habitat for wildlife and lands for ground water infiltration. The M&M Trail found on the eastern edge of the map (Figure 1) represents one such "dam" to encroaching urban sprawl. Additional greenways in the area will benefit the native wildlife habitats.

Given the rural nature of this and many other New England communities, the potential for converting farmlands into housing developments needs immediate attention. Protecting viewscapes is one tool that will help, and "farmscapes" are one of the initial attractants to the migrating citizens.

Next, there is a need to investigate the implications of population growth, the resulting urban sprawl, and the threat to open space.

Tied to an increasing population in rural communities is the important need to provide affordable housing. Massachusetts has experienced a net loss of population from 2003-2004. Housing costs are one of the reasons for this out-migration.

Southwick has a history that needs preservation. Southwick was incorporated in 1770. Historic structures and landmarks are competing for the same space that the citizens are demanding.

These are some of the compelling reasons to employ "Smart Growth" techniques to meet the varied needs of the citizens in New England. Time is short since one housing development may totally obscure one historic landmark.

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WATERSHED MANAGEMENT AND LANDOWNERS' ENVIRONMENTAL PERCEPTIONS

Kathleen G. Scholl, Ph.D., CTRS
University of Northern Iowa
203 Wellness/Recreation Center
Cedar Falls, Iowa 50614-0241
kathleen.scholl@uni.edu

Yuka Inui, M.S.
University of Northern Iowa

Samuel V. Lankford, Ph.D.
University of Northern Iowa

1.0 INTRODUCTION

The State of Iowa has 72,000 miles of rivers and streams. These waters have several designated uses for more than 2.9 million Iowans, such as urban and agricultural needs, sustaining environmental resources, power plant cooling, and providing tourism, sport, and recreation. Of serious concern is the amount of pollution currently found in many of these waters (Water Tech online 2005). Too many waterways in Iowa are on the Federal Clean Water Act Section 303(d) list of impaired waters and are regarded as too polluted to maintain their designated function. Prominent non-point pollution sources that impact the quality of Iowa water bodies include silt, nitrogen, phosphorous, pesticides, animal waste, hormones and antibiotics (IDNR n.d., USGS n.d., WHO's 13 News 2005). In 2002, the Iowa Department of Natural Resources identified 205 water bodies and 286 impairments with additional investigation needed in 40 wetlands, 23 lakes, and 108 stream and river segments (IDNR n.d., Maas n.d.). These numbers continue to slowly but steadily increase. Stakeholders such as urban and rural residents, developers, farmers, and public land managers must be full participants in reversing this trend. Yet not enough has been done to measure awareness of the causes and effects of this problem, and assess their willingness to institute good environmental practices. As public debate surrounding land use and preservation issues increases, insight into the nuances of landowner awareness, concerns, and attitudes becomes increasingly important.

2.0 THEORETICAL FRAMEWORK

This study focuses on the association between landowners' perceived environmental social identity (anthropocentric vs. ecocentric) and their environmental behavior, in the context of a small impaired stream located in Black Hawk County of northeastern Iowa (see Figure 1). This social identity theoretical framework can be applied for single and multiple use recreation and tourism issues of development or preservation.

Environmental identity is the set of meanings attached to the self as the person interacts with the natural environment. How one views one's self within the environment is distinguished between the worldviews of anthropocentricism and ecocentrism. An anthropocentric position views humans as intrinsically valuable, unique among all species, and shaped by their social and cultural environment. From this perspective, the environment does not have intrinsic value, but instead is viewed as a means to a human end. Individuals holding an anthropocentric view "tend to favor economic development over environmental protection, and tend to engage in fewer environmental behaviors" (Schultz & Zelezny 2003, p. 126). An ecocentric worldview considers humans as valuable and unique yet just one among many other species and objects of value and worth (such as trees, rivers, and prairies), and they must consider environmental forces that may impose constraints on human actions. Ecocentrists define their relationship with the environment as interdependent and tend to "care more about environmental problems, favor environmental protection over economic growth, and engage in more pro-environmental behaviors" (Schultz & Zelezny 2003, p. 126). Research has shown that public attitudes and values toward the environment—citizens' sense of environmental identity—vary on a continuum between anthropocentricism and ecocentrism (Hunter & Rinner 2004, Schultz & Zelezny 1999).

The following model was utilized to develop the study approach (see Figure 2). Stets and Biga (2003) suggest that the level of environmental identity can help explain the attitudes toward a resource (in this case the watershed) and the subsequent behaviors (the likelihood of pursuing or accepting assistance from the Soil Water Conservation District (SWCD) to implement

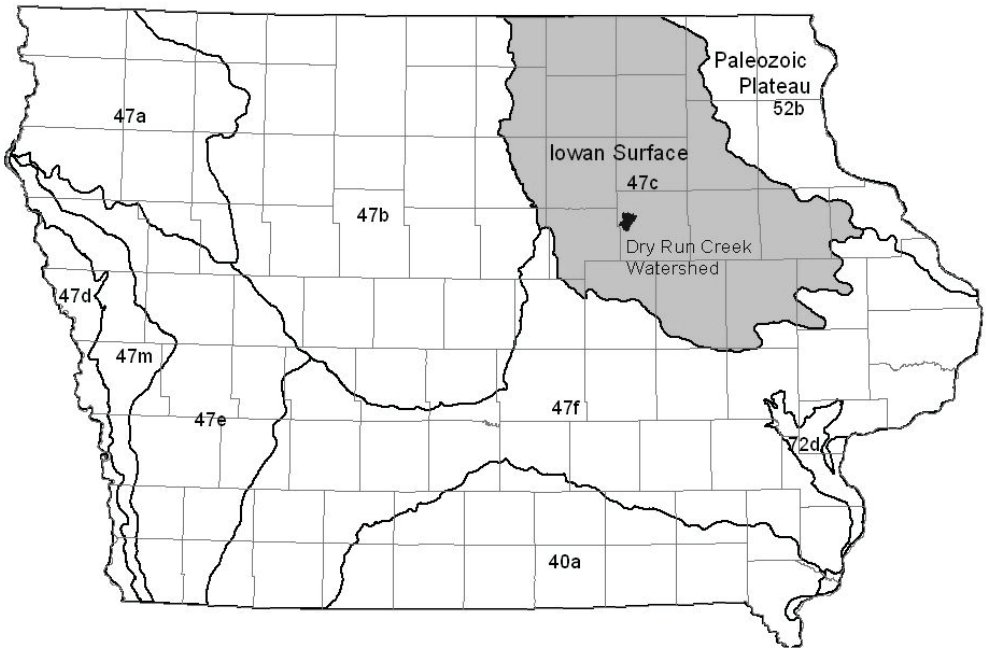

Figure 1.—Iowa Ecological Regions (Wilton, 2005).

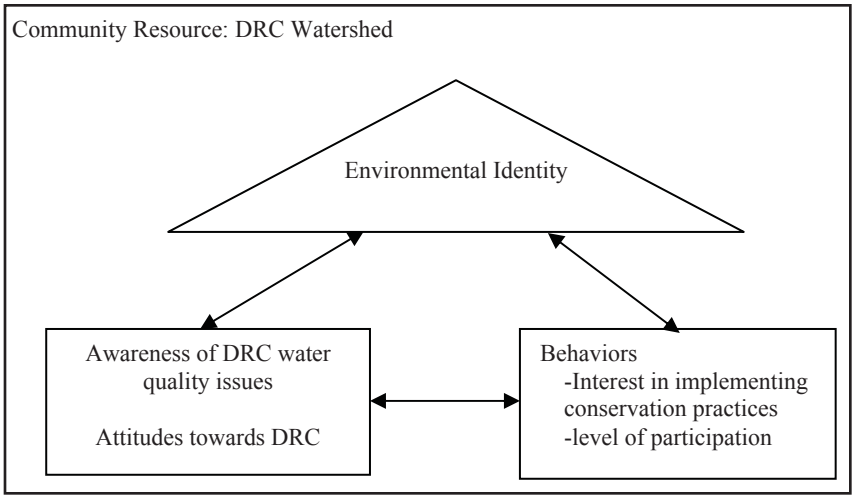

Figure 2.—Environmental identity, attitudes, and behavior in a social context adapted from Stets and Biga (2003).

conservation practices on their property located within the Dry Run Creek (DRC) watershed). Stets and Biga posit that once a person's "environmental identity is formed, environmental attitudes will form followed by environmental behavior" (p. 406). "Attitudes are just a part of one's environmental identity for people construct attitudes about an object (such as the environment) on the basis of how the objects affect what they value" (Stets & Bita 2003, p. 401). Attitude theory focuses on the choices or decisions a person makes regarding a specific object. Examining environmental attitudes and the intentions they produce is not sufficient to understand environmental behavior. Identity theory not only looks at individual choice but also links the individual to a larger social structure that guides individual choices. Therefore the identity, the attitude, and the behavior must be considered in predicting environmentally responsible behavior. In this case, the supposition that if a landowner believes a particular environmental degradation has adverse consequences to what he/she values, the individual is more likely to instigate conservation practices.

3.0 METHODS

3.1 Study Site

DRC is the primary drainage system in northwestern Black Hawk County, Iowa (see Figure 1). The creek is composed of 24.5 miles of stream channel that drains

approximately 35 square miles. It drains from rural farm fields at its outer reaches, coalesces into channels as it travels into the city of Cedar Falls, and empties into the Cedar River. Despite the creek's name, water is present in much of the stream throughout the year. In 2002 and again in 2004, the IDNR labeled DRC watershed an "impaired water body," indicating that certain aquatic life was not present in the stream and that it was unsuitable aquatic habitat. Other stream quality issues have been noted including the use of the creek as small landfills and the presence of a mixture of chemicals and bacteria microfauna, such as *Escherichia coli* (*E-coli*). The presence of these chemicals and bacteria in the stream deteriorate the water quality, further impairing the aquatic life in the stream (Beason 2005). Despite these dangers, however, very few Cedar Falls residents know of these findings.

3.2 Survey Sample

In January of 2005, Black Hawk SWCD set out to identify landowner awareness, concerns, and attitudes of water quality issues specific to the DRC watershed. To accomplish this task, 348 systematic randomly selected property owners within the DRC watershed were sent a survey to identify potential conservation practices that they may be interested in implementing. Two hundred and fifteen surveys were returned (61.8%). Considering that the City of Cedar Falls and rural farmers own more acres of land within the DRC watershed, 122 additional surveys were sent to these landowners who were not initially selected as part of the sample, with 49 surveys returned. Since significant differences between each group's responses were not found, both sets of surveys were combined for a total of 264 surveys in this sample of landowners.

4.0 RESULTS

Landowner human-environmental perspectives are distinguished between the worldviews of anthropocentricism and ecocentrism. The sum of 11 human-environmental perspectives questions was calculated to give an indication of landowner human-environment perspective towards preserving the overall environmental health of the watershed. The higher the total score, the more environmentally friendly is the landowners's sense of self. The scores ranged from 5.5 to 60.5 with a mean score of 36.9 and a standard deviation of 7.47. To determine whether a landowner had a tendency towards an anthropocentric, moderate, or ecocentric world view, environmental identity scores were categorized in the following manner: landowners with a score of 27.4 or less were categorized as anthropocentric; landowners with an identity score between 27.5 and 38.5 were categorized as holding a moderate environmental world view; and landowners who scored higher than 38.6 were categorized as ecocentric.

Findings indicated that landowners with a higher environment identity score were more aware, concerned, and interested in instigating possible conservation practices on their property than those individuals whose environmental identity scores tend to favor development within the watershed over preservation. Although the majority of landowners (74.7%) indicated that they were "unaware" or "not sure" of the watershed water quality issues, landowners with an ecocentric world view were more likely to be aware of DRC water issues compared to those with moderate environmental identity (Scheffe, $p = .001$).

4.1 Interest in Conservation Practices

Table 1 illustrates the association between landowners' human-environmental perspectives with their potential conservation behavior. Cross tabulation between landowner interest in learning and implementing conservation practices and landowner differences in environmental identity was analyzed. For all 17 conservation practices, individuals who held an ecocentric worldview were more likely to be interested in learning more about conservation practices that would help improve DRC water quality. Interestingly, for the 17 listed conservation practices, 100% of the landowners who held an anthropocentric world view were not interested or felt seven of the 17 practice did not apply to their situation. However, a high percentage of all surveyed landowners were interested in the following practices: Native landscaping/wildflower gardens/rain gardens (55.9%); backyard conservation/wildlife habitat improvement (50.8%); and urban construction control (49.8%) (Table 1).

Table 1—Environmental identity and level of interest in conservation practices

		Environmental Identity			
	All landowners	Anthropocentric World view	Moderate Environmental Identity	Ecocentric World view	x^2 Sig.
Native landscaping/Wildflower gardens/Rain gardens					p≤ 0.001
no interest/not applicable	33.9%	88.9%	40.2%	15.9%	
interested but need more information	55.9%	11.1%	48.5%	50.7%	
already adopted practice	10.2%		11.4%	11%	
Backyard conservation/wildlife habitat improvement					p≤ 0.001
no interest/not applicable	37.7%	94.7%	45.5%	13.6%	
interested but need more information-	50.8%	5.3%	41.8%	73.5%	
already adopted practice	11.4%		12.7%	12.5%	
Urban construction control					p≤ 0.001
no interest/not applicable	45.5%	100%	56.8%	18.9%	
interested but need more information	49.8%		36.4%	77.8%	
already adopted practice	4.7%		6.8%	3.3%	
Permeable paving					p≤ 0.001
no interest/not applicable	50.6%	94.1%	58.3%	30.8%	
interested but need more information	48.5%	5.9%	40.2%	69.2%	
already adopted practice	0.9%		1.5%		
Inlet protection for storm sewers					p≤ 0.001
no interest/not applicable	47.6%	94.1%	52.7%	31.1%	
interested but need more information	47.2%	5.9%	41.2%	64.4%	
already adopted practice	5.2%		6.1%	4.4%	
Assistance in disposal of household hazardous waste					p≤ 0.001
no interest/not applicable	34%	82.4%	37.9%	78.7%	
interested but need more information	46.4%	5.9%	42.4%	60.4%	
already adopted practice	19.6%	11.8%	19.7%	20.9%	
Conservation cover					p≤ 0.001
no interest/not applicable	41.1%	94.7%	51.1%	14.6%	
interested but need more information	45.3%	5.3%	34.6%	69.7%	
already adopted practice	13.6%		14.3%	15.7%	
Wetland restoration					p≤ 0.001
no interest/not applicable	51.1%	100%	61.2%	24.7%	
interested but need more information	43.9%		32.8%	70.8%	
already adopted practice	5.1%		6%	4.5%	
Filter strips along the creek					p≤ 0.001
no interest/not applicable	46.6%	100%	56.7%	20.9%	
interested but need more information	43.3%		29.9%	71.4%	
already adopted practice	10.1%		13.4%	7.7%	
Waterways					p≤ 0.001
no interest/not applicable	43.6%	100%	50%	22.8%	
interested but need more information	41.9%		32.3%	64.1%	
already adopted practice	14.5%		17.7%	13.1%	
Rock check dams					p≤ 0.001
no interest/not applicable	55.2%	94.1%	63.1%	35.6%	
interested but need more information	40.9%	5.9%	32.3%	61.1%	
already adopted practice	3.9%		4.6%	3.3%	
Minimal use of lawn and garden fertilizers and pesticides					p≤ 0.001
no interest/not applicable	36.6%	100%	40.6%	17.6%	
interested but need more information	40.5%		36.1%	54.9%	
already adopted practice	23.2%		23.3%	27.5	
Terraces					p≤ 0.001
no interest/not applicable	51.9%	100%	59.7%	31.5%	
interested but need more information	36.6%		29.1%	55.6%	
already adopted practice	11.5%		11.2%	13.5%	

continued

Table 1—continued

	All landowners	Environmental Identity: Anthropocentric World view	Environmental Identity: Moderate Environmental Identity	Environmental Identity: Ecocentric World view	x^2 Sig.
Community sewage treatment					p≤ 0.001
no interest/not applicable	52.4%	88.2%	61.1%%	33.3%	
interested but need more information	33.9%	5.9%	28.2%	47.8%	
already adopted practice	13.7%	5.9%	10.7%	18.9	
Windbreaks around dwellings					p= 0.002
no interest/not applicable	49.8%	88.9%	52.6%	37.1%	
interested but need more information	33.6%	11.1%	31.6%	42.7%	
already adopted practice	16.6%		15.8%	20.2%	
Contour strips					p≤ 0.001
no interest/not applicable	60%	94.1%	65.1%	46.1%	
interested but need more information	31.7%	5.9%	24.8%	47.2%	
already adopted practice	8.3%		10.1%	6.7%	
Private septic system upgrades					
no interest/not applicable	70%	100%	77%	54%	p≤ 0.001
interested but need more information	21.9%		15.6%	35.6%	
already adopted practice	8%		7.4%	10%	

Table 2.—Environmental identity, and environmental concerns and attitudes (Numbers are means of counts, not percentages)

	Environmental Identity: Anthropocentric World view	Environmental Identity: Moderate Environmental Identity	Environmental Identity: Ecocentric World view	Sig.
Do you believe that the water quality of DRC is declining?	2.84	3.27	3.67	F(2, 252)=14.156, p <.001
Water contamination is an important environmental issue in DRC	2.89	3.74	4.23	F(2, 251)=29.847, p <.001
Poor water quality in DRC affects economic development in this area of Iowa	2.40	3.03	3.23	F(2, 253)=7.245, p <.001
Agriculture fertilizers have significantly impacted the water in DRC	2.6	3.24	3.54	F(2, 252)=10.858, p <.001
Lawn fertilizers have significantly impacted the water in DRC	2.9	3.46	3.59	F(2, 252)=5.528, p <.004
New construction and development have increased the amount of soil loss in this area	2.68	3.49	3.97	F(2, 251)=19.597, p <.001
Septic systems can affect the water quality of DRC	2.95	3.41	3.75	F(2, 251)=9.011, p <.001
Livestock production contributes to the reduction of water quality of DRC	2.75	3.19	3.08	F(2, 252)=2.420, NS
Run off from paved surfaces including parking lots affect the water quality of DRC	3.10	3.71	4.11	F(2, 253)=15.850, p <.001

1=strongly disagree; 2=disagree; 3=not sure; 4=agree; 5=strongly agree

Analysis on other independent variables revealed no significant differences between the different types of landowners (urban, rural, business) and the number of years landowners had lived in the watershed, and their interest in a specific conservation practice or their concerns and attitudes towards toward environmental degradation. Table 2 shows that a landowner's human-environmental perspective does influence a person's concern and attitude toward potential environmental impacts.

To see whether a landowner's willingness to participate in DRC conservation practices was associated with environmental identity, respondents were asked to indicate either a minimum, moderate, or maximum level of conservation participation. The majority of landowners expressed only a minimal amount of time available (72.4%), whereas 14.4 percent and 13.1 percent of landowners could offer a "moderate" to "maximum" amount of time, respectively, to help improve the stream water quality. Results of crosstabulation identified that landowners who are more environmentally sensitive (ecocentric) indicated more desire to be active in environmental conservation practices.

5.0 DISCUSSION

Gaining an understanding of landowners with differing environmental viewpoints was considered important to the Black Hawk SWCD in order to direct appropriate educational efforts for various conservation practices. The results indicated that an individual landowner's environmental outlook is associated with awareness of DRC watershed issues, a greater concern for potential pollutants, and a greater interest in participating in modern conservation practices. Thirty-five percent of landowners surveyed held a moderate environmental perspective and indicated that they were "unaware" of the DRC water quality issues.

Landowners holding an environmentally-friendly perspective represent a consistently strong association for interest in watershed conservation, suggesting that outreach and education aimed at environmental values and the threat to these values represent a potential approach for increasing support for watershed conservation practices. SWCD could target its outreach to this group to further assess these landowners' level of willingness to participate in specific land conservation efforts. This study also found that those with an anthropocentric identity did not support these conservation practices. It is recommended that SWCD invite individuals to the table with an anthropocentric perspective to hear and understand their environmental views and values and create opportunities to increase landowner knowledge of cost-effective conservation practices towards sustainable rural and urban growth. One recommendation is to target watershed information on specific facts related to the economic impacts to the watershed, rather than aiming to advance general and global watershed concerns. This is not to say that communicating comprehensive environmental concepts and issues are unimportant, but rather such education may not be the best route to increase public support for watershed protection by some landowners where environmental protection is not one of their concerns.

Therefore, as agricultural and urban development continues to increase demands on our nation's waterways, resource managers must identify appropriate strategies that reverse the trend of non-point sources pollutants degrading public waters. Increasing public participation is a prerequisite in this endeavor. However, land management agencies are faced with diverse landowners who hold varied values toward human-environmental relations that affect landowners' watershed awareness, concerns, and behaviors towards conservation practices on their land. These results assist in a more precise understanding of landowners' personal environmental beliefs and the degree to which landowners might support or personally contribute to the solution of cleaner water within their community. In the case of DRC watershed, it is recommended to start by educating the public on specific urban pollution issues and various means by which to mitigate them. As the public debate surrounding land use and preservation issues increases, insight into the nuances of landowner awareness and level of public support becomes increasingly important. When seeking public involvement in land management decisions, it is useful to have this insight into public understanding and the general level of public concern for local and state water quality. These results support targeting outreach, education, and technical assistance

efforts based on a public education campaign about water quality from a development and economic perspective as well as recreation and preservation perspectives.

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CONNECTING WEST VIRGINIA FEE-FISHING BUSINESSES WITH THE LARGER TOURISM MARKET THROUGH THE DEVELOPMENT OF TOURISM PACKAGE

Zongxiang Mei
Recreation, Parks and Tourism Resources
West Virginia University
Morgantown, WV 26506
mmmzzxx@hotmail.com

Chad Pierskalla
West Virginia University

Michael Shuett
Texas A&M University

Abstract.—Thirty-five or more fee-fishing businesses in West Virginia are often characterized as small businesses, and they could benefit from connecting with larger travel packages that are more likely to attract out-of-state anglers. The objectives of this study are to: (1) identify mini-market segments based on fee-fishing experiences; (2) examine how fee-fishing mini-markets can better connect with the larger outdoor recreation markets; and (3) use this information to identify gaps in recreational offerings and develop tourism packages in a West Virginia test market. Six fee-fishing mini-markets were identified. Regression analysis results indicate that it is possible to develop fishing packages. A gap analysis suggests that most of the recreation activities associated with family fishing experience are available to customers in the West Virginia test market. The development of additional tourism offerings and public/private partnerships can help address the gaps identified in the weaker markets.

1.0 INTRODUCTION

1.1 Background

Fee fishing, a recreational activity that represents a small component of the economically important travel and tourism industry in West Virginia, is a popular kind of fishing in the United States. Fee fishing involves paying a fee for the privilege of fishing a private pond where fish populations are enhanced by stocking fish (Cichara 1982). More than 35 fee-fishing businesses exist in West Virginia (WV), and they contribute to the tremendous economic benefits associated with fishing activities. When compared to fishing in public waters, fee fishing at ponds brings more convenience to a wide range of anglers such as out-of-state travelers, families, handicapped anglers, inexperienced anglers, and people who want higher catch rates. In addition, this style of fishing brings more revenue to pond owners than farming fish for sale. However, many of the fishing-related tourism providers are small and may lack the critical mass to attract out-of-state anglers to their sites as primary destinations. Usually pay pond owners do not have the professional knowledge or experience to operate the ponds as professional recreational destinations. How, then, can pond owners better satisfy the needs of anglers and develop their fee fishing business opportunities in such a way to have the greatest benefit to the rural economy in West Virginia?

The development of fishing packages through public-private partnerships can help attract visitors from a larger region if such packages afford higher quality and more eventful experience opportunities. Better customer service and larger fish sizes can contribute to improved quality. However, for each of those production factors, several constraints (e.g., heavy fishing pressure on public water, unequal fishing effort at highly accessible stocking locations, declining average fish sizes and catch rates, and lack of marketing) exist in the market creating difficult challenges for individual tourism providers (Finn & Lommis 2001, Radomski et al. 2001).

Furthermore, West Virginia Division of Tourism and Natural Resources developed a five-year strategic plan (2003-2007) that emphasized the importance of hunting and fishing. There appears to be substantial demand for fishing packages in West Virginia. Logar, et al. (2003) conducted a survey of potential WV tourists. They found that only 9 percent (n = 496) of visitors participated in a travel package to West Virginia. However, just 26 percent of them would not like to visit West Virginia and take part in a recreational package. Most visitors prefer to participate in a travel package, but they have had little experience in West Virginia. In addition, according to the survey, 49 percent of

respondents desire fishing or fishing lessons as part of a package. Most travel as a family (72%) and desire overnight accommodations as part of the package (85%). Family fishing packages could serve a significant market segment in West Virginia.

Fee fishing involves several mini-markets. The development of fishing packages that include other outdoor tourism activities through partnerships with WV State Parks can help private landowners better connect with major markets and attract visitors from a larger region. The purpose of this study is to identify those fee-fishing mini-markets and better understand how to package the fee-fishing experience so as to help the mini-markets prosper in West Virginia.

1.2 Study Objectives

- To identify mini-market segments based on fee-fishing experiences;
- to examine how fee-fishing mini-markets can better connect with larger tourism markets; and
- to use this information to identify gaps in recreational offerings and develop tourism packages in a West Virginia test market.

2.0 LITERATURE REVIEW

Market segmentation by demographic, psychological, or other variables is a trend in recreation and tourism research. Segmentation by motivation is one of the most popular identified in the literature. Two theories supporting the linkage between beneficial experiences and activities are presented to provide support for the linkage between fee-fishing mini-markets and larger tourism markets. The recreation opportunity production process is a theory somewhat related to Maslow's hierarchy of needs, and it is more applicable to outdoor recreation management. On the other hand, push-pull motivation framework is more widely used in tourism research. Both theories connect experiences and benefits (input or push factor) with the attracting factors of a recreation area such as activity and service opportunities (output or pull factor). The reason for introducing two similar theories is that this thesis applies the findings of fee-fishing recreational mini-markets (outdoor recreation markets) to larger markets (tourism markets). That is, it examines both outdoor recreation and tourism behavior. Current research on connecting mini-markets with larger tourism markets is presented in this chapter. However, there are no studies that specifically connect fee-fishing mini-markets with the larger tourism market.

2.1 Market Segmentation

Market segmentation refers to the process by which people (visitors in this case) with similar needs, wants, and characteristics are grouped together so that an organization (or fee-fishing business or state park) can use greater precision in serving and communicating with its chosen customers (Mill & Morrison 1992). With increasingly competitive consumer markets and rapidly changing consumption pattern, scholars have conducted several studies to provide marketing information to those producing products such as opportunities to experience outdoor environments or tourism packages (Yaman & Shaw 1998). Parks are important destinations for the increasingly popular activities of nature-based leisure travel and ecotourism (Butler & Boyd 2000, Cole 1996, Font & Tribe 1999, Galloway 2002, Taylor 2000). Concerning tourism in parks, one challenge for park management identified in the literature involved the implementation of viable park marketing and planning programs (Galloway 2002, Groff 1998, Markwell 1997).

In *The Third Wave*, Toffler (1980, p. 248) warned that the "mass market has split into ever-multiplying, ever changing sets of mini-markets that demand a continually expanding range of options." Segmentation is a process to develop and refine products and services (such as experience packages) to meet every segment's demands and preferences. Segmentation variables are used to divide the mass market into more homogeneous mini-markets. A number of tourism researchers have indicated that the segmentation of markets in terms of both psychological, and socio-demographic variables potentially enables a better discrimination between market members than does analysis in terms of only the latter (Galloway 2002).

2.2 Connecting Experiences and Activities

Recreation Opportunity Production Process

Brown's (1984) recreation opportunity production process helps researchers and managers better understand

their role in providing the essential outputs of recreation through the manipulation of activities and settings (Pierskalla et al. 2004). To understand the relationship among recreation opportunities, a common approach used by tourism providers involves management of tourism resources in terms of their potential to provide four types of recreation opportunities (activity, setting, experiences, and benefit opportunities). These four types of recreation opportunities define the visitor demand hierarchy. The two lowest levels (activities and settings) are the inputs that can lead to the production of certain recreation opportunities. The two highest levels (experiences and benefits) are the outputs of the production process.

Push-pull Motivation Framework

In tourism research, motivation concept can be classified into two forces, which indicate that people travel because they are pushed and pulled to do so by factors (Dann 1977, 1981). This push-pull framework provides a useful approach for examining the motivations underlying tourist and visitation behavior (Dann 1977, Klenosky 2002). Push factors refer to the tourists as a subject and deal with those factors predisposing him/her to travel (e.g., escape or nostalgia). Pull factors are those which attract the tourist to a destination (e.g., sunshine, sea, or other setting opportunities) and whose value is seen to reside in the object of travel. Push motivations are more related to internal or emotional aspects, such as the beneficial experiences desired. Pull factors are connected to external, situational, or cognitive aspects (Yoon & Uysal 2005). Push and pull factors have been characterized as relating to two separate decisions made at two separate points in time--one focusing on whether to go (push associated with travel motivations), the other on where to go (pull of setting attributes) (Klenosky 2002).

2.3 Linkage of Experience of a Single Event with Participation in Activities Throughout the Year

A recreation experience is defined as the desired psychological result or outcome that motivates a person to participate in a recreational engagement or activity (Driver & Tocher 1970). Managers can manipulate recreation settings (and the activity opportunities they afford), which can directly or indirectly influence recreation behavior that results in visitor-produced recreation experiences and benefits (Brown 1984). Park managers can provide the social, physical, and managerial setting characteristics to help visitors achieve their desired experiences. Thus, managers can be considered as producing opportunities to experience.

Lehto et al. (2004) conducted a study to test the effect of prior experience on vacation behavior. One conclusion of their study is that prior experience is a strong predictor of activity participation patterns. The most frequent tourists to a site tended to have the most focused package of activity choices. As people's experience increased, they generally tended to narrow down their place and activity choices (i.e., become more place- and activity-specialized). Pomfret (2006) developed a conceptual framework to examine previous research on mountaineering, mountaineers, adventure, recreation, and tourism, and applied this framework to mountaineer adventure tourists. While these investigations focus on the motives of mountaineers, it is suggested that they are also important to mountaineer adventure tourists, given that tourism and recreation share similarities (Hall & Page 2002, McKercher 1996, Williams 2003). These findings could be useful when interpreting some of the results of this thesis since it reports a study that was conducted in West Virginia, a mountainous region.

3.0 METHODOLOGY

To address the three objectives of this study, two research methods were applied. Method 1 identifies the fee-fishing mini-markets that exist in West Virginia by examining the on-site fee-fishing experiences and off-site recreation activities that visitors desire. Part of this method was reported in a thesis (Moldovanyi 2004) and is summarized in this chapter. Method 2 involves a gap analysis of tourism activities that may complement the fee-fishing mini-markets identified in Method 1 and offered at five state parks within a West Virginia test market.

3.1 Method 1

Mail-back questionnaires and on-site interviews were administered to visitors at three WV fee-fishing businesses in the summer of 2002. This investigation was conducted by Pierskalla, Schuett and Moldovanyi

(Moldovanyi 2004). Respondents evaluated 26 recreation experience opportunity items listed in the questionnaire as reasons for their visit. They also reviewed a list of 25 outdoor activities and checked yes/noas to whether they participated in them during the last 12 months. (Moldovanyi 2004).

The three sites were Family Fishing and Camping, located in Wendel, WV; Whispering Pines, located in Alum Creek, WV; and Mill Run Farm, located in Marlinton, WV. To test survey instruments for content validity, a pilot study was administered prior to the formal data collection period. The formal data collection process was conducted during eight weeks between June and August 2002. Adult anglers were randomly selected to participate using a random number table. Participants were told that their names would not be connected with the results of this study and their responses would be confidential and voluntary (Moldovanyi 2004).

When analyzing the data provided by 337 on-site interviews and 212 returned questionnaires, the Statistical Package for the Social Sciences (SPSS), Version 13.0, was used. The following is a summary of the statistical procedures used to address the first two objectives of this study. To describe the characteristics of pay pond anglers, frequency and descriptive statistic analyses were performed (Gender, Marital Status, Highest Education Level, Age, and Income Level). Principal component factor analysis, a data reduction technique, was performed to group 27 experience items into domains. Six factors or domains (considered as the fee-fishing mini-markets) were identified following the principal component factor analysis with Varimax rotation (Moldovanyi 2004)

To identify the dependence of market preference (desire for experience packages) on socio-demographic characteristics of anglers, ANOVA (analysis of variance) was conducted. Those visitor characteristics examined include age, travel group, marital status, highest education level, and income. For each mini-market identified in the factor analysis, two sample t-tests were used to examine differences among gender. Multiple linear regression analysis predicting the relationships between fee-fishing anglers' mean preference to attain experience domains (dependent variable) and their participation in other outdoor recreation activities throughout the year (independent variables) was performed. Twenty-five activity variables (independent variables) were entered into each of the six models that were developed. Significant values for each model and for each independent variable are reported. Standardized beta values are also reported for each independent variable. The R-square values, indicating the percent of variance explained, are also reported for each regression model. These models indicate the relationship between mini-markets and larger outdoor recreation markets.

3.2 Method 2

Tourism information within 30 miles of Pipestem Resort State Park in West Virginia was collected by building a test-market tourism information database. The tourism information database was built and divided into six categories with more than 220 tourism providers represented. Within the database, there were four other state parks other than Pipestem Resort State Park. The other WV parks were Pinnacle Rock State Park, located in Bramwell; Bluestone Sate Park, located in Hinton; Little Beaver State Park, located in Beaver; and Twin Falls Resort State Park located in Mullens. All the information regarding services and activities offered by those five state parks were also included in the database.

Gap analysis was conducted by comparing the activities offered at five state parks within the test market with the activities demanded by fee-fishing visitors seeking various experience packages. Based on the multiple linear regression models developed in Method 1, fee-fishing anglers' participation in outdoor recreation activities corresponding with the six market segments were identified. Those activity demands were compared to the activities marketed by the five state parks, as indicated in the tourism information database. By comparing the activities anglers demand and the activities supplied in the test market, gaps are identified.

4.0 RESULTS

4.1 Survey participation, Response Rates, and Socio-Demographic Characteristics

Two hundred-twelve people returned a questionnaire with a response rate of 62.9 percent.

Regarding the socio-demographic characteristics of respondents, there were considerably more men anglers than women in this sample. Women accounted for only one of every five people in our sample: 260 (80.5%) males and 64 (19.2%) females. Study respondents traveled in a variety of groups, but primarily as family with children (n = 103, 29.7%), followed by two or more families (n = 65, 18.7%), a couple (n = 55, 15.9%), family and friends (n = 48, 13.8%), alone (n = 38, 11.0%) and two or more friends together (n = 38, 11.0%). Most respondents (n = 202; 59.9%) reported a marital status of married with children. A smaller proportion of anglers reported the following: single with no children (n = 60; 17.8%), single with children (n = 30; 8.9%), married with no children (n = 27; 8.0%), other situation (n = 18; 5.4%). Almost half (n = 165; 49.1%) of the respondents reported attaining a high school or equivalent status; followed by some high school (n = 64; 19.0%), some college (n = 43; 12.8%), and college graduate (n = 28; 8.3%). Respondents' ages ranged from 16 years (the age at which people were eligible to participate) to 74 years. Respondents were an average of 40 years old. Respondents' annual 2001 household incomes were highly varied, ranging from $2,500 - $243,000. The average income was $36,629 and the median was $27,500 (Moldovanyi, 2004).

4.2 Six Mini-markets

Principal component factor analysis (with Varimax rotation), a data reduction technique, was performed to group 27 experience items. Six factors or domains were identified following the analysis. Each of the domains identified represent a mini-market in this study. The six factors were labeled by the research based on identifiable patterns of experience items. Those factors were classified as: Experience nature and adventure (ENAA); Social relaxation (SR); Trophy fishing (TF); Escape (ESC); Family (FAM); and Fish for food and fun (FFFF). The six factor domains explain 68.59 percent of the variance for the observed variables. The large Cronbach's alpha scored indicated strong internal reliability among the items for the following domains: 0.917 (ENAA), 0.906 (SR), 0.872 (TF), 0.774 (ESC), and 0.706 (FAM). Factor six (FFFF) was the least reliable factor (Cronbach's alpha = 0.335). Eigenvalues and the percentages of variance were acceptable and reported in Table 4. All the Eigenvalues were larger than 1.0.

4.3 Connecting with Larger Tourism Markets

Multiple regression analysis was used to identify the strength and significance of relationships between on-site fee-fishing experience motivations (dependent variable) and other tourism activities in which visitors participate throughout the year (independent variables). Six models were developed, each representing a larger market segment and potential fishing package.

The first model examines predictors for "Experience nature and adventure" and approaches significance (p = 0.12). Of those activities included in the analysis, driving for pleasure was the only significant predictor (*Beta* = 0.132, p = 0.09). Other independent variables that are suggestive include target shooting, rock climbing, birding, motor-boating, and nature photography. Together, this group of activities could be incorporated in a tourism package with the theme, "experience nature and adventure." That is, a mix of both passive and active activities included in this model can complement the fee-fishing experience. In the "Social relaxation" model, four-wheel driving/ATV driving was the only significant independent variable (*Beta* = 0.158, p = 0.07). However, other complementary activities that could be considered as part of this tourism package include road biking, kayaking, target shooting, motor-boating, and walking. Trophy fishing was the only model developed that was significant (R^2 = 0.20, p = 0.02) and included three significant predictors and three others that were more suggestive. Driving for pleasure (*Beta* = 0.168, p = 0.03), four-wheel driving/ATV driving (*Beta* = 0.162, p = 0.05) and nature photography (*Beta* = 0.156, p = 0.05) were significant predictors for the desire to experience "Trophy fishing." Although target shooting (*Beta* = 0.138), road biking (*Beta* = 0.112), and motor-boating (*Beta* = 0.087) were not significantly related, they have relatively strong relationships with the trophy-fishing experience factor as indicated by the Beta values reported. Among all of the 25 predictors examined for each of the models, birding had the strongest relationship with the mini-market, "Escape" (*Beta* = 0.214, p = 0.01). Although this model has only one significant predictor,

the model does approach significance (p = 0.17). Other activities that are suggestive in this model include target shooting, nature photography, four-wheel driving/ATV driving, camping near vehicle, and driving for pleasure. For the "Family experience" factor, swimming was the only significant predictor (*Beta* = 0.169, p = 0.04). However, the independent variable, kayaking, does approach significance (p = 0.10) and is an affordable alternative to motor-boating and complements family fun. Backpack camping, watching wildlife, sightseeing and target shooting were more suggestive variables in this model. The final model examined predictors of "Fish for food and fun." Birding was the only significant predictor (*Beta* = 0.169, p = 0.04). Rock climbing was the second-strongest predictor and approached significance (*Beta* = 0.153, p = 0.10). Other more suggestive independent variables include kayaking, hunting, day-use hiking, and walking.

4.4 Gaps in the Test Market

A gap analysis was performed by comparing those activities associated with each market segment with activities already marketed by state parks within 30 miles of Pipestem Resort State Park in West Virginia, the study area. Of those gaps examined, 77 (43%) are currently marketed by a state park in the test-market area. Most of the recreation activities associated with the family fishing experience are available to customers, whereas "Experience nature and adventure" is a potential fishing package lacking the most marketed activities.

The activities offered at the five state parks within our test market were compared with the activities demanded by fee-fishing visitors seeking various experience packages. Those activities marketed for each experience package are identified with a checkmark in Table 1. Gaps exist where checkmarks are absent. The six most strongly related tourism activities with each experience domain (or mini-market), as determined in the regression analysis, were included in Table 1. One hundred eighty possible activity gaps were examined and reported in Table 1 (six domains multiplied by six activities multiplied by five state parks). Of those gaps examined, 77 (43%) are currently marketed by a state park in the test market area. The gap analysis results indicate that most of the activities associated with the family fishing experience were available to tourists in the test market. However, many gaps exist for the other mini-markets and provide tremendous opportunities for other tourism providers to work with state parks to better meet the needs of visitors.

5.0 DISCUSSION

Family fishing packages appear to be the most promising type of tourism package for the Pipestem test market, and perhaps could attract those visitors with the greatest household incomes. Swimming, kayaking, backpack camping, watching wildlife, sightseeing, and target shooting are examples of secondary activities that can complement family fishing opportunities and are among the more heavily marketed activities near Pipestem. Tourists can find most of these activities in nearby state parks. These results also complement those findings presented by Logar et al. (2003). Their survey of potential WV tourists indicated that most visitors travel as a family unit (72%). Park managers should work together to develop marketing strategies that include those family activities as a package.

The gap analysis performed in this study helps address the question regarding what should be contracted out and what should be done within the state parks. Those activities that are not marketed by the state parks in this study should be given priority when developing public-private partnerships. For example, activities associated with "Experience nature and adventure" and "Escape" mini-markets were the least marketed activities by state parks in this study. Nonetheless, several private tourism providers within the test market offered activities such as rock climbing, birding, and motor-boating. The development of additional tourism offerings and public-private partnerships can help address the gaps identified in those weaker markets. Building partnerships when developing tourism packages is a relatively new topic for research and practice. Although the strength of a partnership (i.e., partnership, strategic alliance, or joint venture) is only one indicator of the level of integration between two or more organizations, other patterns of linkages should also be considered (Beekun & Ginn 1993).

Although this study was conducted in three West Virginia fee-fishing ponds and results applied in a gap analysis

Table 1.—Gap analysis of tourism offering at State Parks in the test market

Mini-market segments (Local fee fishing events)	Major Market (Recreational events throughout the year)	Marketed Activities by WV State Parks within 30 Mile Radius of Pipestem State Park				
Experience Factor	Activity Participation	Bluestone	Little Beaver	Pinnacle Rock	Pipestem	Twin Falls
Experience Nature & Adventure	Driving for pleasure					
	Target shooting	✓				
	Rock climbing					
	Birding					
	Motor-boating	✓	✓			
	Nature photography	✓	✓	✓	✓	✓
Social Relaxation	Four wheel driving/ATV driving					
	Road biking		✓	✓	✓	✓
	Kayaking	✓	✓		✓	
	Target shooting	✓				
	Motor-boating	✓	✓			
	Walking	✓	✓	✓	✓	✓
Trophy Fishing	Driving for pleasure					
	Four wheel driving/ATV driving					
	Nature photography	✓	✓	✓	✓	✓
	Target shooting	✓				
	Road biking		✓	✓	✓	✓
	Motor-boating	✓	✓			
Escape	Birding					
	Target shooting	✓				
	Nature photography	✓	✓	✓	✓	✓
	Four wheel driving/ATV driving					
	Camping near vehicle	✓			✓	✓
	Driving for pleasure					
Family	Swimming	✓	✓		✓	✓
	Kayaking	✓	✓		✓	
	Backpack camping					
	Watching wildlife	✓	✓	✓	✓	✓
	Sightseeing	✓	✓	✓	✓	✓
	Target shooting	✓				
Fish for Food & Fun	Birding					
	Rock climbing					
	Kayaking	✓	✓		✓	
	Hunting	✓			✓	
	Hiking (day use)	✓	✓	✓	✓	✓
	Walking	✓	✓	✓	✓	✓

within a West Virginia test market, it has relevance to other locales, given that fee-fishing businesses and other recreation and tourism providers are confronted with similar environmental constraints and pressures to access resources and use them efficiently. Future gap analyses should be conducted in other test markets. This study was also limited by the number of outdoor recreation activities examined. Future research should examine other leisure activities to more fully develop tourism packages relevant to fee-fishing. In addition, other styles of fishing on public waters should be examined to develop models applicable to streams, rivers, and lakes.

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RECREATIONAL USE IN THE HEADWATERS OF THE CHATTOOGA RIVER

Wade M. Vagias
137 Lehotsky Hall
Clemson University
Clemson, SC 29634
wadev@clemson.edu

Robert B. Powell, Ph.D.
Clemson University

Lance T. Haynie
Clemson University

Abstract.—For over 30 years, Sumter National Forest (SNF), principal managing agency for the Wild and Scenic Chattooga River, has prohibited whitewater boating on the uppermost 20 miles of the river. In an attempt to gain access, boater advocacy group American Whitewater filed an appeal against the most recent Land and Resource Management Plan. On the basis of this appeal, SNF was directed to conduct a visitor use capacity study in the upper sections of the river and involve all interested parties in the process. To this end, SNF has hosted three meetings during which the study process was outlined, stakeholders identified, and potential Limits of Acceptable Change indicators discussed. The visitor use capacity analysis is currently underway and expected to continue through 2008. This paper reviews historical and current river management documents and, utilizing a secondary data source, examines levels of experience, involvement, and place attachment between two major stakeholders, Trout Unlimited members and whitewater boaters. An overview of the current process to reanalyze recreation use in the headwaters is synthesized, two major stakeholders embroiled in the controversy are examined, and considerations for future research suggested.

1.0 INTRODUCTION AND PURPOSE

Located in the mountainous corner of northeast Georgia, western South Carolina, and southwestern North Carolina, the Chattooga River and surrounding areas are a popular destination for outdoor recreationalists of the southeastern U.S. Management of the river corridor is shared between the Sumter National Forest (SNF) in SC, Nantahala National Forest in NC, and Chattahoochee-Oconee National Forests in GA, with the SNF as lead agency for river management. A ban on floating the uppermost 20 miles river (north of the Highway 28 Bridge) has been in place since 1976. While empirical data are lacking, anecdotal evidence suggests the ban was implemented to limit conflict between anglers and an increasing number of river floaters. Individuals familiar with the river attribute the rise in boating popularity to the 1972 blockbuster movie *Deliverance,* filmed in large part within the river corridor (Lane 2004). In an attempt to gain access for boaters, American Whitewater (AW), a whitewater boating advocacy group, filed an appeal against the most recent land and management plan. On the basis of this appeal, SNF was directed to conduct a visitor use capacity study on the upper sections of the river and involve all interested parties in the process. This visitor use capacity analysis is currently underway and is expected to continue through 2008.

It is our intention for this research to serve several distinct purposes. The first purpose is to synthesize the history of Chattooga River management by reviewing relevant management documents and literature to fully understand management direction and ascertain possible reasons for the boating ban. Secondly, this research aims to provide an overview of two major stakeholders involved in the current controversy. Our attendance of U.S. Forest Service (USFS) National Environmental Policy Act (NEPA) meetings showed the primary opposition to floating above the Highway 28 Bridge stems from local Trout Unlimited (TU) members. Therefore, we sought to compare and contrast experience, intensity, and place bonding between whitewater boaters who utilize the Chattooga River and TU members from two local chapters. Finally, this research identifies future research needs regarding management of this valuable resource.

1.1 Data and Limitations

In 2001, Backlund (2002) conducted a study of two major stakeholders who utilize the Chattooga River; TU Members from two local chapters (Chattooga River in western SC and Rabun in northeastern GA) and whitewater boaters. Survey respondents were identified either by mailing list or the mandatory river registration (anglers and floaters, respectively) (Backlund 2002, Hammitt et al. 2004b). Floaters were then selected

utilizing a stratified sampling method drawn from 3,311 river permits completed by floaters in 2000 (Bixler & Backlund 2002). A seven page questionnaire was mailed to respondents using a 4-stage modified Dillman (2000) procedure (Hammitt et al. 2004a). Both groups were sent a cover letter, postage-paid envelope, and survey instrument with minor wording changes to reflect differences between activities (Backlund 2002). After follow-ups and reminder postcards, an adjusted response rate of 71 percent for TU members and 53 percent for whitewater boaters was obtained. A usable sample of 427 individuals resulted, of which 189 were trout fishermen (Bixler & Backlund 2002).

While these data have been used in several other publications (see Backlund 2002; Bixler & Backlund 2002; Hammitt et al. 2004a, 2004b), this study conducted a unique analysis of data by making comparisons between these two stakeholders regarding levels of activity involvement, intensity, place bonds, and demographic variables. However, limitations of the data need to be recognized. First, the empirical data was gathered using two different sampling methods, a stratified random sample (floaters) and a purposive sampling frame (TU). Secondly, this data was site specific to the Chattooga River and therefore generalizations cannot be made to other rivers.

2.0 LITERATURE REVIEW

2.1 Overview of the Resource

Originating from small springs and rivulets near Highlands, North Carolina, the Chattooga River cascades down Whiteside Mountain and through the Ellicott Rock Wilderness Area, where it becomes the upstate boundary between Georgia and South Carolina. Here the river slows as it meanders through quiet pools and shallow riffles. Near the end of its journey, the river again descends quickly as it travels through the famous *Five-Falls* before finally spilling into the confines of Tugaloo Reservoir. The watershed encompasses 281 square miles of southern Appalachian forest and drops approximately 4,000 feet over its length.

The Chattooga area is heavily visited; some 11 million people visit annually and an estimated 25 million reside within 150 miles of the river, including the population centers of Atlanta, Asheville, Charlotte, and Chattanooga. Officially designated a Wild and Scenic River (WSR) in 1974, the Chattooga is one of the few remaining free flowing rivers in the southeastern U.S. It provides opportunities for whitewater boating and harbors some of the preeminent trout fishing in the region. Land-based recreational opportunities include sightseeing, backpacking, day hiking, horse packing, and the chance to observe a tremendous variety of flora and fauna, including many federally listed species. Historically, the land was a Cherokee stronghold throughout the 1700s and 1800s and has several known archeological sites located along its banks.

2.2 River Management

In 1971, the WSR Study Report on the Chattooga River was published by the USFS, in which all portions of the river were recommended for inclusion as a WSR. Reasons included a variety of recreational opportunities, of which fishing and boating were both noted. Three years later, the river received official WSR Status which stipulated the USFS to manage the river "in such manner as to protect and enhance the values which caused it to be included" ("Wild and Scenic Rivers Act", 1974). As noted earlier, a portion of the river also flows through the Ellicott Rock Wilderness Area, which further regulates river management. As stated in the 1964 Wilderness Act (WA) (Section 4[b]), "wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use" ("Wilderness Act," 1964).

Five years after inclusion as a WSR, the SNF Land and Resource Management Plan (LRMP) was published and a ban on boating above the Highway 28 Bridge was instituted. The justification for the ban included the adverse effect that the increasing number of boaters had on the fishing experience (Chattooga Wild and Scenic Development Plan 1976). Since the original LRMP, SNF has drafted several revisions and each reinforced the ban. During the mid-1990s and early in 2002, AW lobbied the SNF to gain access to the upper river, but each attempt was met with limited or no response.

In January 2004, a Revised LRMP (RLRMP) was published by the SNF which continued the ban on

floating the upper river. Shortly thereafter, AW filed an appeal to the Washington Office (WO) of the USFS on the basis that "denying boaters access to the headwaters is inconsistent with applicable law and policy" and "the stated justification[s] for the boating ban are not based on adequate information" (Forshey et al. 2004, p. ii). In April 2005, the WO reversed the Regional Forester's continuation of the ban on boating above Highway 28 (Manning 2005). The WO justified the reversal on the grounds that the Regional Forester did not "provide an adequate basis for continuing the ban on boating above Highway 28." As part of this decision, a visitor use capacity analysis was ordered to be conducted to determine how the RLRMP should be adjusted or amended to reflect the findings of the forthcoming analysis.

2.3 Visitor Use Capacity Analysis

The Visitor Use Capacity Analysis is ongoing in the form of the Limits of Acceptable Change (LAC) process. The LAC process is a participatory framework designed to examine potential human impacts in natural areas and the subsequent development of management policies that protect the unique character of the natural resource. This framework relies heavily upon interested citizen participation for effective implementation (McCool 1996). In launching the LAC process for the Chattooga River, the USFS has held three public meetings (October, November, and December 2005). During these meetings, the process was introduced, stakeholders acknowledged, recreational and resource opportunities, values, and desired conditions identified, and potential indicators and data collection procedures discussed with interested parties. At the time this paper was submitted, the USFS was deciding upon appropriate methodologies to employ and are considering user trials, expert panels, literature reviews, focus groups, and user surveys.

3.0 METHODS

A literature review was conducted which included a review of past and present river management documents, an exploration of the visitor use capacity analysis and LAC process, and identification of potential future management directions. Our attendance at public meetings showed two major stakeholders, TU and whitewater boaters, as well as several other less visible groups. Empirical data from a secondary source (see Backlund 2002) were reviewed and synthesized; specifically, variables related to experience, involvement, and place bonding were used to compare and contrast the two known major stakeholders embroiled in the current controversy. Data were analyzed using a mixture of cross-tabulations, mean scores, and t-tests. Most importantly, this analysis identified current informational inadequacies and future research needs regarding recreational management of the upper Chattooga River.

4.0 RESULTS

4.1 Respondent Characteristics

The study population was found to be predominantly male; females represented 2.6% of anglers and 13.9% of whitewater boaters. Respondents were well educated, greater than 90% having attended college or graduate school. Not surprisingly, income levels were equally high as 60% indicated they earned greater than $60,000 annually. Finally, results suggest that distance to the Chattooga River is not a deterrent to participation; data indicated anglers traveled on average 54 miles and whitewater boaters well over 100 miles to reach the Chattooga (Table 1).

4.2 Experience

This study examined the variables experience, involvement, and place attachment for TU members and whitewater boaters utilizing the Chattooga River. Experience is operationalized as the number of years one is involved in an activity and intensity as the number of times the activity was participated in during the past year. The theory of specialization, typically measured through years or frequency of participation in an activity, provides a way of examining differences between anglers and boaters utilizing the Chattooga River (Manning 1999). Manning further describes specialization as not a single construct, but rather one that incorporates a number of factors that contribute to the level of specialization one may exhibit. Bixler and Backlund (2002) suggest that trout fishing and whitewater boating both require specialized equipment and that participants are often intensely involved with their chosen activity.

Respondents were asked a series of open-ended questions regarding previous experience (Table 2). The majority of

Table 1.—Profile of Survey Respondents

	TU Members		Whitewater Boaters	
	Frequency	Percent	Frequency	Percent
Gender				
Male	184	97.4	205	86.1
Female	5	2.6	33	13.9
Age				
< 25	10	5.3	28	6.6
25-34	16	8.5	84	19.7
35-44	27	14.3	95	22.2
45-54	37	19.6	98	23
55-64	50	26.5	72	16.9
> 65	49	25.9	50	11.7
Education				
High school or less	20	10.8	19	8.0
College	84	45.2	144	60.5
Graduate school	82	44.1	75	31.5
Income Category				
< 20,000	7	4.3	30	13.0
20,000 - 39,999	22	13.7	34	14.8
40,000 - 59,999	27	16.8	35	15.2
60,000 - 79,999	31	19.3	40	17.4
80,000 - 99,999	19	11.8	36	15.7
100,000 - 119,999	21	13.0	22	9.6
120,000 - 139,999	9	5.6	7	3
> 140,000	25	15.5	26	11.3
Miles from Chattooga River				
< 25 miles	59	31.6	29	12.6
26 - 50 miles	87	46.5	48	20.8
51 - 75 miles	17	9.1	22	9.5
76 - 100 miles	11	5.9	38	16.5
101 - 150 miles	6	3.2	42	18.2
> 151 miles	7	3.7	52	22.5

TU respondents (51%) have been trout fishing for 31 years while nearly half of whitewater boaters surveyed (47%) have floated rivers 10 years of less. However, when mean number of years utilizing the Chattooga River is examined, data indicated that TU respondents have been utilizing the Chattooga River on average four years longer than their whitewater boating counterparts. While not statistically significant, data indicates that boaters frequent the Chattooga River more often, both lifetime and annually, than their angler counterparts.

4.3 Involvement

McIntyre and Pigram (1992) characterized involvement as a function of three components: attraction, self-expression, and centrality. Attraction refers to not only the pleasure that can be gained from an activity but also the importance of the activity to the individual. Self-expression refers to the desired image one wishes to portray while in their leisure activity. Lastly, the centrality dimension explains the degree to which activity served to shape one;s life and the extent to which an individual organizes his/her life around the activity.

Using a Likert-type scale (1 = strongly disagree to 5 = strongly agree), respondents were asked 12 questions designed to explore and measure involvement in their chosen activity. Responses were then combined into one of three subscale categories (attraction, self-expression,

Table 2.—Previous Experience on the Chattooga or Other Rivers

	TU Members		Whitewater Boaters				
	N	Mean	N	Mean	t	df	p
Years Fishing or Whitewater Boating *	188	31.5	238	13.0	13.61	424	<.001
Years Fishing or Whitewater Boating the Chattooga River *	188	14.7	237	10.5	4.24	423	<.001
Years Fishing or Whitewater Boating Other Rivers *	188	17.5	231	10.8	6.1	417	<.001
Times Participating on Chattooga River (lifetime)	161	142.5	229	145.5	-0.08	388	0.93
Times Participating on Chattooga River (last year)	185	9.8	237	13.8	-1.77	420	0.07
Times Participating on Other Rivers (last year)	181	20.8	233	23.2	-0.46	412	0.64

*p<.05

Table 3.—Involvement

	TU Members		Whitewater Boaters				
	N	Mean	N	Mean	t	df	p
Attraction *	184	4.39	235	4.60	-4.07	417	<.001
Self-Expression	185	3.68	234	3.79	-1.58	417	0.115
Centrality *	189	2.96	238	3.41	-4.94	425	<.001

*p<.05

or centrality) to produce a grand mean for the subscale. As illustrated in Table 3, whitewater boating respondents have higher grand mean scores for each of the three subscales with significant differences existing within the attraction and centrality subscales. Results suggest that whitewater boaters attribute higher levels of pleasure and importance to their activity, as indicated by attraction scores, than TU members and that the activity plays a more central role within their lives.

4.4 Place Attachment

The Chattooga River Corridor is one of the most scenic places in the southern Appalachians. In order to ascertain overall levels of connectedness to the Chattooga River, survey respondents were first asked to rate, via a 7-point Likert-type scale (1 = weak to 7 = strong), "how strong you would characterize your feelings of attachment to the Chattooga River." Mean scores for boating respondents was 6.05 as compared to TU respondents overall mean score of 4.95. Independent t-test analysis showed this difference in overall connectedness to the river to be significant ($t = -8.84$; $df = 420$; $p<.05$).

Hammitt and Cole's (1998) taxonomy of emotional place bonding in a recreational setting provides a theoretical model of place attachment. They propose that emotional place bonding begins with familiarity resulting from increasing levels of bonding intensity and bonding character. As place bonding increases, one progresses sequentially through the stages of the taxonomy: from familiarity to belonging to identity to dependence and finally to rootedness. Each serves a specific role in the place bonding experience. Familiarity can result in repeated visits as well as noticeable impacts. Place belongingness includes a sense of affiliation with the place as well as involving the affective and emotional connections one creates to a place (Milligan 1998). Place identity and place dependence refer to the importance of a place to a person's self-identity and the degree to which the resource is relied upon to perform a particular activity (Bixler & Backlund 2002). At the top of the taxonomy, rootedness incorporates feelings of being at home and being stable within the place.

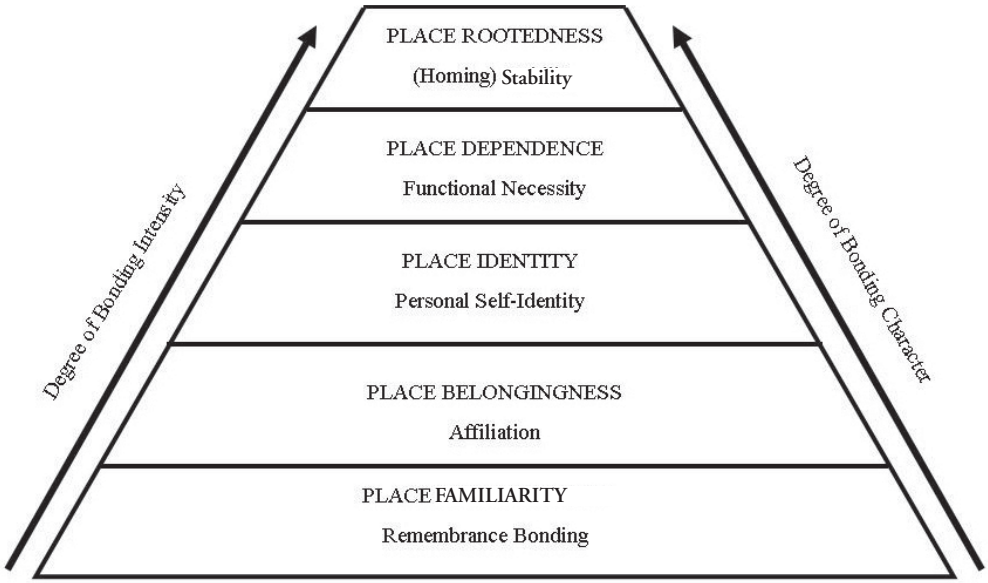

Figure 1.—Here (Taxonomy of Recreation Place Bonding (Hammitt & Cole 1998)).

Utilizing Hammitt and Cole's Taxonomy of Recreation Place Bonding (Figure 2), respondents were asked a series of questions designed to explore emotional bonds to the river and its corridor (1998). As discussed by Bixler and Backlund (2002), these questions were designed to follow the abovementioned model. Similar to the measures of involvement previously discussed, respondents answered questions on a Likert-type scale (1 = strongly disagree to 5 = strongly agree) regarding their level of bonding to the river. Grand means were then calculated for each of the five subscales of the model and are reported in Table 4. Independent t-test analyses showed significant differences to exist between the two groups at all five levels of the taxonomy. Results are shown in Table 4.

5.0 DISCUSSION AND IMPLICATIONS FOR FUTURE RESEARCH

Under direct order from the WO of the USFS, the process to reanalyze recreational use in the headwaters of the Chattooga River is ongoing and will continue through 2008. This research served several distinct purposes. The first purpose was to explore and explain the history of the boating ban and river management, including relevant management documents. Secondly, this research aimed to provide an overview of the two major stakeholders involved in the current controversy and explore variables including levels of experience, intensity, and place attachment. Finally, this research served to identify future research considerations regarding

Table 4.—Place Bonds

	TU Members		Whitewater Boaters				
	N	Mean	N	Mean	t	df	p
Place Familiarity *	187	3.48	235	4.29	-9.70	420	<.001
Place Belongingness *	188	3.53	238	4.16	-9.38	424	<.001
Place Identity *	188	3.51	237	4.16	-8.99	423	<.001
Place Dependence *	189	2.55	235	3.53	-12.66	422	<.001
Place Rootedness *	189	2.06	237	2.50	-6.29	424	<.001

*p<.05

management of this valuable resource. This effort includes highlighting past research inadequacies so that the USFS is better equipped to guide management of this river in the future.

Through analysis of a secondary data source we were able to illuminate differences regarding experience, intensity, and place bonds between two Chattooga River stakeholders: whitewater boaters and TU members. Of interesting note is that while TU members have been using this mountainous stream longer than their whitewater boating counterparts, they reported significantly lower scores in two of the three involvement measures (Table 3) and in all place attachment categories (see Table 4). Data indicate boaters utilize the Chattooga River more frequently than their angling counterparts both annually and over the lifetime. We hypothesize that the stronger place bonds may be a result of the discrepancy between frequencies of use between the groups. In addition fishermen could fish other streams while the Chattooga is the only Wild and Scenic whitewater river in the Southeast for intermediate boaters. Therefore this resource is not replaceable.

Of other interesting note is that the average age of whitewater boating respondents was 40 years old. The magnitude of this finding may not be apparent to those not familiar with the Chattooga River and its headwaters and we wish to identify it as a forewarning for future research. The headwaters section that is currently being reexamined is steep, narrow, and difficult to navigate. Rapids within this section range in difficulty from Class I to VI on the International Scale of Whitewater Difficulty. This section of river requires expert whitewater skills and is more similar to other steep mountainous streams such as the Narrows of the Green River near Hendersonville, North Carolina, and Overflow Creek in northeastern Georgia, than it is to the lower sections of the Chattooga from where the sample was drawn (Sections II, III, and IV). From the researcher's own experience paddling these and other such "creeks" in western Carolina and northeastern Georgia, the 'average' age of the expert boater is considerably less than the 40 indicated by our data. In addition the lower river (largely class II – III), with the exception of Section IV, is relatively easy to navigate and attracts primarily intermediate boaters. Therefore, future research endeavors should aim to secure study samples that more accurately reflect the correct user group.

Evidence suggests past studies, including the data utilized within this paper, have excluded several major recreational stakeholders including non-TU anglers, expert boaters who do not paddle the lower Chattooga, campers, hikers, local communities, and general recreationists. Future analyses should make every attempt to identify all stakeholders, not just those who are most visible or vocal within the community.

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Leisure and Gender II

MEN'S WILDERNESS EXPERIENCE AND SPIRITUALITY: A QUALITATIVE STUDY

Paul Heintzman
Leisure Studies Program
University of Ottawa
Ottawa, ON
K1N 6N5
Canada
pheintzm@uottawa.ca

Abstract.—Previous research on wilderness experience and spirituality focuses on participants in women-only or mixed male and female groups. This qualitative research study investigated the spiritual impact of participation in a men-only canoe journey into a remote wilderness area. In-depth interviews were conducted with six participants after the trip. Interpretive analysis was used to identify themes in the interview data. The results indicated that the short-term impact of participation in the wilderness trip was a sense of peacefulness while the long-term impact was characterized by recollection. The wilderness setting, along with the diverse social settings during the trip, was viewed as important to spiritual well-being. Most of the participants did not identify the scheduled spiritual activities as having a large impact upon their spiritual well-being. A few, but not all, of the participants viewed participation in a men-only group as important to their spiritual well-being.

1.0 INTRODUCTION

In Driver et al.'s book *Nature and the Human Spirit*, (1996) the authors suggested, "A more thorough understanding of the spiritual meanings that nature holds for humans could improve management of public lands" (p. 3). While quantitative studies (e.g., Heintzman 2002, 2003) document that some wilderness users are interested in the spiritual dimension of their wilderness visit, qualitative research studies are helpful in providing in-depth information about the factors that contribute to the spiritual impact of wilderness experiences. Stringer and McAvoy (1992), in a study of male and female participants in wilderness adventure programs, concluded that wilderness experiences were conducive to spiritual development. They identified two influential factors that contributed to the participants' spiritual experiences during the wilderness trips: (1) having other people on the trip to share experiences, opinions, and ideas with, and (2) being in a wilderness environment which did not have the constraints and responsibilities of the participants' everyday world. Fox (1997) examined six women's perceptions of a solitude wilderness experience in Australia. The women regarded *nature* as being spiritual and that *solitude* was important to their spirituality. Many of the women experienced the emotions of awe and wonderment of nature that contributed to their *spiritual experience.* Fox also discovered that the women experienced a sense of spirituality by being part of a women-only group and that working as a team with other women enhanced their spiritual experience. Fredrickson and Anderson (1999) examined how the qualitative dimensions of the wilderness experience might be a source of spiritual inspiration for women who participated in a wilderness canoeing trip or hiking trip. They found that being in a *bona-fide* wilderness along with aspects related to being part of an all-women's group (i.e., group trust and emotional support," "sharing common life changes, "non-competitive atmosphere") were sources of spiritual inspiration. Fredrickson and Anderson suggested future research with male-only groups.

1.1 Purpose of Study

Since previous research studies focus on the wilderness experience of participants in women-only or mixed male and female groups, this study investigated the influence of wilderness experience upon the spirituality of participants in a men-only group. Is the influence of wilderness experience upon spirituality the same for men as it is for women?

1.2 Research Questions

1. What is the influence of participation in a men's-only wilderness trip upon the spiritual well-being of the participants?
2. How do the various components of the wilderness trip (activities, settings) during the wilderness trip affect the spiritual well-being of the participants?
3. What is the influence of the "wilderness" environment upon the spiritual well-being of the participants?

4. What is the influence of the "men only" dimension of the wilderness experience upon the spiritual well-being of the participants?

2.0 METHODS

This qualitative research study investigated the spiritual impact of participation in a men-only wilderness canoe journey, offered each year by a Canadian education, retreat and conference centre. The program description which was used to publicize this men-only canoe journey read as follows:

> A Wilderness Canoe Retreat for Men
>
> Men have gathered around fires in the wilderness for thousands of years. Join this opportunity to travel with men, sharing experiences and stories in the supportive atmosphere of this wilderness journey. Travelling along ancient routes in the ……..Wilderness Area, ….. we will paddle and portage deep into remote wilderness. There will be time each day to share experiences unique to our male spiritual journeys, to relax, reflect and swim. An overnight solo is an option for those who choose.

The canoe retreat was five days in length and took place in a designated wilderness area. The group of men on the trip comprised three leaders and 10 participants, one of which was the researcher. The participants ranged in age from early 20s to early 70s with the majority in the 40 to 60 age range. They came from a variety of urban and rural communities. The activities during the trip included canoeing, camping, unstructured time to be alone or with others, discussion times, spiritual activities (e.g., an aboriginal tobacco ceremony, a Sufi dance, a smudge ceremony), and an optional overnight solo.

The participants were informed of the research project at the beginning of the trip and were told that they could volunteer to participate in the study if they were interested. At the end of the trip seven of the 10 participants volunteered to be interviewed. Unfortunately, one participant died in an accident a few weeks before the interviews were conducted. As a result six participants were interviewed.

Haluza-Delay (2000) is critical of previous studies on wilderness experience and spirituality (e.g., Fredrickson & Anderson 1999; Stringer & McAvoy 1992) as they did not incorporate a longitudinal dimension, but rather focused on the immediate experience of the wilderness trip. He suggested that it is important to consider the participant's reflections after the wilderness experience and how the experience transformed the life of the participant. Intense spiritual experiences on a wilderness trip may or may not have an impact on long-term spiritual well-being. A spiritual experience does not necessarily lead to spiritual development as spiritual experiences need to be integrated into life for spiritual development and transformation (Chandler et al. 1992). Therefore to, determine the long-term impact of the wilderness experience on spiritual well-being, the interviews were conducted approximately five months after the completion of the canoe trip rather than immediately after the trip as in previous studies.

The researcher used a qualitative in-depth interview schedule as a guide when conducting the interviews. The questions were designed to explore the relationships between participation in the wilderness trip and spiritual well-being. As the interview progressed, probing with "how" and "why" questions took place to determine how and why the various dimensions of the wilderness trip influenced, if in fact they did, spiritual well-being. In addition, particular attention was given to the impact of being part of a men-only group. These interviews were recorded on audiotapes for later transcription and data analysis.

Interpretive analysis was used to identify themes in the interview data. The transcripts were analyzed inductively to seek patterns and themes based on the data (Patton 1990). The constant comparison technique was used to guide this process of theme development and understanding (Glaser & Strauss 1967). Through this method, the transcripts were carefully read, reread and coded to determine recurring themes and patterns within the data. During this process, patterns were observed that represented commonly shared explanations of the relationships between participation in the wilderness trip and spiritual well-being.

3.0 RESULTS

Six themes were identified in the data analysis: peacefulness, recollection, wilderness setting, variety of social settings, variable impact of spiritual activities, and ambivalence about a men-only group.

3.1 Peacefulness

The theme that encapsulated the immediate impact of participation in the wilderness canoe trip was that of peacefulness. A number of participants actually used the term "peace" or a variant of it to describe the immediate influence of the trip. For example, Bob stated "I think I got a sense of *peace* from it, so that would be a sense of harmonizing and sense of rightening…," Chris reflected on "a *peacefulness* you had within yourself, " and Ernie claimed, "The whole thing seemed very much of a *peace* to me." Arthur described the trip as "a break from everyday things, a *peace* with self, a *peace* with the world and I guess a *peace* as a comfort, like obviously not the lack of fighting but the comfort level, whatever but *peace*, that would be the direct part." He likened the peace he experienced to the type of peace one would have as a child growing up and suggested this peace resulted from being away for four days and not having to worry about everyday responsibilities and concerns. Similarly, for Ernie the wilderness experience had a calming effect: "It was very positive. It was great. It was like a retreat… putting my pre-occupations into perspective…made me feel more opened up, *less as if I needed to hold on to my worries and concerns and anxieties* and all that." Noting that his sense of peace was "kind of subtle", Bob associated his sense of peace with "a sense of well-being inside" and attributed this sense of peace both to being in nature and having the opportunity to reflect, contemplate and clarify a number of life issues and questions associated with a major shift in his life. Bob went on to describe this peace in much more detail:

> the wonderful sense of peace, the wonderful sense of connectedness to my world around me, to myself, …there were no sharp things inside me…not a sense that something was wrong, or I needed to work on something, there was just a peace, there was tranquility, there was acceptance, there was harmony and I really fondly remember those moments because I felt so good inside…

For Chris the peacefulness was characterized by being glad, and although it had an inward or internal dimension like that of Bob, it was heavily influenced by harmonious interaction with others on the trip:

> it's more of a peacefulness that you had within yourself, first of all you're glad you'd done it and you're glad you were able to share with a number of other men in the same circumstances more or less and it amazes me…that…people that did not know each other at all could come together and get along so well and share a lot of things they don't share with anyone else in many cases…

In addition to the peacefulness being generated by the harmonious interactions with others on the trip, Chris also spoke of "the peacefulness of the settings that we could go out and enjoy nature…"

While other participants did not necessarily use the term "peace" they described the immediate impact of the trip in ways that reflected a sense of peacefulness in their lives. Like Chris, David found the sharing to be helpful: "I came away from it with…physical fatigue, but quite *refreshed* in spirit and a sense of appreciation of the sharing aspect of it." Similar to Bob, Fred was dealing with significant issues in his life at the time of the canoe trip and the wilderness experience brought a sense of quieting and perspective into this situation.

> …an immediate sense of *quieting of the mind*… prior to going on the canoe trip, I really had experienced a fairly significant confusion and turmoil in my life…it giving me enough time at least to start to work through some of that, put it into perspective.

In summary, although it took different forms and could be attributed to a variety of factors, the immediate impact of the wilderness experience upon the participants was that of a sense of peacefulness. This peacefulness was very much related to the nature of the long-term impact of the wilderness impact which we now turn to.

3.2 Recollection

Recollection, or reflecting back upon the wilderness experience, is the theme descriptive of the long-term impact of wilderness experience upon the spiritual well-being of the participants. This theme of recollection is suggested by a variety of terms and phrases such as "think back," "recall," "memory," and "moments or thoughts."

> "I *think back* on the experience with a lot of satisfaction and pleasure…I *recall* (camping spots)." (David)
>
> "…that peacefulness is still there, it does bring back, you know, you just have to *think back*, it kind of renews I guess your hope that things in the world can be better…" (Chris)
>
> "I *think* about it a fair bit." (Ernie)
>
> "…ability to be able to *recall*…some of the feelings and emotions of that time…and so I think for me it does allow me to a certain extent to be able to re-experience some of what, you know I would have felt at that time…just feeling a sense of being blessed." (Fred)
>
> "…there's a fading of the *memory* of what I experienced…but there is a general enriching of my spiritual vocabulary." (Bob)
>
> "…it gives me sometimes focus, *restful moments or thoughts* or something like that in what might otherwise be a busy time or schedule." (Arthur)

The long-term impact of the wilderness canoe trip seemed to be primarily associated with the memory of the experience and less with any specific behavioral change. Fred commented: "I think probably in honesty, at this point in time, it (long-term impact) hasn't been anything significant." Other than the "restful moments or thoughts" which tended to help him "stop and smell the roses more often," Arthur noted that the long-term impact of the wilderness experience was not strong. Bob also noted that the impact of the trip was primarily immediate and not long-term:

> I'm a little unsure as to what I carry with me from the trip today…you know spiritual highs if you will, spiritual peak experiences, they do tend, for me at least to fade over time, but the impact, the really great part of the impact is immediate, during the trip and shortly thereafter…

However, a couple of participants did mention specific behavioral changes as a result of participating in the wilderness canoe trip. For example, David connected his recollection of the trip to his ability to sleep: "In fact I find it difficult to sleep. I have insomnia and regard some of the camping spots there as safe places that I recall and imagine that I am lying down in, and it seems to clear my mind …" Chris mentioned the influence upon the pace of his life and his relationship with other people:

> it's starting to slow some of the way I'm doing things I guess, how I look at what I'm doing overall I guess and how I get along with my greater family, my in-laws and…how you'd like to relate with them and how you relate to your Church family you still want to be in more of a participative role in that family and also at work…you have a different outlook on how you want to cooperate and work with people in your work environment, it's all been very positive that way…you know it doesn't have to be so combative or people competing with each other.

For Ernie, the influence of the trip was subtle but it affected his understanding of his surroundings and of people:

> It's sort of incremental, another part of my cumulative experience…it has made me feel more as if I understand something about this place, which is my home…it's too subtle to be able to say it's done this or it's done that, yeh, it's definitely effected my outlook on my surroundings and to some extent it has definitely affected something about how I think about people.

In summary, the long-term impact of the wilderness experience seemed to be primarily positive memories and reflections on the experience rather than concrete lifestyle or behavioral changes.

3.3 Wilderness Setting

The nature or wilderness setting of the canoe trip was associated with the men's spiritual well-being. For example, Fred noted that in terms of enhancing his spiritual well-being, "being out in nature…and experiencing that aspect" distinguished the canoe journey from other retreats he had experienced. When the researcher probed to find out what it was about the wilderness setting that was helpful to spiritual well-being, a variety of reasons were identified. One of the most common answers was that the wilderness setting provided an opportunity to get away from the everyday routine and to focus on the spiritual:

> "It just helped reinforce the *break with routine*… we are to a large extent back there…away from civilization, cell-phones or whatever you have… getting rid of those distractions maybe allowing one to more go with the setting or with the surrounding to sort of view things or view self as the way we're made or the way we are instead of being adapted or changed by everything around us." (Arthur)

> "…*getting away* from the influences of your routine of civilization… it just seems to free you up from the pressures of the day, and the bad news and the stresses that are imposed on you by others…it's good to just get away from those stresses. (Chris)

For Arthur and Chris, the wilderness setting was important for spiritual well-being because it provided the opportunity to be away from their everyday world. For Bob and Ernie, the wilderness was important for spiritual well-being not only because they got away from their everyday world, but also because it involved being in a different type of environment: for Bob, an environment that was more remote and with fewer people while for Ernie an environment that brought about a positive state of mind.

> …the idea of being that far away as opposed to a park…it did provide that extra bit of intrigue, that extra bit of mystery, that extra bit of excitement that made me really get the sense that we were in a little bit of a different world. So just the thought that help for instance isn't just around the corner or if we run out of food, you know we can't just pop across the street and pick up something else…and also the thought that I wasn't going to get disturbed by people which… would have wrecked the experience you know, it would just not have been the same…so from my perspective, I think it really added a lot… (Bob)

> …being in the wilderness has a very positive effect on my state of mind …if spirituality is about discovering the more fundamental and commonly shared aspects of human existence or beliefs or whatever we choose to occupy our lives with, when you leave all you occupy your life with behind, and you go out into the wilderness, which is the same for everybody, it just naturally has that effect. And definitely makes me realize that the stuff that I get caught up in on a day to day basis that makes me forget that human beings are spiritual beings, those things are of no concern to the inhabitants of the wilderness, and so that too, is a refreshing example. (Ernie)

Bob also stressed the importance of the natural characteristics of wilderness such as the breeze, trees, and rocks which were conducive to reflection:

> …the fact that I was out in nature…I think the quietness provides me with a chance just to be quiet inside and I think that reflection…I mirror the reflection outside me inside me,…and that provides that settling and the sense of well-being,…I mean things as simple as leaves moving in the breeze and the shapes of trees and rocks…I can't describe what it is exactly but I think there is something inside us that recognizes that and that then feels a sense of I'm coming back, I'm remembering who I am. I'm feeling OK inside. So just natural forms I think do that to us, naturally. (Bob)

Bob's mentioning of the breeze, trees, and rocks reflects a second reason why wilderness was important to the spiritual well-being of the participants—it is marvelous and awe-inspiring. "Just the wonder of creation and everything around me…and just the beauty and the

marvel within that creation…the wonder of it all" was important to Fred's spiritual well-being. Chris explained:

> …nature is there in every aspect, often is something that, you know is so marvelous, you just want to say, you know, it's so intricate. How can this be? You know and it's so wonderful that fact that you have nature and we can enjoy it and it kind of enlightens the fact that here you are a small picture of it and it's not all about human beings either, we are just part of the big picture.

A final reason that wilderness was seen as important for spiritual well-being was that it produced a sense of being vulnerable:

> a sense of vulnerability before and in the face of the forces of nature that we were experiencing…a sense of awe and respect for the surroundings…it made you realize that you were alone and you were self reliant, you were reliant on the resources of the group. It enhanced your sense of vulnerability. (David)

Thus, there were different reasons as to why the wilderness setting was conducive to spiritual well-being: being away from the everyday world; and being in a different environment that generated intrigue, reflection, awe and wonder, and also a sense of vulnerability.

3.4 Variety of Social Settings

The variety of social settings on the trip, such as being alone, being with one other person, and being in a group, was viewed as important to spiritual well-being. Fred highlighted the importance of the social interaction: "the opportunity to interact with other individuals and in particular with the sharing of stories and our own personal life experiences and probably more than any other single factor…that really has a profound effect on me personally…" Chris explained how positive feelings arose from these social interactions: "to come away with a lot of good feelings like you've had things you were thinking about that you could discuss with others in both a group setting and with individuals as you go throughout your day's activities." Several participants commented that the combination of times with the whole group, one on one, and alone was beneficial:

> "…the others are open to talk or discussion but…if people want to find their own space, people are free to do that as well…so there's lots of time for self but there's also lots of time to participate…in a group with fellow men if you wish." (Arthur)
>
> I think that I found some spiritual jewels, some spiritual treasures in all the social settings, being alone definitely, being around the fire with the entire group definitely, and just in one-on-one conversations with people… (Bob)
>
> I at least, went back and forth between group and solitude throughout the day, throughout the series of days. It was a nice alteration…To the extent that friendship and camaraderie is an element of spiritual well-being, there was quite a bit of opportunity for that. Sometimes with everybody together and sometimes one on one. Two or three people. (Ernie)

Fred explained how time alone was beneficial to his spiritual well-being:

> Well I think being alone, it gives me that time and the opportunity just to try and work my own way through some of those issues of situations that you know may be negatively affecting my spiritual well-being …and I really firmly believe that more so in one on one situations we tend to be much more open and honest in sharing our experiences.

All three of the participants who participated in the solo found this time alone helpful to their spiritual well-being. Arthur explained that it gave "a feeling of closeness to nature or closeness to the sky." Bob noted: "the solo, that was really good for me…it gave me a really wonderful sense of peace." Ernie explained:

> …it's just more formally retreat-like to be by yourself in the woods, just you and the fire and the lake. But I think it sort of comes back to my notion of what spirituality is about, which is that a lot of it has to do with being able to let go of one's pre-occupations and notice what's there underlying it. And so just being out in the woods

> by yourself does that, it's only, it gets to be that it takes a considerable amount of effort to drum up something to think about, something to occupy yourself with, so when you give that effort, other stuff comes up that you might not expect.

3.5 Variable Impact of Spiritual Activities

The participants never mentioned any of the organized spiritual activities (e.g., Sufi dance, smudging ceremony) during the interviews, possibly because these activities did not have much of an effect upon their spiritual well-being. Some participants, but not all, mentioned the spiritual discussions, and these discussions were viewed differently by different participants. For example, David appreciated the structured sharing times: "Certainly, the structured sharing around the campfire and times of reflection were important and the tone and the structure of those was very important, they could have been quite negative." When he was asked what it was in particular about the discussions that he found helpful for his spiritual well-being, he responded in terms of the way the discussions were facilitated: "Mostly the open-endedness of the questioning, of the assurance that you could be honest and not, ah, just going along…" Similarly, Chris stated, "I really liked sitting down in the evenings and around the campfire or whenever we sat together and had discussions…" When he was asked how the discussions enhanced his spiritual well-being he referred to a greater being: "…other people had similar thoughts about the way things should go in the world and there's an overall feeling that people want to do the right thing and that…confirmed in my mind I guess that there's a greater being watching over us." For Bob, the discussions were important because they facilitated a sense of community: "…in general you know sitting around the campfire and being with other men and talking about men's issues really…I had a real sense of community, or companionship and there were some good discussions."

While David, Chris, and Bob saw the discussions as helpful, Arthur felt that the discussions would have been more helpful to spiritual well-being if they had have been more intimate:

> the first time (a previous trip) let's say the discussions were more intimate or more personal and maybe people felt more free to voice their problems and inner concerns. Like to me this time maybe people didn't have the same concerns or maybe they didn't feel as (open), …to me as a group, I think people could have been more intimate, and I use the word intimate like in a mental sense or spiritual sense…

For Ernie, the structured spiritual activities and discussions were more of a hindrance than a help:

> For me, the attempt to introduce a spiritual element was the biggest obstacle to having it be an effective spiritual retreat…to my taste, it just wasn't very effective. One aspect to that was that it was kind of a hodge podge: a little Christianity, a little Buddhism, a little Sufism, little Native American, a little Canadian, it just felt like a bag of tricks and quite superficial. Ah, and the real spiritual power of the trip was completely there if no one had opened their mouths. It didn't need that kind of enhancement…what was offered by way of spiritual imitation was just feeble in comparison to the experience itself. And it did come with some expectation, "Now we are going to sit down and have a spiritual experience together." And I just think that that's pretty hard to cook up. Didn't work for me. Now, clearly it did work for some of the other people…

3.6 Ambivalence about Men-only Group

Being part of a men-only group was an important factor in the trip's impact upon their spiritual well-being for some, but not necessarily all, of the participants. Only one participant spontaneously mentioned the importance of being part of an all-men's group during the interviews. For the remainder of the participants, the researcher asked about the impact of being part of the men-only group near the end of the interview. When asked about the effect of being part of a men-only group upon his spiritual well-being Fred responded: "To be quite honest, I don't know that it did…I really don't feel that it had any greater impact than if I were in a mixed group." Arthur stated that "I don't know that it (men-only group) had a strong impact in that regards (spirituality)." Likewise, Ernie observed: "Well, I think in the end it didn't impact

on it much…Part of me thinks that it was probably diminished by the fact that it was just guys, but as I say, maybe the fact that it was just guys meant that I actually did spend more time alone."

On the other hand, Bob, who was the only participant who spontaneously mentioned the importance of the men-only group to his spiritual well-being explained:

> I really enjoyed the camaraderie of the group of men… sitting around the campfire and being with other men and talking about men's issues…maybe brotherhood is too strong a word, but it was just comforting, it was reminding me it was ok to look for companionship with other men and that I'm capable of it and that I was able to be in that company and you know, be myself and have a good time and express what I needed to express and ya that is gave me a boost if you will, it gave me a sense that I can do it, so the companionship was really good……the fact that it was a men's group allowed me to focus on some of my spiritual issues…just as an example…what is the difference between male spirituality and female spirituality…it was one of the deepest times that I ever thought about that question, you know and that is what I enjoyed…

Two other participants also viewed being part of a men-only group as important as it allowed for the men to share, cooperate, and be vulnerable with each other.

> I think it was better as a men's only group… some of the discussions might not have been as open…it was good to see that men…can share and get along and cooperate in that way whereas a lot of our life's experience are not geared to that, it's the other way around, more competitive whether in the sporting world it's all competitive, in the business world, it's sometimes that way, it's not conducive to working together. (Chris)
>
> It made men more vulnerable to one another and open to one another and the realization that other people, other men were willing not to be just (macho)…we've had experiences of quite macho behaviour on the surface at the beginning and pealing [sic.] that off to discover the real person. (David)

4.0 DISCUSSION

Many of the results from this study are consistent with previous research. The importance of the nature or wilderness setting of the canoe retreat for spiritual well-being is consistent with previous research that suggests nature and wilderness settings provide a helpful setting for spiritual growth and development (Fox 1997; Fredrickson & Anderson 1999; Heintzman, 2000, 2002, 2003; Stringer & McAvoy 1992; Sweatman & Heintzman 2004). The reasons that wilderness was important to spiritual well-being varied, but again reflected previous research. First, for some men the wilderness experience provided the opportunity to get away from the everyday routine. This finding is consistent with Stringer and McAvoy's (p. l7) observation that "the operative factor for some participants was being in a **different** environment, free from normal constraints on time and energy, as opposed to being *necessarily* in a **wilderness** environment." Second, for other men the awe-inspiring qualities of the wilderness itself facilitated spiritual well-being much like Fox found that awe and wonderment of nature contributed to spiritual experience and Fredrickson and Anderson discovered that direct contact with nature in a bona-fide wilderness was spiritually inspiring. The first reason reflects the "being away" feature of restorative environments theory while the second reason reflects the "extent" feature of the same theory (Kaplan 1995). The finding that a variety of social experiences ranging from group sharing experiences to time alone in nature may play an important role in spiritual well-being is consistent with previous studies which have found that both sharing with others and solitude in nature are important to the participants' spiritual experience (Fox 1997, Fredrickson & Anderson 1999, Stringer & McAvoy 1992, Sweatman & Heintzman 2004).

For the men in this study, the immediate impact of the wilderness experience was a sense of peacefulness. Again this sense of peacefulness has been identified in previous studies. Participants in Stringer and McAvoy's (1992, p. 294) study "commented that the wilderness provides a place to find inner peace and tranquility." Fox (1997) noted that "spiritual experiences inspired from nature

were often related to …feelings of inner peace," while Fredrickson and Anderson (1999) observed that words such as "peaceful" were used by their study participants when journaling about wilderness experience. In comparison to these previous studies, the current study focused on the long-term as well as the immediate impact of the wilderness experience and found that the primary long-term impact was of recollecting or remembering the wilderness experience.

In two previous studies on the wilderness experience of women-only groups it was found that being part of a women-only group was a key factor in the spiritual experience of the women (Fox 1997, Fredrickson & Anderson 1999). In contrast, the current study found that being part of a men-only group was not necessarily an important factor in enhancing spiritual well-being for all men in the group. While half of the men found that a men-only group was important for sharing, co-operating, and being vulnerable, the other half really did not see that being part of a men-only group influenced the spiritual dimension of the trip.

5.0 CONCLUSIONS AND IMPLICATIONS

Although the results cannot be generalized and this study cannot be directly compared to previous studies, being part of a men-only group did not seem to be as important for the men in this study as it was for women who were part of women-only groups in previous studies of wilderness experience (Fox 1997, Fredrickson & Anderson 1999). Further research is needed on the impact of wilderness experience upon spiritual well-being for participants in men-only groups.

In terms of practical implications, this study seems to suggest that designing wilderness experiences to include opportunities for contact with nature and a range of social interactions may be more important than including structured spiritual activities and discussions during the wilderness trip. Moreover, the greatest impact of participation in this wilderness canoe retreat seemed to be immediate. Wilderness leaders and programs may want to give more thought to how to facilitate long-term spiritual impacts in addition to short-term or immediate spiritual impacts.

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RECREATION SPECIALIZATION AND GENDER: A COMPARISON OF MASSACHUSETTS FRESHWATER ANGLERS

Laura E. Anderson
Graduate Student
Department of Natural Resources Conservation
University of Massachusetts, Amherst
160 Holdsworth Way
Amherst, MA 01003

David K. Loomis
University of Massachusetts, Amherst

Abstract.—Recreation specialization describes the continuum of general to specific behavior of natural resource users and allows for the classification of these users into meaningful subgroups. While this theory has been used to study anglers, the majority of participants in recreational fishing are male. Therefore, more could be learned about how women at various specialization levels experience the activity. This analysis considers both specialization level and gender as predictors of five propositions. In general, male anglers were more specialized than female anglers. As expected, men fished more days per year and more years than women. Men also considered the experience of the catch to be more important. Contrary to expectations, women placed less importance on catching fish than men. Women also rated family recreation and experiencing new and different things as more important. Additionally, women were more supportive of one management item—restricted fishing areas.

1.0 INTRODUCTION

Recognizing that there is no average angler, human dimensions researchers have sought to segment resource users into meaningful subgroups for management. One way of segmenting users is through recreation specialization theory. Recreation specialization asserts that people who engage in a recreational activity can be placed on a continuum of general to specific behavior. In the area of recreational fishing, anglers along this continuum can be segmented into categories ranging from low specialization to high specialization. Recreation specialization is useful in its ability to predict the importance anglers place on activity-specific goals, nonactivity-specific goals, support for management regulation, investment in the activity, and frequency of participation (Ditton et al. 1992).

A second way to segment users is by gender. Women have been minorities in recreational fishing; therefore the preferences and interests of female anglers have been less studied than those of male anglers. In this paper, we consider the experience of both women and men anglers by specialization level to determine ways in which fisheries managers can better meet the needs of all anglers.

2.0 LITERATURE REVIEW

2.1 Recreation Specialization

Bryan introduced the concept of recreation specialization in 1977 when he classified anglers into four groups of increasing specialization: "occasional fishermen," "generalists," "technique specialists," and "technique-setting specialists" (p. 175). Bryan based his categories on the skill levels, equipment, and activity-setting preferences of the anglers. Despite this contribution, Bryan's definition involved circular reasoning, in that the items used to measure specialization were the same as those used to define specialization level (Ditton et al. 1992).

Ditton et al. (1992) set out to re-conceptualize recreation specialization using the social worlds' literature. This process yielded eight propositions. Namely, a person is likely to become more specialized in an activity over time. As specialization level increases, side bets, centrality of the activity to one's life, acceptance of rules, norms, and procedures related to the activity, importance of equipment and skill, resource dependence, and use of media sources related to the activity will increase. Also, with increased specialization, the importance of activity-specific elements will decrease relative to nonactivity-specific elements. Ditton et al. suggested that multiple variables be used in future studies to form a specialization index.

Salz et al. (2001) developed a multi-item specialization index using the social subworlds concept of Unruh

(1979). The authors divided anglers into "least specialized," "moderately specialized," "very specialized," and "highly specialized" categories based on four variables: orientation, experiences, relationships, and commitment. Salz et al. tested four propositions of specialization theory using this index. Strong support was found for all of the hypotheses tested.

2.2 Leisure and Gender

Historically, men have been the primary participants in recreational fishing. Today, they continue to make up the majority of recreational anglers. In 2001, 74 percent of all anglers in the U.S. were male (DOI 2002, p. 15). As a consequence, less is known about the preferences and interests of female anglers than male anglers. Studies of recreation specialization in the area of recreational fishing also reflect the characteristics of the mostly male participants. There could be more to learn about female anglers' experiences at various specialization levels.

Literature on women's leisure has demonstrated that women and men may experience leisure differently. The quantity and quality of women's recreation may be negatively impacted by various life factors and social expectations. For example, women who are involved in more than one activity at a time, such as watching out for the welfare of children while fishing, experience contaminated leisure. Second, women may experience interrupted leisure, meaning that they are able to engage in leisure activities during short periods of time rather than during one extended leisure period. Women continue to bear a disproportionate burden for childcare in the U.S., a factor that can lead to both contaminated and interrupted leisure (Mattingly and Bianchi 2003).

Beyond childcare, women are trained to be concerned about the welfare of others; this "ethic of care" can constrain women's ability to experience quality leisure (Jackson and Scott 1999). Additionally, there continues to be an income gap between men and women. Among full-time employees, women earned 76 cents for every $1.00 that men earned in 2005 (U.S. Census 2005). Finally, women may face certain social norms and expectations that keep them from fishing. These constraints may inhibit women from becoming as highly specialized in recreational fishing as men.

2.3 Hypotheses

Six hypotheses were formed to consider any differences between men and women by specialization level. The first goal was to consider if men and women differed in overall specialization level. Based on the various leisure constraints faced by women, and their lower participation in the activity, we expected women to be less specialized than men. Hypotheses two through six combine two factors—specialization level and gender—as predictors of participation frequency, support for management, investment in side-bets, and importance attached to activity-specific and non activity-specific elements of fishing.

Ha1: Male anglers will be more highly specialized than female anglers

Ha2: High-specialization and male anglers will have a greater frequency of participation than will low-specialization and female anglers

Ha3: High-specialization and male anglers will have greater support for various management tools and regulations than will low-specialization and female anglers

Ha4: High-specialization and male anglers will have generated a greater value of side-bets than will low-specialization and female anglers

Ha5: High-specialization and male anglers will attach less importance to activity-specific elements of the fishing experience than will low-specialization and female anglers

Ha6: High-specialization and male anglers will attach more importance to non activity-specific elements of the fishing experience than will low-specialization and female anglers

3.0 METHODS

3.1 Data Collection

Data for this analysis come from a 1998 survey of 2,930 Massachusetts anglers. Participants were randomly selected from a population of state-licensed anglers to receive a 16-page questionnaire. Questionnaires were administered to study participants using the Salant and Dillman (1994) Total Design Method. The 2,930 prospective survey respondents were mailed a letter notifying them about the project. One week later,

Table 1.—Sport Angler Questionnaire Response and Sample Selection

Type of Response	N	%
Effective original sample	2,586	--
Useable returned surveys	1,411	54.6
Total number of women	151	10.7
Total number of men	1,238	87.7
Sampled females and males with specialization level = 2, 3, or 4	281	19.9
Number of women	136	9.6
Number of men	145	10.3

questionnaires accompanied by a cover letter describing the purpose of the study and a self-addressed stamped envelope were mailed to the same individuals. A week after mailing the questionnaire materials, a post card was mailed out to the same individuals reminding them to return their questionnaires and thanking them for their participation. Three weeks after mailing the reminder post card, an additional questionnaire, a letter describing the project and encouraging response, and a self-addressed envelope was mailed to sample individuals who had not yet responded with a completed questionnaire.

Survey administrators developed the specialization index used in this analysis from four questionnaire items. Each of these items corresponded to one of the following characteristics: orientation, experiences, relationships, and commitment. These characteristics were first used by Unruh (1979) to place individuals into four social subworlds—strangers, tourists, regulars, and insiders. Survey respondents were asked to rate which of four descriptions for each characteristic best described them. Each description corresponded to a value from one to four. These values were then totaled across all four characteristics for each respondent, yielding a value between four and 16. This value was divided by four to determine the respondent's specialization level (1=least specialized [stranger], 2=moderately specialized [tourist], 3=very specialized [regular], 4=highly specialized [insider]). Survey respondents were also asked to indicate their gender on the survey.

3.2 Data Analysis

To consider overall differences in specialization level by gender (Ha1), a comparison of the percentage of anglers falling into each specialization level was made between women and men anglers. A chi-square test was performed to determine if differences were significant. A series of two-way ANOVA tests were performed to test the remainder of the hypotheses (Ha2 through Ha6).

4.0 RESULTS

4.1 Response Rate

Out of the 2,930 questionnaires sent to Massachusetts anglers, 1,411 were returned in usable form, yielding a response rate of 54.6 percent. Only 151 of the 1,411 returned surveys were completed by women. In order to better compare men and women, a sub-sample of 151 men was randomly selected from the larger sample. Only men and women falling into the three highest specialization levels were included. This process yielded 281 surveys for analysis. This represents 19.9 percent of the usable returned surveys (Table 1).

4.2 Specialization Level by Gender

Out of 281 women and men falling into the three levels of specialization, 107 (38.1%) were of low specialization, 118 (42.0%) were of medium specialization, and 56 (19.9%) were highly specialized. Overall specialization levels of women and men anglers differed significantly. Out of women anglers, 63 (46.3%) were of low specialization, 51 (37.5%) were of medium specialization, and 22 (16.2%) were highly specialized. Among men anglers, 44 (30.3%) were of low specialization, 67 (46.2%) were of medium specialization, and 34 (23.4%) were highly specialized (Table 2, Figure 1). With a Chi-square of 0.020, male anglers were, in general, more specialized than female anglers.

Table 2.—Number of Women and Men by Specialization Level

	Specialization Level			
Gender	Low	Medium	High	Total
Women	63	51	22	136
Men	44	67	34	145
Total	107	118	56	281

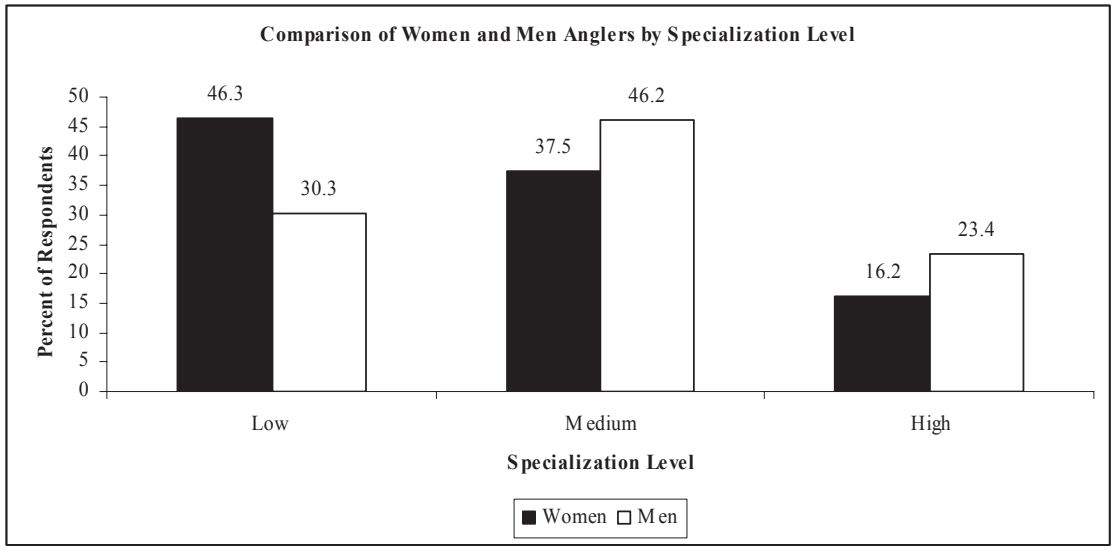

Figure 1.—Comparison of Women and Men Anglers by Specialization Level. Chi-square=0.020.

Table 3.—Two-way ANOVA Tests for Mean Differences in Participation Frequency According to Specialization Level and Gender

	Specialization Level				Gender		
	Low	Medium	High	p	Men	Women	p
Years fishing	21.92	27.20	26.87	0.099	29.24	20.39	0.000
Days fishing	15.07	33.62	50.75	0.000	36.45	21.10	0.007

Mean values are in years for item one and days for item two. Means underscored by same line are not significantly different (.10) using Tukey's test.

4.3 Participation Frequency

As predicted, men reported spending more days and years fishing than women. Also as predicted, more highly specialized anglers spent more days and years fishing than less specialized anglers (Table 3). Both components of Ha2 are strongly supported by these findings.

4.4 Management Regulation Items

Support for management regulation items differed by gender on only one item, with women being slightly more supportive of restricted fishing areas. Women and men did not differ in their support for the other ten management items. While means by specialization level generally varied in the direction predicted, only one item—minimum size limit—was significant at the 0.10 level (Table 4). These findings yield little support for the specialization component of Ha3 and no support for the gender component of Ha3.

4.5 Side Bet Items

Though means by gender varied in the direction predicted, men and women did not differ significantly in money spent on reels, tackle, rods, and electronic equipment. All of the means varied in the direction

Table 4.—Two-way ANOVA Tests for Mean Differences in Support for Management Items According to Specialization Level and Gender

	Specialization Level				Gender		
	Low	Medium	High	p	Men	Women	p
Restricted fishing area	3.394	3.422	3.304	0.860	3.135	3.628	0.003
Mandatory catch and release	3.124	3.284	3.429	0.445	3.358	3.142	0.236
Creel limit	4.143	4.198	4.500	0.158	4.277	4.161	0.258
Prohibit use of certain gear	3.621	3.573	3.786	0.556	3.550	3.685	0.311
Slot limit	3.235	3.241	3.527	0.271	3.295	3.293	0.683
Voluntary catch and release	4.028	4.077	1.125	0.781	4.047	4.087	0.689
Minimum size limit	4.028	4.026	4.589	0.005	4.176	4.100	0.734
Maximum size	3.467	3.650	3.839	0.137	3.604	3.624	0.818
Stock native fish	4.243	4.302	4.455	0.229	4.320	4.267	0.861
Stock non-native fish	2.933	3.017	3.109	0.585	3.048	2.938	0.920
No stocking allowed	3.724	3.629	3.821	0.625	3.705	3.673	0.958

Mean scores were based on responses to the following categories; 1 = Strongly oppose, 2 = Oppose, 3 = Neutral, 4 = Support, 5 = Strongly support. Means underscored by same line are not significantly different (.10) using Tukey's test.

Table 5.—Two-way ANOVA Tests for Mean Differences in Side Bets According to Specialization Level and Gender

	Specialization Level				Gender		
	Low	Medium	High	p	Men	Women	p
Replace reels	103.98	252.92	380.37	0.000	251.03	181.28	0.121
Replace tackle	117.28	333.55	510.28	0.000	307.93	255.66	0.538
Replace rods	103.29	312.24	488.61	0.000	272.79	257.42	0.766
Replace electronic equipment	233.12	592.22	710.50	0.276	567.95	490.95	0.992

Mean values are in U.S. dollars. Means underscored by same line are not significantly different (.10) using Tukey's test.

predicted by specialization level, with three of the four items being significant (Table 5). These results yield strong support for the specialization components of Ha4 but do not support the gender component of Ha4.

4.6 Activity-specific Items

Out of seven items, significant differences were found between women and men in three cases. Contrary to expectations, women placed less importance on catching fish than men. As expected, men placed greater importance on the experience of the catch than women. While all of the means varied in the direction predicted by specialization level, just three of the seven items are significant (Table 6). These results yield mixed support for Ha5.

4.7 Non Activity-specific Items

Differences in perceived importance of nonactivity-specific aspects of the fishing experience were found between women and men anglers for two out of 10 items. In both cases, women rated the nonactivity items of family recreation and experiencing new and different things as slightly more important than men. This finding runs contrary to what was predicted in Ha6. The gender component of Ha6 is also unsupported because no significant differences were found for 8 out of the 10 items. As for the activity-specific items, all of the means generally varied in the direction predicted for specialization level. However, just four of the 10 items were significant at the 0.10 level, lending some support for the specialization component of Ha6 (Table 7).

5.0 DISCUSSION

Recreation specialization as a predictor of 1) participation frequency, 2) support for management, 3) investment in side bets, 4) importance of activity-specific items, and 5) importance of non activity-specific items was somewhat supported in this analysis. It should be noted that a

Table 6.—Two-way ANOVA Tests for Mean Differences in Activity-specific Items According to Specialization Level and Gender

	Specialization Level				Gender		
	Low	Medium	High	p	Men	Women	p
When I go fishing, I'm just as happy if I don't catch a fish	3.105	3.197	3.375	0.132	2.987	3.430	0.001
A fishing trip can be successful even if no fish are caught	3.785	3.803	4.196	0.025**	3.667	4.053	0.011**
For the experience of the catch	3.491	3.821	4.196	0.002	3.933	3.523	0.051
To obtain fish for eating, and not for sport	1.651	1.500	1.643	0.479	1.517	1.596	0.224
For the sport of fishing, not to obtain food to eat	3.443	3.763	4.250	0.002	3.833	3.556	0.330
I'm just as happy if I don't keep the fish I catch	4.009	4.162	4.339	0.173	4.181	4.080	0.358
I'm just as happy if I release the fish I catch	4.085	4.128	4.446	0.133	4.159	4.182	0.816

For items 3, 4, and 5 mean scores were based on responses to the following categories; 1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Very important, 5 = Extremely important. For all other items, mean scores were based on responses to the following categories; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree. Means underscored by same line are not significantly different (.10) using Tukey's test. **Interaction between Specialization Level and Gender is significant at 0.10.

Table 7.—Two-way ANOVA Tests for Mean Differences in Non Activity-specific Items According to Specialization Level and Gender

	Specialization Level				Gender		
	Low	Medium	High	p	Men	Women	p
For family recreation	3.654	3.362	3.286	0.280	3.197	3.700	0.014
To experience new and different things	3.019	3.119	3.491	0.018	3.014	3.227	0.039
To be close to the water	3.606	3.718	4.107	0.023	3.649	3.800	0.175
To be with friends	3.374	3.241	3.564	0.300	3.230	3.400	0.192
To experience natural surroundings	4.271	4.248	4.589	0.041	4.219	4.380	0.230
To get away from the demands of other people	3.676	3.504	3.946	0.184	3.534	3.722	0.314
To get away from the regular routine	3.915	3.941	4.145	0.490	3.860	4.033	0.326
For relaxation	4.385	4.314	4.464	0.605	4.280	4.369	0.420
To be outdoors	4.280	4.222	4.536	0.156	4.219	4.356	0.571
To experience adventure and excitement	3.509	3.890	4.071	0.004	3.780	3.715	0.599

Mean scores were based on responses to the following categories; 1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Very important, 5 = Extremely important. Means underscored by same line are not significantly different (.10) using Tukey's test.

previous study that considered specialization alone for the entire sample of 1,411 responses found strong support for the propositions tested here (Salz et al. 2001). This highlights the drawback of having a smaller sample size with reduced power. However, most of the means varied in the direction expected for specialization level, even if they were not significant.

Perhaps most striking in considering the role of gender in recreational fishing is the very small proportion of women in the survey sample. Only 10 percent of surveys returned by licensed freshwater Massachusetts anglers were completed by women. As expected, women did have lower overall specialization levels than men, according to the specialization index developed by Salz et al. (2001).

Despite this difference in overall specialization level, few significant differences were found between women and men in the propositions tested.

Among the differences found, a few conformed to what was predicted while others ran contrary to what was predicted. As expected, women participated in the activity less often than men, with men participating 15 days per year more than women and 9 years more than women. However, contrary to the expectation that women would rate activity-specific items as more important, women placed less importance on catching fish than men did. We also expected that women would rate non activity-specific items as less important. However, women considered family recreation and experiencing new and different things to be more important than men did.

These results suggest that more study is needed in the area of recreational fishing to consider how well the propositions in recreation specialization theory apply to women. Clearly, the results presented here are limited by having a small sample size. Future studies could target a larger sample of women and should consider how women negotiate gendered leisure constraints as they progress along the recreation specialization continuum.

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Fish and Wildlife II

THE TEXAS SALTWATER ANGLER POPULATION: A LONGITUDINAL PERSPECTIVE (1989-2005)

Yung-Ping (Emilio) Tseng
Department of Recreation, Park and Tourism Sciences
Texas A&M University
College Station, TX

Robert B. Ditton
Texas A&M University

Abstract.—This paper focuses on selected human-dimensions indicators of the Texas recreational fishery using the *Index of Qualitative Variation* (IQV) and Spearman Rank-Order Correlation Coefficient. Minority (Hispanic, Spanish, and females) participation and the overall participation rate in saltwater fishing did not keep pace with a dramatic population transformation in Texas over the last 16 years. Recreation behavior indicators also demonstrated a positive trend in that saltwater anglers have more experience and rate themselves as more skilled over time. Self-assessed skill improved steadily over the last decade. This finding suggests there are more high-specialization (higher levels of skill, experience, and commitment) anglers in the Texas saltwater angler population than previously. The extent of angler satisfaction has been high and increased consistently over time. Also, an increasing preference for red drum (*Sciaenops ocellatus*) is important because stocks of this species are currently being enhanced through hatchery production. Finally, this paper demonstrates the need for consistent human-dimensions questions over time and the types of important sociodemographic, recreation behavior, and resource use questions that can be answered using longitudinal data.

1.0 INTRODUCTION

In general, outdoor recreation research lacks studies that test hypotheses that may be affected by temporal processes. Most outdoor recreation research has used cross-sectional study designs, which provide "instantaneous" or "point in time" perspectives. While this approach is useful, it has limitations. Often, these limitations result from a narrow time perspective. For example, it would not be safe to infer that anglers become more skillful as household income increases, based on cross-sectional data. If anglers spend more money than before, it cannot be concluded that anglers are more involved and skillful; a more plausible explanation is that the economic situation of saltwater anglers has improved over time (a period effect). Longitudinal studies, or studies with repeated measures over time, can provide better information than typical cross-sectional surveys (Bohnsack 2002). In particular, longitudinal analyses have been adopted by social scientists interested in change, process, and the dynamic aspects of social and cultural phenomena (Glenn & Frisbie 1977).

In this paper, selected human-dimensions indicators of the Texas saltwater fishing were used, along with a longitudinal analysis. Six statewide angler survey data sets (1989, 1990, 1993, 1998, 2002, and 2005) were used to analyze selected human dimensions indicators.

2.0 METHODS

Survey procedures followed the Total Design Method (TDM) and modified TDM created by Dillman in 1978 and 1994, respectively. Data for these six studies were obtained from a series of stratified random samples of Texas resident fishing license holders. To ensure adequate numbers of saltwater anglers in the sample, 49% of the anglers sampled lived in the first tier of Texas coastal counties. This practice has been used in statewide surveys of resident licensed anglers in 2002 (Anderson & Ditton 2004), 1998 (Bohnsack & Ditton 1999), 1994 (Ditton & Hunt 1996), 1990 (Ditton & Fisher 1992), and 1989 (Hunt & Ditton 1991). None of the samples included persons age 65 and older as they were exempted from the general angler license category. Telephone follow-up interviews (Hunt & Ditton 1991) were used to extrapolate the non-response adjustment in the first two statewide surveys. Since the 1994 statewide survey, logistic regression (Fisher 1996) was used for non-response adjustment purposes.

2.1 Analysis Variables

In this study, three groups of human-dimensions indicators were used to identify stability, change, and

direction of change in Texas saltwater fishing. Three groups of variables were included: *Sociodemographic*, *Recreation Behavior*, and *Resource Use* indicators.

Sociodemographic Indicators

Sociodemographic indicators were assessed using gender, age, ethnicity, and household income. The age variable was measured by years of age; ethnicity was asked by dichotomous choice of whether or not they were of Spanish or Hispanic origin. Household income was measured by anglers' approximate annual household income using standard $10,000 categories to $99,999.

Recreation Behavior Indicators

Saltwater fishing participation, years of experience, and self-assessed fishing skill were used as recreation behavior indicators. Participation was measured by whether they had participated in saltwater fishing in the previous 12 months. Experience was measured by the years of previous saltwater fishing participation. Self-assessed fishing skill included only assessments of above average and below average self-assessed skill.

Resource Use Indicators

Saltwater fishing days, fish species targeted, and satisfaction level were selected as resource use indicators. Saltwater fishing days was measured by the total days in saltwater fishing in the previous 12 months. Fishing targets were ascertained by asking for the first, second, and third favorite saltwater fishing species. Satisfaction level consisted of three groups: (1) *Unsatisfied,* including those reporting they were not at all or slightly satisfied, (2) *Moderate satisfied*, and (3) *Satisfied,* including those reporting they were very or extremely satisfied.

2.2 Measures

Two measurements were used to measure the indicator trends in this study. The index of qualitative variation (IQV) was used to measure variability for nominal variables. It is based on the ratio of total number of differences in the distribution to the maximum number of possible differences within the same distribution. The index can vary from 0.00 to 1.00. A minimum number means no variation (or diversity) in the category. In contrast, when variables are distributed evenly across the category, there is maximum variation (or diversity) and the IQV is 1.00 (Frankfort-Nachmias & Leon-Guerrero 2002).

$$IQV = \frac{K(100^2 - \sum Pct^2)}{100^2(K-1)}$$

where
K= the number of categories
N= the total number of cases in the distribution
$\sum Pct^2$ = the sum of all squared percentages in the distribution

Spearman Rank-Order Correlation Coefficient(r_S) is a supplementary technique used to test the direction and strength of the relationship between two variables. In other words, it is useful to show whether any one set of numbers has an effect on another set of numbers. In this study, all three groups of human dimensions indicators were measured by Spearman Rank Correlation. The temporal correlation between indicators and time series provides a stochastic measure of secular trend (Maraschilo & McSweeney 1977).

$$r_s = 1 - \frac{6\sum D^2}{N(N^2-1)}$$

where:
D = the difference between the ranks of corresponding values of X and Y, and
N = the number of pairs of values

For example, the distribution of male saltwater anglers in Texas varied from 78.14 percent to 83.07 percent across the six surveys. The first step in the Spearman Analysis is to rank the values within each category from smallest to largest. The rank from 1989 to 2005 is 5th, 3rd, 4th, 6th, 2nd and 1st, respectively. Indicators were compared with the time series using the Spearman rank. The correlation gave an objective value for the direction and magnitude of each of indicators over a 16-year period.

3.0 RESULTS

Tables 1, 2, and 3 summarize the temporal correlation for sociodemographic, recreation behavior, and resource use indicators in Texas saltwater fishing, respectively. At the nationwide level, the increase in females fishing outstripped the males, with a 19 percent increase from 1980 to 1995. Furthermore, there was a 33 percent

Table 1.—Sociodemographic Indicators of Texas Saltwater Anglers

Indicators	Year						
	1989	1990	1993	1998	2002	2005	r_S
A. Gender							
1. Percent Male	79.69	79.87	79.85	78.14	82.61	83.07	+.600
2. Gender Distribution(IQV)	0.625	0.606	0.562	0.632	0.488	0.487	-.600
B. Age							
1. Percent working age (18-64)	97.71	95.76	93.53	95.65	94.60	95.90	-.257
2. Age Distribution (IQV)	0.089	0.162	0.242	0.167	0.204	0.157	+.257
C. Spanish/Hispanic Origin							
1. Percent Hispanic	10.69	10.33	9.25	13.34	10.19	11.94	-.200
2. Hispanic Distribution (IQV)	0.382	0.370	0.336	0.462	0.366	0.421	+.200
D. Household Income							
1. Percent over average household income	32.06	36.78	58.64	55.10	63.24	65.78	-.943**
2. Income Distribution (IQV)	0.871	0.930	0.970	0.990	0.930	0.900	+.174

** The Spearman rank correlation coefficient was significant at alpha= .05

Table 2.—Recreation Behavior Indicators of Texas Saltwater Anglers

Indicators	Year						
	1989	1990	1993	1998	2002	2005	r_S
A. Saltwater fishing participation rate							
1. Percent Participation	43.91	45.89	42.04	49.61	34.94	48.07	+.143
2. Participation Distribution(IQV)	0.985	0.993	0.975	1.000	0.909	0.999	+.143
B. Saltwater fishing experience by years							
1. Percent of saltwater anglers fishing experience	41.82	42.45	43.63	42.21	43.79		+.700
2. Experience Distribution (IQV)	0.973	0.977	0.984	0.976	0.985	N/A	+.700
C. Self-assessed saltwater fishing skill							
1. Percent with average skill	62.97	64.39	64.14	64.37	64.72	67.74	+.829**
2. Skill Distribution (IQV)	0.933	0.917	0.920	0.917	0.913	0.874	-.899**

** The Spearman rank correlation coefficient was significant at alpha= .05

increase in the number of females fishing in 1990 compared to 1980 (Aiken 1999). In the Texas survey, however, the gender indicator showed no significant change for either percentage or IQV descriptive statistics over time. Another non-significant trend in age indicated relative stability in saltwater fishing in Texas. According to U.S. Census for Texas from 1990 to 2000, Hispanic population growth in Texas is a long-term trend with the total percentage growing from 25% to 32% in the last decade (Codina 2002). However, the Hispanic fishing population has not increased over time in Texas. The surveys indicated that fishing in Texas is still dominated by the Anglo population. In sum, gender, age, and ethnicity indicators showed no long-term trends over time. However, the Spearman rank correlation and IQV in average household income increased simultaneously. The median household income category of saltwater anglers had increased from $40,000- $49,999 to $50,000- $59,999 since the 1993 statewide survey (Ditton & Hunt 1996). In the 2005 survey, the median group advanced to a higher household income level, $60,000- 69,999. The household income over the median group ($50,000- $59,999) revealed a steady upward trend over time.

Recreation behavior correlations are shown in Table 2. Although the saltwater fishing participation rate has fluctuated from 35 percent to 48 percent over the last 16 years, there was still no significant trend for either percent or IQV descriptive statistics. Participation rate has kept pace with the nationwide level of saltwater fishing. From 1991 to 2001 nationwide surveys, participation in saltwater fishing increased by 2 percent, but this rise was not statistically significant (Norton et al. 2002). Although

Table 3.—Resource Use Indicators of Texas Saltwater Anglers

Indicators	Year						
	1989	1990	1993	1998	2002	2005	r_s
A. Fishing days in salt water							
1. Percent of saltwater fishing days	45.01	43.16	44.99	43.64	45.46	42.58	-.257
2. Saltwater fishing days Distribution(IQV)	0.990	0.981	0.990	0.984	0.992	0.978	-.203
B. Saltwater fishing targets							
1. Percent red drum (the favorite species in saltwater fishing)	32.10	29.70	32.60	37.00	38.00	42.58	+.943**
2. Fishing targets Distribution (IQV)	0.988	0.993	0.972	0.984	0.965	0.875	+.886**
C. Satisfaction extent in participating saltwater fishing							
1. Percent with the two highest levels of satisfaction	34.89	27.94	46.03	54.11	50.85	55.14	+.886**
2. Satisfaction Distribution (IQV)	0.972	0.987	0.917	0.850	0.881	0.841	-.886**

** The Spearman rank correlation coefficient was significant at alpha= .05

not statistically significant, the data nevertheless suggest a slightly upward trend of more experienced anglers engaging in saltwater fishing. In terms of self-assessed skill, the IQV and percent change of above average self-reported skill increased significantly. The Spearman rank correlation coefficients were significant with an alpha of less than .05.

A longitudinal perspective of saltwater fishing natural resource use is provided in Table 3. These analyses monitored changes in the relative composition of saltwater fishing resource utilization in Texas. The total fishing days in saltwater represented a slight decrease over time, but it was not a significant difference. The temporal correlation between favorite angler species and time series increased significantly over time. Red drum has been the most popular species in saltwater fishing in Texas since 1989, probably due to its power, speed, and good eating quality. While the extent of angler satisfaction has been high and has increased consistently over time, variation has decreased significantly from 0.972 to 0.841. Thus, the temporal correlation between satisfaction and time series decreased significantly at alpha less than .05.

4.0 DISCUSSION

The nine sociodemographic, recreation behavior, and resource use indicators demonstrated some similar and some unique patterns of change for saltwater fishing in Texas. If managers are to achieve an accurate understanding of anglers and their dynamic nature, they need to view them in successive frames or states using a longitudinal perspective (Boulding 1978). Longitudinal analysis is touted as an approach for establishing temporal order, measuring change, and making stronger causal interpretations. Another advantage of a longitudinal perspective is the examination of change, not in values or levels of variables over time, but in the relationships between or among variables over time (Menard 2002).

4.1 Change in Demographic Indicators

Concurrent with demographic change in Texas, there was a need to know more about angler sub-populations (seniors, women, African-Americans, and Hispanic-Americans) not well represented in most previous study results as programs were underway or being developed to socialize more individuals from these groups into fishing (Anderson & Ditton 2004). Results revealed a downward trend in the female saltwater fishing population as demonstrated by the IQV decrease. To reverse this trend, fishery interests will need to understand more about females and their attitudes toward and expectations from angling. Bohnsack (2002) suggested that the responses of females differed significantly from males in terms of their resource dependency and their attitudes toward activity-specific and activity-general aspects of their angling experiences. Gender differences existed for a few of the measures tested; however, significant differences were not present for most measures tested.

The exponential growth of the Hispanic population over the past two decades raises another question about their underparticipation in fishing. Our finding of no

significant trend toward a greater rate of participation by Hispanics may suggest a disconnection between providers and this ethnicity group. Besides a number of constraints that may be present, the image of fishing and the nature of experiences currently provided may not rate highly with this population group. For example, Shaull and Gramann (1998) indicated Hispanics view fishing more as an opportunity for relaxed social interaction with family and extended family. Because of Hispanics' strong family attachment to the nuclear and extended kinship network, a secure and supportive social space for shared experiences with family and extended family is a more important management goal than focusing on the size and nature of the fish and the sporting experiences provided. Because the content of environmental consciousness likely varies substantially with cultural background, Anglo-Americans' and Hispanic-Americans' concerns will probably differ, and the expression of even common concerns will vary (Lynch 1993).

4.2 Improvement in Skill Magnitude

There was a significant trend in self-reports of increased skill in saltwater fishing among Texas anglers. This fishing trend may be evidence of growth and development in the fishing population and movement along the specialization continuum (Snepenger & Ditton 1985). Bryan (1977) postulates that as people become more familiar with fishing, they may advance through a predictable set of alternatives in reaching their goals. According to specialization theory, the least specialized angler will likely be aware of and seek only the most superficial and apparent elements of the experience (Ditton & Loomis 1992). To the contrary, more specialized anglers are likely to prefer a more pristine environment for their fishing experience. Self-assessment skill is one of the important variables for testing the specialization level. Scott and Shafer (Scott & Shafer 2001) suggested using three dimensions (behavior, skill and knowledge, and commitment) of indicators to fit the specialization model. In this study, saltwater anglers that rate their skill level as higher than others are likely to be more specialized anglers.

4.3 Resource Use Indicators

As a resource use indicator, anglers' preference for red drum has always been high and has continued to increase. The increasing preference for this species is important because stocks of this species are currently being enhanced through hatchery production and there may be limits to meeting angler demands for this species. Likewise with increasing levels of satisfaction, it is reasonable to expect those who are more satisfied with fishing overall to be more inclined to appreciate the resource management practices than those who are less satisfied. Accordingly, fishery managers in Texas who would like to promulgate resource conservation and sustainability are more likely to be supported by the increasing percentage of high specialization anglers than by low specialization anglers (Oh et al. 2005). Researchers or managers can scrutinize the changing directions in resource use and satisfaction magnitude over time with a longitudinal perspective and perhaps reach different conclusions from time series research results.

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A TIME SERIES APPROACH TO ESTIMATING THE ECONOMIC IMPACTS OF EXOGENOUS EVENTS ON A LOCAL ECONOMY

Chi-Ok Oh, Ph.D.
Department of Parks, Recreation and Tourism Management
Clemson University
Clemson, SC 29634-0735
chiokoh@clemson.edu

Robert B. Ditton, Ph.D.
Texas A&M University

Abstract.—Achieving the economic impacts associated with recreational fishing depends considerably on the maintenance of high-quality fishery resources. As fishing quality declines at a lake, anglers are likely to divert their activity to other water bodies reachable at similar travel cost. In 2001, a series of the abrupt events, namely, an outbreak of harmful algal blooms, occurred at Possum Kingdom Lake in Texas. As various fish populations at the lake were affected and catchability reduced, we sought to estimate the *negative impacts* of the golden algae events as an illustration of estimating damage assessment. Using a time series intervention analysis, we demonstrated that inserted interventions had negative economic impacts. The intervention time series method provided a useful tool for analyzing the influence of external events on various time series of interest. Further, other approaches were suggested for monitoring recreational fishing activity and understanding related economic impacts at recreational fishing lakes.

1.0 INTRODUCTION

Recreational fishing is big business in the United States. About 1,842,000 individuals (residents and non-residents) participated one or more days per year in freshwater fishing and spent an estimated $750,870,000 overall per year in the state of Texas in 2001 (U.S. Fish and Wildlife Service and U.S. Bureau of the Census 2003). Recreational fishing is also an important part of the state's tourism industry with local economic impacts as anglers are lured from one region of the state to another to pursue their activity (see, e.g., Anderson et al. 2003, Thailing & Ditton 2000) or as out-of-state anglers and their expenditures are attracted to high-quality recreational fishing in Texas (see, e.g., Chen et al. 2003). However, maintaining direct and indirect economic impacts associated with recreational fishing depends entirely on maintaining high-quality fishery resources (high catch per unit of effort and all of the factors that play a role in this including water quality, water quantity, habitat, stocking levels, etc). If fishing quality declines at a particular lake in a measurable way, anglers may divert their activity to other water bodies reachable at similar travel cost, which can result in major economic consequences for local businesses in the original area.

This situation happened to some extent starting in January through July 15, 2001 when there was a confirmed outbreak of golden algae (Prymnesium parvum) at Possum Kingdom Lake (PKL) in Texas. This algal species is normally found in estuarine areas and produces a toxin fatal to fish when it becomes the dominant algal species in a water body. According to the Texas Parks and Wildlife Department (TPWD), at least 200,027 fish, including many large highly sought after game fish, died during this period (TPWD 2005). From January 1, 2003- April 21, 2003, there was another confirmed golden algae bloom at PKL, resulting in a further loss of an estimated 1,475,212 fish killed (TPWD 2005). Another other event, which happened in the spring of 2005, was not incorporated in the study due to its ongoing process.

As various fish populations at the lake are affected and catchability (or perceived catchability) is reduced, we would expect recreational fishing activity at the lake by non-residents (who are more likely to make substitution choices elsewhere) and residents alike to decrease. Accordingly, we would expect reduced angler expenditures, which will impact the various sectors of the tourism economy in the three-county local study area (i.e., Palo Pinto, Stephens, and Young counties).

There is usually little opportunity to implement studies of external events with negative consequences and their economic impacts. Accordingly, most efforts to estimate the associated negative economic impacts are often "guesstimates" at best because appropriate data were not

collected before, during, and following the events. In addition, the potential presence of confounding factors should be recognized from the outset. Typically, an anecdotal information approach appears to be used most often, primarily for helping the media to understand and report harmful algal bloom (HAB) events and their effects. Typically, some casual observations or unscientific "surveys" are made immediately after the event based on a limited number of observations and then extrapolated to the population of business owners in the region.

In the absence of a feasible study design for estimating economic impacts, the best way to assess the economic impacts of exogenous events on a local economy may be through an empirical modeling process using a time-series approach. While a time series approach typically makes use of either single (i.e., univariate) or multiple time-series variables (i.e., multivariate), a univariate approach has been adopted most often due to the ease of modeling involved and limited data availability for using a multivariate approach (Enders 1995). Accordingly, the negative economic impacts of golden algae at PKL or other HABs can probably best be estimated with a univariate approach, namely, by detecting the irregular variations or patterns of economic variables as a result of the event.

The purpose of this study was to demonstrate the effectiveness of a time series approach, namely, intervention analysis, for estimating the negative economic impacts of exogenous events on the economy of the adjacent study area. In particular, study objectives were to estimate the extent of economic impact of the outbreak and continued presence of golden algae at PKL on the local three-county area during a particular time period. Additionally, we sought to suggest a protocol of approaches for monitoring recreational fishing activity and related economic impacts at PKL and for recreational fishing lakes elsewhere in the future.

2.0 METHODS

2.1. Data Collection

Due to a lack of necessary primary data prior to exogenous events, time-series secondary data were most desirable for situations like this one. Two time-series secondary data sets with coverage of relevant variables were acquired from the Texas Comptroller of Public Accounts (TCPA) and TPWD. Data for county-level gross sales and state tax on total expenditures were obtained from TCPA. We used five tourism-related SIC code categories for the three-county study area for the period starting the first quarter of 1986 to the second quarter of 2004. The SIC codes included the expenditure amounts at grocery stores, eating and drinking places, retail stores not else classified, hotels and motels, and miscellaneous amusement and recreation services. The original SIC codes used were adjusted to the IMPLAN codes for the economic impact analysis. Tourism and recreation related expenditures were adjusted to 2001 levels using the Dallas-Fort Worth consumer price index (U.S. Bureau of Labor Statistics 2005). Data for the number of visitors to PKL State Park were provided by TPWD from September 1996 to January 2005. The number of visitors was expressed in natural logarithms. The log transformation is beneficial in that it is easier to manage a log-transformed variable when the variance was proportional to change in the series level (McCleary & Hay 1980).

2.2. Economic Impact Assessment

The economic impact of recreation and tourism-related activities reflected in gross sales in five SIC-code categories in the three counties adjacent to PKL were further estimated using a regional Input-Output (I-O) model. An I-O model presents a comprehensive representation of the economic structure of a region and facilitates the identification of interrelationships among economic sectors. Thus, regional I-O models provide detailed and relevant information on consequences of expenditures on regional economies (Baaijens et al. 1998).

The economic impacts of recreation and tourism-related activities are best described in terms of changes in the amount of total output. Other estimates such as labor income and value added, which may provide information not incorporated here, were excluded intentionally from further analysis because they varied the same as the variable we used. Total output was used to estimate the degree of the interdependence of sectors; the larger the output multiplier, the greater the interdependence of the sector on the rest of the regional economy. To be as

accurate as possible in analyzing the various economic impacts on the local or regional level, we used the I-O modeling developed by IMPLAN, a modeling technique designed for economic impact analysis (Minnesota IMPLAN User's Manual 1997).

2.3. Intervention Model Approach

To examine the impacts of the 2001 and 2003 golden algae outbreaks, intervention analysis was used. This was considered a useful model for evaluating the influence of an external event (or events) on the behavior of a time series (Enders et al. 1990). Intervention analysis is a two-step process. The initial step begins with the identification of a suitable model (typically ARIMA [AutoRegressive Integrated Moving-Average] models) that represents the pre-intervention periods (McCleary & Hay 1980). Then, the identified model is re-estimated using the full sample to test the effects of exogenous interventions on the level of time series. Interventions can be represented as "binary variables which indicate the absence of the state prior to the event and the presence of the state during and after the event" (McCleary & Hay 1980, p.143). Thus, a binary vector (or dummy variable) is introduced into the model to take into account the effect of an exogenous intervention. By comparing the level of post-intervention time series to that of pre-intervention series, the statistical significance of the effect can be assessed.

This model developed by Box and Tiao (1976) can be written as

$$Y_t = f(I_t) + N_t$$

where Y_t is an observed time-series and the function, $f(I_t)$ is the intervention component of the model. And, N_t represents the effect of other factors, which can typically modeled by the ARIMA component. Thus, while $f(I_t)$ explains the deterministic component between an intervention (or interventions) and the time series, N_t describes the stochastic process of the time series around the $Y_t = f(I_t)$ (McCleary & Hay 1980).

2.4. Noise Component (N_t)

The general principle of Box-Jenkins ARIMA modeling for the noise component involves the following steps: model identification, estimation, and diagnostic checking (Ender 1995, Johnston & DiNardo 1997). In the identification stage, the data are initially transformed to make them stationary. More specifically, differencing was performed to remove trend, and seasonal differencing was performed to remove seasonality. A tentative model was then determined by examining the autocorrelation function (ACF), which is a computation of the correlation of the observed series with consecutive lags of that series and partial autocorrelation function (PACF), a computation of the partial correlation of the observed series with consecutive lags of that series. Using the graphical inspection of ACF and PACF of the pre-intervention time series, a tentative model can consist of autoregressive (AR) or moving average (MA) components only, or both AR and MA components together. The parameters of AR and MA indicate weights attached to successive lags of the current and preceding observations and of random shocks, respectively.

After the specification of the tentative model with parameter estimation (i.e., calculation of the coefficients) has been derived, diagnostic checks of the model were performed to ensure all coefficients were significant and within the bounds of stationarity for the AR coefficients or invertibility for MA coefficients, and that residuals did not differ from white noise. White noise indicates that each value in the sequence has a mean of zero, a constant variance, and is serially uncorrelated (Enders 1995). Finally, to test the goodness of fit of the model to the data, we used two different model-selection criteria: Akaike's Information Criterion (AIC) and Schwartz's Bayesian Criterion (SBC).

2.5. Intervention (I_t)

Once a successful ARIMA model was identified, an intervention component (or components) was added in the form of a binary variable. In contrast to the experimental construction of ARIMA model, specification of the intervention component should be executed based on *a priori* ideas (McCleary & Hay 1980). Thus, because an intervention is considered an exogenous input time series with the pre-specified onset of an event that disturbs the dependent time series in a bivariate model approach, the function of I_t is called a transfer function which specifies the dynamic transference from the independent effect of the input series (I_t) on the dependent output series (Y_t). Thus,

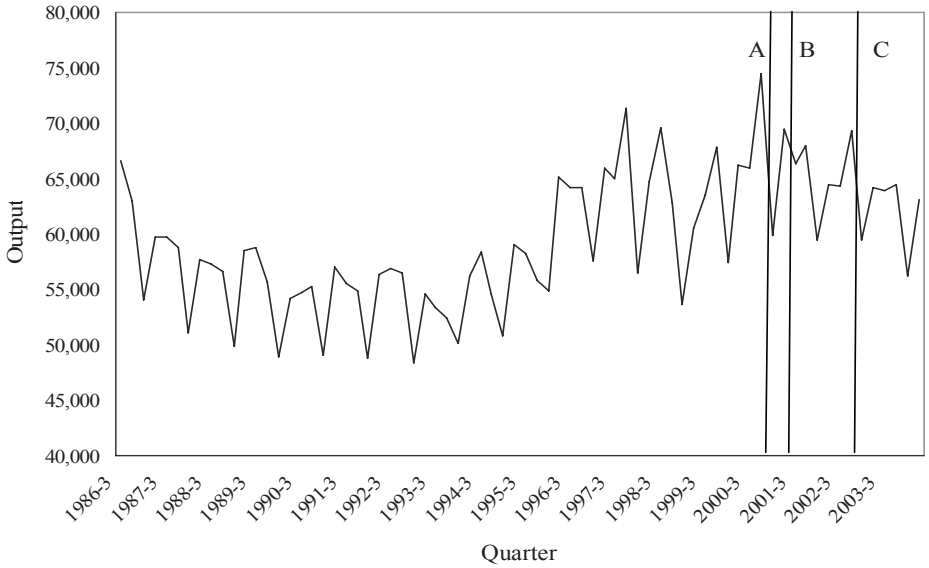
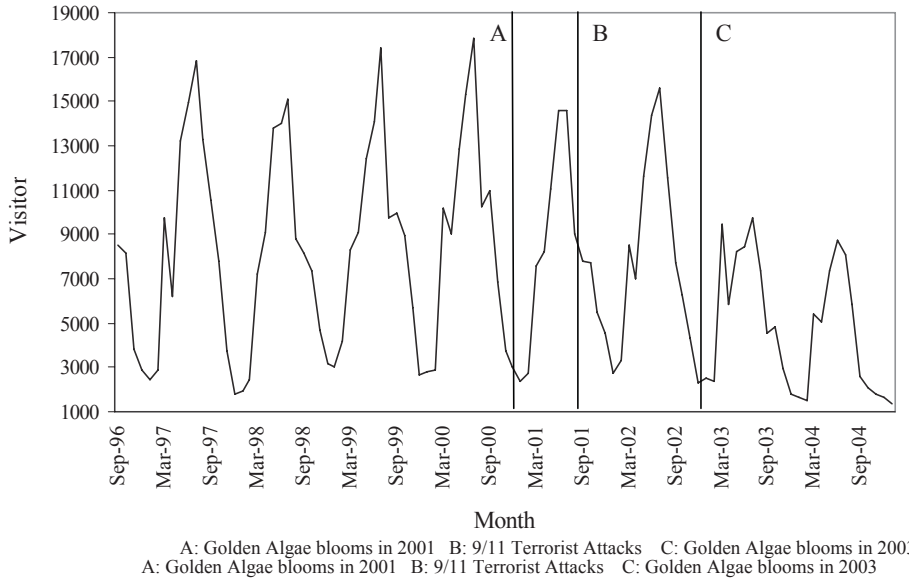


Figure 1.—Total Economic Output in the Three-county PKL Study Area, 1986-2004.



A: Golden Algae blooms in 2001 B: 9/11 Terrorist Attacks C: Golden Algae blooms in 2003

Figure 2.—Number of Visitors to PKL State Park, 1996-2005.

transfer functions can capture intervention responses into a model to depict the dynamic transfer from the intervention to the dependent time series (Box & Tiao 1975, Wood 1988).

Given the abrupt onset of interventions like algal blooms, intervention processes of dynamic realization can be either temporary or permanent, depending on the duration of the interventions. Thus, the effects of the interventions were captured by the transfer function, $\frac{\omega B}{1 - \delta B}$, where ω is the parameter estimate of an intervention and δ is the dampening rate of the interventions. *B* is the backshift operator such that $BY_t = Y_{t-1}$. The parameters of the full impact assessment model were then estimated based on the tentative ARIMA model identified. When all required conditions (e.g., significant coefficients, white noise residuals, and bounds of system stability) were satisfied, impact parameters were tested for statistical significance and the entire model interpreted (McCleary & Hay 1980).

3.0 EMPIRICAL ANALYSIS

The data were first plotted (Figures 1 and 2) to scrutinize any irregular variations or patterns of the series. Three hypothesized interventions were then inserted into each

Table 1.—The impact of golden algae blooms on total output in the three-county study area

Model Component	Parameter	Coefficient	t- value	
Golden Algae Blooms in 2001	ω_{01}	-2,816,402.0	-1.315	
9-11 Terrorist attacks	ω_{02}	-2,208,659.2	-0.864	
Golden Algae Blooms in 2003	ω_{13}	-1,091,767.6	-0.464	
	AR lag 1	0.6930	6.330	
	Seasonal AR lag 4	-0.5940	-4.004	
	Seasonal AR lag 8	-0.3550	-2.321	
	AIC	1,970.94	SBC	1,983.30
	Q Statistics	Lags	Significance	
		16	0.124	

time-series variable: Golden Algae blooms in 2001, the 9-11 Terrorist Attacks in 2001, and golden algae blooms in 2003. The 9-11 terrorist attacks were inserted due to the significant economic impacts on the tourism industry nationwide (Lee et al. 2005). The pre-intervention observations in each time series before the first incident of golden algae blooms (January 2001) were used for the initial construction of the ARIMA model. To check stationarity of each time series, augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were used. Although detailed results are not reported here, the results generally indicated that non-stationarity was present before differencing each time series and became stationary after the first differenced series of the variables. Significant AR and MA factors were utilized further to support that the residuals were white noise as well as seasonal differencing with seasonal fluctuations.

Once an initial ARIMA model was identified, the compound impact assessment models, each with three intervention components, were implemented after inserting each intervention individually. Despite white noise residuals in the ARIMA model with the pre-intervention period (i.e., the noise component), the full impact assessment model was not acceptable if residuals were different from white noise. The model-building procedure was done repeatedly until a parsimonious and statistically acceptable impact assessment model was generated (McCleary & Hay 1980). The Ljung-Box Q-statistic was used to test whether the residuals have a mean of zero, have constant variance, and are serially uncorrelated (i.e., white noise).

Parameter estimates and diagnostic statistics for total output are represented in Table 1. For the time series variable of total economic output in the three-county study area, ARIMA (1,1,0)(2,1,0)4 appeared to be the best model. All parameters were statistically significant and acceptable. Diagnostic checks with Q statistics at different lags also supported that the residuals were not different from white noise. While ignoring the noise component, the new equilibrium level is the pre-intervention mean plus $\frac{\omega_0}{1-\delta_1}$ as the first order transfer function. However, when δ is near zero (i.e., statistically non-significant), the total amount of change as a result of the intervention can be measured with the zero order transfer function. The difference between the zero order and first order transfer function is the value of δ, which determines the rate at which the process returns to its pre-intervention equilibrium level (McCleary & Hay 1980). After having tested the first order transfer functions at the outset, the zero order transfer functions seemed to be more appropriate for measuring each effect of the intervention components.

Table 1 illustrates the estimated impacts of the intervention events on the total output variable. Following the golden algae blooms in 2001, there was a zero order decrease of $2.8 million in total economic output calculated from five tourism-related SIC codes.

Table 2.—The impact of golden algae blooms on the number of visitors to PKL State Park

Model Component	Parameter	Coefficient	t- value	
Golden Algae Blooms in 2001	ω_{11}	-0.2287	-1.620	
	δ_{11}	0.7323	2.196	
9-11 Terrorist attacks	ω_{02}	-0.1951	-1.475	
Golden Algae Blooms in 2003	ω_{13}	-0.2187	-1.630	
	AR lag 4	-0.5631	-5.058	
	MA lag 1	-0.5465	-5.654	
	Seasonal MA lag 12	-0.4730	-3.815	
	AIC	98.83	SBC	115.76
	Q Statistics	Lags	Significance	
		16	0.087	

Compared to the average total economic output computed from the pre-intervention periods, the amount decrease is equivalent to a change in about 5 percent of total output. Not only did the estimated impacts show the directional consistency with our *a priori* expectations, but the intervention components were also statistically significant at 10 percent of one-tailed tests. After the 9-11 terrorist attacks in 2001, the parameter estimate of ω_{02} indicates that there was an immediate zero-order decline of total economic output by about $2.2 million. Additionally, with the parameter estimate of ω_{13} indicating -$1,091,768, the golden algae blooms in 2003 had a negative impact on total economic output of 1.9 percent despite its non-significance.

Table 2 presents parameter estimates and diagnostic statistics for the number of visitors to PKL State Park. Various examinations using autocorrelation functions such as ACF, PACF, and IACF and the associated Ljung-Box Q statistics showed that ARIMA $(||4||,1,1)(0,1,1)_{12}$ was the best model. By working in the time series with logarithm transformation, the interpretation of the model parameters was not straightforward any more. Therefore, because the parameter ω_0 was not directly interpretable in the logarithm transformation, it was more convenient to work with the term, $e^{(\omega_0)}$ which can be decoded as the ratio of the post-intervention series level to the pre-intervention series level (McCleary & Hay 1980). This ratio can be further transformed into the percent change in the expected value of the process as a result of the intervention (See more on this in McCleary & Hay 1980): Percent change = $(e^{(\omega_0)} - 1) \times 100$. The percent change of the first order transfer function can be calculated in a similar manner. Although the impacts of two interventions (i.e., 9-11 terrorist attacks and golden algae blooms in 2003) on total economic output were not significant previously, all three interventions had a significant (at 10% of one-tailed tests) and negative impact on the number of visitors to PKL State Park.

While the first order transfer was identified for the initial algal blooms in 2001, the zero order transfer functions were more suitable for the other two interventions (i.e., 9-11 terrorist attacks and the golden algae blooms in 2003). Using the first order transfer function, the asymptotic change in log level of the algal blooms in 2001 was:

Total demand change = $\frac{\omega_1}{1 - \delta_1}$ = -0.854. When this result was translated into percent change, we found that the algal blooms in 2001 explained a 57% reduction in visitor number. As the pre-intervention mean for the time series variable was approximately 8,344 visitors per month, this percent change represented a total reduction of approximately 4,793. The parameter estimate of ω_{02} from the 9-11 terrorist attacks in 2001 indicated there was an immediate zero-order decline. When the estimate, -0.195, was converted into the percent change,

the terrorist attacks were accompanied by a 17.7 percent reduction in visitor numbers or a decline of about 1,489 visitors. Likewise, the parameter estimate of ω_{13} indicated a negative impact of the algal blooms in 2003 on the number of state park visitors (a decline of 19.6%). Accordingly, this reflected a drop of 1,615 PKL State Park visitors.

4.0 DISCUSSION

Using the intervention time-series model approach with economic impact assessment, three intervention components including two algal blooms were inserted to estimate the economic impacts of each event. Initially, the variable of total economic output was generated from the I-O model to provide a holistic depiction of the economic structure in the region. ARIMA (1,1,0)(2,1,0)4 was identified as the best model to fit into the data generation process. From the first golden algae bloom in 2001, total economic impact was estimated as a loss of $2.8 million, equivalent to about 5 percent of total output in the three counties around PKL. While there was a negative impact of $2.2 million after the 9-11 terrorist attacks, the second golden algae bloom seemed to explain a negative loss of $1.1 million. However, the last two impacts were not supported by statistical significance at .10. All three interventions had significantly negative impacts on the number of visitors to PKL State Park. Using the identified best model of ARIMA (||4||,1,1)(0,1,1)12, the algal blooms in 2001 explained a 57 percent reduction in the number of visitors, equivalent to approximately 4,793 visitors per month. The 9-11 terrorist attacks had a negative impact of 1,489 visitors while the algal blooms in 2003 resulted in a reduction of 1,615 visitors.

Since its initial development by Box and Tiao (1976), the intervention time-series modeling approach has provided a reliable means for analyzing the influence of one or more external events on the behavior of a time-series variable employed. Although this method was used here mainly for estimating regional economic impacts using three variables, other methods such as damage assessment (e.g., Kopp & Smith 1993) could also have been used concurrently to incorporate other often overlooked information. Combining the concept of consumer surplus (i.e., willingness to pay above recreationists' expenditures), for example, with a damage assessment from the fish kill associated with the algal blooms also could have provided economic valuation insight beyond economic impact estimations. It is well known that the market value associated with natural resources is not the only value sacrificed once resources are impacted. The comprehensive deliberation of total values estimated from both market and nonmarket sides collectively could have provided additional insights for better decision-making had additional data been available.

Our results are conservative in that we used only the five categories typically used to analyze outdoor recreation. Other SIC codes could have been appropriate for investigation if evidence provided support for doing so. Likewise, IMPLAN multipliers vary by expenditure area and are reflective of the extent of business activity within and between business sectors (For a further discussion of this, please see Ditton & Hunt 2001).

Because of the extensive economic impact of recreational fishing and other outdoor recreation activities at other major Texas lakes, the question remains: what types of data should be collected on a regular basis so as to ascertain use trends and extent of impacts associated with exogenous events such as golden algae blooms and any declines in public use of water bodies and associated infrastructure? If recreational fishing is a significant economic activity, or thought to be, there needs to be a data base available to ascertain the extent of fishing activity and expenditures and to ascertain the impacts of all possible exogenous events such as golden algae, oil spills, contaminants, drought, etc. to provide a basis for remediation efforts.

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USING MULTINOMIAL LOGISTIC REGRESSION ANALYSIS TO UNDERSTAND ANGLERS WILLINGNESS TO SUBSTITUTE OTHER FISHING LOCATIONS

Woo-Yong Hyun
Ph.D. Student
Department of Recreation, Park and Tourism Sciences
Texas A&M University
2261 TAMU
College Station, TX 77843-2261
hwyong@neo.tamu.edu

Robert B. Ditton, Ph.D.
Texas A&M University

Abstract.—The concept of recreation substitutability has been a continuing research topic for outdoor recreation researchers. This study explores the relationships among variables regarding the willingness to substitute one location for another location. The objectives of the study are 1) to ascertain and predict the extent to which saltwater anglers were willing to substitute fishing at one location for fishing at another location; and 2) identify the relationship between independent variables such as demographic characteristics, constraints, and anglers' specialization variables as predictors and anglers' willingness to substitute one fishing location for another. From the results of the multinomial logistic regression analysis, anglers' willingness to substitute was affected negatively by age, and affected positively by a constraint variable; and anglers' willingness to substitute was negatively associated with specialization variables. Exploring the relationships between recreationists' willingness to substitute and specialization has implications for future research, and can be helpful to outdoor recreation managers for understanding recreationists' substitution behavior.

1.0 INTRODUCTION

The concept of recreation substitutability has been a continuing research topic for outdoor recreation researchers interested in the behavior of recreation users as well as economists and social psychologists studying recreation demand and motivation (Manning 1999, Shelby & Vaske 1991). The study of substitutability affecting leisure behavior is closely related to a research question about what kinds of indicators influence recreationists' willingness to substitute leisure behaviors that may bring about actual substitution in the future (Iso-Ahola 1986). Previous studies of substitutability have shown that each individual's perceptions could affect recreation substitutability whether it involves activity replacement or location displacement (Iso-Ahola 1980). The application of substitutability to recreational fishing research occurs when anglers participating in recreation fishing encounter constraints such as new regulations, limits to use, and conflicts with other recreation activities that in some way limit their fishing satisfaction.

Generally, there are four types of substitution alternatives involving resource and activity alternatives. These can be best viewed in a matrix format as provided by Shelby & Vaske (1991). These are the available alternatives for changing activity or resource or setting that recreationists could consider in making substitution decisions to get the same benefits and satisfaction (Manning 1999). Among the substitution alternatives identified by Shelby & Vaske (1991), first of all, there is the temporal/strategic substitute (changed behavior at the same resource and in the same activity) whereby users adjust their time schedule or use some alternative strategy to achieve the benefits they seek. Second, a resource substitute involves a situation where recreationists can choose to participate in the same activity but at a different location. Third, activity substitution involves a choice whereby users participate in an alternative activity at the same location. Finally, a resource and activity substitute occurs when recreationists choose to change both the resource and their activity. In the case of recreational fishing, anglers may choose one of these four types of substitution alternatives to get the same recreational satisfaction and benefits they get from fishing.

Resource substitution occurs when an individual engaged in recreation (e.g., fishing for largemouth bass) cannot enjoy the same experience due to some new regulations for the activity, and therefore he/she chooses to substitute the resource for others to achieve a similar level of satisfaction and benefits from the activity (Brunson & Shelby 1993, Hendee & Burdge 1974, Iso-Ahola 1986). Resource substitution is a behavioral change by anglers seeking similar benefits and satisfaction by

engaging in the same activity at a different site and at a similar cost. This may happen when anglers encounter constraints such as regulation, crowding, and poor fishing conditions. Although there have been a few studies regarding resource substitutability, previous research has explored the unsymmetrical nature of resource substitution (Shelby 1984), interactive effects between resource and activity (Ditton et al. 1975), and substitution between public and private recreation areas (Cordell 1976). Shelby (1984) argued that some anglers in a different fishing resource setting would be willing to substitute other locations while others would not. Otherwise, Ditton et al. (1975) has shown that each individual's participation frequency in recreation activity is strongly affected by the various types of environmental settings available. Cordell (1976) also reported there has been resource substitution between public and private recreational sites, due mainly to increasing recreation demand.

Bryan (1977) defined specialization as a continuum of behavior from the general level to the specialist level in a recreation activity. For measuring recreation specialization, there are three dimensions such as behavior, skill/knowledge, and commitment (Scott & Shafer 2001). Previous studies associated with recreational specialization of anglers have focused on segmenting them into groups based on specialization level. This research showed that substitution behaviors could be affected by recreationists' specialization level; for example, anglers with a high level of specialization tend to be less willing to make substitution decisions than those with a low level of specialization (Choi et al. 1994).

In substitution decision-making, previous studies have shown which predictors affect recreationists' substitution behavior. First, in the relationship between willingness to substitute and demographic variables, Ditton and Sutton (2004) showed that anglers' willingness to substitute was negatively related to age, positively related to education level, and greater for males than females in gender. Otherwise, Sutton and Ditton (2005) argued that females were more willing to substitute than males. This study investigated saltwater anglers' willingness to substitute for their most preferred species. Second, personal characteristics such as participation frequency and skill level have been shown to affect people's willingness to substitute (Snow 1980, Vaske & Donnelly 1982). Willingness to substitute has also been associated with recreation specialization (Bryan 1977, Ditton et al. 1992, Fisher 1997), in which high specialization or involvement is negatively related to willingness to substitute (Scott & Schafer 2001). Personal experience is directly related to a user's willingness to substitute among resource substitute locations through recreational place bonding (Hammitt et al. 2004). Baumgartner (1978) argued that recreation substitutability was determined by various elements regarding the entire experience. Previous research has shown that recreation substitution has a negative relationship with place attachment, resulting from long-term use in recreation resource, and an individual's previous experience could be an indicator with which recreationists evaluate recreation locations (Schreyer et al. 1984).

The objectives of this paper are 1) to ascertain and predict the extent to which saltwater anglers were willing to substitute fishing at one location for fishing at another location; and 2) identify the relationship between independent variables such as demographic characteristics, constraints, and anglers' specialization levels as predictors and anglers' willingness to substitute one fishing location for another. Most importantly, this study explores the relationship between specialization variables (behavior, skill/knowledge, and commitment) and anglers' willingness to substitute.

2.0 METHODS

2.1 Data Collection

This study used data regarding willingness to substitute from a stratified random sample of saltwater anglers. The sample frame for this study included licensed Texas resident anglers who fished in saltwater from 1997 to 1998. First, a random sample of 10,000 anglers was selected from the license database maintained by the Texas Parks and Wildlife Department, with 49 percent of the sample being anglers that resided in the first tier of Texas coastal counties. This was done to ensure a sufficient number of saltwater anglers. The usable number of angler responses from the Texas statewide survey was 4,052 (Bohnsack & Ditton 1999) of which 2,073 licensed anglers (51%) had gone fishing in

Table 1.—Dependent variable classified by four categories

Category	Description
1	I would choose another location along the Texas coast to go saltwater fishing
2	I would choose to go fishing in freshwater
3	I would cancel my fishing trip
4	It would not affect my fishing plans

saltwater one or more days during the previous twelve months. The sampling frame was all anglers that reported fishing one or more days in saltwater in the first phase, and the sample size was 2,073 licensed saltwater anglers.

Of the 2,073 questionnaires sent to the 2,073 anglers, 1,102 were returned. When nondeliverables were deleted (n = 971), there were 1,102 returns for an effective rate of 57 percent. About 1,005 were completed and hence usable for data analysis.

An eleven-page self-administered mail questionnaire was used to collect data and the survey process was consistent with the Dillman (1978) methodology. All mail questionnaires were sent by first-class mail, and also a postage-paid business reply envelope was used to increase return rate of the survey (Hiett & Worrall 1977, Chase & Godbey 1983, Chase & Harada 1984).

Questions in the survey questionnaire dealt with saltwater anglers' demographic characteristics; recreational specialization characteristics, consisting of behavior (total fishing days since last year), skill/knowledge (fishing skill, equipment, and guide), and commitment (fishing club membership and tournament participation); and constraints (e.g., regulation, fishing costs, fish types to catch, and fishing license fee).

2.2 Variables

Dependent Variable—Resource Substitution Behavior

Anglers' willingness to substitute was assessed by the following direct question.

> "In recent years, areas of the Texas coast have experienced red tide events and public health fishing advisories at particular locations. TPW and other state agencies issue public notices about these events. How would such an event at your favorite fishing destination affect your next fishing trip?"

From this question, respondents willing to substitute other resources can choose a resource substitute they considered acceptable. The basic question was based on previous work by Shelby and Vaske (1991), who used a multiple-choice question format (yes or no answer for each water body) and asked anglers to consider all acceptable resource substitutes. In contrast with this approach, our question sought to understand their exact meaning of a substitution by providing specific constraints such as red tide events and public health fishing advisories to understand what they say they will do to get the same fishing enjoyment and satisfaction at a similar cost. An answer with four categories was ordered from substitution of another saltwater fishing location to no substitution (Table 1). This question enables respondents to more accurately indicate specific locations they consider to be acceptable resource substitutes.

Independent Variables as Predictors

Independent variables as predictors of resource substitution behavior included recreation specialization variables (e.g., behavior, skill/knowledge, and commitment), demographic variables (e.g., age, gender, income), and constraints (e.g., perceived too many fishing regulations, too high overall cost, confusing fishing regulations, too confusing in differences between State and Federal fishing regulations, too expensive fishing licenses, and not always able to identify the types of fish to catch). A description of independent variables hypothesized as affecting anglers' willingness to substitute other locations is provided in Table 2.

Table 2.—Variable Names and Definitions of Variables Used in the Analysis

Variable	Description
Demographic Variable	
AGE	Anglers' age
GENDER	0 = Male, 1 = Female
INCOME	Income level (coded 1 to 11: 1 = Under $10,000, 11 = $100,000 and above)
Specialization	
TOTDAYS	Total number of fishing days since last year
TOTDAYSW	Total number of fishing days in saltwater since last year
ABILESW	Self evaluated fishing skills (1= less skilled, 2 = equally skilled, 3 = more skilled)
REPLACE	Replacement cost for all fishing equipment owned by angler
GUIDE	Fishing without a guide (0 = no, 1 = yes)
CLUB	Member of a fishing club or organization (0 = no, 1 = yes)
TOURNSW	Participation in a saltwater fishing tournament (0 = no, 1 = yes)
Constraints	
CONST1	Too many fishing regulations (1 = Strongly Disagree to 7 = Strongly Agree)
CONST2	Too high overall cost (1 = Strongly Disagree to 7 = Strongly Agree)
CONST3	Too confusing fishing regulations (1 = Strongly Disagree to 7 = Strongly Agree)
CONST4	Too confusing in differences between State and Federal fishing regulations (1 = Strongly Disagree to 7 = Strongly Agree)
CONST5	Too expensive fishing licenses (1 = Strongly Disagree to 7 = Strongly Agree)
CONST6	Not always be able to identify the types of fish to catch (1 = Strongly Disagree to 7 = Strongly Agree)

To measure the effect of specialization variables on willingness to substitute of anglers, seven items (two behavior items, three skill/knowledge items, and two commitment items) were used (TOTDAYS & TOTDAYSW; ABILESW, REPLACE & GUIDE; CLUB & TOURNSW).

2.3 Analysis

Logistic regression analysis was used to identify the relationships between dependent variable (resource substitution behavior) and independent variables (recreation specialization, socioeconomic characteristics, and constraints). The logistic regression model is shown as the following form:

$$\ln(p/1\text{-}p) = \beta_o + \beta_i X_i$$

where p = the probability of resource substitution behavior; (p/1-p) = odds of resource substitution behavior; β_o = constant; X_i = vector of independent variables; β_i = parameter estimate for the ith independent variable. The logistic regression is powerful in its ability to estimate the individual effects of continuous or categorical independent variables on categorical dependent variables (Wright 1995).

The multinomial logistic regression model used is generally effective where the dependent variable is composed of a polytomous category having multiple choices. The basic concept was generalized from binary logistic regression (Aldrich & Nelson 1984, Hosmer & Lemeshow 2000). In a multinomial logistic regression model, the estimates for the parameter can be identified compared to a baseline category (Long, 1997). In this study, having no willingness to substitute was specified as the baseline category. The multinomial logistic regression model with a baseline category would be expressed as follows:

$$\text{Log}\ (\pi_i / \pi_I) = \alpha_i + \beta_i x,\ i = 1,\ldots..,I\text{-}1.$$

The logistic model uses the baseline-category logits with a predictor x. This multinomial logistic regression model can be a useful tool for modeling where the dependent variable is a discrete set of more than two choices (Agresti, 1996). The multinomial logistic regression model used in this study estimates the effect of the individual variables on the probability of choosing a type of alternative resource substitute for their recreational fishing activity.

Table 3.—Descriptive Statistics for All Variables Included in the Analysis

	Mean	Std. Dev.	Minimum	Maximum
Demographic Variables				
AGE	45.02	10.89	18	77
GENDER	0.17	0.37	0	1
INCOME	6.76	2.90	1	11
Behavior				
TOTDAYS	27.62	33.53	0	310
TOTDAYSW	22.40	35.70	0	440
Skill/Knowledge				
ABILESW	1.85	0.67	1	3
REPLACE	11858.4	23089.8	0	352000
GUIDE	0.50	0.50	0	1
Commitment				
CLUB	0.84	0.37	0	1
TOURNSW	0.18	0.38	0	3
Constraints				
CONST1	3.81	1.91	1	7
CONST2	4.65	1.78	1	7
CONST3	4.06	1.90	1	7
CONST4	4.48	1.74	1	7
CONST5	4.48	2.02	1	7
CONST6	3.44	2.08	1	7

3.0 RESULTS

Most anglers (83.2%) were male. About 18 percent of the anglers said their annual household income was $100,000 or above, and 47.4 percent reported an annual household income between $30,000 and $69,999. Most anglers (58%) were between the ages of 31 and 50. Most (90.3%) indicated a willingness to substitute other water resources or to cancel their fishing trip that would provide the same fishing satisfaction and enjoyment with their current fishing activity. Descriptive statistics for the 16 independent variables included in the analysis are presented in Table 3.

Only 10.2 percent of the anglers reported that there was no substitute for their original fishing plans. Most anglers (89.8%) said that there was another fishing location or that canceling their fishing trip could be substituted for saltwater fishing. In more detail, 48.7 percent of the anglers said they would choose another location along the Texas coast to go saltwater fishing; 16.2 percent said they would go fishing in freshwater, and 24.9 percent said they would cancel their fishing trip. Most anglers (59%) also reported there were other recreational activities that would provide the same level of satisfaction and enjoyment as saltwater fishing. The most frequently identified substitutable recreational activities for saltwater anglers were freshwater fishing (40.1%), hunting (32.6%), camping (20.3%), and golf (11.0%).

The final model specification of Table 4 was statistically significant ($\chi^2 = 85.817$; $p < 0.0001$). From the results of the multinomial logistic regression analysis in the model, anglers' willingness to substitute was affected negatively by age, and anglers' willingness to substitute was strongly affected negatively by specialization variables (behavior: Total days in saltwater; skill/knowledge: Fishing without guide; commitment: Club membership and Tournament participation). There was no significant effect of gender, income, total fishing days since last year, fishing skill compared to other anglers, and equipment costs and most other constraints on anglers' willingness to substitute other locations. The results are in accordance with predictions from previous studies and show the relationship between specialization variables and anglers' willingness to substitute, and how much anglers' willingness to substitute is affected by recreation specialization variables.

Table 4.—Results of the Multinomial Logistic Regression in the Final Model showing Significant Effects on Anglers' Willingness to Substitute other locations (Final model included only significant variables at .05 level)

Anglers' Willingness to Substitute Decision[a]		Estimate	SE	Wald	df	p (Sig.)	Odds ratio
1	Intercept	4.424	1.137	15.145	1	.000	
Choosing another location	AGE	-.256	.129	3.920	1	.048	.774
to go to saltwater fishing	GUIDE	-1.018	.304	11.237	1	.001	.361
2	Intercept	5.107	1.289	15.698	1	.000	
Choosing freshwater fishing	TOTDAYSW	-.489	.188	6.750	1	.009	.613
	CLUB	-1.038	.485	4.574	1	.032	.354
	TOURNSW	-1.321	.516	6.569	1	.010	.267
	GUIDE	-.748	.346	4.662	1	.031	.473
3	Intercept	3.757	1.226	9.393	1	.002	
Canceling fishing trip	GUIDE	-.812	.327	6.177	1	.013	.444
	CONST2	.269	.120	5.051	1	.025	1.309

N= 629 (no substitute for saltwater fishing = 61; substitution for other locations = 568).
Model chi-square = 85.817; p<0.0001, –2 log likelihood = -1409.979, Pseudo R2 (Nagelkerke) = 0.140.
a The reference category is: 4 (Not willing to Substitute other locations)

4.0 DISCUSSION

To better understand anglers' willingness to substitute alternate locations, this study used predictors such as specialization, socio-demographic, and constraint variables. Among them, recreation specialization was expected to be an important factor to affect recreationists' future behavior in outdoor recreation research as well as management issues. As such, this study examined the relationship between anglers' substitutability and three kinds of recreation specialization dimensions, which were divided into behavioral (behavior), cognitive (skill/knowledge), and affective (commitment).

As shown in this study, resource substitutability by saltwater anglers can be measured by the level of a willingness to substitute another location for one location. Results showed anglers' willingness to substitute was around 90 percent and that only 10 percent of the anglers reported they were not going to change their original saltwater fishing plans. The result of anglers' willingness to substitute was consistent with Shelby and Vaske (1991), which showed that if anglers could not go salmon fishing on the Rakaia and Waimakariri rivers, most anglers (70% and 75% on each river, respectively) in recreational salmon fishing were not willing to substitute other rivers for their first choices. Since there have been only a few previous studies dealing with resource substitutability in outdoor recreation activities, we cannot assume our results can be compared directly with previous studies. However, we know that many studies regarding substitution have been concentrated on recreationists' willingness to substitute under some hypothetical condition (substitutability) rather than actual behavioral change in their resources or activities.

The multinomial logistic regression model provided sufficient evidence that recreation specialization was closely associated with an individual's willingness to substitute other locations as in a previous study (McFarlane 2004), which means that recreation specialization influences anglers' substitution behavior. The results showed how much specialization, constraints, and demographic variables are related to anglers' willingness to substitute other fishing locations for one location. The multinomial logistic regression using a classification method for the dependent variable would provide a more satisfactory solution compared to other analysis techniques because it not only requires strict assumptions, but enables a direct interpretation of the relationship between independent variables and the dependent variable (Press & Wilson 1978). Findings of substitutability studies to understand recreationists' future behaviors have been applied to management issues even though results were not clear-cut (Manfredo & Anderson 1987, Absher & Graefe 1988).

Future research needs to extend the study range to apply to resource management and development decisions. This effort involves how the three dimensions of recreation specialization are associated with recreationists' involvement, motivation, and social groups. This study as pre-research for future research will help various stakeholders (e.g., voluntary association groups, national or regional agencies, and other related groups) and researchers understand recreationists' substitution behavior. Additionally, the results of this study suggested that recreationists' specialization level (behavioral, cognitive, and affective) is closely related to their future behavior pattern, such as recreation substitutability. While this study did not deal with other unknown indicators that may affect willingness to substitute, it provides recreation site managers and researchers with some management implications such as the important factors affecting recreationists' substitution behavior. This study may also help managers understand how to maintain recreation areas.

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Nature-Based Tourism

TOURISM AND RECREATION SYSTEM PLANNING IN ALBERTA PROVINCIAL PARKS

Paul F.J. Eagles
Department of Recreation and Leisure Studies
University of Waterloo
Waterloo, ON, Canada N2L 3G1
eagles@uwaterloo.ca

Angela M. Gilmore
University of Waterloo

Luis X. Huang
Sun Yat-sen University

Denise A. Keltie
University of Waterloo

Kimberley Rae
University of Waterloo

Hong Sun
University of Waterloo

Amy K. Thede
University of Waterloo

Meagan L. Wilson
University of Waterloo

Jennifer A. Woronuk
University of Waterloo

Ge Yujin
University of Waterloo

Abstract.—Traditionally, system planning in parks and protected areas concentrated on biogeographical concepts, while neglecting tourism and recreation. The existing system plan for parks and protected areas in Alberta, Canada, divides the province into six natural regions based on a geographic classification system (Grassland, Parkland, Foothills, Rocky Mountains, Boreal Forest, and Canadian Shield). This plan also identifies four program goals: preservation, heritage appreciation, outdoor recreation, and heritage tourism. Currently, the goal of preservation is met through the selection and creation of a protected area system covering 27,500 km^2 within 519 sites and 8 classes of protected area. However, the goals of heritage appreciation, outdoor recreation, and heritage tourism have yet to be addressed to the same level of depth either in policy or in practice, leaving a major policy gap. The objective of this research is to fill this policy gap through the development of the tourism and recreation components of the system plan for Alberta Parks and Protected Areas.

1.0 INTRODUCTION

Adrian and Adrian (1998) define system planning as "an organized approach to macro-level planning. It is not a new concept, but builds on existing knowledge and approaches. System planning is a framework for understanding and using systems ideas. It is also a vehicle for convincing others. It is much more than data gathering. It must be a dynamic process." Generally, a system plan provides direction and guidance for all components within a protected area's organization and the coordination of protected areas with other aspects of land use, resources management, and social development in the region. A system plan includes the history, present condition, and future plan for the protected areas (Adrian & Adrian 1998).

System planning is important to the management and development of broad geographical areas. When applied to parks and protected areas, system planning provides guidance on mechanisms, institutions, and procedures to coordinate the balance of land use and social development across a system of protected areas (Adrian & Adrian 1998). Traditionally, system planning concentrated on biogeographic representation within a park system. Conversely, it neglected tourism and recreation components. The main goal in the management of Canada's National Parks is the protection and maintenance of ecological integrity. Similarly, the Ontario Parks' system plan is based upon a biogeographical concept, the forest regions of the province. The province of British Columbia's protected areas system is also based upon a principle of representing classes of natural areas. None of these system plans establish goals for the creation and management of parks based on tourism or recreation principles. Given the importance of tourism and recreation to the park movement in Canada, it behooves strategic planners to more fully consider these concepts in the next generation of park system plans.

Alberta has a well-established and mature protected areas system. The rapid economic and population growth of the province, and the increasing demands from society for tourism and recreation opportunities in Alberta's protected areas, creates a need for additional strategic considerations in system planning. Therefore, the focus of this paper is to develop a conceptual framework for a protected area system plan based on recreation and tourism goals and objectives for Alberta Parks and Protected Areas.

2.0 ALBERTA PARKS AND PROTECTED SYSTEM

The protected area system in Alberta, including National Parks and Provincial Parks and Protected Areas, now exceeds 8,160,300 hectares or approximately 12.3 percent of the province. The system plan for Alberta Parks divides the province into six natural regions: 1) Aspen Parkland, 2) Boreal Forest, 3) Canadian Shield, 4) Grassland, 5) Foothills, and 6) Rocky Mountains. Within each of these natural regions, Alberta Parks has established a network of protected areas ranging from low intensity to high intensity use. The eight protected area classes in the province include: 1) Willmore Wilderness Park, 2) ecological reserves, 3) wilderness areas, 4) heritage rangelands, 5) wildland parks, 6) provincial parks, 7) natural areas, and 8) provincial recreation areas. These areas provide visitors with the opportunity to participate in heritage appreciation, outdoor recreational activities, and heritage tourism.

The four goals of Alberta's network of parks and protected areas are:

1. Preservation - to preserve, in perpetuity, a network of parks and protected areas that represent the diversity of the province's natural heritage and related cultural heritage.
2. Heritage Appreciation - to provide opportunities to explore, understand, and appreciate Alberta's natural heritage, and to enhance public awareness of our relationship to and dependence upon the natural world.
3. Outdoor Recreation - to provide a variety of natural landscape-dependent outdoor recreation opportunities and related facilities and services.
4. Heritage Tourism - to encourage Alberta residents and visitors to discover and enjoy the province's natural heritage through a variety of outdoor recreation and nature-based tourism opportunities, facilities and accommodation services (Alberta Parks 2006).

The first goal, preservation, is the main focus of Alberta Parks' existing system plan. This goal was implemented through the creation of many parks and protected areas during the Special Places Program from 1995 to 1999. This program added 81 new parks to the system, and expanded 13 existing sites for an addition of over 2,000,000 hectares to the system (Alberta Parks 2006b). At the time this paper was written, there was no strategic plan for Alberta's protected areas system dealing with the implementation of the goals of heritage appreciation, outdoor recreation, and heritage tourism. This policy void is recognized by planners with the park agency and by parks' scholars.

Eagles et al. (2002) define goals as, "the broadly stated social purposes for which a protected areas is established" and "objectives are more explicit statements of what is to be accomplished." Objectives are sub-goals that provide more explicit statements of what is to be accomplished. Schoemaker (1984) provided five foundational characteristics from which to systematically construct objectives: 1) output-oriented, 2) time-bound, 3) specific, 4) measurable, and 5) attainable. "Output-oriented" means that objectives deal with the results of an activity by describing what is to be accomplished, but not how. Time-bound objectives provide the direction to develop the appropriate management actions, and require accountability. Specific objectives should provide all parties with a clear vision of what is to be accomplished. Measurable objectives provide a clear basis for evaluating progress and allow managers to determine where efforts need to be placed in the future. "Attainable" suggests that objectives must be achievable with the available funding and staffing resources, sometimes compromising between the idealistic vision and the reality of the impacts of tourism (Zealand et al. 2005). All goals and objectives should be worded so as to have these characteristics.

To assist with the development of a strategic plan that deals with the three underrepresented elements of the Alberta protected areas goals, the researchers developed a methodology and an approach aimed at adding a visitor-based element to the existing system plan for Alberta's Parks and Protected Areas.

3.0 RESEARCH DESIGN

Three stages of research were utilized to in this policy development. Initially, a broad scanning was undertaken of a large number of potential themes relating to recreation, tourism and visitor management. These themes were derived from the literature. Secondly, these themes were then compared to the current goals and policies of Alberta Parks. This comparison produced a narrowed and focused list of conceptual areas that could have relevance within the Alberta parks and protected areas context. Ultimately the research led to the adoption of four key areas: 1) economics and finance, 2) education and heritage appreciation, 3) outdoor recreation and health, and, 4) marketing and management. Thirdly, policies were developed for each of the four key areas. A three tiered system of specific goals, objectives and tactics was used to provide the structure for each topic area. These topic areas were condensed into a concise final planning document. Each of the four key areas is dealt with in turn. Goals, objectives, and tactics were defined for each and comprise a working policy document.

4.0 RESEARCH FINDINGS

4.1 Economics and Finance Theme

As nature-based tourism rises in popularity, parks and protected area use can have significant economic and financial repercussions for management organizations and local communities. The financial and economic benefits of parks and protected areas to the local community include generating income, improving economic structures, and encouraging entrepreneurial activity. The Federal Provincial Park Council (2002) created a benefit framework for parks and protected areas. The benefits are divided into three categories: personal benefits, which identify all benefits accruing to stakeholders; commercial benefits, which are benefits of a park from the perspective of a defined area (e.g. local community); and societal (or public) benefits, which serve society as a whole (beyond those to stakeholders and businesses).

The World Conservation Union (1998) believes that the total economic value of a protected area consists of its use values and non-use values. There are several ways in which the economic value of a park can be estimated in monetary terms. The Money Generation Model, which is used by the U.S. National Parks Service to inform local communities of the value of nearby parks, can be used to capture the value of the protected area (IUCN 1998). The Department of Canadian Heritage (1999) designed the Provincial Economic Impact Model to estimate both traditional economic impact measurements (e.g., tourism spending, spending on capital development), direct user benefits (e.g., consumer surplus, existence benefits), and societal benefits (e.g., benefits from biodiversity, water production, scientific and educational benefits).

Alberta Parks does not attempt to generate money for the agency or for the government; however, tourism development does have significant positive economic impacts on local and regional communities. Community economic development is a community-based and directed process that combines social and economic development. Community economic development works towards fostering the economic, social, ecological, and cultural well-being of communities and regions.

This research proposes two goals for the area of economics and finance within the Alberta Protected Areas System Plan.

Economics and Finance Goal 1: Encourage the creation of tourism-based income for parks, local communities, and the allied public and private sectors.

Objective 1.1: Within the next five years, the tourism-based income of the community located nearest the park entrance should increase by 10 percent. This goal is applicable to those operating parks that are open and available for visitor utilization.

Tactic I: Encourage hospitality service businesses (accommodations, food/beverage, and related services) to develop in the local community.

Tactic II: Encourage recreation service businesses (guiding services, equipment sales and rental, etc.) to develop in the local community.

Tactic III: Encourage the local community to create or re-create a cultural event, recreation opportunity, or tourist attraction that will increase participation rates and attract park visitors.

Objective 1.2: Within the next five years, the tourism-based income of the operating parks should increase by 10 percent.

Tactic I: Charge suitable fees for recreation opportunities provided in the parks.

Tactic II: Provide concession opportunities for the private sector.

Economics and Finance Goal 2: Minimize the economic leakage from expenditures related to parks and protected spending.

Objective 2.1: By 2010, develop and implement a measurement system of the economic impact generated by park tourism in Alberta.

Tactic I: Alberta Parks should work with allied institutions to develop an economic measurement system.

Tactic II: Alberta Parks should publish a financial benefits report on provincial parks every five years.

4.2 Education and Heritage Appreciation Theme

Natural Heritage includes features of the natural environment, consisting of physical and biological formations, habitats, ecological functions, wildlife, or natural sites that have significant value from an aesthetic, scientific, or conservation point of view (UNESCO 1972). Cultural Heritage includes significant elements or structures of human society as architecture, buildings, sites of historical importance, artifacts, or other features representative of cultural, religious, ethnic, or historical values that have significant value from the historical, aesthetic, ethnological, or anthropological point of view (UNESCO 1972). In this paper, heritage refers to both natural and cultural heritage.

Education is an important focus of society and has the potential to play a powerful role in protected areas. Education and heritage appreciation within parks can clarify and validate the protection of areas. These protected areas are intrinsically valuable and the protection and maintenance of these sites and/or artifacts is invaluable for the benefit, education, and enjoyment of future generations. Therefore, by offering education in, for, and about parks and protected areas, public participation can be promoted while encouraging citizens to subscribe to a change in attitude and individual habits that will support environmentally responsible ethics (Blanco 2002).

Parks and protected areas should be viewed as more than areas of nature conservation; rather, they should also be considered as invaluable educational resources with opportunities for heritage appreciation (Blanco 2002). The possibilities for educational opportunities within these areas are incredibly vast. For instance, while visiting parks, people can partake of several interpretive programs or participate in informal environmental educational, and heritage appreciation programs. Some examples of these programs could involve guided hikes presenting local parks, natural and cultural heritage, a discussion with park staff on land management practices, or hands-on exploration about the geology or history of the park (Taylor & Caldarelli 2004). The opportunities to utilize parks and protected areas as learning facilities for guests are present; the challenge is initiating, implementing, and maintaining these programs.

Education is included in the system plan, as it is a priority in the overall plan for Alberta parks and it has not been sufficiently addressed at the policy planning level. System goals will make education an underlying function throughout the parks system. In the context of this section, "base knowledge" is defined as general knowledge such as flora, fauna, wildlife, landforms, and points of historical or cultural interest.

This research proposes three goals for the area of education and heritage appreciation within the Alberta Protected Areas System Plan.

Education and Heritage Appreciation Goal 1: Alberta Parks will provide opportunities to explore, understand, appreciate, and celebrate Alberta's natural and cultural heritage.

Objective 2.1: Within each operating park, the park agency will communicate the historically,

culturally and ecologically significant events, people, landscapes, sites, and themes to all visitors.

Tactic I: Conduct and maintain an inventory of historically, culturally, and ecologically significant sites that exist within the current parks system.

Tactic II: Designate sites as historically, culturally, and ecologically significant in each natural region within the next five years (within existing parks only).

Tactic III: The interpretive staff at each operating park that has such programs will research and design an interpretive program that exemplifies the significant features of the park. The program should be tailored to various age levels and levels of interest. Development of new and updated interpretive programs that exemplify significant features of parks should occur as staff and monetary resources become available.

Education and Heritage Appreciation Goal 2: All visitors to Alberta Parks shall have basic knowledge of Alberta's natural regions and sub-regions.

Objective 2.2: Every Albertan, other Canadian, and international tourist who visits Alberta's parks will gain a base of knowledge of the natural regions and parks they are visiting.

Tactic I: Alberta Parks and the Province of Alberta will promote Alberta natural regions across Canada and to the international community (i.e., travel shows, travel magazines) to develop knowledge of the regions and the parks.

Tactic II: Alberta Parks will maintain an appealing and easy-to-use website that promotes and highlights Alberta natural regions and parks, allowing visitors to begin their educational experience of the parks even before they leave their home.

Objective 2.3: Every Albertan will have a basic knowledge of Alberta's natural regions and parks and will be familiar with the basic knowledge of the natural regions closest to their home.

Tactic I: Alberta Parks will develop information and education programs within the parks concerning Alberta's natural regions.

Tactic II: The interpretive programs in each operating park will be age-specific and family-oriented.

Objective 2.4: Every Albertan student will have a base knowledge of Alberta's natural regions and parks through the Alberta public education system by the time they graduate from high school.

Tactic I: Alberta Parks will work with its allies to encourage the Alberta Ministry of Education to include curriculum goals concerning the natural regions and parks of Alberta.

Tactic II: Alberta Parks will provide supplementary curriculum activities to the Provincial Education Ministry within one year to encourage awareness and education regarding the provinces national and provincial parks.

Tactic III: Alberta Parks will provide school-based education programs, where individuals visit local schools to educate students about their nearby park.

Tactic IV: Alberta Parks and the Ministry of Education will create an interactive website within the next year where students can learn about Alberta's natural regions, its parks, and its flora and fauna.

Tactic V: Alberta Parks will work with schools to organize field trips to local parks where curriculum affiliated material will be covered in the interpretation activities.

Education and Heritage Appreciation Goal 3: Involve local communities near Alberta's parks in education programs.

Objective 2.5: Create partnerships between the local community, local schools and local parks.

Tactic I: Alberta parks shall be involved in community festivals, fairs, and celebrations, that celebrate the ecological and cultural values of the natural regions and parks.

Tactic II: Alberta Provincial Parks will host events at each park for the local community at least once a year to provide education about the park**.**

Objective 2.6: Have the local community participate in the designation and deliverance of heritage and education functions within the parks system.

Tactic I: Create an advisory committee for each park, where feasible, consisting of knowledgeable community member volunteers, including representatives from various cultural groups in the area. The committee will be responsible for aiding parks' staff in the research, selection, and designation of significant heritage features and in the delivery and development of heritage appreciation programs.

Tactic II: Where appropriate, hold heritage-based activities within the park and involve and invite locals to participate.

4.3 Outdoor Recreation and Health Theme

Alberta is home to some of the most spectacular natural landscapes in North America. Alberta parks and protected areas offer a diverse selection of year-round nature-based outdoor recreation activities and facilities (Alberta Community Development 2005). By providing various different recreational settings and types of recreational activities, park managers allow visitors the opportunity to have many different experiences (Clark & Stankey 1979). This is important because individuals like to have choice in the activities, settings, and experiences; diversity is key when it comes to the provision of recreational opportunities.

Many opportunities are available within Alberta parks and protected areas for wilderness recreation and solitude, which can lead to the improvement of physical health, the testing of outdoor skills, and an increase in quality of life (Alberta Community Development 2005). Solitude, health, skill testing, and quality of life are features of "healthy living" obtained through outdoor recreation pursuits. Not only does Alberta Parks need to identify these features but the agency also needs to communicate these to current and future visitors. For the purpose of this paper, health is defined as a combination of mental, spiritual, social, physical, and environmental components (Maller et al. 2002). Therefore, if park visitors are given information about the health benefits of different recreation opportunities, they can choose the most appropriate location, type, and style of activity to achieve their own personal health benefits and goals. This research proposed two goals for outdoor recreation and health parts of the system plan for parks and protected areas in Alberta.

Outdoor Recreation and Health Goal 1: Alberta Parks will continue to offer diverse, safe, accessible, enjoyable, and healthy nature-based, outdoor recreation opportunities.

Objective 3.1: Alberta Parks will identify the outdoor recreation activities that occur in the parks and protected areas. It will monitor the use level of the activities. At the same time, the park agency must determine if these activities are appropriate for each park.

Tactic I: Develop an outdoor recreation classification scheme based on those experiences individuals wish to achieve in parks.

Tactic II: Develop an outdoor recreation monitoring scheme.

Tactic III: Monitor the levels of each recreation activity in each park, where feasible. Produce a general report each year and a specific report every five years.

Objective 3.2: Alberta Parks will work with the wide range of Alberta recreation service providers to develop an overall outdoor recreation plan for Alberta.

Tactic I: Alberta Parks will encourage the Government of Alberta to undertake, every five years, an Alberta Recreation Survey to determine various information about recreational activities within the province.

Objective 3.3: Every Albertan will have access to appropriate levels of outdoor recreational opportunities.

Tactic I: Alberta Parks will determine what level of outdoor recreation opportunities should be provided in Alberta's parks and protected areas.

Tactic II: Alberta Parks will work with the wide range of Alberta outdoor recreation service

providers to coordinate the delivery of outdoor recreation opportunities across the province.

Outdoor Recreation and Health Goal 2: Every Albertan shall have a healthy park experience at least once a year.

Objective 3.4: Alberta Parks will identify and communicate the health benefits associated with visiting parks and protected areas.

Tactic I: The Government of Alberta will encourage each citizen of Alberta to undertake a health-related leisure activity in Alberta parks and protected areas at least once a year.

Tactic II: Alberta Parks will undertake ongoing partnerships with government and research agencies to investigate and promote healthful outdoor recreation activities within Alberta's Parks and Protected Areas.

4.4 Marketing and Management Theme

Alberta's Provincial System of Parks and Protected Areas is a public service product, which means that it should be focused on meeting the needs of its customers, the visitors, and its owners, the citizens of Alberta. In order to do this, Alberta Parks as an agency needs to know and understand the visitors and the citizens. Thus, marketing and management play a key role in the system plan framework. In order to effectively market or promote any idea or service, one needs to develop a thorough understanding of the customer, and in the case of Alberta Parks, it is park visitors (Peakin 1986). As Eagles (2000) states, it is vital for managers and staff to know who is coming to their parks and protected areas, when they are coming, why they are coming, what they are doing during their visit, and finally, why they return or do not return.

One way to determine what is bringing visitors to a certain park or protected area is to conduct a customer analysis, which typically consists of surveys or interviews in parks and protected areas. These surveys and interviews help managers and staff determine "the link between motivation and opportunity" (Peakin 1986) for each individual park. Motivation is an important concept when it comes to planning and managing parks and protected areas since visitors must be motivated to visit. Motivation has been termed as many different things in recreation literature but one overlaying idea that has been seen is the idea of intrinsic motivation, that is, the desire for individuals to participate in a given activity or pursuit for their own sake (Mannell and Kleiber 1997). The importance of examining motivation when planning and marketing outdoor recreational opportunities must be recognized since it relates directly to benefits sought in recreational activity participation (Iso-Ahola 1980).

To efficiently and effectively market and manage outdoor recreational opportunities with Alberta's Provincial Parks and Protected Areas one needs to develop a thorough understanding of its customers, or visitors. The following four goals and associated objectives and tactics are intended to develop this understanding within the Alberta Parks and Protected Areas System Plan.

Marketing and Management Goal 1: Develop a profile and understanding of visitors to Alberta's Parks and Protected Areas, including what motivates them to visit.

Objective 4.1: Determine what motivates people to visit Alberta's Provincial Parks and Protected Areas.

Tactic I: Use pre- and post-visit surveys that focus on the motivations for visitation.

Objective 4.2: Determine whether the motivations of visitors to Alberta's Parks and Protected Areas are satisfied during their visit.

Tactic I: Use pre- and post-visit surveys to determine whether motivations for visitation are satisfied during their visit.

Objective 4.3: Determine whether there is a relationship between outdoor recreational activities participated in and motivation.

Tactic I: Use a visitor survey that focuses on recreational activities participated in and motivation to determine the relationship between motivation, participation and satisfaction.

Tactic II: Develop a list of common motivations for participating in recreational activities at Alberta's Parks and Protected Areas.

Tactic III: Use motivations in future planning initiatives to meet the needs of visitors.

Objective 4.4: Determine whether there is a relationship between the motivations of visitors and the park or protected area they choose to visit.

Tactic I: Using the information obtained from the pre- and post-visit survey, visitors can be segmented by park to determine whether motivations differ between and among parks and protected areas.

Tactic II: Develop a summary report describing the general motivations of visitors to parks found in each of Alberta's Natural Regions (Boreal Forest, Rocky Mountain, Foothills, Canadian Shield, Parkland, and Grassland) currently used in the Park's System Plan.

Marketing and Management Goal 2: Develop a short- and long-term marketing strategy for Alberta Parks.

Objective 4.5: To determine and/or establish the target markets for Alberta Parks.

Tactic I: Establish a profile of visitors to Alberta's parks and protected areas, both one time and repeat visitors.

Tactic II: Divide visitors into different target markets to determine their specific motivations and visit characteristics.

Tactic III: Establish visitation targets for each target market.

Marketing and Management Goal 3: Develop an integrated marketing plan for Alberta Parks.

Objective 4.6: Within 10 years, make Alberta a well-known international and national tourism destination.

Tactic I: Develop a comprehensive marketing program using basic marketing principles.

Tactic II: Establish a good working relationship with other tourism providers and institutions.

Tactic III: Use this marketing plan to implement the goals and objectives for: 1) economics and finance, 2) education and heritage appreciation, and 3) outdoor recreation and health.

Objective 4.7: Ensure that the local community is part of an integrated provincial park marketing plan.

Tactic I: Develop a working relationship with surrounding communities and businesses.

Tactic II: Work with communities and tourism bureaus surrounding Alberta's Parks and Protected Areas to develop common marketing tools to reach a wide range of tourists and visitors.

Marketing and Management Goal 4: Maintain good service quality in Alberta Provincial Parks' visitation and tourism.

Objective 4.8: Develop a service quality measurement system for Alberta's Provincial Parks and Protected Areas to act as a minimum target.

Tactic I: Work with other governmental departments to create an ongoing tool that can be used on a province-wide basis to assess service quality within parks and protected areas.

Tactic II: Work with park staff to develop a working strategy specific to their area/park to monitor service quality on an on-going basis.

Tactic III: Develop and implement service quality goals for each park.

5.0 DISCUSSION

System planning is an important process in parks and protected areas, and as with any form of high-level management there are limitations, benefits, and implications that result from the process and the policy that is implemented.

Limitations encountered in the development of this working policy document include those related to using a group approach, defining topic areas, limits of knowledge, and a lack of previous work in this area. The researchers could not find any similar plan related to these aspects for parks and recreation planning in a senior government agency. Due to most managers' lack of direct experience working within the Alberta Parks system, specifically in management and planning, secondary sources of information were used. This approach does not allow for a full and complete understanding of the current and past management and planning practices of the organization. It is also challenging to attempt to develop and implement new priorities within a current

system planning document in an established park system. In terms of the research and writing process, time and resources were also a factor that limited the number of concepts and topic areas that could be fully explored. Several topic areas were combined and reduced to result in a more concise document, which may result in some exclusion of background information.

Additionally, Alberta Parks will likely experience limitations when implementing this working system policy. These limitations may be related to the allocation of resources including monetary, human, and physical assets. Alberta Parks will need to assess the available resources and allocate them appropriately. It is probable that a complete implementation of this proposed system plan will require additional financial and human resources beyond those currently available to the park system.

By fully implementing this system approach to visitor and recreation planning within the protected areas system, the overall protected areas system will benefit. The main objective of the implementation of this policy is to work toward the complete achievement of Alberta Parks goals. To do so, Alberta Parks requires the framework for recreation and tourism planning in a system context. By integrating these concepts into an inclusive system plan, a more integrated management approach will fulfill the existing policy gaps and address the deficiencies of the current system. Additionally, the initiation and implementation of this research and policy will demonstrate Alberta Parks' progressive and adaptive management strategies. As this is the first system plan to address visitor and recreation needs within Canada, such forward thinking will serve to make Alberta Parks a leader in parks and protected areas planning.

It is important to note that since the work on this paper began, the goals of Alberta Parks and Protected Areas have changed through a strategic planning exercise. The new goals are: 1) Preservation and Protection, 2) Heritage Appreciation and Education, 3) Outdoor Recreation and Healthy Living, and 4) Tourism and Community (Lazaruk, pers. comm.). These goals are sufficiently similar to the ones outlined in this paper that the contents of the exercise are still valid.

By taking a new perspective to system planning within parks and protected areas, the researchers were able to demonstrate the necessity for a more integrated approach to planning and management of Alberta Parks. By focusing on concepts surrounding visitor management, tourism, finance, marketing, recreation, health and education, a more comprehensive approach to system planning was developed. Further refinement of the goals, objectives, and tactics needs to be undertaken by Alberta Parks. Research into the effectiveness of the plan will determine what further concepts and aspects of park management needs to be included.

6.0. ACKNOWLEDGMENTS

Thanks to Heather Lazaruk, a system planner for Alberta Parks, for providing valuable criticism of this work. Dawn Carr, the Director of Planning for Alberta Parks, provided background information, support, and encouragement. The authors wish to note that this proposal is their responsibility, not those of the many Alberta Parks staff members who provided advice.

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SWAMP TOURS IN LOUISIANA POST HURRICANE KATRINA AND HURRICANE RITA

Dawn J. Schaffer
328 Renewable Natural Resources Bldg
Louisiana State University
Baton Rouge, LA 70803
dschaf1@lsu.edu

Craig A. Miller
Louisiana State University

Abstract.—Hurricanes Katrina and Rita made landfall in southern Louisiana during August and September 2005. Prior to these storms, swamp tours were a growing sector of nature-based tourism that entertained visitors while teaching about local flora, fauna, and culture. This study determined post-hurricane operating status of tours, damage sustained, and repairs made. Differences between tours that remained open after the hurricanes and those that closed were examined. A three-phase mail survey was used to collect data, with a response rate of 74%. The most common damages reported were loss of telephone service and damage to the swamp. Fewer tourists were also a problem for swamp tours. More swamp tours operating for 15 years or more remained open after the storms than those operating for less than 15 years. This study also found that a new tour, the New Orleans disaster tour, is being offered by four swamp tour businesses.

1.0 INTRODUCTION

1.1 Tourism

Tourism is the second largest industry in the state of Louisiana and is very important to the state's economy (LADCRT 2004). During 2003, more than 21 million people visited Louisiana spending over $9.4 billion in the state and more than 120,000 people were employed by the tourism industry. For 2005, tourism revenue was expected to top $10 billion and 7,000 new jobs were expected in the industry (LADCRT 2004). Nature-based tourism is an important segment of the Louisiana tourism industry. In 2001, visitors to Louisiana spent $168 million on wildlife watching alone (USDOI 2001). The state supports many types of nature-based tourism activities, including: swamp tours, hunting, hiking, recreational boating, recreational fishing, camping, state parks, bird watching, scenic drives, and golfing (LADCRT 2004).

According to the Louisiana Department of Culture, Recreation, and Tourism (LAD CRT) (2004), Louisiana is continually thinking of new ways to draw attention to the many sites and activities that are unique to the area. The state is making "strategic investments in developing eco-cultural and heritage tourism" and "will continue to grow an important segment of Louisiana tourism" (LADCRT 2004). The report also discussed nature-based programs on which the state was focusing, such as the America's Wetland Initiative and the Louisiana African American Heritage Trail, and how these and other similar programs are important components of their "vision to brand Louisiana as the pre-eminent heritage and ecotourism destination in the world" (LADCRT 2004).

1.2 Hurricanes Katrina and Rita

The occurrence of Hurricane Katrina August 29, 2005, a strong category 4 storm that made landfall twice in southeastern Louisiana, caused extensive loss of life and property damage to the Louisiana coast (NOAA 1 2005). The National Oceanographic and Atmospheric Administration (2005) called Hurricane Katrina, "one of the most devastating natural disasters in recent US history." The tourism industry was one of many industries in Louisiana to suffer as a result of this storm. The city of New Orleans, a major tourist center, suffered severe damage due to strong winds, heavy rainfall, and storm surge as well as flooding caused by levee breaches (NOAA 1 2005). The Louisiana Gulf Coast was further damaged on September 24, 2005, when Hurricane Rita, a category 3 storm, made landfall near the Texas/Louisiana border. Although the storm made landfall in southwestern Louisiana, it caused significant damage along the entire Louisiana coast and further impacted those areas already distressed by Hurricane Katrina. (NOAA 2 2005). Hurricanes Katrina and Rita and the damage they caused to southern Louisiana's many natural areas no doubt affected the LADCRT's 2004 plans for nature-based tourism. However, even though the state's main focus directly after the storms was trying to ensure

the safety of its citizens, how the storm would affect the tourism industry was still an important issue.

On September 20, 2005, the LAD CRT released its new four-point plan to rebuild Louisiana's tourism and cultural industries, called *Louisiana Rebirth: Restoring the Soul of America*. The points of the new plan are as follows:

1. Rebuild Louisiana to worldwide preeminence as a top tourist destination.
2. Make Louisiana's cultural economy the engine of economic and social rebirth.
3. Build better lives and livelihoods than before for all Louisiana's people.
4. Make Louisiana's recovery the standard for high performance, accountability, and ethical behavior.

The new plan recognized that Hurricane Katrina was the largest disaster Louisiana has ever experienced and that the loss of human lives, separation of families, and destruction of communities and property will never be forgotten. The plan also acknowledged that Louisiana now has the opportunity to rebuild to a better condition while demonstrating that the state is capable of response, rebuilding, and reconciliation. Although this plan was created prior to Hurricane Rita, it was amended to include areas damaged by the storm (LADCRT 2005).

1.3 Swamp Tours in Louisiana

There has been one previous study on swamp tour businesses in Louisiana. O'Mara et al. (1998) felt that a new type of tourist was emerging, one who was searching for unique experiences he/she could not get at home and that the tourism industry would continue to develop into different specialty areas to appeal to them. For the purpose of their study, nature-based tourism was defined as a "specialty area that provides a tourist with an up-close encounter with natural beauty and cultural uniqueness" (O'Mara et al. 1998). When they conducted their study, nature-based tourism businesses were becoming popular in coastal Louisiana parishes that were seeking economic enhancement while protecting their natural and cultural resources; the economic gains of these parishes also contributed to the economy of the state as a whole. The success of these businesses piqued the researchers' interest in a better understanding of the organization of these enterprises. This descriptive study of Louisiana's swamp tours was the initial step to "understand the importance of nature-based tourism to the state's economy" (O'Mara et al. 1998). Swamp tours were chosen as the business to study because they were primarily small, nature-based tourism businesses whose growth in the last few years had exceeded expectations and little information was known about their structure and performance, ownership patterns, needs, challenges, and opportunities.

O'Mara et al. (1998) conducted the majority of their surveys during face-to-face interviews, but there were some telephone and mail surveys. There were 43 swamp tours in operation at the time of the study, and 37 agreed to participate. Of the 43 businesses named in that report, 22 were still operating in August 2005, prior to Hurricane Katrina. When swamp tour operators were asked an open-ended question regarding what they saw as the "one most negative" factor that would interfere with business success, "possibility of a hurricane" was one of the 16 different responses given. In their conclusions, O'Mara et al. (1998) suggested five measures to protect the sustainability of swamp tours in Louisiana: 1. Producing more educational materials and/or training programs for swamp tour operators, 2. Organizing a swamp tour association, 3. Addressing litter problems within the state, 4. Planning and managing for attraction development, and 5. Developing outdoor educational experiences for school groups. Swamp tour owners affected by Hurricanes Katrina and Rita may want to reconsider these ideas when rebuilding their businesses for the future.

Tierney (1997) studied the immediate and long-term effects of the Northridge Earthquake on randomly chosen businesses in the cities of Los Angeles and Santa Monica, California, which were two areas that were particularly hard hit by the earthquake. The Northridge earthquake of 1994 impacted the greater Los Angeles region; at this time, it was the costliest disaster in U.S. history. Data for the descriptive study were collected through a mail survey. This study encompassed a wide range of types of businesses. The most important conclusion derived from the Northridge earthquake survey was the importance of including in the idea of disaster-related business

vulnerability both physical damage at the business site and a variety of off-site impacts, such as loss of telephone service and disruption of customers, supplies, and goods (Tierney 1997).

1.4 Objectives

1. To determine the type of damages sustained by individual swamp tour companies and whether they are going to continue in the industry.
2. To determine the rebuilding period and process for affected businesses.
3. To determine the affects the hurricanes had on those swamp tour businesses not damaged by the storms.

2.0 METHODS

2.1 Population

The first step of the implementation of this study was to identify all swamp tour businesses in the state of Louisiana. A complete list of swamp tour businesses and their contact information was generated using the following sources:

- Internet Searches including Google.com, Yellowpages.com, Anywho.com, and NewOrleansWebsites.com
- Telephone Directories
- Louisiana Welcome Centers: Jackson Square New Orleans, I-55 Kentwood, I-10 Slidell, and I-10 Atchafalaya Louisiana Official Tour Guide 2005

The population for this study consisted of owners and operators of 51 swamp tour businesses in southern Louisiana. The locations of the swamp tour businesses were divided into three geographic regions (Table 1). These regions are composed of southern Louisiana parishes that were declared emergency areas by the Federal government during Hurricane Katrina, Hurricane Rita, or both of the storms (LDEQ 1& 2 2005). There were 18 swamp tour businesses located in parishes declared emergency areas from Hurricane Katrina only, three swamp tour businesses in parishes declared emergency areas from Hurricane Rita only, and 30 swamp tours located in parishes declared emergency areas from both storms.

2.2 Procedure

Attempts were made to contact each business by telephone October 9-12, 2005, two weeks after Hurricane Rita. Those swamp tours able to be reached by telephone were asked whether their business was operating. This contact allowed the researcher to determine whether a mail survey would be a practical method under the circumstances following the storms.

The survey of southern Louisiana swamp tour businesses was conducted throughout the winter and spring 2006. Swamp tour businesses were initially contacted by telephone on February 16, 2006. At this time, the survey was explained to them and they were asked whether they would agree to participate in the study. The benefits of this study in respect to their business were emphasized. These benefits included determining how many businesses were damaged by the storms, how many businesses are providing service, how the tour operators as a group felt about the future of their business, how the damage to the areas the tours visit effected their business, and whether the hurricanes caused the operators to change the educational information they present to their customers.

Survey questionnaires were administered to swamp tour businesses by first-class mail. Methods followed those described by Dillman (2000). To encourage participants to take part in the survey, the questionnaire was developed to be attractive to respondents. The questionnaire was developed to make responding simple to reduce burden on the part of the respondents and minimize order effects. The questionnaire included fixed alternative questions, some with an open-ended "other" response option. Open-ended format was also used for some of the demographic questions. To maximize the effectiveness of the survey instrument, different types of fixed alternative questions were used, including nominal, binomial, ordinal, and interval (estimated costs, continuous data converted to interval scale for data analysis).

The first mailing of the survey included a cover letter, questionnaire, and a pre-addressed, stamped, return envelope. The cover letter included a brief description

of the purpose of the survey and contact information in the event the respondent had questions or wanted to request more information on the study. The cover letter also explained to the respondent that participation in the survey was voluntary and their answers would remain confidential. Swamp tour businesses were coded numerically using a random numbers table and the code was stamped on the questionnaire. The first mailing of the questionnaire took place February 22, 2006 and was followed 10 days later by a postcard reminding respondents to fill out and return their questionnaire if they had not already done so. As questionnaires were returned, respondent names and addresses were removed from the mailing list. A second mailing of questionnaires was sent to non-respondents March 16, 2006, 10 days after the postcard reminder. The second postcard reminder followed the second questionnaire mailing 14 days later. A third mailing of questionnaires was conducted April 12, 2006.

2.3 Data Analysis

Data analysis was conducted using SPSS for Windows (SPSS v. 10.0, SPSS, Inc.). Descriptive statistics including means and frequencies were used to determine trends and compare variables. Key variables were analyzed using contingency tables and Pearson's Chi Square Test. To use the contingency function in SPSS, data for certain variables were collapsed to create binomial responses. The variable "hours" representing the question, " How do your current hours of operation compare to your hours of operation before Hurricanes Katrina and Rita?" originally had 5 answer choices; these responses were combined into two categories and re-entered into the database under the variable "open". The variable "years" representing the question, "How long has your swamp tour business been in operation?" was originally analyzed on an interval scale and then condensed into two categories and re-entered into the database under the variable "combyear." After data entry was complete, an additional question arose; the possible differences between those swamp tour businesses that closed following Hurricanes Katrina and Rita and those swamp tour businesses that remain open were investigated.

3.0 RESULTS

3.1 Damage Caused by Hurricanes Katrina and Rita

A total of 31 usable responses were received for a response rate of 74 percent. A total of 9 surveys were returned but were not used for data analysis, including six undeliverables, two returned blank, and one returned blank but the respondent wrote on the front that the business was closed. The 11 swamp tour businesses that did not respond to the survey were contacted by telephone on April 20, 2006. Of these 11 businesses, 36 percent were willing to answer a few questions about the effect of Hurricanes Katrina and Rita on their swamp tour. Non-respondents' answers did not differ from those provided by respondents'.

Of the 31 respondent swamp tour businesses, 71 percent were open and 29 percent were closed for business (Table 1). Of the swamp tour businesses reporting they were not open (N=10), 22 percent did not plan to re-open while 44 percent expected to be ready to serve customers within 0-3 months of responding to the survey. The majority (80%) of responding swamp tour owners stated that their business had sustained damage from Hurricane Katrina. One-half of respondents stated that their business was damaged during Hurricane Rita. One-half of swamp tour owners also reported their business was damaged by both of the storms; therefore there were not any swamp tours damaged by Hurricane Rita that were not previously affected by Hurricane Katrina. (Table 1). Only six (21%) of the responding swamp tours were not damaged by either of the hurricanes. More than one-half (58%) of the respondent swamp tour businesses are located in parishes that were declared emergency areas by the Federal government after both Hurricanes Katrina and Rita. Only one (3%) of these businesses is located in a parish that was declared an emergency area during only Hurricane Rita. (Table 1).

The three most common types of damages experienced by swamp tour businesses after Hurricanes Katrina and Rita were loss of telephone service (61%), damage to the swamp area where tours are taken (52%), and loss of electricity (48%). Flooding to the office building and other structures was the least reported (23%) type

Table 1.—Questions concerning storm damage to swamp tour businesses

Question	Percent	Total Number of Respondents to Question (N)
Business open after Hurricanes Katrina and Rita	71	31
Business closed after Hurricanes Katrina and Rita	29	31
Swamp tour damaged by Hurricane Katrina only	80	29
Swamp tour damaged by Hurricane Rita only	50	28
Swamp tour damaged by both storms	50	28
Swamp tour not damaged by either storm	21	28
Swamp tour located in parish declared emergency area Hurricane Katrina only	39	31
Swamp tour located in parish declared emergency are Hurricane Rita only	3	31
Swamp tour located in parish declared emergency area during both storms	58	31

Table 2.—Owner estimated cost of repairs to swamp tour businesses (N=18)

Cost	Percent
Less than $999	17
$1,000 - $9,999	33
$10,000 - $19,999	6
$20,000 - $29,000	0
$30,000 - $39,000	6
More than $40,000	38
Total	100

Table 3.—Financial assistance used by swamp tour owners to pay for repairs (respondents chose multiple answers) (N= 31)

Source of financial assistance	Percent
Federal Emergency Management Agency (FEMA)	10
United States Small Business Administration Disaster Loan	7
Local bank loan	7
Insurance	3
My own money/savings	13
None	13
Did not know help was available	3

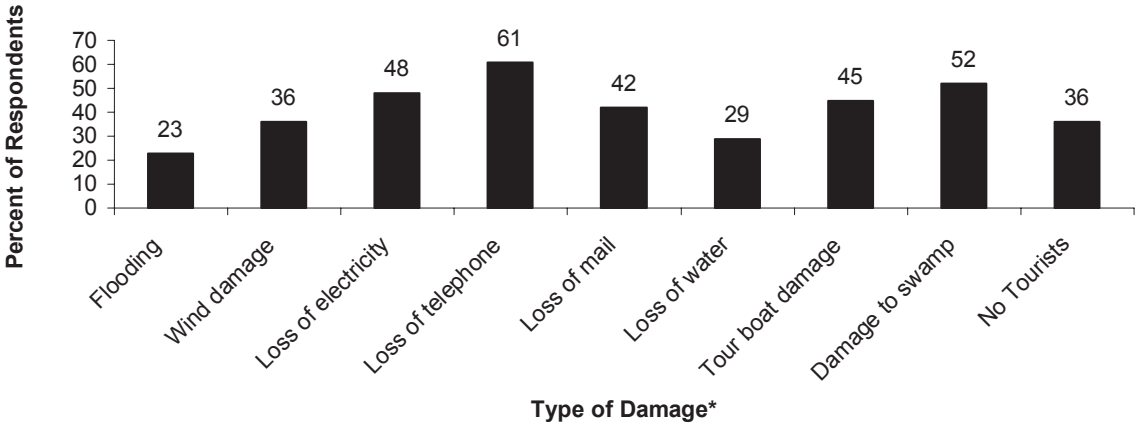

Figure 1.—Type of damage sustained by swamp tour businesses from Hurricanes Katrina and Rita.
* Respondents chose multiple answers for this question.

of damage to swamp tour businesses (Figure 1). A large portion of respondents (68%) have either finished repairs or are currently repairing damage to their swamp tour business caused by Hurricanes Katrina and Rita. Estimated cost of repairs ranged from less than $999 (17%) to more than $40,000 (39%) (Table 2). Less than one-fourth (17%) of swamp tour owners utilized government aid to help pay for repairs, whereas 20 percent either took out a local bank loan or used their own money (Table 3).

3.2 Passenger Information

Swamp tour owners were asked a series of questions concerning their past and present passengers in order to

Table 4.—Questions concerning swamp tour passenger activity

Questions	Percent	Total Number of Respondents to Question (N)
Spring is the peak season for swamp tour	70	27
Highest level of customer activity occurs in the spring	76	29
Lowest level of customer activity occurs in the winter	86	29
Estimate it will take 1-2 years for swamp tour business to resume at pre-hurricane level	39	28
Agree that business will increase with progression of repairs to New Orleans	79	28

gain a better understanding of how Hurricanes Katrina and Rita affected their customer base. It was found that no significant difference exists ($\chi 2=5.021$, df=4, $p>0.05$) between the number of passengers a swamp tour business had in the 12 months before Hurricane Katrina and its operating status after the storms. For the five-year period before Hurricanes Katrina and Rita (2000-2005), 76 percent of swamp tour owners reported their highest level of customer activity took place in the spring and 86 percent reported they experienced their lowest level of customer activity in the winter (Table 4). The majority of swamp tour owners (70%) consider spring to be the peak season for their business. The majority (39%) of swamp tour owners feel it will take one to two years for business to resume at a pre-hurricane level. Most tour owners (79%) agree that their business will increase as progress is made in rebuilding the city of New Orleans (Table 4).

3.3 Swamp Tour Businesses

More than half (55%) of swamp tour businesses take their passengers to visit state land. More (36%) swamp tours are given on pontoon boats than any other type of boat. Approximately one-fourth (26%) of swamp tours are taken on airboats (Table 5). The mean number of years Louisiana swamp tour businesses have been operating is 15 (N=31). The newest business has been open for two years while the oldest has been running for 30 years. The length of time swamp tours have been operating was compared to businesses' hours of operation after Hurricanes Katrina and Rita. More of the older swamp tour businesses (operating more than 15 years) are currently open than those tours operating less than 15 years ($\chi 2=4.094$, df=1, $p<0.05$) (Table 6). Most swamp tour businesses (62%) had not experienced damage as a result of a hurricane prior to Katrina and Rita. More than half (59%) of responding swamp tour businesses are family owned and operated. No differences in operating status were found when comparing family owned and non-family owned swamp tour businesses after Hurricanes Katrina and Rita ($\chi 2=2.229$, df=1, $p>0.05$). The majority (76%) of swamp tour businesses, including family owned and not family owned, employ a total of between one and five people. When asked how their current employee base compared to their number of employees before Hurricanes Katrina and Rita, 55% of swamp tour owners reported they now have fewer employees. Nearly all swamp tour business owners feel swamp tours are either extremely or moderately important to the state of Louisiana's tourism industry (97%), as well as to the local economy of the area where their business is located (90%) (Table 5).

4.0 DISCUSSION

The majority of swamp tour businesses in southern Louisiana sustained damage as a result of Hurricanes Katrina and Rita, but the severity and type of damage to each business varied. While most swamp tour businesses were operating at least part-time, some were forced to close. Of the businesses that closed, the majority planned to re-open within the next year. Hurricane Katrina was more destructive to swamp tour businesses than Hurricane Rita. Hurricane-induced problems included flooding and wind damage to office buildings and other structures, damage to tour boats, and damage to the swamp, all of which ranged from slight to severe damage. The decreased number of tourists in southern Louisiana reduced the clientele and therefore the profits for swamp tour businesses. Loss of telephone service and interrupted mail delivery, as well as the loss of electricity and water, made it difficult to conduct everyday business.

Table 5.—Questions concerning swamp tour business characteristics

Question	Percent	Total Number of Respondents to Question (N)
Swamp tours that are given on state land	55	31
Swamp tours that use pontoon boats	36	31
Swamp tours that use airboats	26	31
Swamp tours not damaged by prior hurricanes	62	29
Family owned swamp tours	59	27
Non-family owned swamp tours	31	27
Swamp tours that employ 1-5 people	76	25
Swamp tours that have fewer employees because of the hurricanes	55	22

Table 6.—Operating status of swamp tours by length of operation in years

		Operating Status of Swamp Tours		
		Open	Not Open	Total
Years of Operation	Less than 15 years	50%	50%	100%
	More than 15 years	86%	14%	100%

(χ^2=4.094, df=1, p<0.05)

These findings agree with those of Tierney (1997) who, when studying the business impacts of the Northridge earthquake, stated that "it is important to broaden our conception of disaster related business vulnerability to encompass both physical damage at the business site and a range of off-site impacts, such as damage to lifelines and disruption of the flow of goods and supplies, that become problematic for business owners in the aftermath of disasters."

Although most swamp tour owners estimated the cost of repairs made to their businesses at more than $10,000, very few owners reported receiving any type of government aid. Most swamp tour owners paid for repairs with their own money or savings. One owner stated they did not know any type of financial aid was available, and it is very possible that other businesses did not apply for aid for the same reason. Some possible explanations for this may be that assistance programs for small businesses were not well advertised in the days and weeks following Hurricanes Katrina and Rita and swamp tour business owners may have been waiting for insurance claims to be processed, which may have caused them to miss deadlines for applying for government aid or disregard government assistance altogether.

The operating status of swamp tour businesses after Hurricanes Katrina and Rita was not influenced by the number of passengers swamp tour businesses served in the 12 months prior to the storms. The data do suggest, however, a trend of more smaller swamp tour businesses, those with less than 1,500 passengers, to be closed than businesses serving more than 1,500 people. This trend may have been statistically significant if the sample size were bigger, or it may have been voided or proved if the intervals given in the question for numbers of passengers had been smaller (e.g., using intervals of 500 for each category instead of continually increasing intervals).

A larger percent of businesses operating for more than 15 years remained open after Hurricanes Katrina and Rita than those businesses that have been operating for less than 15 years. Some possible explanations for this may be that older swamp tour businesses are more financially secure than newer businesses, older businesses may be more established in their local area and have a more reliable clientele than newer businesses (e.g., older businesses may have customers that come back every summer), and older businesses may have more social connections to their local area while owners of newer businesses may be more inclined to close and move elsewhere.

An interesting finding of this study is the emergence of a new type of tour, the New Orleans Disaster Tour. During a visit to the Jackson Square Visitor's Center, New Orleans, in February 2006, one pamphlet was found for a disaster tour offered by a company that conducts a variety of tours, including swamp tours (Gray Line New Orleans 2006). A different swamp tour business listed a disaster tour as one of the additional services it offers to its customers. An Internet search was conducted to determine whether more disaster tours of New Orleans existed and two others were found, both operated by swamp tour businesses (Airboat Adventures, LLC 2006 & Tours By Isabelle: Inter-Tour Louisianne, Inc. 2006). That four swamp tour businesses were offering disaster tours suggested that swamp tour owners have sought out new ways to profit while swamp tour business is slow and that they are capable of re-adjusting their businesses to cater to the changing needs and wants of tourists. The disaster tours offer people the chance to tour some of the New Orleans areas most devastated by Hurricane Katrina, including the 17th Street Canal Breach and the Lower 9th Ward. The tours are also a source of controversy for residents of these areas, who do not want their misfortune to be exploited, but tour representatives said they are conducted in a tasteful manner and raise awareness of the importance of New Orleans industry and coastal wetlands protection (Mowbray 2005).

Swamp tour businesses were a growing portion of the nature-based tourism industry in the state of Louisiana before the 2005 hurricane season brought Hurricanes Katrina and Rita. From 1997, when O'Mara et al. (1998) conducted their descriptive study of Louisiana swamp tours, to August 28, 2005, the day before Hurricane Katrina made landfall, the number of swamp tour businesses in the state had grown from 43 to 51. After Hurricanes Katrina and Rita, 27 swamp tour businesses remained open. Although this is a setback for the swamp tour industry, most owners agreed that their businesses make important contributions to both their local economy and the state of Louisiana's tourism industry. The operating swamp tour businesses seemed willing to wait out this low point in the tourism trade for as long as financially possible; most expected their business to increase as the city of New Orleans is revitalized. A follow-up survey after one or more years is suggested to determine whether the number of fully operational swamp tour businesses in the state has increased and what progress those who are still operating part-time have made, as well as to detect any changes in the number of tourists in the area.

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Management Roundtable

DISCONNECTS BETWEEN THE ENABLING LEGISLATION AND MANAGEMENT PLANNING

Christopher Hawkins
Ph.D. Student in Human Dimensions of Marine and Coastal Ecosystems
Department of Natural Resources Conservation
University of Massachusetts, Amherst
Amherst, MA 01003

David K. Loomis
University of Massachusetts, Amherst

Abstract.—The natural resource management paradigm in place for the past century has favored an expert-client approach, whereby managers have used wise biological principles in conjunction with clientele preferences to enable local, regional, and national decision-making. This paradigm, though acceptable when the primary clients were direct resource consumers (e.g., fishermen, hunters, loggers) and when the country's population was much smaller, has resulted in resource management plans that are tilted towards ecosystem protection, biophysical quantification, and ecological monitoring. However, the behaviors and ethos of society have changed in the past several decades, resulting in subsistence living's giving way to the grocery store, increased commercial distribution of goods, and mass media campaigns that reach the citizenry in short order. In light of this change, a disconnect has become apparent between the intent of resource management and the implementation of it.

1.0 INTRODUCTION

The intent of resource management is to provide a framework for allocating natural goods and services, protecting biodiversity, preserving important ecological functions and linkages, allowing access where appropriate, providing for recreational opportunities, maintaining commercial interests, and ameliorating user group conflicts. Resource management in the United States has changed over the past several decades. From its beginnings as an expert-based way to provide the greatest number with the greatest good to the current suite of environmental laws, society's view of, and role in, resource management has evolved. The concern we face today is that the structure in place to manage resources, from university training to agency ethos, has not kept up with this social progression.

Since contemporary resource management is a complex challenge, given the increase in national population, shifts in demographics, funding cuts, acute and chronic pollution events, declines in the numbers of many commercial species, and land development, it requires a complex management paradigm, one that is responsive to the many and often competing needs of stakeholders.

This paper focuses on the observed disconnect between the myriad social intents of resource management and management itself by examining the direction provided in legal and process documents in comparison to actions listed in the management plans that result. The authors use this comparative approach to highlight the general divide that exists between society, which pays for natural resource management, and the managers and scientists that are tasked with implementing it.

2.0 HISTORY OF NATURAL RESOURCE MANAGEMENT IN THE UNITED STATES: A SOCIAL PERSPECTIVE

In the United States, the management of natural resource can be divided into distinct eras based, among other things, on agency history, primary users, social change, environmental impacts, and resource use patterns. The dates ascribed to these eras are general starting points and sometimes end points. They are suggested frames of reference for understanding how and why we manage our resources the way we do (Table 1).

In the early days of the country, when exploration, cultivation, and development were priorities (1620-1820s), national and state governments utilized no systematic management framework. This era was characterized by chopping, damming, converting, and in general using the plentiful resources in whatever way was necessary or desirable. The forest was viewed as something to be eliminated because it was seen as building material and fuel, and because cutting it was a way to protect against enemies (natives and wild animals) lurking within. This situation continued relatively unchanged from 1825 through the 1880s. This period can be thought of as an era of further exploitation and

Table 1.—A social perspective of environmental management eras in the United States 1620-today

1620 to 1825	None
1825 to 1885 or so	Exploitation/disposal
1885 to 1920	Scientific Approach
1920 to 1960 or so	Commodity Era
1960 to 1985 or so	Environmental Movement/legislation
1985 to today	Public involvement, conflict, disagreement, and litigation

also of disposal, with the federal government turning over land to state control. With no management framework in place, and a national ethos of exploitation, environmental degradation became widespread. The realities of unregulated resource use, including flooding, pollution, and species extirpation reached proportions that prompted society to call for better stewardship of resources, culminating in the Scientific Approach (1885-1920s). It was during this era that management agencies were founded. The paradigm that followed advocated hiring well-trained staff to manage, on behalf of the public, for the greatest good for the greatest number of people. As we will see, even though social norms have changed, the Scientific Approach remains our management paradigm.

Following, and partially resulting from this new emphasis on expert-based management, was the Commodity Era. During this period, which lasted until about 1960, forests, oceans, resources in the ground, and rivers were all looked at as vast storehouses of goods and services, which management, via government agencies, should help extract. When ever-greater environmental degradation encountered a drastically increasing population with more leisure time, the Environmental Movement (1960-1985) was born. Many types of environmental legislation were written during this time and all of them had some mechanism to facilitate stakeholder participation. By 1985, an era of Public Involvement had taken hold, encouraged and mandated by the legislation of the preceding era.

3.0 CONTEMPORARY RESOURCE MANAGEMENT: THE DISCONNECT

In contrast to most of our environmental management history, as outlined above, political and economic systems, as expressions of our social values, now drive local and national resource management (Kennedy & Thomas 1995). Because these social values are diverse, and sometimes in conflict with species and habitat protection, resource managers often find themselves in a dilemma, where *all actions* somehow violate a management constraint. And, while the legal requirements of management today mandate that resource managers properly incorporate these systems and values into the management and planning process, the complexity of the social factors governing and influencing management is often beyond the expertise of the classically trained resource manager. This training has ensured that management agencies still operate largely under the Scientific Approach (1885-1920), an approach based on a biophysically oriented expert-client relationship. Though social scientists are sometimes employed, their role has been minimal and they often work only at the regional or national level, fulfilling some legal requirement. Because of this, social science has been limited at local scales, which is where it is needed most.

Since resource management has not kept pace with social progression, many agencies find themselves mired in the conflict and litigation that arise when stakeholder interests are marginalized. This condition is not efficient and is not in keeping with a government responsive to the wise use of revenue acquired from its taxpayers.

4.0 A BRIEF CASE STUDY

4.1 The Setting

Monroe County, Florida, which encompasses the entire length of the Florida Keys island chain (Figure 1), offers a good example of an area where resource management hinges upon the social system, and where it has not been given adequate attention in the management process.

Figure 1.—South Florida and the Florida Keys. Source: Insider's Guide.

The history of coastal management in the Florida Keys is contentious. There is a distinctly relaxed atmosphere among both long-term and new residents and a higher level of distrust of the federal government than perhaps is seen in other areas of the country. Additionally, the Florida Keys area is among the most heavily regulated in the United States due to the sensitive nature of its political location, as well as social and environmental issues. The latter was the impetus for designating the Keys as an 'Area of Critical State Concern' (Suman 1997). These factors helped drive negative opinions of the Sanctuary's planning process between 1990 and 1996.

The economy of the Florida Keys derives enormous benefits from eco-related tourism and recreation. It is the number one industry in Monroe Country, providing $1.2 billion per year in revenue to local and state coffers (Leeworthy et al. 1996). In addition, many of those who choose to make their home in these islands do so because of the myriad opportunities to SCUBA dive, fish, hike, bicycle, parasail, and view wildlife, which account for millions of revenue dollars more. These two factors combine to produce a powerful statement: natural resource management is inexorably linked to economic and social values in the Florida Keys and these values are important to residents of Monroe County.

In 1990, in response to growing social pressure to create a mechanism to protect the reef tract from potential oil exploration, and to deal with the problems of nearshore water quality and ship groundings, Congress acted to create the Florida Keys National Marine Sanctuary (FKNMS) (NOAA 1990, Suman 1997). Of the 13 existing sanctuaries in the national system, the FKNMS is the only one that was initiated by an act of Congress. The other 12 have followed the standard designation process established by the National Oceanographic and Atmospheric Administration (NOAA), as outlined in the National Marine Sanctuaries Act.

As evidenced, the social system was directly responsible for the management regime Congress put in place in the Florida Keys. Given the nature of the Keys, their location proximal to a large urban center, Monroe County's reliance on tourism revenue, and the attitudes and recreation patterns of the locals, we should expect to find that NOAA employed appropriate social science to understand user groups, determine potential conflicts, and identify acceptable alternative management strategies. However, this did not occur in an adequate way, and the resulting management plan focused almost solely on biology, thereby setting the stage for conflict (NOAA 1996).

4.2 The Result

Because NOAA chose to undertake a strategic planning process that many residents and user groups felt did not respond to their needs and concerns, local opposition to the "federal government takeover" of coastal resources in the Florida Keys was energized (Suman 1997). Groups such as the grass roots Conch Coalition coalesced to stop NOAA, often using emotional persuasion (Figure 2).

Published letters to the editor contained proclamations such as, "The Florida Keys National Marine Sanctuary Management Team will control the Keys economy" and "The Florida Keys National Marine Sanctuary is nothing less than a death sentence for the commercial fishing industry as we have known it" (Swift 1995).

Negative reaction was also generated when NOAA and Sanctuary officials proposed three no-take areas, initially called "Replenishment Reserves." Many fishermen and

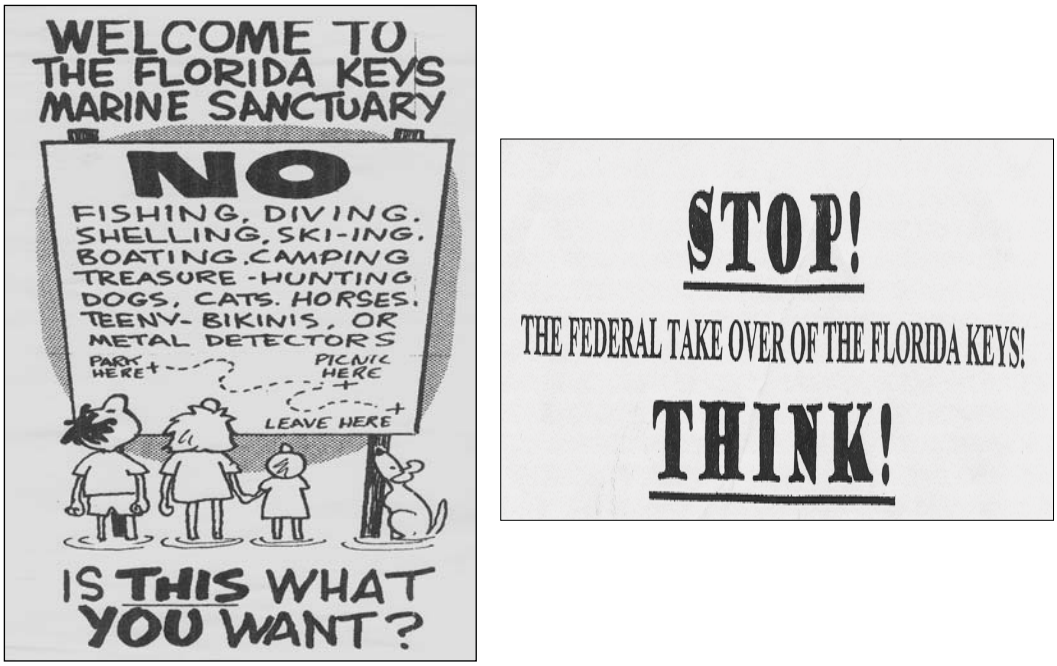

Figure 2.—Conch Coalition illustrations. Source: Florida Keys National Marine Sanctuary.

even conservationists felt that Sanctuary planners did not utilize appropriate or thorough research as to placement or effectiveness of these reserves, and where such information did exist, it was poorly transmitted to the public (Suman 1997, Swift 1995). In the words of one resident, "They [planners] did not do their homework," leading to a perception that NOAA was in a "grab and run mentality" inspired by the publicity of the three grounding incidents.

In 1996, just prior to the release of the draft management plan for the FKNMS, a non-binding public referendum was held in Monroe County. Fifty-five percent of those who voted cast ballots against the Sanctuary. In 2001, a small-scale, non-representative survey found that 87% felt that NOAA was "heavy-handed" in its original approach (Hawkins 2001 unpublished data). The current revision of the Sanctuary management plan continues to minimize the role of the social sciences. While the Sanctuary has a comprehensive biophysical monitoring program and collaborates with numerous universities on ecological studies, there is no complementary human dimensions research and monitoring program to inform Sanctuary managers.

5.0 EXAMINING THE DISCONNECT: RESOURCE LEGISLATION VS. MANAGEMENT PLANS

5.1 Resource Legislation

To better understand how social values are expressed to managers, it is necessary to review the acts, statues, and laws (hereafter termed enabling legislation) that authorize management regimes. As noted previously, resource legislation is a political reaction to social values and pressure concerning the use of natural resources. These values differ across commercial sectors, individuals, communities, governments, and non-profit groups. Often, different values have similar ends. For example, water conservation is a principle that individuals espouse and is something a municipality might also seek also to promote. Saving endangered species can result in private-sector tourism ventures, maintain ecological linkages, and please a person in North Dakota. Sometimes, however, different values are in conflict. User groups such as fishermen and SCUBA divers value coral reefs in incompatible ways; one activity often cannot occur at the same time and place as the other, and one often takes place to the detriment of the other (Lynch et al. 2004).

Nearly all resource legislation refers to these values, either implicitly or explicitly. For the most part, however, environmental legislation discusses ecological and social themes quite generally. To avoid dictating how managers and scientists should do their jobs, and thereby constraining them, environmental laws simply state the rationale for management and the legal mechanisms available to managers to do so. These reasons are almost always a mix of human dimensions and biophysical parameters. To illustrate the social drivers behind resource management, we can now briefly examine the Findings sections of three important laws that assist marine and coastal management: The Endangered Species Act of 1973 (ESA), the National Marine Sanctuaries Act of 1972 (NMSA), and the Coastal Zone Management Act of 1972 (CZMA).

Of the three, the ESA is the most ecologically oriented, having been created to specifically address biology and habitat. Unlike other laws, which exhibit more balance between social and natural concerns, the ESA is a tool to protect species from extinction. This approach elevates the natural/environmental system over the social, political, and economic systems (to be discussed in more detail below). However, even the ESA notes that the rationale for protecting species of concern is based on "esthetic, educational, historical and, recreational values, in addition to the scientific and ecological importance to the 'Nation and its people.' (Thomson West 2004).

The Findings section of the NMSA states that the significance of marine conservation lies in recreational, ecological, historical, scientific, educational, cultural, archeological, or esthetic qualities. The section defines the National Marine Sanctuaries Program as a Federal initiative focused on these and other qualities and lists the following as program goals: "**(A)** improve the conservation, understanding, management, and wise and sustainable use of marine resources; **(B)** enhance public awareness, understanding, and appreciation of the marine environment; and **(C)** maintain for future generations the habitat, and ecological services, of the natural assemblage of living resources that inhabit these areas" (Thomson West 2004).

Finally, in the CZMA, Congress found that in the coastal areas of the United States there is a diverse mix of natural and social factors warranting management. These include: "**a)** …a national interest in the effective management, beneficial use, protection, and development of the coastal zone. **(b)** The coastal zone is rich in a variety of natural, commercial, recreational, ecological, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation. **(c)** The increasing and competing demands upon the lands and waters of our coastal zone occasioned by population growth and economic development, including requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish, and other living marine resources, have resulted in the loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use, and shoreline erosion. **(d)** The habitat areas of the coastal zone, and the fish, shellfish, other living marine resources, and wildlife therein, are ecologically fragile and consequently extremely vulnerable to destruction by man's alterations. **(e)** Important ecological, cultural, historic, and esthetic values in the coastal zone which are essential to the well-being of all citizens are being irretrievably damaged or lost. **(f)** New and expanding demands for food, energy, minerals, defense needs, recreation, waste disposal, transportation, and industrial activities in the Great Lakes, territorial sea, exclusive economic zone, and Outer Continental Shelf are placing stress on these areas and are creating the need for resolution of serious conflicts among important and competing uses and values in coastal and ocean waters" (Thomson West 2004).

With some overlap, social value terms are found more than 50 times within the Findings sections of these three acts. Together with the National Environmental Policy Act of 1969 (see Figure 3), which provides an overarching level of social direction regarding resource management, these acts attempt to strike a balance between environmental protection and the use of the Nation's natural resources by its citizens.

"The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."

Figure 3.—A portion of the National Environmental Policy Act of 1969.
Source: Thomson West, 2004.

5.2 Management Plans

Plans addressing terrestrial, marine, and coastal management issues are many and are developed by states, the federal government, counties, municipalities, and non-governmental organizations. While a comprehensive analysis of management plans is not practical within the scope of this paper, a brief discussion is useful.

Management plans differ from place to place, as a result not just of the issues that drive them, but also of the people that write them. Management planning is not a science, but rather an art, and in the past several decades, there has been a redefining of public involvement in the decision-making process. This has been guided by social values through legislation.

Some plans are better than others in reflecting the legislative intent behind their development, so not all plans are equal in their disproportionate emphasis on biophysical parameters. However, most reviews demonstrate how a majority of plans address social issues in a superficial way. The main human dimensions parameters that can be found in management plans are access, recreation opportunities, and pubic education. This situation would be roughly analogous to Green Mountain National Forest biologists, in an attempt to manage the entire forest, measuring only the annual growth rate of a few trees, counting the number of squirrels in one acre, and recording yearly rainfall only in Middlebury, Vermont. While general social science language does exist in management plans, very few plans have human dimensions research components of a larger research strategy that seeks to understand users in terms of frameworks such as satisfaction, integrative complexity, recreation specialization, group norms, procedural justice, and distributive justice—all of which can help determine acceptable management strategies.

The Missing Ingredient

A review of the social values found within enabling legislation should direct managers to design plans that incorporate a range of factors, both biophysical and social. However, owing to our expert-client approach, a comprehensive and balanced research/management model is rarely found in a management plan. Though, as noted above, management plans differ, there is usually some language about the uniqueness or special ecological features of the area, economic and social reasons the area is important, goal and objective statements, task descriptions and timelines, personnel and funding needs, and monitoring or evaluative mechanisms, the management actions in plans are generally limited to collecting biophysical data.

A main causative factor regarding the overemphasis of biophysical parameters in management plans is the biological/ecological focus found in most resource management programs in the higher education system. These programs often lack human dimensions coursework and emphasis, other than the obligatory general education requirements. Even a cursory review of natural resource management programs at the university level over the past several decades would likely reveal a large disparity between coursework in the natural sciences and coursework in the social sciences, especially at the operational or methods level. This paradigm in turn

Table 2.—A management perspective of environmental management eras in the United States 1620-today

1620 to 1825	None
1825 to 1885 or so	Exploitation/disposal
1885 to today	Scientific Approach

has led to management that is based on uni-disciplinary schemes (Risk 1999; Downs et. al. 2005). All of this results in "combat biology" wherein resource managers, having never been adequately trained in resource management social science, fail to understand and appreciate the social, political, and economic complexity inherent in their fields (Kennedy & Thomas 1995).

For resource management to be truly responsive to its parent legislation, the overarching way in which management is undertaken is fundamentally backward and must change. After benefiting from social and economic arguments, managers default to a biophysical approach. While no one system in the Kennedy and Thomas Model is dominant all of the time, the social system is the recognized driver of resource management (Kennedy & Thomas 1995). As such, social elements of resource management provide important marching orders to managers. However, these components are often recognized only as the *impetus* for legislation or management—something that can be marginalized once a regime has been established.

Therefore human dimensions parameters and research must be incorporated as equal partners in the management plan. The model that these authors endorse is one where biophysical monitoring and human dimensions monitoring work in tandem to inform managers (Figure 4). In other words, human dimensions should no longer be a spice in the management recipe, but rather a key ingredient.

6.0 A NEW PARADIGM

In contrast to Table 1 (p. 265), which is an illustration of management eras from a social perspective, management eras from a management perspective are somewhat abbreviated (Table 2.) because the Scientific Approach remains our management paradigm.

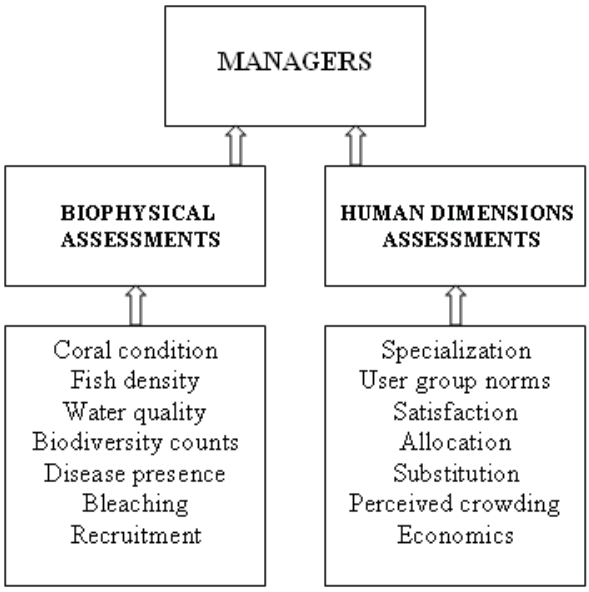

Figure 4.—Framework for integrating biophysical and human dimensions components of resource monitoring.

The Kennedy and Thomas Model (1995) offers a resource management paradigm that is different from that of the Scientific Approach by recognizing that the natural/environmental system is one of four interrelated systems; the other three are the political system, the economic system and the social system. In this model, no one system is dominant all the time, and all of the systems interact with one another. For example, when crude oil prices rise, drilling on federally protected lands suddenly becomes more attractive. When animal rights groups show graphic images of a beaver caught in a leg hold trap, voters send a message to politicians to dictate more socially acceptable means of killing creatures. However, agencies tasked with resource management remain firmly entrenched in the expert-client paradigm, which routinely, if not always, elevates the natural/environmental system over the other three, and this makes for battlefield management.

The Kennedy and Thomas Model is human-mutual, and holds that both the utilitarian viewpoint, which values nature and resources for the goods and services derived from them, as well as the intrinsic outlook, which states that ecosystems have an inherent value regardless of their utility to people, are both ultimately devices of the human mind. That is, both views take human recognition to operationalize.

7.0 CONCLUSION

If someone has a migraine headache due to stress and noise and the doctor decides only to measure how much her head hurts, would this not seem like an incomplete treatment? Would she be right to want him to be attentive to the causes of the problem? Or, should she be happy with the treatment of the symptoms only?

Because resource management is an act of societal regulation, one which incorporates various social science disciplines (e.g., social psychology, anthropology, political science, geography, recreation, demography), it is vital that our management paradigm reflect a balance between the biophysical and social sciences. Social values and economics are listed in most management plans and guidance documents as important factors in maintaining ecological function. However, while recognizing these factors is a necessary step in diverging from the century-old Scientific Approach to resource management, it is only the first step. It is clear that human dimensions are given much more weight in enabling legislation than in the development and implementation of management plans. In very few cases have there been extensive efforts to incorporate social values and desires and in almost no cases do managers use common social science terms such as procedural justice, stated choice, and integrative complexity. While the eco-based approach promotes the uniqueness and biodiversity of a given area, it should be recognized that management is not just about protecting species habitat; it is very much tied to local political, social, and economic issues. This paper is a result of a small review of enabling legislation and finds the need to manage resources in a much broader and responsive way. Managers, acting on behalf of society, continue to favor their own values and beliefs regarding why it is important to manage resources and consistently ignore the intricacy of "who cares?"

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Methods

A RECREATION QUALITY RAPID ASSESSMENT METHOD FOR VISITOR CAPACITY MANAGEMENT

Kenneth Chilman
Associate Professor Emeritus, Department of Forestry
Southern Illinois University Carbondale
1205 Lincoln Drive
Carbondale, IL 62901

Stuart Schneider
Niobrara National Scenic River

Les Wadzinski
Hoosier National Forest

Abstract.—A rapid assessment method for inexpensively obtaining representative samples of place-specific visitor numbers and perceptions of visit quality was tested on Niobrara National Scenic River (NSR). Similar tests have been done on national forest areas in Indiana and Illinois. The data are used in meetings focusing on visitor capacity management.

The rapid assessment visitor inventory (RAVI) method utilizes four-day sampling periods (two weekend days plus two weekdays) within heavy use seasons. Counts of visitors by types are recorded along with one-page surveys focusing on visitors' perceptions of conditions. RAVI studies are conducted at travel pattern concentration sites, places where most visitors tend to visit or pass by.

A four-day sampling period at Niobrara NSR was thought to be representative of weekend/weekday use within a two-month summer use season. Additional sampling is planned for following years to monitor specific numbers and changes occurring. Then decisions can be made about maintaining different levels of use in similar places and providing information for visitor choices.

1.0 INTRODUCTION

Changes in conditions occur frequently on large, diverse outdoor recreation areas. Managers of those areas are responsible for noting those changes and making recommendations for possible actions.

When changes involve significant increases in visitor use of an area, or changes in types of visitors or their behaviors, recommendations may involve limiting or redistributing use. These decisions fall into a category generally referred to as recreation carrying capacity (Manning 1999) or visitor capacity (Haas 2002). Capacity decisions are often contentious, with objections raised by area users and user groups, environmental groups, or local businesses and communities. The objections often culminate in court cases (Chilman et al. 1996).

Recreation capacity planning processes have been developed to systematically approach capacity decision-making (Chilman er al. 1981, Stankey et al. 1985, Graefe et al. 1990, Chilman et al. 1990, Manning et al. 1995). These are usually long-term (several years), expensive, and implemented when conditions become quite controversial.

The focus of the research reported here is to develop a rapid assessment, relatively inexpensive method, and to test it in various recreation settings. Then further research will investigate how to train managers to gather the data and to be able to communicate the data and the method in capacity-decision meetings. The method is designed to address questions, such as "How serious is the problem?" "Who is affected and to what extent?" "What management actions might improve the situation?"

This paper discusses a method for obtaining those kinds of information systematically, rapidly, and inexpensively. The paper then discusses how that information may be used in discussions about capacity recommendations. An application of the method at Niobrara NSR in Nebraska is discussed. Tests of the method have also been conducted on national forest areas in Indiana and Illinois.

2.0 METHODS

The research reported here begins with the premise that, if field-level managers of parks and other recreation use areas could obtain specific visitor use information early in difficult capacity-decision situations and communicate it in meetings internal and external to the managing

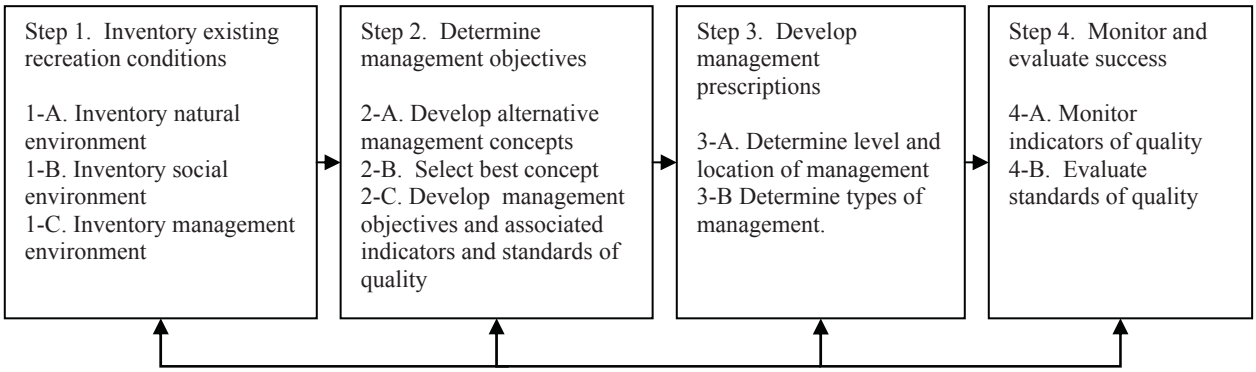

Figure 1.—An Outdoor Recreation Management Framework.

organization, capacity decisions could be reached faster and with less controversy. Accordingly, to determine the nature of capacity decision-making and what information is needed by managers, the research method participant observation, negative case analysis (Kidder 1981) was utilized.

This research method involves participating with recreation managers as a recreation visitor information specialist in capacity-decision situations. A detailed discussion of how this participant observation method has been employed in various places during the past 30 years can be found in Chilman (2005). Basic theory for this method is offered in Manning (1999) as an Outdoor Recreation Management Framework (Figure 1).

The first and most basic step of any management is *inventory*—determining as exactly as possible what and how much is to be managed. In Manning's model, he suggests recreation inventories should include natural environment, social, and management aspects. The focus of this paper is the *social inventory*: how many and what types of visitors are using the management area now, and what their perceptions of area and visit conditions are.

It should be noted here that recreation visitor inventories are done at three levels: national, forest/park management unit, and management area subunit. U.S. Forest Service researchers have developed a sampling design for entire national forests (Zarnoch et al. 2003) that may then be aggregated into national use estimates. What has been lacking are systematic recreation visitor inventories for management subunits.

Management subunits are usually parts of large, diverse recreation areas where different conditions exist with different kinds of users and use patterns. Field level managers can usually identify these different use patterns and can establish subunit boundaries. Within these subunits, visitors usually are attracted to specific areas for specific purposes. These attraction points and the travelways to them can be identified as travel pattern concentrations (TPCs) where most of the subunit users will visit or pass by (Chilman 1983).

A second key concept of the Rapid Assessment Visitor Inventory (RAVI) method is a representative four-day sampling period within a recreation use season: spring, summer, fall, winter. The sampling period includes two weekend days when use is highest, a Friday or Monday where use is usually higher than other weekdays, and a fourth day to represent middle of the week use. Lucas and Oltman (1971) proposed sampling by days—a known population—rather than by number of visitors—an unknown population. The four-day sample utilized here is an extension of that concept to sample by number of weekends—a known population–within 12 weekends of a three-month season. One four-day sample weekend would thus be an 8.3 percent sample. This is an indicator sample, providing a useful indication of user numbers and perceptions in a particular time frame.

Sampling is usually done during the busiest seven hours of the day to fit a surveyor's work schedule. Busiest use times are readily identified by patrol rangers. Counts of numbers and types of visitors are recorded. Additionally, one-page surveys focusing on type of visit experience,

perceptions of conditions, and satisfaction ratings are administered to one person per group of users. Questions addressing specific aspects of a particular site may also be added.

A short report is written, basically tabulating responses and pointing out implications, and is circulated for discussion. The entire process, including a day or two for reconnaissance and discussion of managers' information needs, four days of sampling, and approximately a week to write the report, makes up a short time frame of approximately two weeks to obtain representative data for discussion meetings.

3.0 RESULTS

How did the RAVI method work for the managers of the Niobrara National Scenic River? Results will be discussed using the following steps (design of the study, data collection, data analysis and reporting, and discussion of data with managers) and sub-steps.

3.1 Step I: Design of the Study

A. Identify concerns/questions. A visitor study was conducted at Niobrara NSR from June 21 to August 27, 2001 (Davenport et al. 2002). A large amount of data was collected: 923 visitors were contacted and asked to fill out a registry card. Then 11-page mail-back questionnaires were sent to persons agreeing to participate; 504 questionnaires were returned. Cost of the study was approximately $67,000.

Results of the study were not displayed to represent visitors exiting the NSR at specific places. National Park Service (NPS) managers wanted to obtain sample data from visitors at the end of river management subunits, or zones, so that capacity planning might offer choices of river conditions.

The RAVI method was tested to obtain an inexpensive sample of visitors at the end of river trip zones. The managers were interested in study data and method that could be more easily communicated.

B. Examine study area. Prior to the four-day RAVI study, two days were spent by the researcher floating the upper 30 miles, the heavy floater use area, of Niobrara NSR, with managers. Driving the roads along the river, meeting with watercraft rental personnel and telling them about a study to take place were an important part of the reconnaissance.

C. Develop sampling plan. The decision was made to sample at three river takeout points: Smith Falls, Brewer Bridge, and Rocky Ford. The four days selected were Saturday through Tuesday.

D. Develop count forms and questionnaires. Count forms and one-page questionnaires from previous river use research were adapted for use on the Niobrara. The managers added one question about visitors' perceptions of the quality of visitor services (outfitters).

3.2 Step II. Data Collection

A. Train data collectors. No training was necessary as the research was done by the researcher who had done river research for several years. One assistant was added to do counts while the researcher was surveying visitors.

B. Do counts and interviews. All river floaters stopping or passing by were counted during the seven hours. One person per group was surveyed when groups were ending their trip.

C. Data coding and data entry. Optional. In this case, the descriptive count and survey data were easily tabulated.

3.3 Step III. Data Analysis and Reporting

A. Tabulation of counts, interviews. Data from the river floater counts and interviews were displayed in tabular format.

B. Prepare maps of user distribution. Although not done for purposes of the Niobrara report, map displays of distribution of various types and numbers of users are a useful communication tool.

C. Prepare preliminary report. A very basic format was used in the draft report: Introduction, Methods, Results, Discussion. Of particular interest were counts

of the various types of watercraft (canoes, tubes, kayaks) on the river subunits sampled. Satisfaction ratings were high; only two interviewees ranked their satisfaction lower (7) than 8 on a scale of 1 to 10, with 10 being high. Twelve visitors of the 34 interviewed rated their satisfaction as a 10.

3.4 Step IV. Discussion of Data with Managers

A. Are data, methods clearly understood? Because travel distance was approximately 1,000 miles between the researcher's office and the manager's office, no face-to-face discussions took place after the report was written. However, several telephone conversations were used to discuss the methods and the data.

Subsequently, the Niobrara NSR chief ranger presented the findings of the RAVI test at the May 2006 River Management Society national symposium in South Sioux City, Nebraska.

B. Implications for management issues. A "snapshot" of river user numbers and perceptions on the heavy use subunits of Niobrara NSR will assist discussions when capacity decision-making gets underway. River use capacity planning is being delayed while the National Park Service awaits the outcome of a capacity decision court case for Yosemite National Park in California.

C. Develop plan for monitoring re-measurements. Monitoring remeasurements using the RAVI method were to be planned in June 2006 for summer river use. However, these remeasurements were also delayed by the pending Yosemite court case. The amount of remeasurements also depends on budget allotments.

D. Prepare the final report. In the case of the 2005 RAVI test, no corrections or revisions were requested in the draft report.

4.0 DISCUSSION

The RAVI method was tested on Niobrara NSR to learn if it worked in river use management situations; two other tests were done on forest recreation use areas. The method was also implemented there to find out if the user data would be useful in capacity discussion meetings: Niobrara NSR has several active advisory groups (USDI 2005). The basic rationale of the one-page visitor surveys is to find ways to improve quality of recreation visits; this is an effective emphasis in discussions.

RAVI appears to be a *place-specific, low-cost visitor inventory method*—similar to localized resource inventories used by forest and wildlife managers (Avery 1975) – that has been lacking in recreation management. RAVI appears especially useful in early decision considerations, "Does a problem exist? What is the nature of the problem? What actions might be taken?" RAVI may be extended to increase the number of four-day samples if heavy conflict exists, to sample in comparable units to provide information on the range of choices available, and for monitoring as repeat measurements over time to measure changes occurring (Manning 1999).

RAVI research is now focusing on replications in other types of recreation areas and on developing training for recreation area managers to implement the method on their areas. To assist training, a RAVI procedures manual is being prepared.

Finally, RAVI is a *tool* to help managers with capacity decision conflicts. These are complex decisions involving various individuals and groups. There are no easy answers, but managers who have used recreation inventories report increased credibility. And this is the basic purpose of RAVI: to help managers, and visitors, maintain high-quality recreation visits.

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DEFINING WILDERNESS WITH PICTURES: AN EXPLORATORY STUDY

Ginni Dilworth
Recreation, Park and Tourism Administration
400 Currens Hall
1 University Circle
Western Illinois University
Macomb, IL 61455

Abstract.—Definitions of wilderness have varied across time and cultures. Understanding the way that wilderness is perceived provides insight into both the level of support it receives in American society and the way in which it is managed within that context. Traditionally, definitions have been text-based. This study utilized participant-generated photographs to examine representations of wilderness. Participants were given disposable cameras and asked to take pictures of settings that represented wilderness to them. They were then asked to rank their photos in the order in which they most represented wilderness. Key features in the photos ranked as most representative of wilderness included mountains, lakes, and heavily forested areas.

The findings in this exploratory study indicate that the participants' representations of wilderness match those settings which have been historically described as wilderness. However, this may have been a reflection of prior knowledge and peer influence, along with other external factors.

1.0 INTRODUCTION

Wilderness has been defined both culturally and legally over the last 100 years. The legal definition states that wilderness

"in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."

- Wilderness Act, 1964

Culturally, wilderness is defined as many things, from any natural area, to the "urban" wilderness. This dates back to biblical times when wilderness was regarded as those places that man feared, and where man was sent by God to be punished (Nash 2001). As a socially constructed concept, definitions of wilderness have evolved over the years (Nash 2001, Hammitt et al. 2001). Further, the word is used in many contexts (e.g., urban wilderness) and it has become less meaningful in terms of representing a type of landscape or setting. Thus, it is important to understand the way that wilderness is viewed today. Understanding variations in the way that wilderness is defined by users can inform the management process; for example, it can provide insight into any variation in definition between visitors and managers.

Definitions of wilderness have typically been constructed with the written word, although visual representations by artists (e.g., Thomas Moran, Ansel Adams) have also been utilized. Further, the collection of visual data has been adopted to provide an alternative means to examine outdoor recreation settings, such as the visitor's connection to the setting (Loeffler 2004). Photographs have also been used to examine standards of quality (Manning & Freimund 2004), place attachment (Stedman et al. 2004), and landscape preferences (Palmberg & Kuru 2000). The purpose of this study was to determine patterns of image content when photography is used to represent perceptions of wilderness. As an exploratory study, a secondary purpose was to determine the reliability and validity of the methodology.

1.1 Traditional Definitions of Wilderness

The Judeo-Christian tradition defined wilderness as cursed land, evil places, and places without water. This was often a desert area. The importance of wilderness in this context was revealed by the paradox that while wilderness was evil, it was a necessary evil; it was a place where one could become closer to God, a refuge, and a testing ground. Jumping forward to the Puritan tradition, wilderness was viewed as a threat to survival, and man's ability to conquer the wilderness would put him in God's favor. This was a utilitarian view of nature; cultivation and civilization in place of wilderness were deemed necessary to make the land useful in practical terms as well as to curry God's favor (Nash 2001).

Moving forward again to the Romantic and Transcendentalist eras, the view of wilderness began to be viewed in more favorable terms. The Romantic movement brought about "an enthusiasm for the strange, remote, solitary and mysterious" (Nash, 2001, p. 47). The concept of primitivism was introduced, suggesting that "man's happiness and well-being decreased in direct proportion to his degree of civilization" (Nash 2001, p. 47). Trancendentalists emphasized the spiritual quality of the wilderness experience, proposing that it brought one closer to God, and emphasizing the importance of material objects in this quest: "For this reason natural objects assumed importance because, if rightly seen, they reflected universal spiritual truths" (Nash 2001, p. 85).

Early 20th century definitions include those offered by Sigurd Olson—"wilderness means escape from the perplexing problems of everyday life and freedom from the tyranny of wires, bells, schedules, and pressing responsibility" (Backes 2001, p. 44) and by the founders of the Wilderness Society, "that extremely minor fraction of America which yet remains free from mechanical sights and sounds and smell" (Yard et al. 1935). A legal definition for wilderness was set by the Wilderness Act of 1964, defining wilderness as "an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation," and as a place that "generally appears to have been affected primarily by the forces of nature" and that "has outstanding opportunities for solitude or a primitive and unconfined type of recreation" (6 U.S.C. 1131-1136, 78 Statutes 890).

1.2 Using Images for Evaluation

Images have been used to represent nature in general and wilderness in particular. Ansel Adams used photography while artists such as Thomas Moran used paintings to portray wild places. More recently, images have been used to examine a variety of outdoor recreation phenomena including standards of quality (Manning et al. 1995), the importance of water to the visitor experience (Taylor et al. 1995), and crowding (Manning et al. 2000). Photography has also been used to examine specific preferences, such as visual preferences when rock climbing (Jones et al. 2004), as well as general meanings such as the meaning of the outdoor experience (Loeffler 2004).

2.0 METHODS

ECOEE is a semester-long course in the department of Recreation, Park & Tourism Administration (RPTA) at Western Illinois University. Students spent the Fall 2004 semester in the field studying environmental conservation and outdoor education. The trip included visits to Badlands National Park in South Dakota, Yellowstone National Park and the Wind River Range in Wyoming, the Ansel Adams Wilderness and Yosemite, Death Valley and Joshua Tree National Parks in California, Grand Canyon National Park in Arizona, and the Baja Peninsula in California.

The 2004 ECOEE course included 16 undergraduate students, one graduate student and two instructors. The 16 undergraduate students were provided with disposable cameras and instructed to take photographs of settings that represented their perceptions of wilderness. The students were also issued a brief survey to determine their level of experience with wilderness areas prior to this trip. Upon their return, students were asked to indicate where each photograph was taken. Each student was then asked to rank the photographs by the extent to which they represented wilderness.

Once the students had ranked their photographs, the researcher examined each photograph and identified specific elements contained therein. Elements proposed to represent wilderness over time, including desert, absence of humans and human sign, and specific natural features such as water, forests, and mountains were among the items identified. Each participant's group of photographs was also divided into thirds to form groups ranging from most representative to least representative of wilderness. This division, to be used as a point of reference, was determined after discussions with the participants indicated that their pictures generally fell into three groups along the continuum.

3.0 RESULTS

Of the sixteen cameras that were distributed, ten were returned with a total of 174 usable photographs. Seventy percent of the ten respondents were from rural areas and 30 percent were from suburban areas. The average time that the students had been in the RPTA major

Figure 1.

Figure 2.

Figure 3.

was two and one half years. Prior to this trip, two of the respondents had never visited a wilderness area, five had visited one to five areas and three had visited more than five wilderness areas. None of the respondents had worked in a wilderness area. Finally, 90 percent of the respondents had studied wilderness in at least one class.

Many of the students' photographs were similar in that very few contained roads, trails, or people. Prominent features in the highest ranked photographs ("most like wilderness") were mountains, lakes, and heavily forested areas (see Figure 1). The highest ranked photographs include the top third of photos taken by each respondent, which were generally the top five photographs taken by each participant. A few of these included desert photos from Joshua Tree National Park, but most desert scenes were ranked lower than mountains and forests as representing wilderness. The most common elements of the highest ranked photographs were water (lakes and streams), mountains, and forests. Only one of the highest ranked photographs included a person and only one included a trail (see Figure 2).

Photographs that least represented wilderness (lowest third as ranked by each participant) had common elements as well. These photographs were more likely to include trails, roads, human sign (e.g., tire tracks), and people (see Figure 3). One beach scene was included by one participant. Sixty percent of respondents included scenes of snow and fog, but none of these pictures was ranked high or low; they were all ranked in the middle of the range (middle five to eight pictures).

4.0 DISCUSSION

Most of the photographs were representative of landscapes historically described as wilderness. It is significant to note the items that were not included in the highest ranked photographs, including human sign, people, desert, and trails. With few exceptions, even the "least like wilderness" photos were of landscapes devoid of most human sign. Images that included a visible trail tended to be ranked moderately, although it appeared to be a more acceptable human sign than tire tracks, photos of which were ranked very low. It should be noted that the few images with tire tracks were taken at Joshua Tree National Park; few photographs of desert scenes were highly ranked and none of these included human sign. However, this may be explained by the presence of vehicles rather than the desert setting itself. The highest ranked photographs were taken in places that motor vehicles could not reach. Another indicator was weather, which does not seem to highly influence the representation of wilderness. While the majority of respondents included photographs of scenes that included snow and/or fog, each of these participants ranked these images in the middle of the continuum of most to least like wilderness. Thus, they do reflect these participants' interpretation of wilderness, but they do not stand out as either "most like wilderness" or "least like wilderness." A number of issues, however, may explain these findings.

The first explanation lies in the directions given to the participants. They were instructed to take photographs of settings that represented wilderness to them. However, upon their return, they indicated that they had a tendency to take photographs in areas that they knew to be legally designated wilderness. The majority of the photographs were taken in the Wind River and Ansel Adams wilderness areas. Additionally, participants indicated that if one person identified a setting as appropriate for the study, several others would be in agreement and take a photograph of the same scene. For example, the lake shown in Figure 1 appeared in every participant's set of images. Another issue in regard to participant bias was the experience outside of the setting itself. One participant noted that she ranked several photographs taken in the Ansel Adams wilderness rather low beacuse she remembered hearing an airplane flying overhead, which detracted from her experience and sense of being in the wilderness.

Another issue was their tendency to take photographs at the beginning of the four-month experience. Thus, only five respondents reached Joshua Tree National Park with film in their cameras, and only one participant made it past that park; this last respondent was the only one to include pictures from Baja. Most of the photographs were from the Wind River Range. One exception was Badlands National Park; although it was the first stop on their itinerary, there were no photographs included from this site.

Another issue was the use of RPTA students. While the ECOEE trip provides an opportunity to include images from a variety of settings, only RPTA students participate. Thus, they all have had some level of exposure to the concept of wilderness, and continue to learn a great deal about the concept while participating in ECOEE. Thus, their knowledge of wilderness is greatly increased during the course of the trip and, subsequently, the study.

Another methodological issue was the cameras themselves. The durability of these cameras surpassed the researcher's expectations, as they were dropped off cliffs, in streams and buried in snow. Only one of the cameras listed as unreturned was due to damage. It was not possible to retrieve photographs from that camera. However, three of the five remaining unreturned cameras were lost. Another issue in regard to the cameras is the number of photographs that may be taken. Use of disposable digital cameras may allow participants to take a greater number of photographs, as might traditional digital cameras. A related issue was the burden of carrying two cameras; each of the participants had his or her own camera in addition to the camera issued for the study.

The next step in the development of this approach is to have participants take pictures of natural settings, without instructing them to take photographs of wilderness in particular. Thus, the rankings of the

photographs in regard to representation of wilderness may have greater meaning as they may include a wider range of images and image content. It would also be beneficial to a future study to utilize either digital cameras or multiple cameras to reduce the tendency to run out of film halfway through the trip. Additionally, an opportunity to select participants outside of the park and recreation discipline may yield different results. Finally, while the use of images may indicate settings that represent wilderness to the participants, other aspects of the experience that do not necessarily appear in the image (e.g., the sound of a plane flying overhead) may affect the perception of a particular setting as wilderness. Use of a photo diary to explain the experience at the time the photograph was taken may add more meaning to the pictures themselves.

In general, the findings in this exploratory study indicate that these RPTA students identify wilderness primarily with natural landscapes lacking human sign, particularly mountains, lakes, and forests. As many continue to question the preservation of wilderness and debate the uses allowed within, it continues to be important to understand what people mean when they speak of wilderness. Using photographs to enhance these definitions may be one way to gain a greater understanding of the meanings behind the words in text-based definitions.

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DETECTING VEGETATION CHANGE USING MULTI-TEMPORAL AERIAL PHOTOGRAPHS AT CADILLAC MOUNTAIN IN ACADIA NATIONAL PARK, MAINE

Min Kook Kim,
Ph.D. Student
Department of Forest Management,
Parks, Recreation and Tourism Program
University of Maine
Orono, ME 04469

Andrea J. Ednie
University of Maine

John J. Daigle
University of Maine

Abstract.—Cadillac Mountain, the highest peak on the Eastern Seaboard, is a major destination for Acadia National Park visitors. Managing vegetation impacts on Cadillac is extremely challenging given the high use and fragile environmental conditions. A number of direct and indirect management strategies have been employed to help to reduce the amount of vegetation impact. The primary purpose of this study was to detect vegetation change on Cadillac Mountain using multi-temporal remote sensing technology. Through image processing steps under ERDAS imagine 8.7, and ESRI ArcGIS 9, major changes between dates were analyzed. Vegetation density analysis was performed to identify distribution of vegetation regrowth and reduction. Study results show detailed measurable vegetation changes in terms of vegetation regrowth and reduction. Vegetation change detection is therefore a feasible approach for assessing vegetation impacts in Acadia National Park. Remote sensing imagery analysis could provide valuable baseline data for monitoring visitor impacts.

1.0 INTRODUCTION

Acadia National Park spans 47,000 acres, and as part of the National Park System (NPS), it has a dual mission to conserve biological and cultural resources as well as to provide for enjoyment by people. The park was established 85 years ago, and has become one of the ten most visited U.S. national parks. Acadia National Park visitation is not unlike many other national parks in that it has been relatively stable over the past decade. Acadia National Park received an estimated 2.4 million visitors in 2003. Cadillac Mountain, the study site, is one of 26 peaks in Acadia National Park. At 1,530 feet, Cadillac's summit is the highest point on the Eastern Seaboard of the United States. The only mountain in Acadia with an auto road, Cadillac Mountain is a major destination for Acadia National Park visitors. The summit receives an estimated 500,000 - 800,000 visitors each year, mostly via the auto road (NPS 2002). According to the 1998 Visitor Services Project by NPS, 76 percent of total visitors to Acadia National Park visited the summit of Cadillac Mountain. There are three trails to the summit of Cadillac in addition to the auto trail, and the 0.3-mile long summit loop hiking trail.

Acadia's granite summits such as Cadillac serve as habitat for several state-listed rare plant species. The short growing season coupled with severe weather conditions make Cadillac a tough place for plants to grow. Many of the plants on the Mountain are slow to recover from damage because of the weather and soil conditions. With very high visitor use in a very small and sensitive area, it is no surprise that loss of soil and plant cover is obvious and extensive on Cadillac (NPS 1998). Both direct and indirect management actions have been implemented since 1996, including physical barriers placed around sensitive areas, and minimal impact messages to encourage visitors to remain on designated trails (Figure 1). This study sought to collect some data regarding vegetation impact over time on Cadillac Mountain. Specifically, this study set out to explore whether remote sensing could be used as a method of testing the effect of various direct and indirect management techniques. Therefore, considering the sensitivity of the area and the ecological pressure caused by high levels of visitation, this study had as its first objective to test a new way of monitoring visitor impact at high-use destination areas where management actions have been implemented. With the availability of improved technology in recent years, the second objective was to test the applicability and feasibility of remote sensing for baseline data for analysis with future data.

2.0. LITERATURE REVIEW

Vegetation is profoundly impacted by anthropogenic activities, particularly trampling. The ultimate effect of trampling is a reduction in amount of vegetation, often resulting in complete loss of vegetation cover. A variety of recreation management strategies have been implemented in U.S. national parks, including planning more active maintenance programs and more durable vegetation covers (Hammitt & Cole 1998). Managers are increasingly using aerial photographs to aid in these planning processes. For example, Price (1983) showed how air photos can be used to monitor visitor impact on meadows around Sunshine Ski Area in Banff National Park, Alberta. By taking repeat photos, he was able to identify where new trails were developing and where pre-existing trails were widening or becoming braided. Hammitt and Cole (1998) discussed the usefulness of overlaying aerial photographs to identify changes over time in Grand Canyon National Park, Arizona.

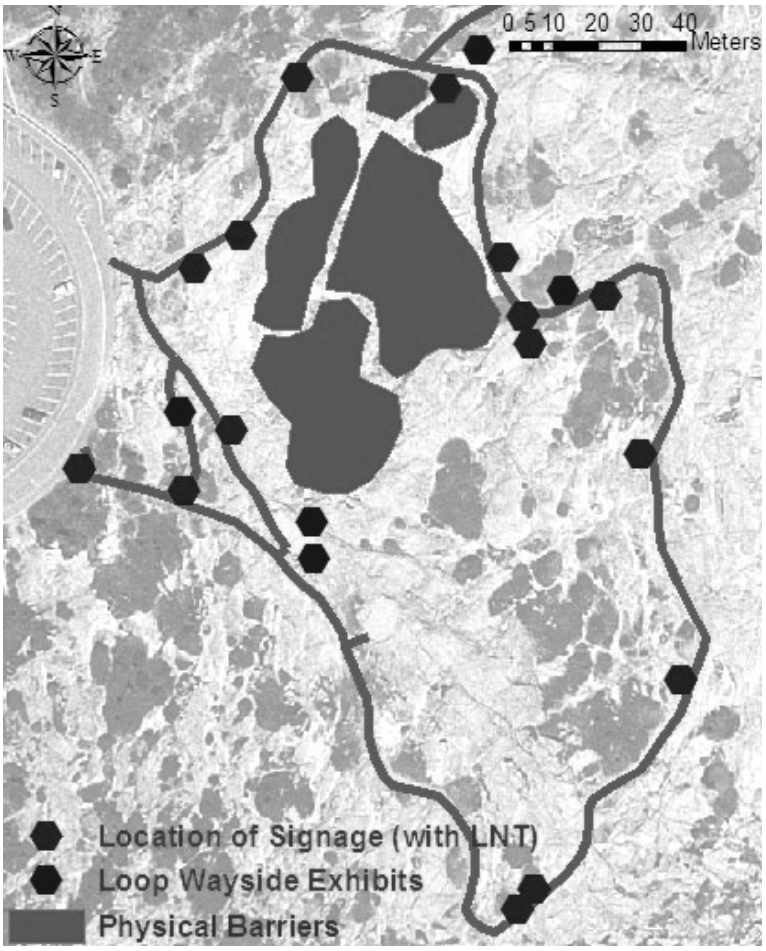


Figure 1.—Location information on Physical Barriers, Signages, and Wayside Exhibits: Signages and wayside exhibits datasets were captured by GPS unit and coded into ArcGIS. Also, edge information of physical barriers were captured by GPS unit and delineated in ArcGIS.

Geographic Information System (GIS) technologies have also been employed, allowing more sophisticated analysis of change over time (Hammitt & Cole 1998). These change-detection technologies using aerial photographs and GIS have been implemented in several studies. For example, Yohay and Ronen (1998) introduced the illumination adjustment method and a modification of supervised classification by using 1 band panchromatic aerial photographs. Hurskainen and Pellikka (2004) used both ESRI ArcGIS and ERDAS together for their change detection analysis. In their study, ERDAS was used for image mosaics, masks, and classifications. The data were then transferred into ArcGIS for post-classification comparison change detection. Finally, the advantages of aerial photographs in terms of accuracy, costs saving, and scheduling compared to other satellite images were discussed in a study by Huang and Lin (2001).

3.0 METHODS

Three scanned and geo-referenced aerial photographs (1991, 1996, and 2004) were used in this study to detect changes over time. Unsupervised classification and image comparison processes in ERDAS 8.7 were completed to identify vegetation change. Landsat TM imagery, which is more commonly used for detecting changes over time, was not used for this study because the pixel size of the imagery (30m * 30m) was too coarse for verifying small-scale changes. Using aerial photographs rather than Landsat TM imagery reduced the pixel size from 30m*30m to 1m*1m. The aerial photographs were black and white images (UTM Zone 19N, NAD 83) and were obtained from Acadia National Park. Several vector datasets were also obtained from Acadia National Park, including the location of the summit loop trail, several observation points, and the physical barriers. The location of signpost messages on the top of Cadillac Mountain was created using ESRI ArcGIS 9 with GPS

Table 1.—Post-classification with 45 classes

Vegetation Growth since 1991	Class 17
Vegetation Growth since 1996	Class 23 and 28
Vegetation Reduction since 1991	Class 15 and 16
No Change	Class from 1 to 14, from 18 to 22, from 24 to 27, from 29 to 45

data. The Maine Digital Elevation Model data for slope and contour analysis was obtained by the Maine Image Analysis Laboratory at the University of Maine. The years for vegetation change investigation were selected based on two main criteria: 1) to encompass a long enough time period to capture re-growth of slowly recovering plants, and 2) to investigate the effectiveness of management actions in the mid 1990s.

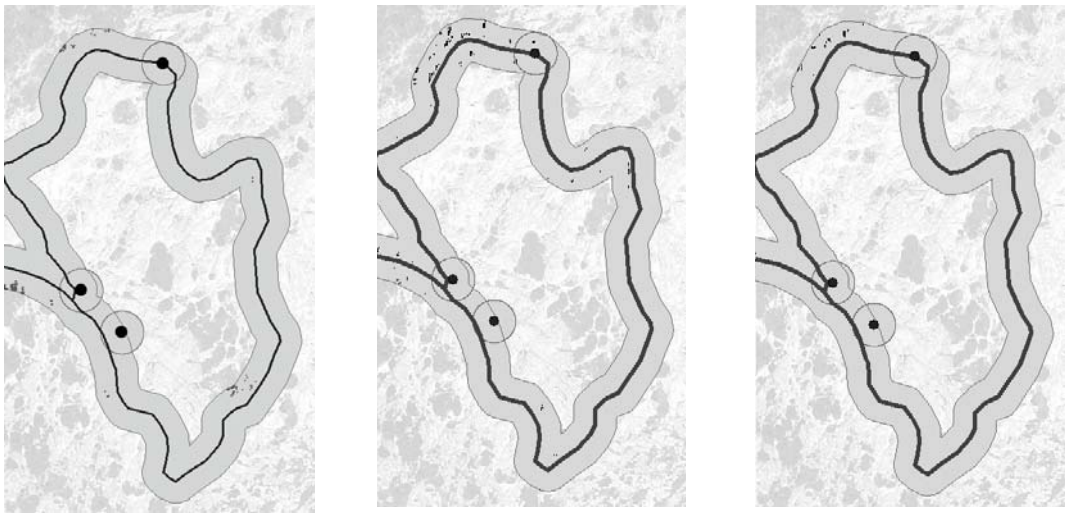
The following image processing steps were completed in ERDAS 8.7. First, as a pre-processing step an image subset was selected to focus on the summit loop trail area of Cadillac Mountain. In UTM Zone 19N, upper left X and Y coordinates were 561,818 and 4,911,660. Lower right X and Y coordinates were 562,270 and 4,911,032. Haze reduction and histogram equalization functions were performed to reduce the effect of atmospheric scattering on the dataset. Although all image datasets were taken in May, these functions are recommended procedures for reducing false interpretation when comparing datasets. Second, the layer stack function was used to prepare for multi-temporal change classification by combining the three original images as separate layers into one image. Next, a binary vegetation / non-vegetation mask was created to reduce the potential for classification confusion or false-change by essentially eliminating the areas represented by non-vegetation. To do this, unsupervised classification (with 45 classes) was completed on the 2004 image. Vegetation classes (0 to 27) were recoded to 1 and all non-vegetation classes (28 to 45) were recoded to 0. An attempt was made to classify species of vegetation in the study area, but even the aerial photograph imagery was too coarse to allow for species identification. This process created a new "mask" image, which was then applied to the layer-stacked dataset containing the three original images.

Fourth, another unsupervised classification on the masked layer-stacked image was completed for post-classification. After developing this unsupervised classification image with 45 classes, the three aerial photographs along with the new classification image were carefully analyzed and compared pixel by pixel to assign informational labels about changes. In order to reduce classification error, the classification and interpretation procedures were executed several times until they were all verified as similar results. Class 17 was found to represent vegetation growth between 1991 and 2004 (Table 1), and classes 23 and 28 represented vegetation growth between 1996 and 2004. Classes 15 and 16 were vegetation reduction between 1991 and 2004, and all remaining classes depicted no change. No classes were discovered for vegetation reduction between 1996 and 2004. At this stage in vegetation change analysis, a spatial neighborhood majority filter is commonly used to eliminate scattered and isolated pixels. Because those details were important in this analysis, the filter was not applied.

Finally, the change data were brought into ESRI ArcGIS 9, where each representative color class signifying vegetation growth and reduction was extracted and converted to point data. In order to investigate vegetation change near the summit area caused by human activities, buffering layers (10m, 30m, and 50m) from the loop trail and observation points on the top of Cadillac Mountain were developed. The buffering layers were used to examine whether vegetation reduction lessened with increasing distance from the loop trail. The clip function was used to estimate the quantity of vegetation change within the buffering areas.

4.0 RESULTS

Within a 10m buffering layer from the loop trail and observation points (Figure 1), total vegetation growth between 1991 and 2004 was higher (43.5 m^2) than reduction (5.9 m^2). Within the 30m buffering layer (Figure 2), total vegetation growth (146.4 m^2) was also

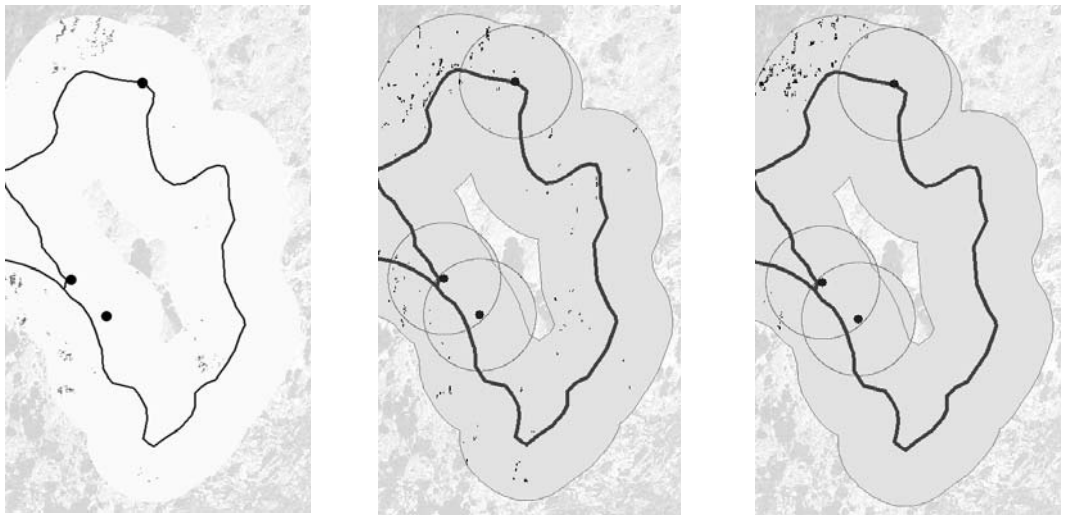


Vegetation Growth 1991 – 1996 (19.5 m2)

Vegetation Growth 1996 – 2004 (24 m2)

Vegetation Reduction 1991 – 1996 (5.9 m2)

Figure 2.—2004 imagery with 10m buffering.



Vegetation Growth 1991 – 1996 (87.6 m2)

Vegetation Growth 1996 – 2004 (58.8 m2)

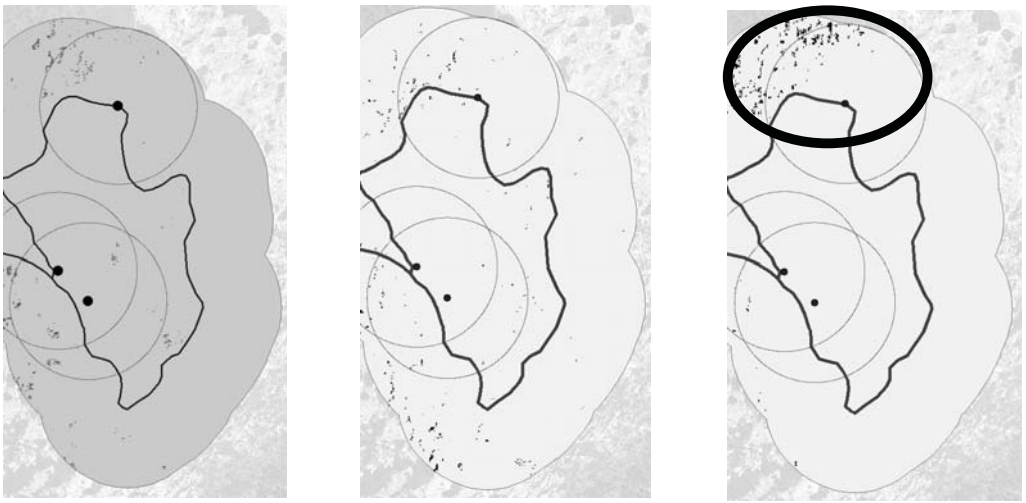
Vegetation Reduction 1991 – 1996 (42.7 m2)

Figure 3.—2004 imagery with 30m buffering.

higher than reduction (42.7 m^2). In the 50m buffering layer (Figure 3), total vegetation growth (294.4 m^2) was higher than reduction (135.4 m^2). The total vegetation change was calculated for each buffering layer for comparison (Table 2). Also, distribution difference between reduction and growth was noticed. Vegetation growth points were relatively well distributed across the map, but vegetation reduction points were concentrated in the northern section of the map between 1991 and 1996.

Table 2.—Total vegetation change for each buffer layer

	Re-growth (unit: m^2)	Reduction (unit: m^2)
0-10m	43.5	5.9
10-30m	102.9	36.8
30-50m	148	92.7



Vegetation Growth 1991 – 1996 (178.2 m2)

Vegetation Growth 1996 – 2004 (116.2 m2)

Vegetation Reduction 1991 – 1996 (135.4 m2)

Figure 4.—2004 imagery with 50m buffering.

5.0 DISCUSSION

Vegetation regrowth was higher than reduction at all buffering levels. Management actions were considered in interpreting these results. For example, the physical barriers built in the late 1990s for directly preventing visitor impacts (Turner 2001) lie for the most part within the summit loop trail. However, the change maps suggest a relatively small amount of vegetation regrowth within these areas. Interestingly, large amounts of vegetation regrowth were discovered outside of the loop trail.

A question in this exploratory analysis was whether the minimal impact messages along the summit loop trail could be detected as effective at reducing impact to the vegetation. Figure 5 shows an area where a signpost message was placed in the mid 1990s, and a large amount of vegetation reduction was discovered between 1991 and 1996, but no further reduction between 1996 and 2004. Although it cannot be certain that this vegetation increase between 1996 and 2004 is a result of the posted message, one suspicion is that the indirect management approach has effectively altered visitor behavior. This possibility is consistent with research that has suggested public values and attitudes have been shifting away from anthropocentrism toward the biocentric end of the spectrum (Cordell & Tarrant 2002).

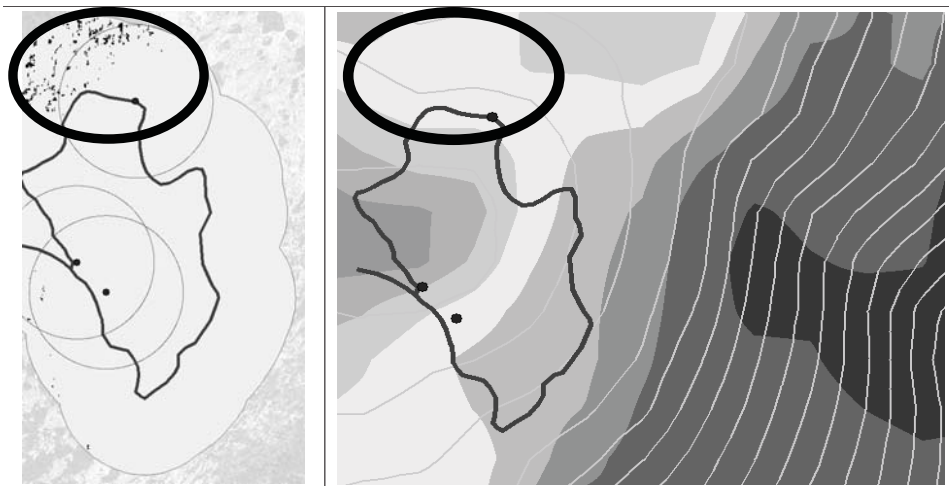


Figure 5.—Vegetation reduction between 1991 and 1996 (left) and Slope Analysis (right).

The slope of the summit area represents a possible explanation for the convergence of the vegetation reduction between 1991 and 1996 (left image in figure 5). As we see in the right image of figure 5, the slope is very steep in the east area of the loop trail compared to other areas. The slope could cause visitors who want to enjoy viewpoints from the summit of Cadillac Mountain to use the north area, which is relatively flat. Considering crowded conditions are common on the summit of Cadillac during the summer months, this Northern end of the summit loop trail is likely the preferred destination for people to stray off the loop trail for privacy.

Two main conclusions were drawn in relation to the study objectives and results. First, vegetation change detection is clearly a feasible approach for assessing vegetation impact in Acadia National Park. The change data will be useful for monitoring further changes over time on Cadillac Mountain; the ability to compare these data with future change images will add a valuable component to current monitoring initiatives in the park. The change data could also potentially be important for analyzing the effectiveness of management actions. However, it is difficult to develop confidence that vegetation change is a direct result of visitor impact. This is especially true in a sensitive area such as this sub-alpine zone, where natural events also have long-lasting effects.

6.0 LIMITATIONS AND RECOMMENDATIONS

This study set out to explore the applicability of a tool, thinking that with promising results the next step would be to address some important wrinkles. Two main limitations exist within the study approach. First, although the imagery used in the study was less coarse than the popular alternative, the use of even more accurate data would likely have allowed for the detection of greater, and more detailed, change. Also, this study used single band, or black and white imagery, which requires an extra subjective processing step that would not be required with multi-spectral, or colored imagery. Multi-spectral data provide the ability to use color theory equations instead of counting on the human eye to identify change. Second, the sensitivity of the study area limited confidence that detected change is a correlate of management intervention. Although the vegetation change imagery will be helpful as baseline data, the slow rate of re-growth prevents the identification of causal relationships. This difficulty is particularly present with a location such as Cadillac Mountain, where vegetation reduction has been evident for decades because of high visitor use.

Two main recommendations for further research are suggested considering the implications of this study. First, this study method should be replicated in an area more susceptible to change. This could be a recreation area that is only beginning to receive higher levels of use, or a visitor area with a greater variety of plant species. Second, this study should be replicated using higher-resolution, and multi-spectral imagery. Imagery with greater accuracy would enable testing of the effectiveness of the physical barriers. If the physical barriers are found to protect vegetation, the enclosed areas could potentially be used as control sites to detect whether vegetation impact is actually decreasing as a result of the management actions. They could also serve to develop an understanding of the rate of sub-alpine species regeneration in heavily impacted areas as a result of indirect management implementations.

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VISITOR EMPLOYED PHOTOGRAPHY: ITS POTENTIAL AND USE IN EVALUATING VISITORS' PERCEPTIONS OF RESOURCE IMPACTS IN TRAIL AND PARK SETTINGS

Catherine E. Dorwart
Department of Parks, Recreation and Tourism Management
North Carolina State University
Box 8004 Biltmore Hall
Raleigh, NC 27695
cedorwar@ncsu.edu

Roger L. Moore, Ph.D.
North Carolina State University

Yu-Fai Leung, Ph.D.
North Carolina State University

Abstract.—The purpose of this study was to examine visitors' perceptions and to determine how their perceptions affected overall recreation experiences along a 2.9-mile segment of the Appalachian Trail in the Great Smoky Mountains National Park. A purposive sample of 28 visitors was selected for this study. The study consisted of three parts, including a trail impact assessment of the target trail, a visitor employed photography (VEP) exercise, and a brief post-trip interview. This paper focused specifically on the VEP exercise. After analysis was completed, four perceptual themes emerged: nature-oriented details, scenic values, management influences, presence of other people, and depreciative behavior. We concluded that using VEP could help improve understanding of the relationships among resource impacts, perceptions, and outdoor recreation experiences. In addition, it could be useful to future trail management and supplement other visitor data collection methods.

1.0 INTRODUCTION

Park and trail managers are generally charged with a dual mission, to protect natural resources and to provide for the appropriate public enjoyment of these resources. A significant component of this responsibility is understanding visitors' experiences. Various techniques for collecting data such as surveying, interviewing, and evaluating written material have been used to capture, assess, and understand park and trail visitors' perceptions and experiences. One popular visual method is photo elicitation, which often uses 35mm or computer edited photographs generated by the researcher to assess visitors' preferences, acceptability of impacts, or standards of quality (Kaplan & Kaplan 1989, Manning et al. 1996, Kim et al. 2003). Visitor employed photography (VEP) is another visual technique that shows promise for outdoor recreation research. Outdoor recreation researchers have used VEP successfully to assess visitors' perceptions of parks and other recreation places, to understand the scenic value of trails, and to explore the processes inherent in participants' outdoor experiences (Cherem & Driver 1983, Cherem & Traweek 1977, Loeffler 2004, Taylor et al. 1995).

Due to VEP's potential for assessing what people find important, it was employed in this qualitative study to examine visitors' perceptions and experiences along a high-use segment of the Appalachian Trail (AT) in Great Smoky Mountains National Park (GRSM). The purpose of this grounded theory study was to understand GRSM visitors' perceptions of a specific hiking trail environment and to determine how their perceptions affected their recreation experiences. The study objectives were to determine the following: Did visitors perceive certain elements and resource conditions on GRSM trails? If so, what was the nature of their perceptions? And, in what ways did visitors' perceptions affect their outdoor recreation experiences?

2.0 BACKGROUND

Many studies of people's evaluations, conceptualizations, and relationships with the natural environment (in particular perception and preference in relation to experiences of nature, landscape, and the environment) have been guided by the landscape perception paradigm. This paradigm provides a framework for explaining how different people form perceptual categories to identify characteristics that are most important in terms of the ways the environment is experienced. The paradigm further helps identify why something (e.g., encounters with others, trail impacts, scenic views, design of the path, social or environmental conditions) will be perceived as negative or positive to the experience.

Ndubisi (2002) clarified that studies of "landscape perception seek to understand human values and aesthetic experiences in order to take them into account in creating and maintaining landscapes that are socially responsible and ecologically sound" (p.197). Central to this ideology is a belief that visitors interpret the environment that they are in, in terms of their needs, and prefer settings in which they are likely to function more effectively (Kaplan & Kaplan 1989). Further, essential to environmental perception research is the recognition that perception is an interaction between humans and environment that is dynamic, inextricably linked to the whole psychology of the observer, and immersed in the environment that is experienced (Taylor et al. 1995).

Therefore, different methods of data collection will be needed to measure these different elements of visitor behavior, meaning, and knowledge. It is crucial to understand the inherent differences in applying each method (Shelby & Harris 1985). Further, in light of varying resources, funding, visitor accessibility, and technologies available, managers and researchers will need to find the best method when collecting data on visitors' perceptions and experiences.

2.1 Current Methods

A review of the current research related to visitors' perceptions of recreation impacts found that there are various approaches to collecting visitor data, and demonstrates that there are positive and negative factors associated with each method.

Mailed questionnaires, post-trip interviews, written evaluations, photo elicitation, and videos have been the predominant instruments used to collect off-site data. Research concentrating on visitors' perceptions has used survey questions regarding hypothetical situations (Shafer & Hammitt 1995), evaluations of written descriptions (Shelby & Harris 1985), and post-visit mail surveys (Noe et al. 1995) to investigate the acceptability of resource impacts. Several have noted that the use of hypothetical survey questions may be a relatively ineffective method because it forces respondents to make judgments separate from actual site conditions, so respondents may interpret different things from the same list of impacts (Kim et al. 2003, Shelby & Harris, 1985). Moreover, respondents may react to the *idea* of an impact rather than an actual *perception* of the impact (White et al. 2001). Finally, Kim et al. noted that "respondents may also interpret or imagine quite different things, even on the same list of items" (p. 283) when taking a written survey. Therefore, selecting the correct wording is often challenging. All of these issues may limit the validity of findings from written descriptions, post-visit, and mailed surveys. However, such off-site survey methods could be less costly and more convenient, and they can be administered without additional impacts to the resource.

A majority of such studies have employed on-site open-ended interviews (Farrell et al. 2001) and on-site closed-ended surveys (Kim et al. 2003) to assess visitors' perceptions and evaluations of impacts. Farrell et al. (2001) chose to use open-ended interviews rather than written surveys for the following reasons: first, written surveys may cue visitors to respond "properly" by using words like "destruction," and second, interviews would allow them to detect important elements of evaluation that would be lost with a written survey. On-site methods are advantageous because they provide the most realistic exposure to the impacts being evaluated. In addition, respondents evaluate the impact while they are exposed to it, which reduces mental processing of impacts. Therefore, it seems probable that on-site methods will produce a more valid, reliable assessment of impact perceptions.

Conversely, scenic views or other site attributes may distract on-site respondents from evaluating specific impacts. Several studies have used a photo survey method to address this weakness of on-site assessments (Kim et al. 2003, Shelby & Harris 1985). Shelby & Harris (1985) explained that "If the goal is to evaluate a specific environmental condition, such as the extent of bare ground, photos…may allow respondents to better focus on that characteristic, without being influenced by other features such as the quality of the view or proximity to water" (p. 59). Using photos may lead respondents to rate their perception of impacts without considering other factors. In addition, respondents do not have to imagine impacts, as they do with a written survey method, so there is less likelihood for error from wording and interpretation (Kim et al. 2003). Photographic

evaluations may also be more economical, timely, and convenient than on-site visits.

Photographs have been used extensively in landscape assessment studies, and have been confirmed as a valid substitute for on-site evaluations (Kellomaki & Savolainen 1984, Shuttleworth 1980). Photographs have also been utilized in recreation management studies to assess crowding norms (Heywood & Murdock 2002, Manning et al. 1996, Manning et al. 2001, Manning et al. 1999). In fact, Manning et al. (1999) suggest that visual presentations of normative scenarios may result in more valid crowding norms. Past studies of recreation impacts have also implied that evaluations of impacts based on photographs are similar to ratings made in the field (Kim et al. 2003, Shelby & Harris 1985). Meitner (2004), who used "surrogate methods" to assess people's perceptions of scenic beauty (methodological approach was to use different types of photos, 360 degree views, panoramic, slides, etc.), concluded that the use of alternate methods is necessary. He claimed that they are a preferred and cost-effective method of assessing human perceptions and evaluations of natural environments (p. 4). Addressing "representational validity", he also stated that various studies report high levels of consistency between perceptual judgments and expressed preference based on photos versus direct experiences of landscapes. Although some researchers suggest that photos may allow respondents to better perceive specific features within the landscape, Zube et al. (1974) found that photos were less reliable for the perception of specific features within the landscape. Furthermore, photos cannot display non-visual impacts like odors and sounds, nor can photos adequately represent hard-to-photograph components like overall forest condition (Kim et al. 2003).

However, research has found that VEP, which is a method that takes a camera out of the researcher's hands and places it into the control of the visitor (participant), actually captures the dynamic perceptual interaction as it happens, without redefining the visitor's recreation experience. In addition, it may provide better focus on specific impacts and better represent the conditions under examination. Researchers have found that responses stem as directly as possible from the perceptions of on-site visitors (Cherem & Driver 1976, 1983) and VEP has high potential as a resource tool in terms of reducing experience intrusion (Taylor et al. 1995).

3.0 METHODS

3.1 Site

This study took place in GRSM, located in North Carolina and Tennessee. GRSM is the most visited National Park in the country and one of the most threatened, appearing on the America's Ten Most Endangered National Parks list for six consecutive years (NPCA 2006). Nearly all of the 800 square miles of forested parkland within this International Biosphere Reserve and World Heritage Site are proposed as designated wilderness, and are therefore managed for "unimpaired" resources and outstanding opportunities for primitive and unconfined recreation. The park's trail system is essential in both these regards, providing visitors with a diversity of recreation experiences depending on interest, level, and outcome desired. Therefore, within this park, a 2.9-mile segment of the AT headed north out of Newfound Gap was selected that exhibited the following criteria: a single-track natural trail with a variety of resource conditions, well traveled, scenically beautiful, and allowing for a variety of uses.

3.2 Sample

A purposive sample (using theoretical sampling methods) of 28 AT day hikers headed north out of Newfound Gap were asked to participate in the study. Participants were intercepted at the trailhead during September and October 2005. Only those participants who planned to hike up and back along the 2.9-mile stretch between the Newfound Gap Trailhead and Icewater Spring Shelter that day were chosen.

3.3 Instruments

The VEP method employed was adapted from previous studies (see Kim et al. 2003, Lynn 2000, Taylor et al. 1995) and entailed having participants take pictures along the trail, documenting information about their pictures and experiences in a log, and participating in an interview after they finished their trail trip. Once the park visitor agreed to participate, he/she was given a disposable 24-exposure digital camera, and asked to photograph those elements/features of the trail environment that added to or detracted

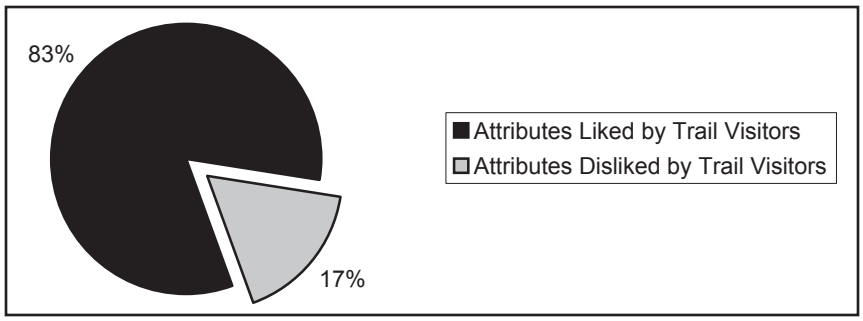

Figure 1.

from the quality of their experience. The goal was to capture images of those elements or locations in the trail environment that had the strongest effects on the quality of the participant's trail experience. In addition, each participant was given a "Photograph Log Booklet" and asked to record details for each photo that related to their general experience on the trail. Specifically, the photograph log asked such questions as: What element/feature of the trail environment did you photograph? Describe why you selected this element/feature of the trail environment to photograph. Describe what type of effect this element/feature of the trail environment had on your overall experience. This provided the researcher with the photographers' intentions regarding the objects photographed. After each participant returned from the hike, he/she was asked to turn in the camera and answer several open-ended questions related to their trip. A general interview guide approach was used (Patton 1990) and the answers to these questions were recorded. The semi-structured interviews supplemented the VEP assessment and led to richer and thicker descriptions of each participant's experience. After visitors completed their journals and interviews, they were asked to fill out a brief note card which asked them how many times they visited the park, their level of income and education, their age, and whether they were willing to be contacted for follow-up questions.

3.4 Data Analysis

Data analysis involved constant comparison (journals) and content analysis (photos) based on work by Strauss and Corbin (1998) and Henderson (1991). Once the data sets were compiled, the researchers began a process of constant comparative analysis, which involved open and axial coding. In open coding, the researchers formed initial categories of information about the visitors' perceptions and their outdoor recreation experiences. In each category, properties or subcategories were located and several properties emerged. Next, the data were coded using axial coding, through which we began to identify central themes. Finally, enumerative strategies were used to supplement descriptive data resulting from analysis of the journals (Henderson 1991). Photos were divided into two piles based on whether the participant had indicated in their photo log that the elements photographed were positive or negative. Then each group was organized, based on themes. In addition, pictures were coded and numbered (noting how many times certain elements came up in each picture) so that the investigators had an idea of how many times each theme was photographed. The investigators also coded and counted data within each photograph to see which attributes of the trail (i.e., scenic vistas, fallen trees, exposed tree roots, people, etc.) were photographed most often. These attributes were then categorized.

4.0 RESULTS

In general, study participants were well educated, came from households with a high income level, and were first-time users of this part of the AT. Thirteen of the participants were male, and fifteen were female. Analysis of the photographs (n=274) and photo logs (n=28) found that participants noticed both negative and positive aspects of the trail environment. In addition, 83 percent of the pictures taken contained attributes that visitors liked and 17 percent of the pictures contained attributes that were disliked.

Interestingly, in both sets of photographs (those that reflected attributes that visitors liked and disliked), the

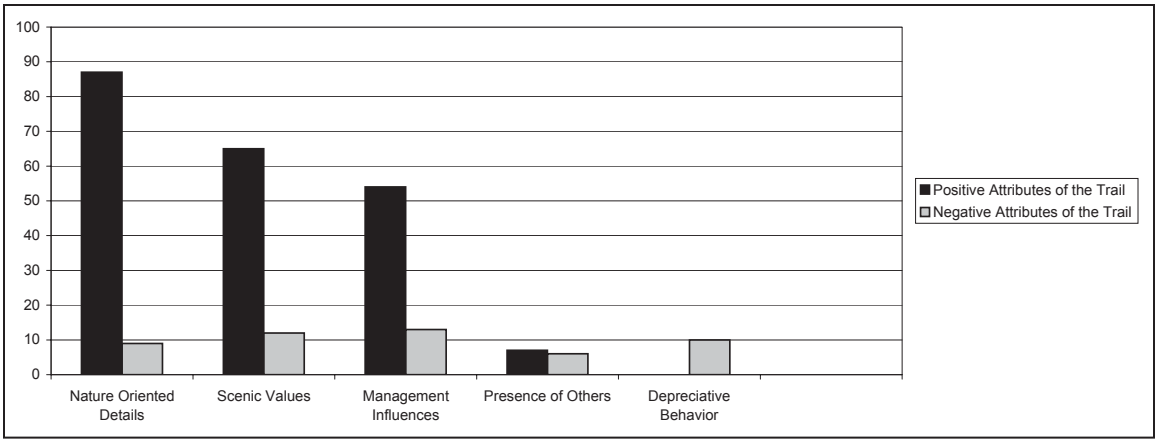

Figure 2.

same perceptual themes emerged—nature-oriented details, scenic values, management influences, presence of other people, and depreciative behavior. These elements were organized in order—from the element that was captured most often in the pictures to the element that was least photographed by visitors along the trail. However, from analysis of the transcribed photograph logs we found that noticing these attributes did not detract significantly from the participants' overall outdoor experiences.

These findings were consistent with past trail perception and preference research, which found that people prefer trails that are compatible with the natural surroundings and that perceptions of only *certain* aspects of the trail environment affect experiences.

4.1 Themes

As noted above, after an analysis of the photograph logs and photographs was completed, several themes emerged from the data. These themes are explained in greater detail in the following sections.

Nature-oriented Details

Whether hiking alone or with a group, each participant given a camera during the day-hike overwhelmingly noticed nature-oriented details such as plants and wildlife. This is consistent with Kaplan and Kaplan (1978), who found that most people prefer settings that are "green" and that nature content is an important characteristic of preferred scenes. This was reflected in subjects' pictures as well as through an analysis of the photograph logs. These photographs were supplemented by themes emerging from an analysis of the logs. When asked what they were photographing and the type of effect seeing these elements had on the recreation experience, one coupled noted their appreciation of the "flowers and bees…nature working its lifecycle" and the "calming" effect that perceiving these elements had on their visit. Two middle-aged women also noted the positive effect the plants had on their experience. "Dead tree with mushroom [and] moss…[which was] allowing dead growth to support existing growth - ecosystems" was reminiscent to them of "how nature wanted it to be." In addition, two women in their late 20's found solace in the "green ground cover [and] moss in roots of the tree" because it was "so delicate in texture…brilliant green [and] soft." They noted, "It is the simple small parts of nature that we are amazed by even in a large massive forest."

The same nature-oriented details (that so many visitors found to have a positive affect on the experience) contrarily had a negative effect on others. For instance, one young couple claimed that the "dead tree [and] moss" had a negative effect on their experience because they "did not like the formation" and that it created a "bad view." Similarly, a young mother visiting with her family wrote that seeing a natural "cave" was a negative experience because it made her a "little scared because [she] wasn't sure what was living in it."

Scenic Values

It came as no surprise that the number one reason that people were taking a day-hike along the Newfound Gap

trail was for the scenic views. As previous research has found, visitors prefer scenic vistas, restorative settings, and sites along the water's edge. These elements seem to affect the perception of visitors' surroundings and of the trail environment or landscape. Therefore, this was the second most photographed element. One middle-aged male hiker—who had once visited this trail many years ago—found joy in the "high altitude vistas" writing, "It's one of the reasons I chose this hike [for the] inspiration (hey I'm a pastor—inspiration is my business)." An older gentleman agreed. It is the "vista with [the] clouds… beautiful expansive views [I am] in awe…unfortunately you can hear the vehicles on the road below."

This contradictory type of response was prevalent, because though each participant appeared to love the views, such negative aspects as perceiving invasive species, wooly adelgid damage, pollution or smog, and acid rain came up often in their logs as negative aspects of the view. For instance, one man wrote seeing both the "view and haze" had a positive and negative affect on his experience. "Hiking for views is an important part of [the] Smokies experience. [I] love the views but [am] concerned about the air quality." Similarly, two female science teachers were deeply disturbed by the dead trees. "I hate to see the dead trees because they are dying from disease" they noted. "[We] are sad and concerned for the future use of the forest." Thus, perceptions of the same scenic elements along the trail emerged as both positive and negative contributors to visitors' experiences.

Management Influences

The third theme to emerge was an overwhelming perception (and often an appreciation) of trail and park management practices along this 2.9-mile stretch of the AT. One male hiker enthusiastically wrote next to his picture, "Shelter at Icewater Spring…very nice…I'll be back to camp!" Another participant recorded, "Stairs on a long uphill stretch…somebody went to the trouble and expense of trail maintenance." He appreciated the "ease of use and safety" and the erosion control. Similarly a young couple photographed "natural steps" because they "liked the natural rock formation incorporated into [the] trail." It left them "pleased" with the experience.

As with other themes, the same elements that some hikers found positive were those that left others with a less than perfect experience. For instance, one participant was frustrated when he got lost, noting the lack of "white blaze markers…I found myself looking for them when unsure of trail direction." A family agreed writing, "Signs…lack of info…we went the wrong way." They further recommended that better marked trails would increase "ease of use and [lead to] less frustration." Visitors' experiences were also affected by the "log stairs [which]…detracts from [the] natural trail." In accordance, two young males found that the stairs were "too many…too close together."

Presence of Others

There has been a significant amount of research on the effects of encountering others during a recreation engagement. Studies on recreation conflict often take into consideration visitors' perceptions and preferences when assessing recreation experiences. Analysis of the pictures and reflections found that people were almost equally split between whether seeing others had a positive or negative effect on their experience. One middle-aged couple noted the positive experience they attained from seeing others. "Friendly hikers, people you meet…what's not to like about the AT," they wrote. The two female science teachers appreciatively noted "backpackers…hot hikers…people getting away from crowds and taking advantage of the park…wow, I'm always impressed with backpackers!"

However, many visitors had a negative experience noticing other people on the trail. This may be because visitor conflict is often asymmetrical (one group consistently reports that it has a conflict with a competing group all or most of the time; and conversely the competing group reports experiencing little or no conflict) (Hoger & Chavez 1998). Another reason that visitors may have had these contradictory experiences may be their attitudes and norms. "The social power of a norm is a function of the interaction between the cognitive component (expectations about behavioral standards and/or obligations) and the emotional component (the costs or benefits of sanctions for the behavior)" (Heywood & Murdock 2002, p. 284). One

lone hiker claimed that "people [had a] substantial effect on the wilderness experience" and that he "would prefer to encounter fewer people" during a hike on the AT. Another young couple had a similar perception, writing "People…every other minute you run into other people [there is] no seclusion or privacy," indicating possible crowding problems. A middle-aged woman also did not like all the people, stating, "People 'hiking' on [the] trail aggravated the experience." This led to a negative experience with "impatient hikers 'pushing' [her] along the hike."

Depreciative Behavior

Unlike the other four themes, this theme was the only one that included pictures, comments, and attributes that were all negative and wholeheartedly disliked on the trail. Elements that were included in this theme also had only a negative effect on visitors' experiences. This finding supports previous research on trail and park research. In their study, Roggenbuk et al. (1993) found that such factors as damage to trees, noise, and litter influence the wilderness experiences. Visitors in their study rated site impacts as having more of an influence on their wilderness experiences than encounters with others on the trails. Similarly, Lynn et al. (2003) discovered that litter, tree and plant damage, and fire rings were all noticed by hikers, and had the greatest effects on hiking experiences.

One male relayed his disgust with some people's actions by including a photograph of a "tree used as a bathroom…[noting] it definitely affected my experience today…Some guy had just stopped to crap about 6 feet from the trail and it reeked!" Another participant wrote that seeing a "water bottle in the brush…it shouldn't be there...it's discouraging to see people can't carry their trash out with them," negatively affected her experience. Finally, two middle-aged women photographed a "cigarette butt on [the] trail" explaining, "people should leave no trace behind—it is a nuisance when people are smoking on the trail."

5.0 DISCUSSION

This analysis of visitor data initiates the process of asking whether VEP is a viable approach for capturing visitors' perceptions and experiences and for assessing what it is that visitors find important during their park visits. We feel that these are questions that all researchers need to ask themselves before undertaking a visitor behavior study. Researchers have found that using this method alone or with other qualitative methodologies such as interviews or participant observations can illuminate dynamics and insights not otherwise found through other methodological approaches (Clark-Ibanez 2004). We concur, and found that the use of respondent-generated photographs and photo logs were keys to gathering perceptions and to the memory of the park experience (Taylor et al. 1995). We also found that using this approach empowered the interviewees and produced richer data. While there is a large body of knowledge on biological and physical assessments of recreation impacts, very few studies have examined visitors' perceptions of the trail environment and how resource conditions affect visitor experiences. However, information on visitor perceptions is integral to carrying out both parts of the National Park Service's mandate. By understanding visitors' perceptions of resource conditions, managers will be better able to identify the most critical areas in the system and prioritize trail resource elements or conditions to be addressed. In addition, it could help managers with the design of future trail systems.

In conclusion, this method shows great potential in capturing this information and could be a powerful approach in the future when combined with other methods such as surveys or interviews. When the social/human dimension was introduced into the predominantly hard science field of natural resource management, we created an opportunity for integrating qualitative approaches into our research. Further, mixed-methods research can be used to develop integrated research that actually addresses the questions visitors, managers, and researchers are asking. Introducing qualitative research into integrative research creates thicker descriptions and richer data, and addresses different questions from quantitative data. Research that combines both approaches can provide more valuable data in guiding future management. Further research is needed that integrates information on visitors' perceptions, the measurement of actual resource conditions, and the effects of perceptions on outdoor recreation experiences. This study could serve as a basis

for future research focused on the development of a conceptual model for measuring these aspects and for guiding management strategies.

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Leisure Motives

GENDER-BASED MOTIVATIONS OF NON-RESIDENTIAL BIRDWATCHERS IN NEW YORK STATE: A QUALITATIVE STUDY

Mary Joyce G. Sali
State University of New York
College of Environmental Science and Forestry
203 Marshall Hall
1 Forestry Drive
Syracuse, NY 13210

Diane M. Kuehn
SUNY College of Environmental Science and Forestry

Abstract.—Birdwatching is the fastest growing outdoor recreation activity in the United States, and birdwatchers are an important economic development force in many rural communities. Wildlife management agencies are being challenged to develop products and programs for non-consumptive natural resource users such as birdwatchers. For effective planning and management of these programs, it is important to understand the characteristics and motivations of birdwatchers.

The purpose of this study is to explore, through qualitative research methods, the motivations of male and female non-residential birdwatchers. Sixty birdwatchers (i.e., 30 males and 30 females) were interviewed by phone using an interview guide. The interviews were recorded, transcribed, and analyzed. Results indicate that motivations of non-residential birdwatchers can be grouped into five categories (i.e., emotional, intellectual, physical, social, and spiritual). Emotional motivations were the most commonly indicated concepts. Analysis of the qualitative data also revealed similarities and differences in motivations between male and female birdwatchers. Results of this qualitative study will aid in the development of a birdwatcher participation survey that will be used for a quantitative investigation on motivations of birdwatchers.

1.0 INTRODUCTION

Birding is a popular outdoor activity in the United States (Cordell & Herbert 2002). Forty-six million Americans aged 18 years and older participated in birdwatching in 2001. These birdwatchers spent an estimated $32 billion that generated $85 billion in economic benefits in the United States. This effect on the economy also produced $13 billion in tax revenues and supported more than 863,000 jobs. The states of New York, California, and Pennsylvania had the most birders (La Rouche 2003).

To be considered a birdwatcher, an individual must take a trip a mile or more from home for the primary purpose of observing birds or must closely observe or try to identify birds around the home (La Rouche 2003). Watching birds around the home is the most common form of birding. Eighty-eight percent of birders (approximately 40 million individuals) are backyard birders. Birders who take trips away from home (i.e., "away-from-home or non-residential birdwatchers;" La Rouche 2003) accounted for 40% of birders (about 18 million). Those who notice birds while mowing the lawn or picnicking at the beach are not considered to be birders. Trips to zoos and observing captive birds also do not count as birdwatching.

Wildlife management agencies and recreation service providers have recognized the importance of birdwatching to the U.S. economy and thus are being challenged to develop better programs and products for the birdwatching population. They are also faced with a number of management issues that have emerged in connection with the growth of birdwatching. These issues include possible impacts of birdwatching on nesting birds, the trampling of soils and vegetation, and the compatibility of birdwatching with other forms of wildlife recreation (Kellert 1985). In order to address the aforementioned issues and to develop programs and products that meet the needs of birders, a more thorough understanding of the motivations of birders is needed.

The purpose of this study is to identify motivations of male and female non-residential birdwatchers using qualitative methods. It should be noted that this study is exploratory in nature; results were used as the basis of a quantitative investigation that took place in the spring of 2006. The results of this qualitative study will be combined with those of the quantitative study to provide a stronger support for the results through convergence and corroboration.

1.1 Motivations of Wildlife-Related Recreationists

In a study of motivations of hunters, Decker et al. (Decker et al. (2001) concluded that the majority of specific goals for wildlife-related recreation are included in three categories: (1) affiliation (i.e., individuals become involved in an activity primarily to accompany another person and to enjoy their company or to strengthen/ reaffirm personal relationships); (2) achievement (i.e., wildlife recreationists become involved in an activity primarily to meet some standard of performance); and (3) appreciation (wildlife recreationists seek the sense of peace, belonging, and familiarity and the resulting stress reduction that they have come to associate with the activity).These three goal-orientations provided a framework for a wildlife recreation involvement model created by Decker et al. (1987). The goals (i.e., achievement, affiliative, and appreciative) of the individual combined with psychological (internal) and sociological (external) influences determine a person's involvement in wildlife recreation. However, involvement has a temporal dimension. For example, over time an individual may try the activity, identify with it, and adopt it as a means to meet his or her goals. A change in motivations occurs over time, shifting from an achievement or affiliation orientation during initial involvement to appreciation orientation during continued involvement.

These goal-orientations have been tested for both consumptive and non-consumptive wildlife-related activities. Decker and Connelly (1989) verified the existence of affiliation, appreciative, and achievement-oriented goals among hunters and they concluded that involvement in wildlife recreation is a dynamic process with the goal orientation changing with increased experience. McFarlane (1994) used the three above-mentioned goals to group motivations of birdwatchers and added a fourth goal called "conservation-related motivation" (p. 365). Kuehn (2002) adapted the three goals in relation to fishing participation in different life stages and found that affiliation influenced the level of fishing participation during adolescence and adulthood.

Scott et al. (1999) examined the motivations of participants in the Great Texas Birding Classic and identified four dimensions of motives: competition, enjoyment and conservation, sociability, and self expression. Enjoyment and motivation constituted a single motivational dimension. In McFarlane's study (1994), conservation and enjoyment represented separate dimensions. Sociability was also regarded as an important motive for participants in the birding competition. In contrast, affiliation was relatively unimportant among Canadian birders (McFarlane 1994). It is important to note, however, that McFarlane (1994) focused on general motives for birdwatching, whereas Scott et al. (1999) were concerned with why people participated in a birding event. The results of the above-mentioned studies provide valuable insights into the varied motivations of birders, indicating that non-residential birdwatchers might also have different reasons for participating in birdwatching.

In addition to the need for a better understanding of motivations for birdwatching, more information on the influence of gender on birdwatching is also needed. The 2001 National Survey on Fishing, Hunting, and Wildlife-Associated Recreation (La Rouche 2003) shows that a slightly larger percent of birdwatchers were women (52%). In an earlier study, it was found that more male birders (85%) participated in a birding competition (Scott et al. 1999). In a more recent study (Scott & Thigpen, 2003), participants in a birding competition were found to be disproportionately female (74%). Differences in primary motivations were also found to exist between genders. Other studies also indicate that gender likely influences recreation participation. For example, results of qualitative interviews of anglers done by Kuehn (2002) found that males were more achievement-oriented while females were affiliation-oriented. Gender can be an important factor to take into account in understanding birdwatchers' motivations.

2.0 RESEARCH METHODS

This exploratory study used qualitative data collection and analysis techniques to provide information on the motivations of non-residential birdwatchers in New York State. The sample of interviewees was chosen through a three-step process. First, all the names with corresponding e-mail addresses listed on the 2004 American Birding Association (ABA) membership directory were retrieved from each of the 20 ABA regions in New York State.

Only those who are residents of New York State were chosen. Second, an e-mail requesting birdwatchers to participate in telephone interviews was sent to the sample of birdwatchers. Twenty-five males and 17 females responded to the e-mail indicating their willingness to participate in the interviews. Third, snowball sampling was employed by asking those who were interviewed for names, phone numbers, and e-mail addresses of friends, colleagues, and relatives who participate in non-residential birdwatching. The researcher then contacted the individuals through either e-mail or telephone and asked permission to conduct the interviews. Five males and 17 females responded positively and were interviewed. Overall, a total of 60 birdwatchers (i.e., 30 males and 30 females) were interviewed.

The semi-structured interviews were conducted from April 4 to May 19, 2005 by telephone and were recorded using a tape recorder (with interviewee permission). The interviews ranged in length from 10 to 45 minutes. The interview guide used several questions, but the central question was "What motivates or encourages you to currently participate in birdwatching?"

All the interviews were transcribed using Microsoft Word. Qualitative data derived from the phone interviews were analyzed using QSR-N6, a qualitative software program. Data were analyzed separately for males and females in order to facilitate gender comparisons. General categories and subcategories related to motivations of non-residential birdwatchers were generated from the data analysis. The categories and subcategories that emerged in this phase were used in the development of a birdwatcher participation survey. Quotes were also identified that illustrate trends in the data, and the unique experiences and perspectives of the interviewees.

3.0 RESULTS OF THE STUDY

Of the 60 interviewees, 50 percent were male and 50 percent were female, ranging in age from 33 to 84 with a mean age of 59. All of the interviewees were Caucasian and 68% were married. The average number of years of school completed was 17 years. Five categories of motivations were identified, namely: emotional, intellectual, physical, social, and spiritual. Table 1 shows the five general categories, subcategories, and the number of times each subcategory was indicated by interviewees. The most commonly indicated category was emotional motivation (n=58), followed by intellectual motivation (n=28). Table 2 displays the categories and subcategories of motivations of birdwatchers by gender. Verbatim examples from the interviews are provided.

3.1. Emotional Motivations

Emotional motivations are those relating to emotions or feelings. Five subcategories were identified under emotional motivations (Table 1). The most commonly indicated subcategory is *going outdoors and enjoying wildlife and the natural environment.* A 33-year-old male interviewee who started birding at the age of 4 indicated this subcategory by stating the following:

> *MALE INTERVIEWEE: I just enjoyed it. I like being outside. I like nature. I think it's like hunting without shooting anything…I love being outside. I just grew up with them. It's like part of who I am.*

The second most common emotional motivation is *enjoying the sights and sounds of birds*. The following examples illustrate this type of motivation:

> *MALE INTERVIEWEE #9: To find birds, and just seeing and hearing.*

> *FEMALE INTERVIEWEE #45: I think the aesthetics…the beauty of birds.*

Six interviewees identified conservation of birds as their motivation as shown in the following example:

> *MALE INTERVIEWEE #14: Well, I'm hooked on it, but I'm also a conservationist and a naturalist. And especially if I can, you know, do some activity or pump some money into a local resource that is pro-birding or pro-environment. I like to do that as well.*

Emotional motivations seem to vary by gender as can be gleaned from Table 2. For instance, more males (n=5) than females (n=1) mentioned *conservation of birds* as their motivation. However, more females (n=9) than males (n=4) indicated *enjoying the sights and sounds of birds* as their motivation.

Table 1.—Categories, subcategories, and frequencies of motivations of non-residential birdwatchers

Motivations	Frequency[a]
Emotional	
Going outdoors and enjoying wildlife and the natural environment	28
Enjoying the sight and sounds of birds	13
Enjoying something that is fun, challenging, and exciting	6
Contributing to the conservation of birds	6
Relaxing and escaping from everyday activities	5
Total	58
Intellectual	
Adding a bird to my list	8
Studying bird behavior and bird migration	8
Seeing a new and rare bird species	6
Improving my bird identification skills	2
Sharing knowledge about birds with others	2
Studying birds in their natural habitat	1
Teaching others how to birdwatch	1
Total	28
Physical	6
Traveling to different places	1
Getting physical exercise	1
Taking photographs of birds	1
Total	9
Social	
Competing with other birdwatchers	3
Being with friends who are birdwatchers	2
Meeting new people who have the same interest	2
Enjoying birding with family and relatives	2
Total	9
Spiritual	
Connecting with nature or creation	1
Communing with nature	1
Understanding and appreciating the Creator better	1
Experiencing the peace that birding provides	1
Renewing or refreshing my spiritual self	1
Total	5

[a] = the number of times the item was indicated by interviewees

3.2 Intellectual Motivations

Intellectual motivations relate to knowledge or use of the mind. *Adding a bird to my list* and *studying bird behavior and bird migration* were indicated eight times each (Table 1).

Birders enjoy adding a bird species to their life list as the following examples show:

> *MALE INTERVIEWEE #59: I like the challenge of adding new birds to my list which is pretty difficult to do in the United States anymore. So, it has lost some of the challenge.*

> *FEMALE INTERVIEWEE #26: Well right now, my husband and I are trying to see a member of every bird family in the world. So that's how we plan out trip. We wanted to go seeing five thousand birds by the time… our 70th birthday. In fact, that's what we're trying to plan now… to finish the families. We have three families short before completing everything. We're going to Botswana and Zambia in May. Our next thing is to try to go to the Philippines in February or March next year.*

Table 2.—Frequencies of male and female non-residential birdwatchers indicating their motivations

Motivations	Males Frequency	Females Frequency
Emotional		
Going outdoors and enjoying wildlife and the natural environment	15	13
Enjoying the sight and sounds of birds	4	9
Enjoying something that is fun, challenging, and exciting	2	4
Contributing to the conservation of birds	5	1
Relaxing and escaping from everyday activities	1	4
Intellectual		
Adding a bird to my list	5	3
Studying bird behavior and bird migration	5	3
Seeing a new and rare bird species	3	3
Improving my bird identification skills	0	2
Sharing knowledge about birds with others	2	0
Studying birds in their natural habitat	0	1
Teaching others how to birdwatch	0	1
Physical		
Traveling to different places	6	0
Getting physical exercise	0	1
Taking photographs of birds	1	0
Social		
Competing with other birdwatchers	2	1
Being with friends who are birdwatchers	1	1
Meeting new people who have the same interest	0	2
Enjoying birding with family and relatives	1	1
Spiritual		
Connecting with nature or creation	0	1
Communing with nature	1	0
Understanding and appreciating the Creator better	0	1
Experiencing the peace that birding provides	1	0
Renewing or refreshing my spiritual self	0	1

Also, some birders indicated that they like to study bird behavior and migration:

> *MALE INTERVIEWEE #24: I record information that helps provide us good information regarding the movement of birds.*

> *FEMALE INTERVIEWEE #57: I want to know more about what they are doing and how they behave and how they sing. I read lots of book about them 'cause I want to learn.*

Table 2 shows differences in intellectual motivations of male and female birders. For example, males (n=2) indicated *sharing knowledge about birds with others,* while none of the females mentioned this as their motivation.

> *MALE INTERVIEWEE #35: …and I like to, you know, keep the records of each county as current as possible so that we can leave a legacy to others to look back and say "Well, this was it was like back in the late 20th and early 21st century."*

On the other hand, females (n=2) indicated *improving my birdwatching identification skills*, while males did not indicate this.

> *FEMALE INTERVIEWEE #29: I like to use my eyes and I am good visually. I'm not good in hand-eye coordination, but I'm very good in assessing details and catching motion. And so, it's a challenge that I am up to and therefore can enjoy some of my personal skills.*

3.3 Physical Motivations

Physical motivations are those relating to the body. Six male interviewees mentioned *traveling* while none of the

female interviewees indicated this as their motivation (Table 2). Five of these six male interviewees consider traveling and birding to go hand-in-hand.

> *MALE INTERVIEWEE #14: …the aspect of getting out there and seeing different places…is definitely a draw for me…*

> *MALE INTERVIEWEE #32: …and seeing new different places. It takes me all over the state of New York and I've recorded a life list for all the counties in the state. I think it's the travel.*

One male interviewee uses birdwatching as an excuse to travel as shown in the following example:

> *MALE INTERVIEWEE #27: The foreign travels that we do trying to find members of every family. It turns out that's more of an excuse to travel and to find places that we never ever would have gone to...*

3.4 Social Motivations

Social motivations relate to the interaction of the individual to other people such as personal interactions, relationships, and communication. Both males and females mentioned *competing with other birdwatchers* as their motivation.

> *MALE INTERVIEWEE #4: …there's kind of a competitive aspect to it too. You wanna find something unusual. You wanna go see the things that other people saw.*

> *FEMALE INTERVIEWEE #12: …birds I haven't seen before. I also have three friends that I do a competitive… we do the Montezuma. Yeah, so I'll bird with them a couple of times during the year. So competition. We're the only all-female birding team. I do it for competition but my friends do it for fun.*

A difference in the subcategory meeting people with the same interest can be noted. Two female interviewees identified this subcategory while none among the male interviewees mentioned this as their motivation.

> *FEMALE INTERVIEWEE #16: …And it's also a social… you know, it's a social thing because I'm meeting new friends.*

> *FEMALE INTERVIEWEE #47: …and certainly the social aspect of it. I meet lots of people out there. We meet in the field and I hike with them, walk with them, and enjoy the same thing.*

3.5 Spiritual Motivations

Spiritual motivations are those relating to the spirit, the intangible or non-material, and the search for subjective meaning or intrinsic value. They also relate to supernatural beings and natural forces that exist in the universe. One example of this motivation is from a birder who has 18 years of birding experience:

> *FEMALE INTERVIEWEE #48: I'm not a spiritual person in any ways they perform, but I think it's like meditation. Because you get out there and it's very quiet and all your senses have to be attuned and you have to listen really carefully and it's peaceful. That' how I get in tuned with the universe. Really! Some people are religious and they go to church. I bird and that gets me in tuned really with creation. I have come to the conclusion over the years that that was a big part of it. It is something that puts me in tuned with… with the world and with nature or creation or whatever you wanna call it. It really does put me in tuned. I'm not a spiritual person. I'm not a religious person, so I don't want that misconstrued. I don't really know that I've expressed it really well, but it just came to me at point you know walking in the woods… it's like meditation. It's like when you sit and you center and you breathe and you concentrate. It's really kind of like that.*

Another subcategory under spiritual motivations is experiencing the peace that birding provides.

> *MALE INTERVIEWEE #17: I enjoy the solitude. I frequently, if I have a major talk to give, speech or anything like that… the day before or a couple of days before, I would go out and take my binoculars. And I do that…it kinda clears my head…*

4.0 CONCLUSION AND FUTURE RESEARCH

Research on motivations helps wildlife professionals identify the reasons why people participate in wildlife-related activities such as birdwatching. Information derived from these studies help wildlife agencies create and develop programs and products for wildlife users. In the past, a few studies have utilized open-ended questionnaire items to identify motivations of birdwatchers. In contrast, this study employed a qualitative approach in order to understand in depth the various reasons for participating in birdwatching.

The results of this study show that motivations of non-residential birdwatchers can be grouped in five general categories (i.e., emotional, intellectual, physical, social, and spiritual). The two most commonly indicated categories are emotional motivations and intellectual motivations. Similarities in motivations between male and female bidwatchers were noted. For instance, for both genders, motivations such as *going outdoors and enjoying wildlife and the natural environment, adding a bird to my list, studying bird behavior and bird migration, and competing with other birdwatchers* were indicated. Results also suggest gender-based differences in motivations of birdwatchers. For example, more males than females mentioned *conservation of birds*, whereas more females than males indicated *enjoying the sights and sounds of birds* as their motivation. Males indicated *sharing knowledge about birds with other* and *traveling*, while none of the females mentioned these as their motivations. Females, on the other hand, indicated *improving my birdwatching identification skills* and *meeting new people with the same interest,* while males did not indicate these motivations. The results of this qualitative study will be combined with quantitative research methods in order to understand more fully the concepts being studied.

5.0 ACKNOWLEDGMENTS

The study was funded with support from New York Sea Grant and the State University of New York College of Environmental Science and Forestry. The assistance of the sixty birdwatchers who participated in the interviews is greatly appreciated.

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EXPLORING THE EFFECTS OF ADOLESCENT PERCEPTIONS OF PARENTING IN FREE TIME AND GENDER ON ADOLESCENT MOTIVATION IN FREE TIME

Clifton E. Watts Jr.
Department of Recreation, Park and Tourism Sciences
Texas A&M University
2261 TAMU
College Station, TX 77843-3142

Linda L. Caldwell
The Pennsylvania State University

Abstract.—This study examined how gender and perceptions of parenting related to adolescent motivation during free-time. The sample consisted of 377 ninth-graders from high schools in eastern Massachusetts. Significant gender differences were found for rules enacted, with females reporting more rules in place than males. When examining the relationship between parenting practices and motivation, differences were observed in motivation states based on the provision of specific parent practices by gender. Intrinsic motivation was higher for boys when they reported parents enacting more rules, while more rules undermined girls' intrinsic motivation. External motivation was lower for girls when they reported more parental involvement, while boys were unaffected by this variable. Regardless of gender, amotivation was higher when youth reported parents providing low resource support and few rules. The discussion focuses on how boys and girls respond differently to specific parenting practices and what this means to adult leaders working with youth.

1.0 INTRODUCTION AND BACKGROUND

Parents are widely regarded as the most influential figures in the leisure socialization process of children and adolescents (Collins et al. 2000, Hutchinson et al. 2003) Parental influence is not simply a product of parents' involvement and actions in free time, but often a combination of action and inaction (Caldwell & Darling 1999). Parents can control access to peers, resources, and time to structure behavior, and maintain involvement and support autonomy by demonstrating interest, articulating expectations, and allowing youth to manage situations (Hutchinson et al. 2003). These parenting practices often impact developmental outcomes from free-time experiences, which can be significant as youth make the transition to adulthood (Hutchinson et al. 2003, Outley & Floyd 2002, Rich 2003). The current study examines how parenting practices are associated with different free-time motivation types reported by adolescents and how these vary by gender.

1.1 Conceptual Framework

A key developmental outcome of adolescence is learning how to internalize behaviors that are not immediately intrinsic or internally motivating (Ryan & Deci 2000). Intrinsic motivation refers to behavior performed for the inherent qualities of an activity or behavior, while internal motivation refers to motivation based on qualities of an activity that reflect personal interests, beliefs, or values. Self-determination theory (SDT) identifies internalization as a process by which extrinsically motivated activities are regulated to the self through the support of the basic psychological needs of relatedness, competence, and autonomy (Deci & Ryan 1985, Ryan & Deci 2000). Internalization depends on the degree to which these three needs are supported, and variations of internalization are referred to as forms of regulation.

Ryan and Deci (2000) identify three internally regulated forms of motivation: 1) introjected (i.e., doing a task to conform to personally relevant social norms), 2) identified (i.e., doing a task to fulfill one's self-image), and 3) integrated (i.e., doing a task because it is fully ascribed to one's values and needs). While these forms of motivation have internal appeal, they are extrinsic in nature because they are motivated by an internally relevant outcome, whereas intrinsic motivation is typified by engagement based on an activity's inherent qualities. Internally motivated activities are thought to prepare adolescents for the roles and responsibilities of adulthood through tasks that develop self-direction, self-expression, and motivated involvement (Larson & Kleiber 1993). Furthermore, activities that are internalized may eventually become intrinsic in their appeal as desirable qualities of the activity become more apparent (Ryan & Deci 2000). As internalization needs are supported, youth

are more likely to experience intrinsic and internalized motivation states, whereas a lack of support could lead to external motivation, and worse, amotivation (Ryan & Deci 2000).

External motivation is usually associated with behavior engagement for rewards or to avoid negative consequences. Many activities are initially started for some type of reward, and continued because they offer individuals opportunities for relatedness, competence, and if fully integrated, autonomy (Ryan & Deci 2000). However, activities that are done solely for external rewards lack the power to positively influence development and long term engagement—experiential qualities associated with intrinsically motivated behaviors (Deci & Ryan 1985). Amotivation or action without intent is even worse because the individual attributes all action to external sources. Amotivation is marked by perceptions of incompetence, lack of control, and nonintentional action (Ryan & Deci 2000). Amotivation is generally viewed as developmentally disruptive because it undermines involvement and intrinsic interest in activities that have the potential to offer choice, autonomous action, and long-term engagement—qualities of leisure that aid in the transition to adulthood (Watts et al. 2005).

For years, SDT research has sought to understand the causes of human behavior and the conditions that optimize human development, performance, and well being (Ryan & Deci 2000). Specifically, this research focused on the social-contextual conditions that facilitate the processes of self-regulation and internal motivation. By examining classroom climate, healthcare settings, and work environments, Ryan and Deci have noted similar features present in the bio-social environment that allow for behavior to be internally motivated. Integrating this research, Grolnick et al. (1997) outlined a conceptual model of parent involvement that promotes self-determined behavior. Grolnick et al. identified three central social-contextual dimensions associated with parenting that facilitate internalization. These dimensions are:

1) Autonomy Support—the provision of opportunities by parents to facilitate responsibility and encourage independent action in youth.

2) Interpersonal Involvement—promoting relatedness through and investment of time and resources in a child's interests, and maintaining an environment that assures connectedness.

3) Structure—promoting competence by carefully monitoring and providing guidelines and constraints on behavior.

Using Grolnick et al.'s dimensions of parenting as a conceptual framework, Hutchinson et al. (2003) examined the practices parents used to structure, regulate, and support adolescent free-time use. Hutchinson et al. found that structuring practices were represented by instances where parents communicated expectations, provided rationale for these expectations, explained consequences, and provided feedback to adolescents on how and with whom they spent free time. Structure from parents also included practices to assure involvement in activities that they deemed important or developmentally appropriate. Lastly, parents used activities to control what and with whom their adolescent spent free time, and redirected adolescents from spending large amounts of time in less desirable, unstructured activities. Parents viewed their structuring practices as ways that they could ensure engagement in safe and acceptable behaviors and limit failure in the lives of their children. Hutchinson et al. found that parent autonomy support and interpersonal involvement practices supported relatedness and autonomy support, and was often relationship-based.

Parents related to adolescents by making time to talk about and share activities with adolescents, and being aware of their adolescent's interests and providing resources to support those interests. Parents supported autonomy by giving their adolescents opportunities for self-directed behavior, and facilitated adolescent choice by allowing the youth to make decisions about activities and friends in the free-time context (Hutchinson et al. 2003). Parents also encouraged self-management of these activities and allowed adolescents to structure and plan activities to encourage responsibility.

2.0 STUDY OBJECTIVE

The significance of Hutchinson et al.'s (2003) study is that it frames the self-determination literature to leisure and free-time contexts, and links support for relatedness,

competence and autonomy within specific practices parents use to manage their adolescents' free time. This framework allows for applying Grolnick et al.'s model to examine how specific parenting practices account for differences in adolescent motivation during free time. Given this orientation, the purpose of this study was to investigate the effect of perceptions of parenting on adolescent motivation. The study sought to address the following research question: How do specific perceived parenting practices relate to adolescent motivation, and does this differ by gender?

Gender differences were examined because of differences associated with leisure socialization of boys and girls (Shaw 1994). Boys and girls are often guided toward different forms of leisure, and this pattern may entail differences in rules and monitoring practices used by parents to manage adolescent free time. Furthermore, research suggests that boys and girls respond differently to similar parenting practices. For example, Mboya (1995) suggested that boys and girls respond differently to parent interpersonal involvement. Girls reported higher feelings of competence with higher levels of social interaction and connection to parents, while boys are not impacted positively or negatively with similar levels of parental involvement.

3.0 METHODS

The sample was derived from three suburban high schools in eastern Massachusetts. The study sample consisted of 377 youth from a larger sample of 407 questionnaires from students in ninth grade. Questionnaires were omitted from analysis if the student indicated that they did not live with his/her mother. Exclusion based on absence of the child's biological mother from home was based on the analysis strategy, which was to use perceptions of mother's parenting practices for the perceptions of parenting variable. This approach has been used in previous studies, and it is intended to yield a referent source from which to gauge parenting practices (See Grolnick et al. 2002). Approximately 58 percent were female and 88 percent were European-American. Youth ranged in age from 13-15 years with a mean of 14.2 years. Data were collected within a two-week period during the fall semester of 2003 at each school, and administered with the assistance of teachers in each high school. Prior to data collection at each school, teachers were trained to administer the instrument by the study research team.

An adapted version (to reflect free time) of the College Students' Perceptions of Parents Scale (POPs) (Robbins 1994) was used to measure parent autonomy support and involvement (PASI), while parent structuring (PS) measures were adapted from Hutchinson et al.'s (2002) investigation of monitoring and structure practice study. In all, 31 items (16 PASI, 15 PS) were developed in consultation with Hutchinson and her colleagues, and these items reflect practices identified through their study of free-time parenting practices (Hutchinson et al. 20003). PASI items were measured on a 7-point scale with responses ranging from 1=not at all true to 7=very true. PS items were measured on a 5-point scale with responses ranging from 1=almost never to 5= almost always.

The POPs items were entered into separate principal component factor analyses with varimax rotation to reduce the data into specific parenting practice categories. Items were accepted into specific factors if factor loadings were above .40 and did not crossload onto other factors. The result of these analyses yielded six different areas of parenting practices. PASI consisted of resource support, involved and shared time, and adolescent control. Table 1 provides descriptive and scale statistics for the specific PASI subscales. PS items measured practices around rules, direct monitoring, and guidance and setting expectations. Table 2 provides descriptive and scale statistics for the specific PS subscales.

Motivation was measured using the Free Time Motivation Scale for Adolescents (FTMS-A) (see Baldwin & Caldwell 2003), which assesses five types of motivation: intrinsic, identified, introjected, external, and amotivated. For the purposes of this study, the scale was simplified to include internalized motivation (included intrinsic and identified motivation), externalized motivation (external motivation), and amotivation (α ranged from .71-.77).

Table 1.—Factor Analysis with Varimax Rotation for Perceptions of Parent Autonomy Support and Involvement (n=377)

Factor and Items	1	2	3
Factor 1: Resource Support			
Encourages me to take responsibility for planning and organizing things I do in my free time.	.749		
Provides the resources necessary for me to do the things he or she thinks are good for me in my free time.	.744		
Helps me take responsibility for planning and organizing the things I do in my free time.	.688		
Encourages me to explore and try out different free time activities.	.679		
Provides the resources I need to help me develop the skills I need to do my free time activities.	.672		
Spends a lot of his or her time supporting my free time activities (e.g., driving me to places, etc.)	.539		
Factor 2: Involved and Shared Time			
Share common interest in our free time.		.833	
Enjoy spending free time with my parent during my free time.		.790	
Enjoy doing things together in our free time.		.770	
Factor 3: Adolescent Control			
Gives me the right amount of freedom to do what I like in my free time.			.797
Allows me to decide what I like in my free time.			.687
Never considers things from my point of view when it comes to my free time activities. (R)			.629
Eigenvalue	8.075	1.193	1.060
% of Common Variance	50.471	7.459	6.627
Cumulative Variance	50.471	57.930	64.557
Alpha	.89	.88	.84

Table 2.—Factor Analysis with Varimax Rotation for Perceptions of Parent Structure (n=377)

Factor and Items	1	2	3
Factor 1: Rules			
If I have been out very late at night, I am required to tell her where I was and with whom.	.772		
I need to have permission to stay out late on a weekday evening.	.757		
I need to ask permission before I can decide with my friends what I will do.	.726		
Lets me choose my activities as long as I finish what she asks me to do.	.610		
Factor 2: Direct Monitoring			
Monitors when I come home from free time activities.		.777	
Supervises the parties I have at home.		.694	
Finds out if other parents are present at the parties I go to.		.692	
Monitors how I spend free time.		.661	
Sets a time when I am expected to be home.		.656	
Factor 3: Guidance and Setting Expectations			
Encourages me to be involved with activities that she feels are important.			.758
Sometimes 'pushes' me to do things that she thinks will help me in the future.			.733
Clearly states activities which she approves and does not approve to me.			.700
Eigenvalue	5.785	1.380	1.055
% of Common Variance	41.319	9.856	7.537
Cumulative Variance	41.319	51.175	58.712
Alpha	.83	.83	.70

Table 3.—'T'-Tests for Differences Between Males and Females on Study Measures

	Total (n=377)		Males (n=155)		Females (n=222)			
Measure	M	SD	M	SD	M	SD	t	p.
Internal Motivation	3.974	.565	3.963	.579	3.981	.557	-.303	n.s.
External Motivation	1.956	.703	1.991	.695	1.931	.709	.824	n.s.
Amotivation	2.221	.817	2.200	.799	2.237	.830	-.434	n.s.
Resource Support	5.209	1.380	5.167	1.274	5.239	1.451	-.499	n.s.
Involved and Shared Time	4.638	1.700	4.561	1.624	4.692	1.747	-.737	n.s.
Adolescent Control	5.488	1.317	5.460	1.207	5.508	1.392	-.343	n.s.
Rules	4.114	0.871	3.966	0.907	4.217	0.832	-2.782	.006
Direct Monitoring	3.567	1.082	3.460	1.069	3.645	1.087	-1.633	n.s.
Guidance and Setting Expectations	3.236	1.016	3.259	1.014	3.220	1.014	.368	n.s.

Table 4.—Multiple Regression Analyses Predicting Forms of Adolescent Motivation (n=377)

Variable	r	R^2 Δ	B	SE B
DV Internal Motivation (R^2= .227)			2.413	.189
Sex	.016	.000	.740**	.252
Resource Support	.441***	.194***	.161***	.021
Rules	.308***	.013*	.181***	.046
Sex by Rules Interaction	.060	.020**	-.185**	.062
DV External Motivation (R^2= .132)			1.973	.225
Sex	-.042	.002	.612**	.204
Involved and Shared Time	-.060	.001	.100**	.036
Adolescent Control	-.274***	.087***	-.171***	.034
Guidance and Setting Expectations	.159***	.014*	.091*	.037
Sex by Involved and Shared Time Interaction	-.119**	.028**	-.144**	.042
DV Amotivation (R^2= .142)			3.279	.155
Resource Support	-.343***	.117***	-.153	.032
Rules	-.302***	.025**	-.168	.051

Note: * p <.05, **p <.01, ***p <.001

4.0 RESULTS

Prior to examining the study research question, independent sample t-tests were performed to examine mean differences between boys and girls on all study measures. A statistically significant difference between genders was found when examining perceptions of parents on the rules they enacted in free time, with females reporting the presence of more rules in free time. No significant differences between boys and girls were found for all other study measures. Table 3 reports the results of the t-test analyses.

Hierarchical linear regression analyses were conducted to examine the effects of parenting practices and gender on adolescent motivation. Three different models were tested with the dependent variable varying based on the type of motivation (i.e., internal, external, amotivation). Independent variables were entered as blocks into the regression model with gender entered first, followed by the six POPs variables, and then the interaction terms for gender and the specific POPs variables. Independent variables were removed from blocks if they did not significantly contribute to the variance associated with the dependent variables to yield the most parsimonious regression models. Table 4 shows the results of the multiple regression analyses for each motivation variable.

Internal motivation was predicted by parent resource support and a sex by rules interaction. A significant interaction term demonstrates a significant gender difference based on the provision of rules by parents. Internal motivation was higher for boys when they

reported parents enacting more rules, while more rules undermined internal motivation in girls. Overall, internal motivation was higher for adolescents when they reported high levels of resource support from parents.

External motivation was predicted by a sex by involvement and shared time interaction, adolescent control, and parent guidance and setting expectations. Gender differences in this model were related to the level of involvement and shared time between child and parent. Females reported lower levels of extrinsic motivation when parent involvement and shared time was reported high, whereas parent involvement and shared time had no significant bearing on the reported level of external motivation in boys. Regardless of gender, external motivation was lower for adolescents when adolescent control was higher and parent guidance and setting expectations were low.

Amotivation was negatively predicted by resource support and rules from parents. Unlike internal motivation and external motivation, the prediction of amotivation did not vary by gender. Findings suggest that amotivation was at its peak when parents were reported as not providing resources or rules around free-time use. Specifically, amotivation thrived in parenting environments where parents were uninvolved in their child's free time.

5.0 DISCUSSION

Prior to a discussion of the results, the study limitations should be considered and related to the validity of the study's findings. First, the study used data from a cross-sectional survey of ninth-grade students to test relationships that are probably best measured longitudinally. Relying on this single point in time does not adequately reflect the developmental processes at work. These relationships are often reciprocal and influence each other over time, rather than linear paths of influence that operate in isolation (Sharp et al. in press). Furthermore, a mono-operation bias may be at work as the study relies exclusively on data from one source as opposed to multiple forms of data that can be triangulated to verify study observations (Babbie 1986). Another limitation is related to the use of the perceptions of mother's parenting practices. Boys and girls may differ on how they respond to one parent as opposed to another. Lastly, the sample was a fairly homogeneous convenience sample that might not adequately reflect the experiences of youth from different ethnic, racial, and cultural backgrounds.

One of the most significant contributions of this study is that it categorized parenting behavior into specific types of practices instead of a parenting style, which is commonly used within the literature. The value in these categories is that it provides a level of specificity not found in other studies and applies it to leisure and free time. The study provided interesting findings with regard to how boys and girls experience differences in motivation based on the provision of specific parenting practices.

The provision of rules was related to different levels of internal motivation in girls and boys. For boys, internal motivation was enhanced by the presence of more rules and resource support, while girls experienced high levels of internal motivation when rules were minimized and resource support was high. Compounding this effect is the finding that girls reported higher levels of rules from parents in free time than boys. While there is no mean difference in internal motivation scores, the perceptions of parent's rules enacted in free time for girls had a U-shaped distribution while boys' scores were more reflective of a normal distribution, suggesting that girls could be categorized into a high rules and low rules group. Girls in the high-rules group are those reporting lower levels of intrinsic motivation and higher levels of amotivation, which is a serious concern for this sub-group. Lower instances of internal motivation coupled with higher instances of amotivation can be developmentally disruptive, and keep this group of girls from being involved in structured activities and other opportunities that offer youth the experience of initiative and prolonged engagement (Larson 2000, Ryan & Deci 2000).

The differential effect of parent rules in free time between boys and girls is difficult to interpret. The literature focuses on the impact of too much control and its effect of boredom and rebellion for adolescent boys and girls

alike (Caldwell & Darling 1999). However, this refers specifically to control and not rules in free time. One possible explanation for why more rules benefit boys and are detrimental to girls is related to differences in maturity between the sexes.

Overall, girls mature physically and psychologically faster than boys, and these two indicators of maturity influence subjective maturity (Galambos et al. 1999). Subjective maturity is not always indicative of actual maturity, and may cause problems if youth desire to be mature, but are not. Such adolescents enter a phase of pseudomaturity most often linked with poor stage-development fit (Galambos et al. 2003). However, for those who are mature, the prospect of having to answer to rules might undermine interests and internal motivation because the practices parents enact are not in-line with their child's stage in development. For the same reason, boys might be benefiting from parent rules because these rules protect them from getting in trouble and enhance feelings of competence. The findings underscore the importance of implementing developmentally appropriate approaches when leading and managing youth, and how delicate the balance between being engaged and being disengaged is for youth of this age.

Another possible explanation for why boys and girls are differentially affected by parent rules is related to differences in leisure socialization practices in girls and boys (Shaw 1994). While both sexes acknowledge the existence of specific rules around free-time behavior, girls that perceive more and different rules may feel that they are being oppressed by a parenting environment that is engendering behavior not desirable to girls (Shaw 1994). Ryan & Deci (2000) note that feeling constrained often undermines intrinsic motivation and increases feelings of amotivation, which would explain why girls in the high-rules group would report lower levels of intrinsic motivation. Parents and professionals should take care to understand what youth value and if leadership and parenting practices are enforcing undesirable engendered roles in free time and leisure experiences.

Girls and boys also differed on the effect of parent involvement and shared time on external motivation. In this study, girls reported lower levels of external motivation when parent involvement and shared time was high, and higher levels of external motivation when parent involvement and shared time was low. Parent involvement and shared time had no significant effect on external motivation for boys. This finding supports the widely-acknowledged gender differences between boys and girls in developing a sense of self (Henderson 2005). According to Henderson (2005) boys tend to be task-oriented and allow experiences to drive their sense of self, whereas girls tend to develop their sense of self within the context of relationships. It is quite plausible that girls in this study felt more connected to their mothers, and this connection facilitated regulation through introjection or identification, which are internally regulated, as opposed to externally regulated motivation that seeks rewards or avoids punishment.

Finally, this study supports the idea that amotivation thrives in environments where adults are uninvolved and seemingly uncaring. High levels of amotivation were associated with a lack of resource support and rules in free time, suggesting that children from homes where parents take little interest or provide little direction are most at-risk for action based on amotivation. This generally negative environment does not allow for the compulsion to act. Amotivation results from feelings of incompetence, lack of control, and unintentional action (Ryan & Deci 2000). Uninvolved and uncaring parents and adults can seriously impact an adolescent's ability to develop into a healthy adult when these environments exist. Ryan and Deci noted that amotivation is a serious detriment to personal well being. Studies have shown that highly amotivated youth were less likely to be involved in structured activities and demonstrate initiative, which are theorized to significantly impact adolescents as they become adults (Hutchinson et al. 2002, Watts 2004). Professionals who work with families, and particularly youth, should be attuned to practices that lead to this motivational disposition.

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AN EXPLORATORY STUDY OF THE OUTDOOR RECREATION PARTICIPATION OF FAMILIES WHO HAVE A CHILD UNDER SIXTEEN

Bob Du Lee
School of Human Movement, Sports and Leisure Studies
Bowling Green State University
208 Eppler North, Bowling Green, OH 43402
e-mail: bdlee@bgsu.edu

Alan Graefe
The Pennsylvania State University

Robert Burns
West Virginia University

Abstract.—Family recreation has been recognized as an effective way to nurture family customs and promote healthy youth development. In particular, outdoor-based recreation that includes inherent challenges often offers opportunities for a family to grow together and promotes family cohesion and youth development. Building on earlier research, this study attempts to further explore factors associated with motivation for participating in outdoor family recreation. A series of research questions was developed and analyzed with empirical data. The results indicated that travelers who have at least one child under 16 years of age were significantly different in their motivations and preferences from those who travel without youth.

1.0 INTRODUCTION

Family recreation has contributed to numerous positive family outcomes and plays a vital role in the development of family health, functioning, and strength (Horning 2005). Previous research has shown that family recreation is an effective channel in the development of family customs and promotion of healthy youth development (Couchman 1982, Garvey 1990, Mactavish & Schleien 2000, Kelly 1997, Mannell & Kleiber 1997, Smith 1997). Family recreation refers to the family participating in leisure activities together (Horning 2005). Family members who had often played together reported higher levels of happiness, healthy functioning, and unity because the shared recreational activities provided an environment for open communication, interaction, and problem solving (Nelson et al. 1995). Family recreation not only strengthens family bonds and encourages family cohesion but also consolidates family values and traditions, which youth can carry for life.

There is considerable evidence that family outdoor recreation helps in developing family strength and relationships (Hawks 1991, Hilman & Epperson 1984, Hill 1988). Outdoor programs often incorporate leisure activities that not only develop skills and require physical movement beneficial to health, but also teach perseverance, teamwork, and cooperation among family members (Smith 1997). Further, outdoor recreation is important for healthy growth of youth**.** Most outdoor leisure activities take place in a variety of natural settings that are quite distinct from the constructed environment of the schoolyard or home. Outdoor recreation programs contain inherent challenges and offer opportunities for overwhelming mastery experiences that produce feelings of efficacy and have positive effects on family functioning. In addition, the feeling of collective efficacy through outdoor recreation can be generalized to other domains of family functioning, such as the ability to resolve conflict (Wells et al. 2004).

Therefore, building on earlier research, this study attempts to further explore factors associated with family outdoor recreation participation, aiming at furthering our understanding of the dynamics of family recreation participation in an outdoor setting. More specifically, the study examines recreation behaviors, motivations, and selected characteristics and variables among natural area travelers who are traveling with at least one child under 16 years of age, compared to those traveling without any youth in this age bracket.

2.0 LITERATURE REVIEW

2.1 Family Recreation for Youth Growth and Development

Family recreation has received a considerable amount of attention from researchers in the field of leisure studies over the past few years. Numerous studies have documented the positive relationship between recreation participation and various family outcomes (Freeman &

Zabriskie 2003, Kelly 1997, Shaw 1992, Smith 1997, Zabriskie 2001). Of these outcomes, one of the most important is the impact of family recreation on children's early education. The context of family recreation allows children to acquire skills in social, physical, and recreational arenas and helps to develop interests that influence their lifelong involvement in recreation (Horna 1989). Kelly (1996) and Mannell and Kleiber (1997) further noted that family recreation can be used as an important vehicle for child development. Through role modeling or role taking, parents engaged in structured interactive leisure activities may teach youth moral values, ethics, and good habits, Meanwhile, children improve not only their behavior but also their health and fitness.

In addition, family has been identified as a chief socialization agent (Nisbet 1978). Family recreation cultivates rich opportunities for socialization through which youth acquire social skills. As Kelly (1997) noted, leisure is social in nature. Many leisure activities are performed in a collective format that often allows participants to gain friendship and companionship (Iwasaki & Havitz 1998). Many family leisure programs require interactive activities that encourage intra-family communication and promote child socialization (Horna 1989). Playing together requires cooperation between parents and children. As a result, children may learn how to get along with others, share resources and information, and maintain loyalty to the family (Smith 1997).

Participation in family recreation also helps to promote family health and strengthen family relationships. Sharing leisure opportunities together, family members may engage in teamwork, cultivate collective interests and identity, promote individual commitment, promote the establishment and maintenance of boundaries, and ensure family cohesion (Orthner & Mancini 1991). Joint participation in leisure activities between parents and children may also recreate and maintain parent-children relationships. In particular, shared positive experiences may create a feeling of uniqueness among family members, leading to attachment and bonding in the family relationship (Zabriskie & McCormick 2001).

2.2 Outdoor Recreation for Strength of Family, Remedy of At-risk Youth, and Inclusion of Children with Disabilities

Abundant evidence has shown the positive role of outdoor recreation in promoting family cohesion, maintaining marital stability, enhancing family relations, and improving overall family quality (Holman & Epperson 1984). Specifically, engaging in recreation in an outdoor setting, such as camping, hiking, and backpacking, may also help youth acquire additional survival skills in nature (West & Merriam 1970). Family recreation provides a positive environment that allows children to grow in all aspects, including social, physical, and recreational development. In addition, skills learned in the recreation setting can be carried over into family life. Youths' early engagement in leisure activities will set in motion a life-long interest and involvement in recreation (Horna 1989)

A few studies specifically focused on the positive outcomes of family outdoor recreation participation in relation to building the health of youth. Wells et al. (2004) studied the impact of challenge-based recreation on the collective efficacy of family with youth at-risk. Taking part in a wilderness program, family participants faced three challenges, including strenuous hiking, shelter building, and camping and cooking during a four-day experience. The results indicated that collective family recreation efficacy and conflict resolution efficacy increased for families in all three recreation contexts. Challenge-based family recreation produces collective efficacy within the family, and collective efficacy in one domain can be generalized to other domains of family life.

Family recreation may also provide an inclusive opportunity to invite children with disability conditions to share leisure experiences with other family members. Undertaking such leisure activities collectively can help build family unity, satisfaction, and members' physical and mental health (Mactavish & Schleien 1998). Scholl et al. (2003) also studied the influence of an inclusive outdoor recreation educational program on families that have a child with a disability. In their study, 24 families with at least one child with a disability participated in

a four-day outdoor skill training program that included canoeing, kayaking, dog sledding, and camping. Results indicated that experience gained from the outdoor skill training contributed to an increase in family satisfaction and family cohesion and a decrease in perceived constraints that prohibited whole-family recreation. The authors suggested that outdoor recreation education may be a way to ease constraints on family recreation.

Another empirical outdoor recreation study focused on improvement of parent-adolescent communication. Huff et al. (2003) examined 32 youth who participated in challenging recreation programs in relation to enhancing inter-generation communication. In their study, most of the youth participants were identified as at-risk adolescents who had experienced depression and negative family or peer relationships. Through three outdoor programs offering opportunities to learn a variety of Native American crafts including arrowhead chipping, leather craft, and flute carving, they found that the higher degree of challenge manifested more open parent-children communication. Moreover, regardless of the level of challenge intensity, outdoor recreation can improve parent-adolescent communication.

Thus, building on previous research, the present study seeks to extend our knowledge of the dynamics of family outdoor recreation participation by examining characteristics of travelers in relation to motives of family recreation and family-oriented leisure activities. In addition, the study attempted to explore the distinct preferences by comparing the motivations for an outdoor recreation trip among visitors who travel with a child under 16 and those who do not. Identifying potential users and their motives should help park administrators to plan, develop, and manage family recreation services.

Respectively, three research questions were developed:

> RQ1. Is there a difference in outdoor recreation participation between scenic area visitors traveling with children under 16 and those traveling without children under 16?
>
> RQ2. Is there a difference in the motivations or reasons for visiting the scenic area between visitors traveling with children under sixteen and those traveling without children under 16?
>
> RQ3. What are the factors related to participation in family outdoor recreation?

3.0 METHOD

3.1 Study site

This study was undertaken in 2000 at the Columbia River Gorge National Scenic Area (CRGNSA). The Columbia River Gorge is a spectacular 4,000 foot river canyon straddling the border of Oregon and Washington. The area encompasses 80 miles of land and water along the Columbia River, running from Reed Island, east of Troutdale, Oregon, to Miller Island, near the Dalles, Oregon. The CRGNSA contains 292,500 acres, featuring numerous natural wonders and attractions including more than 120 scenic waterfalls and hiking trails. President Ronald Reagan signed into law an act creating the Columbia River Gorge as a National Scenic Area on Nov. 17, 1986.

3.2 Sample

Data were collected as part of the USDA Forest Service National Visitor Use Monitoring Project in 2000. A series of on-site interviews was conducted to gather information from visitors in the scenic area. Interviews were conducted at 31 sampling sites, including Multnomah Falls, the number-one natural destination in Oregon. The sample was designed to be representative of the total use of the area for the full calendar year. The interview took approximately 5-10 minutes to complete. A total of 1,282 interviews were conducted with an approximate 96 percent participation rate. Respondents' ages ranged from 18 to 87. One-fifth of the respondents were traveling with at least one child under 16, while 80% traveled with no children in their group. Married travelers comprised 60 percent of the respondents (Table 1).

3.3 Measurement of Constructs

The questionnaire used for the interviews included four sections: demographics and trip characteristics, recreation experience and motivations, economics and satisfaction. Activity participation was measured by asking respondents whether they had participated in a list of 26 outdoor recreation activities. The items of trip motivation

Table 1.—Description of demographics and economic status of park users

Variables	N	%
Visiting type		
With-children	223	20
No-children	926	80
Marriage		
Yes	278	60
No	182	40

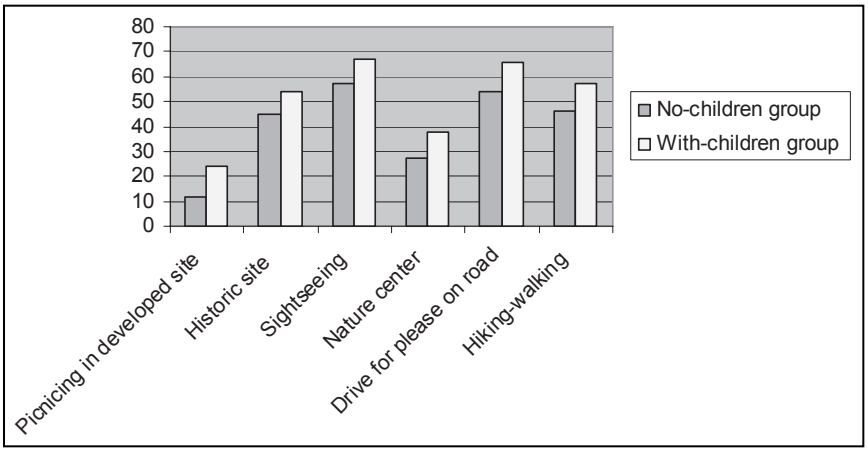

Figure 1.—Comparison of recreation activity participation between no-children and with-children groups.

were designed to measure the major types of motivations, or reasons, for travelers to come to the CRGNSA. These measures were operationalized with nine items using a 5-point Likert-type scale ranging from 1 = not at all important to 5 = extremely important. Marital status was measured with a dichotomous question (yes =1; no=0). Travel distance was calculated using the principle of Euclidian (straight line) distance within a GIS system. Other characteristics of visitation and demographics were measured with closed-ended (multiple choice) questions.

Data were analyzed with the SPSS 13.0 statistical software package and include both descriptive and inferential analyses. Chi-square was used to compare rates of participation in outdoor recreation activities between the with-children group and the no-children group. T-tests were employed to compare the mean scores for the motivations between the two groups. Finally, a multiple regression analysis was conducted to examine the relationships between characteristics of visitors and the importance of the motive of family recreation.

4.0 RESULTS

RQ1. Is there a difference in outdoor recreation participation between scenic area visitors traveling with children under 16 and those traveling without children under 16?

The result from the chi-square analysis indicated that there were significant differences between the two groups for six of the outdoor recreation activities: picnicking, hiking-walking, sightseeing, driving for pleasure, visiting historic sites, and visiting a nature center. In each case, those traveling with at least one child under 16 were significantly more likely to participate than those traveling without children (Figure 1).

RQ2. Is there a difference in the motivations or reasons for visiting the scenic area between visitors traveling with children under 16 and those traveling without children under 16?

Significant differences were found between the two types of visiting groups for three of the motivations. T-tests

Table 2.—Results of t-tests on motivation to visit, no-children vs. with-children groups

Motivations	Groups	N	Mean	t	P <
Physical exercise	No-children	396	3.77		
	With-children	95	3.52	-2.01	.05*
Family recreation	No-children	395	3.57		
	With-children	95	4.36	5.86	.001*
Relaxation	No-children	396	4.37		
	With-children	95	4.11	-2.78	.05*

Table 3.—Multiple regression analysis on motivation for family recreation

	Beta	R
Marital status	.25**	.15
Visiting type	.21**	
Travel distance	-.16*	

* p < .05 ** p< .001

revealed that travelers in the with-children group were significantly different from the no-children group in the rated importance of physical exercise (t=-2.01, p <.05), relaxation (t=-2.78, p<.05) and family recreation (t=5.86, p<.001). Those visiting with children placed less emphasis on both physical exercise and relaxation, and expressed stronger interest in family recreation than their counterpart group (Table 2). However, both groups shared the same interests in "experiencing nature," "being outdoors," "being with friends," "skill development," and "getting away from the regular routine."

What are the factors related to participation in family outdoor recreation?

Multiple regression analysis revealed that significant relationships existed between characteristics of visitation and the motivation of family recreation. Among selected exploratory variables, visiting type (with children versus no children), marital status, and travel distance were significant predictors of the importance of family recreation as a motivation for visiting the scenic area (F=23.76; p < .000). Marital status was the strongest predictor of family recreation (B=.25), followed by traveling with children (B=.21); Visitors who were married as well as those with children under 16 in their group placed more importance on family recreation. Travel distance also contributed to the regression results (B=-.16). Those traveling shorter distances placed more importance on family recreation. In combination, about 15 percent of the variance in the importance of family recreation was accounted for by the significant variables in this model (Table 3).

5.0 DISCUSSION

The purpose of the present study was to conduct a preliminary test of the relationship between selected explanatory variables and activity participation and motives for family outdoor recreation. By comparing the motivations to visit and participation in recreation activities, the study attempted to reveal differences between those who traveled with a child under 16 and travelers who did not have a child under 16 in their visiting group.

Research question one examined differences in outdoor recreation participation between the with-children group and no-children group. Travelers with children along showed different preferences in selecting recreational activities and sites within the scenic area. Nature centers and historical sites that offer more educational value seem more attractive to those families traveling with children. This same group of travelers also prefers to participate in sightseeing, hiking/walking, driving for pleasure, and picnicking in developed areas for their outdoor recreation participation.

Research question two investigated differences in reasons for visiting the scenic area between visiting types (no-children vs. with-children). The study found travelers who have children attached more importance to family recreation and expressed significantly less interest in relaxation and exercise. It is not surprising to learn that those traveling with children value family recreation. The same logic may explain why they do not think of relaxation as the reason for this trip. However, the study

also found that travelers with children present showed less interest in exercise than their counterpart group. This is consistent with the previous finding for the first research question, in which most respondents in the with-children group expressed stronger interest in educational and less physically intensive leisure activities such as picnicking, and sightseeing.

Research question three tested the relationship between characteristics of visitation and the motivation to participate in family outdoor recreation. The results indicated that visiting type (with children versus no-children group), marital status, and travel distance were significant predictors of the family recreation motive. Previous research suggests that family recreation may contribute to marital stability (Hill 1988). Corresponding to the research, the findings in this study showed married couples attach more importance to family recreation. In addition, travel distance was found to be a significant predictor of family recreation motivation. As Shaw and Dawson (2001) noted, family recreation is a form of purposive leisure. It is logical that traveling a shorter distance for the purpose of recreating with the family would be preferable to traveling a long distance.

6.0 LIMITATIONS AND IMPLICATIONS

One main limitation of the study derives from the methodology used for sampling the data. All data were collected from a single scenic area. The homogeneous nature of the subjects can be a threat to the generalization of the research findings. Thus, results may not represent the general population of scenic area visitors and must be interpreted with caution.

In addition, the motivation of family recreation used a single-item measurement. This type of measurement can produce some limitations in differentiating the variability of the measure, posing another threat to the validity of the study.

Even though this was a preliminary study of family recreation, the findings revealed that people traveling with children manifested preferences in their outdoor leisure activities distinct from those traveling without children. Additionally, their motives to visit the scenic sites were different from those traveling without children. These findings may assist nature-based recreation administrators to plan and manage their resources to better serve family-oriented visitors. The study also proposed a model of motivations for outdoor family recreation participation. As a result, the study identified some informative variables that may be helpful to answer the question, "Who are those potential users coming out for family recreation?" However, there may be many other variables that contribute to understanding family outdoor recreation. Interpreting the motives for outdoor family recreation participation is a complicated task. This study is only an initial step in understanding the dynamics of family outdoor recreation. As President Bill Clinton stated, families are fundamental to the life blood and strength of our world. They are nurturers, caregivers, role models, teachers, counselors, and those who instill our values (cited in Nelson, et al., 1995). More research on family recreation is indeed warranted.

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EXPLORING MOTIVATION FOR LEISURE-BASED PHYSICAL ACTIVITY: A CASE STUDY OF COLLEGE STUDENTS

Alvin Hung Chih Yu
Leisure Studies
201 Mateer Building
University Park, PA 16802
The Pennsylvania State University
huy100@psu.edu

Abstract.—The benefits of physical activity have been well documented in recent years. Physical activity may decrease the risk of cardiovascular disease, assist in weight management, improve personal mood, and promote physiological health. In light of this increased activity, it is important to understand the reasons for it. This exploratory study attempted to identify college students' motivations for leisure-based physical activity. To gain this information, interviews were utilized to learn more about the motivations for physical activity. Fifteen students finished the interviews in this study and results revealed five main motivations after open coding procedures: body image, self-efficacy, social needs, enjoyment, and health. These findings responded to self-efficacy theory and value-expectancy theory, where students were motivated for physical activities by their belief in their own ability and in positive outcomes. This study may be the first step in future motivation studies in leisure-based physical activity.

1.0 INTRODUCTION

In the past, researchers and scientists conducted either population-based or experimental studies to explore the possible health benefits of physical activity (Blair et al. 1996, Carpenter et al. 1999, Gauvin & Spence 1996, Manson et al. 1999). The findings confirmed that the prevalent physical activity benefits included reduced risk of cardiovascular diseases and colon-rectal cancers, strong bones, weight management, energy increase, less anxiety, and sense of well-being. The U.S. Surgeon General (1996) also advocated a physically active lifestyle and stated the consequences of a sedentary way of life. However, about 25 percent of American adults still report not participating in any physical activity during their leisure time despite the well documented benefits of physical activity (Sherwood & Jeffery 2000). Motivating people to be physically active and promoting a healthy lifestyle are important issues for officials and researchers.

Based on previous study findings, healthy benefits are well documented, but little attention has been paid to participants' motivations for engaging in certain physical activities during their leisure time. This study sought to explore college students' motivations for engaging in leisure-based physical activities. As Sherwood and Jeffery (2000) suggested, physical activity is a "complex and dynamic process determined by various factors" (p. 21). From a life-span perspective, college students are in a young adult stage; in their physical and psychological development they attain maturity status (Polan & Taylor 1998). They leave their parents for college life and become autonomous when they face the world. At the same time, they are in healthy situations and peak condition due to their physiology and personal perception perspectives. They also have some health problem associated with their risky behaviors, including tobacco or alcohol consumption, accidents, and unhealthy diet (Fromme et al. 1997, Merluzzi & Narin 1999, USDHHS 1990). Most importantly, their current lifestyle will influence or predict their behaviors in the future (Merluzzi & Narin 1999), which means that they will have a physically active lifestyle if they participate in some physical activities or exercises at the young adult stage. Unfortunately, some studies suggest that their physical activity participation level declines from high school to college—91 percent for moderate-vigorous activity participation in high school vs. 58 percent among those who are not active (Douglas et al. 1997, Grunbaum et al. 2002). Therefore, this study sought to explore exercise and physical activity motivations of college students. Findings will help university and government officials promote a physically active lifestyle for students.

2.0 METHOD

2.1 Participants

The participants recruited for this study were 15 full-time students—four males and 11 females. Their age ranged from 18 to 29, and four of them were non-causasians.

Two out of the 15 were graduate students. Based on the demographic data, most participants were female Caucasian. As for their physical activity features, most declared running or jogging as their favorite activity, followed by exercise at a gym, and other various activities such as ice hockey, basketball, volleyball and swimming. All participants identified their physical activity as being only for fitness rather than for sport or competitive purposes. As for exercise frequency, occasions ranged from three to seven times per week. In sum, the study participants were mostly female Caucasians, and the most common exercise was jogging/running about five times per week.

2.2 Methodology

This study utilized the one-on-one interview to explore and learn about all possible motivations for participants' physical activity. The interview method is the most basic and reliable data collection method both for qualitative and quantitative research inquiry (Creswell 1998). In addition, the interview offers the researcher the opportunity to obtain rich and in-depth understanding of participants' experience (Fontana & Frey 2000). To be specific, this study employed the semi-structured interview to understand the possible motivations for college students' physical activity. The interview questions were pre-established to standardize the interview procedures for all participants. However, doing so might limit their responses and reduce variation in answers. To improve upon the structured interview and incorporate suggestions from previous researchers (Fonata 2001, Fontana & Frey 2000), the semi-structured interview was employed. Relevant questions were added at any time to capture the participants' true meanings or experiences.

2.3 Procedures and Instruments

All potential participants received the study information via bulletin boards around campus and were provided with the study details if they showed interest in joining the study. They engaged in interviews voluntarily to help the investigator construct the meaning of the motivation for their physical activity. As for the instruments, two questions were the main focus of this interview: the motivation for leisure-based physical activity and the relationship between their motivations and behaviors, i.e., participation in physical activity. All relevant questions about activity features and family/peer influence were added to capture their motivation meaning.

During the conversation, the investigator established a rapport with participants by standing at the respondent's side, thereby reducing the distance between the investigator and participants. All conversations were audio-taped for transcription and data analysis. After the tapes were transcribed, the responses were categorized or coded into the same group if they had the similar meanings. This process reduced the database to a small set of categories. With the use of this procedure, the process might be characterized as data analysis in grounded theory, open coding (Creswell 1998, Lincoln & Guba 1985, Strauss & Corbin 1990). The line-by-line coding strategies were used in this data analysis to enable the investigator to define the participants' answers and re-think the meaning of the definitions (Charmaz 2001).

3.0 RESULTS

All conversations were transcribed into text format for the data analysis. After following open coding procedures, five categories were dimensionalized in this study: healthy benefit, body image, self-efficacy, social needs, and enjoyment. The data showed that all participants had more than one motivation for engaging in physical activity or exercise. The various motivations were examined in this study.

3.1 Healthy Benefit Motivation

In this category, the participants decided to engage in physical activity for the health benefits or effects of physical activity. For health benefits, two different categories were identified: physiological and psychological. The physiological benefits found in this part included pain relief, energy restoration, cardiovascular strengthening, illness prevention, and weight control. Psychological aspects included stress-relief, sense of freshness, great endurance, feeling stronger, and strengthening self-confidence. "I do exercise because it will be good for my heart." "I can control my weight when I run." "In general, I go swimming because it gives me a sense of freshness, I can think about myself, my future, or anything I want, you know, just like contemplation." "I play basketball and do exercise in gym because they give me a chance to relieve my stress, I

have lots of school work to do and always feel good after exercise." "I think de-stress, I am a student and always feel exhausted and weight-lifting really gives me a chance to relieve myself." "I have back-pain and exercise in gym could help me control my pain and this is the main reason for my physical activity." "I walk because it is good for my cardiovascular system." "I do running since I am in high school because my parents tell me it is good for my body and I can feel it now. I want to have a healthy body and I do that." "I always have exercised in gym because it can help me prevent from some illness." "I try to stretch my muscle and organs and physical activity could help me to do that." "I play basketball because I can feel that I can escape from reality and gives me a totally new feeling after that."

3.2 Body Image Motivation

The tremendous response indicated that the main motivation for physical activity was body image or shape. Most participants, especially females, stated that physical activity could help to maintain a good body shape or image. "I like running or cross-country marathon because it could help my body consume lots of calories to keep my body good shape." "Body image is always very important for me and exercise or weight-lifting can help me have slim shape." "I think body image, like looking slim, is very important for me and I always like walking or jogging to keep good shape." "Better looking body keeps me doing exercise in gym everyday." "I do running because I want to control my weight and it helps me keep good shape, too." "Exercise in gym could help me maintain desired body shape." "You know, keeping good shape is always my concern, like for making girl friend, so, I work very hard in gym to have a slim look." "I play hockey, I mean pick-up game, can keep my good physical shape." "I like running because it keeps me good shape."

3.3 Self-efficacy Motivation

Self-efficacy motivation refers to people's belief that they may achieve a desired performance level for specific tasks based on their self-judgment. Many responded that they feel self-efficacy when they engage in exercise or physical activity. "I want that feeling that I can conduct everything by myself, like activity levels or types." "I feel I can do something by myself when I do physical activity like running." "I can pick up the activity I like and I have great self-confidence when I am doing some exercise." "I enjoy competing with myself and exercise or physical activities give me chance to do that." "I feel more confident and happy because I can keep everything in my control when I playing ice hockey." "I can try my different limit in exercise in gym and I like this feeling." "I like running because I like a sense of accomplishment and a sense that I can handle everything." "I feel that I can increase my skills in soccer and I can do that by myself."

3.4 Social Needs Motivation

Based on the responses, some participants liked to engage in physical activity with friends rather than working out alone. This preference was highly correlated with the activity features. Some activities, such as basketball or volleyball, represent a suitable occasion for participants to meet new people. Others preferred solitary activities such as running or walking alone. Interestingly, males tended to see social needs as part of their motivation to engage in physical activity, but females did not. "I can meet new people and talk with them." "Making new friends keeps me coming to gym everyday." "I like running alone but it will be nice to run with friends, socializing is my another motivation for running." "I like playing basketball during my leisure time because I can make lots of friends there." "I play volleyball because I can play with lots of different people and I like that, I mean, not beach volleyball." "One of my motivations for tennis playing is to play with different people and talk with them after." "Meeting other participants, you know, it is my reason for playing soccer, because we need more than ten people for a pick-up game." "I do weight-lifting in gym because I can talk with different people over there."

3.5 Enjoyment Motivation

Most respondents in this study found that pleasure or fun is their motivation for physical activity. Enjoyment keeps them engaged in doing exercise, and most recognize that it is an important factor in maintaining their physical activity regimen. "I got lots of fun when I run and I will keep going on." "I play hockey because it has lots of fun there." "I swim almost everyday and I got happier mode after that." "Have fun, in gym." "I feel happier in general after exercise in gym." "It is fun, the posture is beautiful and the music is full of power." "I feel

Table 1.—A comparison of different findings about physical activity motivation

Name of Study	Physical Activity Motivations
Yu	Health, Body Image, Self-efficacy, Social Needs, Enjoyment
Federick & Ryan (1993), Nise et al. (1998)	Health, Appearance, Social Interaction, Stress relief, Enjoyment, Challenge, Skill Development, Achievement, Personal Satisfaction.
Ashford et al. (1993)	Health, Fitness, Skill development, Social interaction and Relaxation.
Markland & Hardy (1993)	Ill-health Avoidance, Appearance, Enjoyment, Social Recognition, Stress Management, Weight Management, Re-creation, Personal Development, Affiliation, Competition, Fitness and Health Pressures.

good after exercise." "It is lots of fun to do that." "My motivation for physical activity wants to feel happy." "I love running because it has lots fun to go through that." "I feel pleasure in doing exercise in gym."

4.0 DISCUSSION

This study focused on what motivates college students to engage in some physical activities. Its intention was to propose a theory to explain the relation between motivation and the intended behavior—participation in physical activity. Motivation serves to initiate, direct, and maintain human behaviors (McClelland 1985), and physical activity may be defined as movement of body and energy expenditure (Caspersen et al. 1985). In this study, the participants endorsed five motivations for selecting, beginning, and maintaining physical activities: health benefit, body image, self-efficacy, social interaction, and enjoyment. Study findings were consistent with those from other relevant research on physical activity motivation (see Table 1). A comparison of this study's findings with those from prior studies revealed that the most common reason for participation is health, followed by body image, social interaction/ needs, and enjoyment. This comparison also suggested that physical activity motivations are outcome-oriented.

4.1 Health Motivation

In this study, most students noted that physical activity could result in better healthy effects on their cardiovascular system. Leisure-time physical activity could reduce the risk of coronary heart disease and decrease mortality rates, as Paffenbarger et al. (1994) suggested in a study of Harvard alumni. Blair et al. (1992) stated that physical or other fitness activity has the most preventive effects on heart disease, leading to decreased mortality. They found other evidence which showed similarly healthy effects on hypertension, obesity, colon cancer, diabetes, and bone health. Hypertension has a high correlation with heart disease; decreasing systolic blood pressure via physical activity could reduce coroary heart disease risk (Bouchard & Despres 1995, Fagard & Tipton 1994). Based on participants' responses, physical activity is an effective way to control weight and prevent obesity, which is congruent with current research findings (Fagard & Tipton 1995, Williamson et al. 1993). As for other possible health-related benefits relating to diabetes, Helmrick et al. (1991) suggested after reviewing results from a 15-year study that leisure-based physical activity could prevent or reduce the prevalence of diabetes, especially for type II (non-insulin dependent) patients. Lee (1995) and Yang et al. (2003) conducted careful research on physical activity and cancer and stated that physical activity might reduce the risk of breast and colon cancer. However, more accurate measurements of the preventive effects from physical activity were needed.

In addition, with regard to psychological effects, most respondents also stated that physical activity could help them relieve stress from school work. They felt stressed or burned out and could not escape from the "pressure-cooker." Physical activity could help them to calm down and relieve them of anxious, nervous, and upset feelings. As McAuley (1994) suggested, there are negative relations between exercise and anxiety, depression, and stress. Students who were stressed preferred to play a very hard game, exercise very vigorously at a gym, or engage in long-distance running to help them handle their stressful emotions. Their methods for reducing their stress or anxiety were consistent with research findings.

Scully et al. (1998) suggested that physical activity, such as walking, jogging, or weight training, decreases depression, anxiety, and stress levels.

4.2 Body Image Motivation

Drewnowski and Yee (1987) conducted a body image study and found that both male and female college students were not satisfied with their body image. In this study, females were more likely to be motivated to achieve a good body shape than their male counterparts. They indicated that keeping their body slim would help them to meet others' expectations, responding to the influence of dominant popular cultural norms or ideals, as Markus (1977) suggested. Most were influenced by the printed or electronic media's messages about maintaining a thin body image. Levine et al. (1994) and Gonzalez-Lavin and Smolak (1995) found that adolescent girls endorsed model images in magazines or on television as their ideal body shape, leading possibly to eating disorders to meet unrealistic ideals. The pictures in magazines and on television made female students anxious to keep their body slim, as Koloder (1997) indicated. For college students, body image or shape also was aligned with their status in social events because it could add to their attractiveness to the opposite sex. Physical activity serves to help them have a slim or thin body shape and reduces their anxiety in social events.

4.3 Self-efficacy Motivation

Bandura (1986) stated that self-efficacy is "people's judgments of their capabilities to organize and execute course of action required to attain designated type of performance" (p. 391). In this study, self-efficacy was found in participants' motivation to engage in physical activity. They believed that they were able to participate in physical activity and were confident about their ability. At the same time, all respondents stated that they enjoyed the sense of self-control during their physical activity. The self-competence also helped them to maintain their activity level and increase adherence to a routine in their physical activities. Some liked to challenge their own physical limits and believed that they could successfully exceed their limit. Sternfeld et al. (1999) found positive relationships between physical level and self-efficacy level. Sherwood and Jeffery (2000) confirmed that self-efficacy is an important indicator of physical activity, based on their reviews of current physical activity studies.

4.4 Social Needs Motivation

Some participants indicated that the motivation to engage in physical activity is to meet new people and so they liked interacting with people when they ran, or played basketball or volleyball. Most respondents stated that physical activity offered a good occasion for a social event. They were very willing to spend time with friends and talk with them during their physical activity, thereby gaining support from friends or peers. Brown (1985) found that social support from friends helped to increase adherence to physical activity. Findings from their study of sedentary adults led Booth et al. (1997) to suggest that the lack of social support was a barrier to physical activity. Sallis et al. (1999) studied female college students and found that social support increased physical activity levels. The findings suggested that social support is highly associated with physical activity adherence and maintenance. Indeed, social needs or interaction appears to be an important predictor of physical activity.

4.5 Enjoyment Motivation

Fun, pleasure, or enjoyment would be predictors of participation in physical activity, as stated by study participants. The feeling of fun or pleasure is similar to optimal status in the 'flow' experience, where there is a perceived balance between skills and challenges (Csikszentmihalyi 1975) and it is "the best moment of life" (Csikszentmihalyi 1990, p. 3). As found in earlier self-efficacy motivations, the respondents liked to challenge themselves with adequate skills during physical activity; the byproduct, "flow," subsequently appeared in their perceptions. Enjoyment came with the "flow" experience and motivated people to engage in physical activity. The respondents simply indicated that they participated in some physical activity for fun. However, some studies found that sports participants are more likely to be motivated by enjoyment while appearance or body image are the main motivations for most physical activity participants (Frederick & Ryan 1993, Kilpatrick et al. 2005, Ryan et al. 1997).

4.6 Self-efficacy and Value-expectancy Theory

The expectancy theory states that motivation force has three different parts or processes: expectancy, instrumentality, and valance (Lawler 1973). People engage in specific behaviors based on the values of the expected outcomes, their belief in the capabilities of the desired performance, and perceived probability of their expected outcomes. The participants' outcome-oriented motivation for physical activity in this study indicated that they had foreseen or perceived positive benefits from physical activity. They believed that they had the ability to do it and that their efforts could lead to positive outcomes. Self-efficacy could explain their belief in their ability, their efforts toward the activity, and the degree of persistence related to an activity (Sherwood & Jeffery 2000), whereas the value-expectancy approach could lead to holistic views of the effects of capability, belief, performance confidence, and value formation on desired outcomes. Findings from Jette et al. (1998) and Resnick et al. (2000) also confirmed and revealed that outcome expectations predisposition is better than self-efficacy as a physical activity indicator. Part of self-efficacy also refers to self-control or autonomy concepts, which are one of three determinants of all human motivation, as Deci and Ryan (1985) stated. Participants indicated that they made the choice on their own; desired and anticipated outcomes made them continue their participation in a specific activity.

5.0 CONCLUSION AND IMPLICATIONS

This purpose of this study was to explore college students' possible motivations for engaging in physical activity. Five motivations were identified in this study: health benefit, body image, self-efficacy, social interaction, and enjoyment. These motivations might not be the same as those found in other studies on motivations to engage in physical activity. Biddle (1995) suggested that various motivations associated with physical activity were recognized in different studies, and most were not entirely identical. However, self-efficacy is the most prevalent indicator of motivation to engage in physical activity as based on Sherwood and Jeffery's review (2000). People believe that they are able to perform some physical activities, but those beliefs are influenced by anticipated outcomes and values, such as health and other positive outcomes (Marquez & McAuley 2006). Value-expectancy theory (Lawler 1973) was sufficient to explain people's outcome-oriented behaviors in this study because people were aware of valuable outcomes and believed that they were able to obtain expected ones.

However, this study did not identify some factors that influence motivation, such as gender and activity features. As indicated in many studies, gender is an important indicator of different motivations for males and females. Different activity features might have different effects on motivation, but they were not discussed in this study. Future studies should emphasize how other predictors influence motivation and how they affect motivations. This study served as the first step toward understanding the motivation to engage in physical activity in a specific program and indicated that both value-expectancy and self-efficacy theory could explain the participants' motivations to engage in physical activity. Study findings will help universities develop better interventions to promote physical activity for inactive and sedentary people and increase the physical and psychological benefits of physical activity for participants.

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THE RELATIONSHIP OF VOLUNTEERISM TO THE PHYSICAL ACTIVITY AND HEALTH OF OLDER ADULTS IN A METROPOLITAN PARK SETTING

Julie S. Son
201 Mateer Building
Recreation, Park and Tourism Management
The Pennsylvania State University
University Park, PA 16802

Andrew J. Mowen
The Pennsylvania State University

Deborah L. Kerstetter
The Pennsylvania State University

Abstract.—Volunteers are an important resource to park districts. However, it is less clear how well park districts benefit the health and well-being of their volunteers. The objectives of the current study were: 1) to try to replicate findings of positive relationships of volunteering to physical health and physical activity, and 2) to extend previous research to examine the relationships of the characteristics of volunteerism to health and physical activity. Two hundred seventy-one volunteers and visitors at a Midwestern park district aged 50 and older comprised the sample. Results suggest that park volunteers had better physical health than non-volunteers and that volunteer physical activity level was significantly related to both physical health and leisure-time physical activity. Qualitative findings also suggest that some park volunteers valued park volunteer opportunities for physical activity. Taken altogether, these results indicate that park districts should try to match volunteers based on their interests in health-promoting volunteer opportunities.

1.0 INTRODUCTION TO VOLUNTEERISM, HEALTH, AND PHYSICAL ACTIVITY IN LATER LIFE

Volunteers are an important resource in the operation of community parks and recreation, providing the manpower and expertise for a wide range of activities from assisting with daily operations to helping with programs and special events. The first wave of the baby boom generation will retire soon, which may result in more older adults than ever before looking for ways to give back to their communities. Furthermore, as older adults live longer, it will be increasingly important to have an active older adult population to reduce the demands on the public health care system (Centers for Disease Control and Prevention [CDC] 2005). However, research indicates that older adults tend to have the lowest levels of physical activity and physical health outcomes (CDC 2000, Center for the Advancement of Health 2006) compared to all other age demographics. For instance, on average, older adults have three chronic health conditions and take five prescription drugs (CDC 2004).

1.1 The Relationship between Volunteerism, Health and Physical Activity

Volunteerism may provide one way to improve the health of the older adult population, as it is linked to both positive mental and physical health outcomes (Li & Ferraro 2005, Lum & Lightfoot 2005). For instance, Van Willigen (2000) found that older adults indicated greater life satisfaction and perceived health benefits from volunteering than did younger adults. In another study, Fried et al. (2004) found that older volunteers had significant increases in physical and cognitive activity 4-8 months after volunteer participation compared to a control group. In a recent study utilizing a nationally representative sample, Librett et al. (2005) found that volunteers were more likely to meet physical activity recommendations than non-volunteers. However, these studies describe little about the characteristics of volunteers and the possible relationship of these characteristics to daily physical activity and health. There is also a dearth of information about the possible differences between park volunteers and general public volunteers. For instance, although Librett et al. (2005) found that volunteers on environmental issues were 2.6 times more likely to meet physical activity recommendations than others who did not volunteer on such issues, they did not examine possible differences between park-based volunteers and other types of volunteers. Therefore, a primary objective of this study was to extend previous research to examine the characteristics of volunteerism, including park-based volunteerism, and how these characteristics relate to the physical activity and health of adults 50 and older.

2.0 METHODS

2.1 Respondents and Procedure

Park volunteers and park visitors of a Midwestern metropolitan park district aged 50 and older (N=275) completed onsite self-administered questionnaires that included questions about physical activity, volunteerism, and health as part of a larger study. Individuals completed the questionnaires in September 2005, during two community-wide, free special events held by the park district as well as volunteer sessions with park volunteers at five park district offices. Respondents were unpaid volunteers but were offered incentives such as complimentary refreshments, door prizes (food baskets), and raffle prizes (restaurant, book store, and movie gift certificates). Respondents on-site were also given the option to take the questionnaire home and to return it in a postage-paid return addressed envelope. Mail-back questionnaire packets were also left at the park district offices for potential respondents to complete and return. For the purposes of the current analyses, four physical activity outliers were omitted, resulting in a sample of 271.

2.2 Measures

Perceived physical health was measured with a self-reported health item and three items from the General Health Sub-scale of the Medical Outcomes Study (MOS) SF-36 and yielded an adequate coefficient alpha of .74.

Leisure-time physical activity was defined as one's free time away from work and volunteering and was measured using a modified version of the Physical Activity Scale for the Elderly (PASE) (New England Research Institutes, Inc. 1991). The PASE includes a section on leisure-time physical activity and three measurement components: 1) frequency—ordinal scale of days in past week, 2) duration—ordinal scale of hours in past week, and 3) intensity—light, moderate, strenuous, and muscle-training physical activity. A weighted sum score across frequency, duration, and intensity was calculated according to the NERI scoring protocol to measure leisure-time physical activity.

There were also several volunteer-related measures. *Volunteer status* was measured in two ways: 1) non-volunteer vs. volunteer and 2) park volunteer vs. general public volunteer. *Volunteer recency* was measured as yes or no to the question, "During the past seven days, did you volunteer?" *Volunteer duration* was measured with the question, "How many hours in the past seven days did you work as a volunteer?" *Volunteer physical activity level* was measured as the amount of physical activity required during volunteer work, with the following categories: mainly sitting, some walking, walking and lifting, light hiking or biking, walking and heavy lifting, and strenuous hiking and biking.

2.3 Data Analysis

Leisure-time physical activity was transformed using a square-root transformation, with regression-based diagnostics indicating that the transformed variable conformed to the ordinary least squares assumptions of normality, linearity, and heteroscedascity. Independent samples t-tests were conducted in SPSS 13.0 to examine the relationship of volunteerism (volunteer vs. non-volunteer as well as park volunteer vs. general public volunteer) to physical health and leisure-time physical activity. Backward stepwise regression analyses were conducted in Amos 5.0 (full information maximum likelihood estimation of missing data) to examine the relative importance of volunteer recency, volunteer duration, volunteer physical activity level, and several participant characteristics (age, gender, education, income, and work status) on physical health and leisure-time physical activity.

3.0 RESULTS

3.1 Sample Characteristics

There were 163 women (60%) and 108 men (40%) who participated in the study, with a mean age of 63 (*SD* = 8.9; a range of 50 to 87 years old). The majority of the sample was Caucasian (96%), and married (64%). Fifty-five percent of the respondents were retired, 30 percent worked full-time, and 11 percent worked part-time. Approximately half (51%) of the sample had a college or university education, with 27 percent attaining graduate-level or professional degrees. Nearly half of the sample had a household income of $50,000 or more (45%).

3.2 Results of the Independent Sample T-tests

The results of the independent samples t-tests indicated there was a significant difference between the perceived physical health of volunteers and non-volunteers, $t(246)$

Table 1.—Stepwise regression analysis for the prediction of perceived physical health (N = 271)

Dimension	Fully Saturated Model				Final Reduced Model			
	B	*SE B*	β	*p*	*B*	*SE B*	β	*p*
Constant	55.89	11.33			54.22	4.06		
Age	-.11	.17	-.05	n.s.	--	--	--	--
Gender	5.21	2.60	.13	.05	--	--	--	--
Education	1.94	.89	.15	.05	2.85	.81	.22	.001
Income	-3.22	1.22	.20	.01	--	--	--	--
Work Status	5.44	3.04	.14	n.s.	--	--	--	--
Volunteer Frequency	-2.53	3.18	-.06	n.s.	--	--	--	--
Volunteer Duration	-.09	.26	-.03	n.s.	--	--	--	--
Volunteer Physical Activity Level	4.01	1.65	.20	.05	4.19	1.61	.21	.01
	R^2=.14				**R^2=.10**			

Table 2.—Stepwise regression analysis for the prediction of leisure-time physical activity (N = 271)

Dimension	Fully Saturated Model				Final Reduced Model			
	B	*SE B*	β	*p*	*B*	*SE B*	β	*p*
Constant		1.53			1.91	.44		
Age		.02	.07	n.s.	--	--	--	--
Gender	1.04	.36	-.00	n.s.	--	--	--	--
Education	.02	.12	-.04	n.s.	--	--	--	--
Income	-.02	.17	.21	.01	.39	.15	.17	.05
Work Status	-.07	.41	.26	.001	1.46	.35	.26	.001
Volunteer Frequency	.47	.44	.03	n.s.	--	--	--	--
Volunteer Duration	1.44	.04	-.10	n.s.	--	--	--	--
Volunteer Physical Activity Level	.16	.21	.33	.001	.93	.21	.33	.001
	-.05							
	.93							
	R^2=.24				**R^2=.21**			

= -2.03, $p < .05$. Volunteers had better health (M = 74.01, SE = 1.47) than non-volunteers (M = 68.29, SE = 2.42). There was no significant difference between the perceived physical health of park volunteers and general public volunteers, $t(178) = .078$, $p > .90$. There were also no significant differences between volunteers and non-volunteers, $t(243) = -1.30$, $p > .10$, or park volunteers and general public volunteers, $t(175) = -1.37$, $p > .10$, on leisure-time physical activity.

3.3 Results of the Regression Analyses

Table 1 provides the results of the backward stepwise regression analysis with perceived physical health as the dependent variable. The final reduced model indicated that volunteer physical activity level and education were the only significant contributors to perceived physical health (R^2 = 10%).

Table 2 provides the results of the backward stepwise regression analysis with leisure-time physical activity as the dependent variable. The final reduced model indicated that volunteer physical activity level, work status, and income were significant contributors to leisure-time physical activity (R^2 = 21%), with volunteer physical activity level the most significant contributor, explaining 10% of the variance in physical activity.

4.0 DISCUSSION

In this study, volunteers had better perceived physical health than non-volunteers, which is consistent with previous research (Lum & Lightfoot 2005, Fried et al. 2004). This finding may be due to a selection effect, in which middle-aged and older adults with better health volunteer whereas those with poorer health do not. Selection bias may also explain the failure in this study to

find a difference between the leisure-time physical activity levels of volunteers and non-volunteers: the majority of non-volunteers were physically active, with 85 percent participating in at least light physical activity in the past week and over half (54%) participating in moderate physical activity. Additionally, perhaps because volunteers and non-volunteers had to be present at a special event in order to participate in the study, they were more active than the general population of people 50 and older and, therefore, more alike than different in activity levels, including physical activity levels.

An important finding was that volunteer physical activity level was significantly related to both leisure-time physical activity and health. The more volunteer-based physical activity a volunteer had, the more leisure-time physical activity they participated in and the better their perceived physical health. The strongest relationship was between volunteer physical activity level and leisure-time physical activity. Perhaps volunteer-based physical activity increases levels of leisure-based physical activity, or perhaps people who are physically active in one domain (leisure) want to be physically active in another domain (volunteering). The latter possibility is supported by the reasons volunteers gave for their volunteer participation. More specifically, several of the open-ended comments by the middle-aged and older adult respondents indicated that they volunteered to stay physically and/or socially active, with several volunteers volunteering at least in part to be able to walk, hike, and/or bike in the parks.

In contrast to volunteer physical activity level, the other volunteerism characteristics (volunteer frequency and duration) were not related to leisure-time physical activity or physical health. This latter finding suggests that identifying other factors that contribute to these outcomes will be an important task for future research on volunteerism, physical activity, and health in later life.

One limitation of the current study is the cross-sectional design that was used, which precludes the assessment of the causal nature of the relationships. For instance, we do not know whether or not people volunteer because they are healthier and more physically fit or whether or not people improve leisure-time physical activity levels because they are active in another life domain (volunteering). Longitudinal research could aid in the examination of the possible causal relationships between volunteerism, physical activity and health. The measurement of volunteerism was another limitation in the current study: only volunteer recency in the past seven days, rather than frequency in the past year, was assessed. Similarly, volunteer duration was for the past seven days only. Future research should incorporate more detailed measures of volunteer frequency and duration. Another limitation that was mentioned earlier was the relatively homogeneous nature of the sample, in which the park volunteers and visitors in this study probably had higher levels of activity than what would be found in the general public. Hence, a general population sample would help clarify these relationships. An additional issue for future research to address is whether volunteer-based physical activity should be considered separate from leisure-time physical activity.

5.0 CONCLUSION

Volunteer status was associated with perceived physical health and, more specifically, volunteer-based physical activity was associated with better perceived health. These findings suggest that among older volunteers, perceptions and beliefs may be as important as reality. It seems that if older adults believe physically active volunteering is good for them, park agencies should try to provide these opportunities. In addition, giving volunteers increased flexibility to contribute to volunteer positions that may differ in terms of physical activity demands may also benefit park volunteers in terms of health and physical activity levels. Matching older volunteers based on their interests in health-promoting physical and/or social volunteer opportunities is an important consideration for park agencies.

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Outdoor Recreation Management

BUILDING STEWARDSHIP WITH RECREATION USERS: AN APPROACH OF MARKET SEGMENTATION TO MEET THE GOAL OF PUBLIC-LANDS MANAGEMENT

Po-Hsin Lai
Doctoral Student, Department of Recreation, Park & Tourism Sciences
Texas A&M University,
2261 TAMU
College Station, TX 77841

Chia-Kuen Cheng
Texas A&M University

David Scott
Texas A&M University

Abstract.—Participation in outdoor recreation has been increasing at a rate far exceeding the population growth since the 1980s. The growing demand for outdoor recreation amenities has imposed a great challenge on resource management agencies of public lands. This study proposed a segmentation framework to identify different outdoor recreation groups based on their attitudes toward three dimensions of natural resource management at Padre Island National Seashore. A number of variables was applied to describe the sociodemographic, geographic, behavioral, and psychological characteristics of these recreation groups. Implications of this segmentation approach on public-lands management are discussed.

1.0 INTRODUCTION

Federal-lands management agencies have played an important role in providing outdoor recreation resources because they manage approximately 30 percent of the lands in the United States (Cordell & Overdevest 2001) and because these lands are fairly accessible for people seeking these lands for the purpose of recreation. However, these agencies are facing several recent trends in outdoor recreation, including an increasing number and increasing heterogeneity of outdoor recreation participants, and growing diversity of outdoor recreation activities (Cordell 2004, Cordell & Overdevest 2001). Market segmentation has been applied as one of the approaches to address the growing public demand for outdoor recreation on public lands to meet different needs.

Segmentation Research

Marketing is a relatively new concept to many public sectors (Knopf 1990, Havitz 2000). Only a few segmentation studies have been conducted to explore outdoor recreation groups on destinations managed by public agencies. Among these studies, most of them adopted primarily a demand-oriented approach and focused on the needs and benefits pursued by recreation resource users. The segmentation criteria used by these studies include benefit or motivation (Galloway 2002, McCool & Reilly 1993), setting preference (Donnelly et al. 1996, Fredman & Emmelin 2001), use pattern (Ryan & Sterling 2001), specialization (McFarlane & Boxwell 1996), and place attachment (Warzecha & Lime 2001). A common feature of these studies is that different recreation groups were identified based on what kinds of recreation resources they demanded. The need to maintain the ecological integrity of public lands was frequently subsumed to resource users' demands for recreation. The demand-oriented approach of segmentation is likely to impose a higher level of difficulty on public-lands agencies to meet their management goals when only limited resources are available and demand for outdoor recreation continues to grow.

Most public-lands agencies have the management goals of serving the current population for the enjoyment of the outdoors while sustaining the resources for future generations. However, if the recreation demand on public lands continues to grow, the achievement of one management goal is likely to impair the achievement of the other. The problem is further aggravated by the constraints of financial and human resources faced by many public agencies (Crompton & Lamb 1986, Andereck & Caldwell 1994). By involving recreation users in public-lands management and building a sense of stewardship of resource conservation among them, the agencies will be more likely to enhance their capacity to meet the dual goal of resource management. In order to involve outdoor recreationists in resource management, an alternative of segmentation is to identify different

recreation groups and examine how likely they are to ally with public-lands agencies to achieve their management goals (e.g., Borrie et al. 2002).

Following the same line, this study was designed to address the goals of public-lands agencies to sustain natural resources while taking into account the need to meet diverse recreation demands by asking two research questions: (1) Do different attitudes toward sustainable resource management exist among public-lands recreationists? (2) What are the characteristics of the groups where different attitudes toward resource management are identified? Attitudes toward natural resource management were used as the segmentation criteria in this study to identify different recreation groups whose characteristics were then described using sociodemographic, geographic, behavioral, and psychological variables.

2.0 METHODS

Study Area

The segmentation framework was applied in the context of outdoor recreation at Padre Island National Seashore (PAIS) using the secondary data from a visitor survey. PAIS is located along the east coast of Texas to protect the longest undeveloped barrier island in the world. The unique environment of PAIS provides habitats for diverse biological communities, including several endangered and threatened species. At the same time, the park also offers a wide variety of recreational and educational opportunities for people to enjoy the landscapes at PAIS. The convenient transportation network around the park and proximity to several metropolitan areas, such as San Antonio and Houston, make PAIS accessible to many outdoor recreation participants and, at the same time, vulnerable to visitor impacts.

Data Collection

The visitor survey was implemented in 2003. Systematic sampling was applied to select the study participants by intercepting visitors at the main entrance station during the winter (January 18 - February 7), spring (April 22 - May 9), summer (July 7 - July 31), and fall (October 6 - November 25) on both weekdays and weekends. Visitors 18 years of age or older who had celebrated the most recent birthday were asked to participate in the survey. Those who agreed to participate were then given a questionnaire (along with a postage-paid return envelope) and asked to complete it after the visit and return it by mail. Of the 2,044 visitors contacted, 1688 visitors agreed to participate and 987 visitors returned completed questionnaires after the follow-up procedure (response rate = 58.5%).

Measurement and Data Analysis

Only selected items from the questionnaire were used for the purpose of this study. In addition to the sociodemographic background, place of residence, and activities that respondents participated in when visiting PAIS, two measurement scales were also included in data analyses. Attitudes toward park management were measured using twelve items by a 5-point Likert-type scale where "1" represented "strongly disagree" and "5" represented "strongly agree." Likewise, a 5-point Likert-type scale was applied to measure the 25 items pertaining to motivation for visiting PAIS. Responses to the motivation scale ranged from "1" or "not at all important" to "5" or "extremely important." Principal component analysis with varimax rotation was applied to identify the underlying dimensions of the attitude and motivation scales.

Two steps were included in segmenting PAIS visitors based on the factor scores of the underlying attitude dimensions resulting from principal component analysis. Hierarchical analysis was first performed to determine the number of cluster and initial center for each cluster. The initial cluster centers were imported into K-Means cluster analysis to categorize the respondents into their respective groups. After visitor segments were identified, chi-square test was used to examine if the variations in sociodemographic (i.e., gender, education, age, ethnicity, income, and occupation), geographic (i.e., place of residence), and behavioral descriptors (i.e. first visit to PAIS, visit frequency, planning PAIS as a primary destination, activities participated in when visiting PAIS, and driving distance on the PAIS beach) were significantly associated with the visitor segments. One-way ANOVA was applied to examine if groups significantly differed in terms of the psychological descriptor of motivation.

Table 1.—Standardized factor scores of attitudes toward park management for visitor segments

Attitude Dimension	Visitor Segment				
	Group I (Anti-Wildlife Protection)	Group II (Pro-Land Acquisition)	Group III (Pro-Development)	Group IV (Anti-Land Acquisition)	Group V (Pro-Protection)
Wildlife protection & limited vehicle access	-1.25[a]	-0.83[b]	0.22[c]	0.57[d]	0.73[e]
Limited development	0.47[a]	-0.65[b]	-1.26[c]	0.31[a]	0.66[d]
Creating a buffer around the park	-0.42[a]	1.46[b]	-0.17[c]	-0.94[d]	0.64[e]

*LSD Post Hoc Test
**Different superscripts indicate significance at .05 or better probability level.

Table 2.—Gender composition of visitor segments

Sociodemographic descriptor	Visitor Segment (%)						
	Group I	Group II	Group III	Group IV	Group V	χ^2	Sig.
Gender						17.864	.001
Males	76.3	59.7	66.4	62.0	51.4		
Females	23.7	40.4	33.6	38.1	48.6		

3.0 STUDY FINDINGS

Segmenting PAIS Visitors

Three dimensions were identified from responses to attitudes toward park management, including wildlife protection and limited vehicle access (α=0.84), limited development in the park (α=0.60), and creating a buffer zone around the park (α=0.68). Cluster analysis based on these three attitude dimensions resulted in five visitor segments (Table 1). The first visitor segment (Group I) scored significantly lower than the rest of the groups on the attitude dimension of wildlife protection and limited vehicle access, and was termed as the "Anti-Wildlife Protection Group." Slightly more than one-fifth of the PAIS visitors belonged to this group. The second visitor segment (Group II) had a significantly higher score on the attitude dimension of creating a buffer zone around PAIS and was named the "Pro-Land Acquisition Group." Although Group II was most supportive of land acquisition, it scored relatively low on the other two attitude dimensions (i.e., wildlife protection and limited vehicle access, and limited development in the park). This group consisted of only one-tenth of the PAIS visitors. The third group (Group III), "Pro-Development Group," was most opposed to limited development at PAIS. Approximately one-fifth of the PAIS visitors belonged to Group III. Group IV, "Anti-Land Acquisition," had the lowest score on supporting the creation of a buffer zone around PAIS and represented around one-fifth of the PAIS visitors. The last and also largest visitor segment (Group V) scored most positive on two attitude dimensions, including wildlife protection and limited vehicle access, and limited development in the park. Group V also had a relatively high score on the attitude dimension of creating a buffer zone around the park. As a consequence, this group was called the "Pro-Protection Group." More than one-fourth of the PAIS visitors were categorized into this group.

Profiling Visitor Segments

Only the descriptors that had significance levels less then .01 were presented here. Gender was the only sociodemographic descriptor showing that the variation between male and female visitors was significantly associated with the segments (Table 2). Male was the dominant gender in Groups I, II, III, and IV where Group I had the highest percentage of male (76.3%). Group V had approximately an equal number of males (51.4%) and females (48.6%). Chi-square test also showed visitor segments were associated with group variations in the behavioral descriptors of first-time visit, frequency of visit, participation in consumptive activities when visiting PAIS, and driving distance on the sandy

Table 3.—Behavioral descriptors of visitor segments

Behavioral Descriptor	Visitor Segment (%)						χ^2	Sig.
	Group I	Group II	Group III	Group IV	Group V	Overall		
First Trip to PAIS	16.1	12.3	38.1	45.7	41.4	33.2	40.624	.000
Visit Frequency								
Less than 5 times	56.1	67.9	75.3	83.6	81.7	72.6		
Equal or more than 5	43.9	32.1	24.7	16.4	18.3	27.4	22.586	.000
Participation in Consumptive Activities while Visiting PAIS								
Driving on the Beach	71.4	74.6	47.9	50	54.9	58	24.076	.000
Fishing from Shore	50.4	33.9	21	12.9	10.3	24.2	71.504	.000
Driving Distance down the Beach (60 miles long)								
0-30 miles	72	78.4	95.5	89.6	94.4	86.6		
31-60 miles	28.1	21.6	4.6	10.4	5.6	13.4	27.233	.000

Table 4.—Standardized factor scores of motivation for visiting PAIS for visitor segments

Dimension of Motivation	Visitor Segment					F	Sig.
	I	II	III	IV	V		
Experiencing nature	-0.26[a]	0.18[b]	-0.42[a]	-0.37[a]	0.41[b]	14.14	.000

*LSD Post Hoc Test

beach with four-wheel drive vehicles (Table 3). Members of Groups I and II were less likely to be first-time visitors and more likely to be frequent visitors (visit frequency >=5 during the past 12 months) compared to Groups III, IV, and V. Furthermore, Groups I and II had higher percentages of visitors participating in the consumptive activities of driving on the beach and fishing from shore. Regarding the activity of driving on the beach, higher percentages of visitors in Groups I and II drove more than 30 miles compared to the rest of the visitor groups.

Six dimensions of motivation for visiting PAIS were identified after principal component analysis with varimax rotation, including experiencing nature (α=0.86), escape (α=0.84), skill enhancement (α=0.78), being adventurous (α=0.69), being with friends (α=0.66), and being with family (α=0.65). One-way ANOVA showed that only one motivation dimension, experiencing nature, was significantly different among the visitor groups with the significance level less than .01. Groups II and V were motivated more by the natural attributes of PAIS compared to Groups I, III, and IV (Table 4).

4.0 DISCUSSION AND MANAGEMENT IMPLICATIONS

Answers to the two research questions were revealed by the study findings. PAIS visitors differ in terms of their attitudes toward park management. Moreover, their sociodemographic background, the activities participated in when visiting PAIS, and motivation for visiting PAIS can be distinguished among visitors of different park management attitudes. Visitors who are less in favor of sustainable resource management are more likely to have visited the park, visit the park more often, are involved in consumptive activities, and travel further on the 60-mile sandy beach of PAIS with four-wheel drive vehicles. On the other hand, visitors who are more supportive of sustainable resource management are more likely to be first-time visitors, visiting the park fewer times, participating less in consumptive activities, and driving less on the beach. Furthermore, visitors who support land acquisition and overall protection of the park are more likely to be motivated to visit PAIS because of its natural environment. An implication from the study findings is that different strategies will be needed for the Park Service to foster stewardship with different groups

of visitors to reduce their impacts on the environment and further encourage their active involvement in sustainable park management. Management strategies to achieve theses goals may include on-site visitor impact management and off-site relationship development with park visitors.

Knopf (1990) suggested that marketing could be used as a management tool for public agencies to meet the diverse recreation demands while sustaining natural resources. This is achieved by directing different user groups to desired recreation opportunities and appropriate recreation settings so that impacts on fragile ecosystems can be minimized. In the context of managing visitor impacts at PAIS, visitors who are less supportive of wildlife protection, such as Groups I and II, may be directed to less ecologically sensitive areas by designating areas for their preferred activities and desired experiences away from those areas. This information can be integrated into the management components of Recreation Opportunity Spectrum as a step for developing visitor management frameworks, such as Limits of Acceptable Change, Visitor Impact Management, Visitor Activity Management Process, and Visitor Experience and Resource Protection.

For off-site relationship development, information derived from the study findings may be used to develop social marketing strategies to advocate a sense of stewardship of resource conservation among outdoor recreationists. The purpose of social marketing is to market an idea, behavior, or tangible object to enhance the well-being of a group of individuals or the society in a broader sense through a series of marketing processes (Kotler & Roberto 1989). Applying the concept of social marketing to natural resource management would help to promote the social good of sustaining resources for the enjoyment of current and future generations, and for the intrinsic value of the natural environment. Segmentation based on the criterion of attitudes toward park management helps identify different outdoor recreation groups based on how likely they are to support and participate in sustainable resource management. Educational programs can be designed to transform negative attitudes and enhance positive attitudes. This may be achieved by informing park users that the quality of the nature-based recreation experiences, and the activities they like to do, can only be maintained by sustaining the three dimensions of park management (i.e., wildlife protection and limited vehicle access, limited development in the park, and creating a buffer zone around the park). Moreover, since all the visitor segments value at least one dimension of park management, it can be emphasized that caring for one aspect of the park cannot be achieved without addressing the other two aspects. Distribution of educational messages to reach out to different outdoor recreation groups will need to rely on various communication mechanisms. For example, for those who visit the park more often, on-site programs (e.g., volunteer, interpretive, or other naturalist programs, etc.) may provide an effective way to involve frequent park users and build relationships with them. On the other hand, for less-frequent park visitors, long-distance communication, such as using the park Website or e-mail to inform park users about the news, issues, or opportunities associated with park management, may be applied. By developing a sense of the stewardship in outdoor recreationists, the Park Service will be able to better take the challenge of sustaining natural resources into the future.

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CHOICE MODELING: PUBLIC PREFERENCES FOR ENHANCING BENEFITS FROM PRIVATE FORESTS IN THE ADIRONDACKS

Donald F. Dennis
Research Forester, USDA Forest Service
Northeastern Research Station
P.O. Box 968
Burlington, VT 05402
e-mail: dondennis@fs.fed.us

Mark J. Twery
Northeastern Research Station, Burlington, VT

Abstract.—Recognizing the importance of private land in meeting society's needs for forest-related benefits, public agencies fund programs that provide aid to private landowners to enhance public benefits derived from these lands. This may include technical help, education, tax incentives, and cost-share programs for various management activities. It is important that program goals be aligned with underlying public values and preferences. A random utility model provides the theoretical construct for a choice model in which respondents rank alternatives displaying varying levels of cost and public efforts to improve timber production, wildlife habitats, and recreational opportunities on private forest land. Personal interviews were conducted at the Adirondack Visitor Interpretive Center located in Paul Smiths, NY. Participants completed a conjoint ranking survey and a series of demographic and attitudinal questions. Most respondents believed the availability of forest-related recreation is important to society and that landowners should be permitted to restrict access to their land. However, less than half of the respondents thought landowners should receive incentives to permit public recreation. A nonmetric conjoint analysis (SAS) estimated the parameters of the choice model. Results provide the relative preferences and acceptable tradeoffs between cost and the different program goals (timber, wildlife habitat, and recreational opportunities) of respondents.

1.0 INTRODUCTION

Private landowners own approximately 88 percent of the northeastern forest (USDA Forest Service 1988, 1995). Most of this land, almost three-quarters of the total, is held by a broad assortment of nonindustrial private forest landowners. The mere extent of these holdings makes obvious their potential importance in meeting society's needs for timber, outdoor recreation, wildlife habitats, aesthetics, biodiversity, and other benefits. An understanding of the role that private lands may play along with a greater ability to draw on the potential benefits can reduce the intense pressure being placed on the remaining 12 percent of the land that is in public ownership.

Extensive prior research has focused primarily on the perspectives of landowners regarding benefits derived from their land. In this study, we examined public perspectives toward private lands. For example, what do citizens expect from private forests and what are they willing to give up in order to obtain these benefits? To provide insight into these questions, we administered a conjoint ranking survey and a series of attitudinal questions to visitors at the Adirondack Visitor Interpretive Center located in Paul Smiths, NY. The survey focused on public preferences for and costs associated with enhancing benefits from improved timber management, accessibility for outdoor recreation, and wildlife habitats on private lands.

2.0 METHODS

Conjoint analysis, a form of choice modeling, is a technique for measuring psychological judgments that is used frequently in marketing research to measure consumer preferences for products with multiple attributes (Green et al. 1988). Respondents choose between alternative products or scenarios that display varying levels of selected attributes. The utility of each attribute can be inferred from the respondent's overall evaluations. These partial utilities, or part worths, indicate the relative importance of each attribute's contribution to overall preference or utility. They can be combined to estimate relative preferences for any combination of attribute levels. Conjoint techniques are well suited for soliciting and analyzing preferences in environmental decisions that frequently entail tradeoffs between costs and benefits that are not represented efficiently in market transactions.

A random utility model is used to explain public preferences toward using varying amounts of public funds to enhance different mixes of benefits from timber, recreation, and wildlife habitats on private lands. When presented with a set of alternatives, individuals are assumed to make choices that maximize their utility or satisfaction. The utility that the i^{th} individual derives from the j^{th} alternative (U_{ij}) can be represented as:

$$U_{ij} = X'_{ij}\,\beta + e_{ij} \qquad (1)$$

where X_{ij} is a vector of variables, which may include transformations of variables, that represent values for each of the four attributes of the j^{th} alternative to the i^{th} individual; β is a vector of unknown parameters; and e_{ij} is a random disturbance, which may reflect unobserved attributes of the alternatives, random choice behavior, or measurement error. In the empirical study under consideration, a respondent's utility level (U_{ij}) for each alternative is not observed, but a ranking (r_j) is observed that is assumed to be a proxy for his or her underlying utility.

Following McKenzie (1990, 1993) and others, the analytical capabilities of the conjoint ranking model can be illustrated by assuming that ranking (r_j) can be modeled as a linear combination of the variables representing the attribute levels.

$$r_j = a + b_1x_{1j} + b_2x_{2j} + \ldots + b_nx_{nj} \qquad (2)$$

The estimated partial utilities are the linear effects (b_n's) of a discreet change in the level of the associated attribute on overall preference (n references attributes). Relative overall preference for any alternative (combination of attribute levels) can be determined by summing across Equation 2.

The marginal rate of substitution (MRS) is the rate at which an individual is willing to trade one good for another while remaining equally well off (Nicholson 1978). The MRS is determined by the ratio of the marginal responses. Setting the total differential of (2) to the point of indifference and solving yields the marginal rates of substitution or the acceptable tradeoffs for the respective attributes:

$$dr_j = b_1dx_{1j} + b_2dx_{2j} + \ldots + b_ndx_{nj} = 0 \qquad (3)$$
$$dx_{1j} / dx_{2j} = - b_2 / b_1$$

ALTERNATIVE # (1-9)	
EFFORTS TO IMPROVE:	
TIMBER	LESS/SAME/MORE
RECREATION	LESS/SAME/MORE
WILDLIFE	LESS/SAME/MORE
COST	$0/$250/$500
RANK ? (1-9)	

Figure 1.—Sample card layout for the conjoint ranking survey. Each card contained only one level for each of the four attributes.

A nonmetric conjoint analysis of the choice data was performed using SAS. Nonmetric conjoint analysis iteratively derives a monotonic transformation of the dependent ranking variable (SAS Institute 1993). The independent variables (attributes) were effects coded. Two variables were used to represent the second and third levels of each attribute. If the scenario contained level 1 for an attribute, the variables representing levels 2 and 3 were each coded -1. If the level 2 was contained in the scenario, the variable representing level 2 was coded 1 and the level 3 variable was coded 0. Likewise, if the scenario contained level 3, the variable representing level 2 was coded 0 and the level 3 variable was coded 1. Values for the coefficients (partial utilities) for level 2 and 3 are estimated by the model and the partial utility for level 1 is the negative sum of the level 2 and 3 partial utilities for that attribute.

Surveys were conducted in person at the Adirondack Visitor Interpretive Center at Paul Smiths, NY. Each respondent was asked to rank nine alternative scenarios depicting varying levels of public efforts to improve timber quality, recreation availability, and wildlife habitats on private land at varying cost levels. Each alternative was displayed on a sample card (scenario) that contained a different mix of the levels for the four attributes depicted in Figure 1. Only one level of each attribute was presented in a single alternative. An orthogonal sample design was used to select the

particular levels to be included on each card to allow estimation over the entire range of alternatives ($3^4 = 81$) with the minimum number of ranked alternatives. The orthogonal design also allows estimation of partial utilities for each respondent, thus outlining each respondent's preference structure. Respondents also completed a series of attitudinal questions using a 5-point Likert scale (strongly agree/agree/neutral/disagree/strongly disagree) and a brief demographic survey.

Level[a]	1	2	3
Timber	-1.0561	0.5387	0.5174
Recreation	-0.9969	0.4402	0.5567
Wildlife	-1.2935	0.5594	0.7341
Cost	-0.8853	0.5536	0.3317

[a] Levels 1, 2, and 3 correspond to less, same, and more, respectively, for timber, recreation, and wildlife and $0, $250, and $500 for cost.

Figure 2.—Estimated partial utilities (nonmetric conjoint analysis).

Before completing the surveys, respondents took a guided walking tour of demonstration sites that show the effects of a variety of silvicultural treatments on timber growth and quality, wildlife habitats, aesthetics, and recreational opportunities. These topics were discussed during the tour. Upon returning to the visitor center, respondents were provided with an explanation of the purpose and form of the conjoint survey and were given an opportunity to ask questions or discuss any portion of the survey. The walking tour and survey took approximately 45 minutes and 20 minutes to complete, respectively.

3.0 RESULTS AND DISCUSSION

Five hundred and sixty-seven respondents completed the surveys. This included students from several introductory forestry classes from nearby Paul Smith's College. Eighty-four percent of the respondents were male, 19 percent were 30 years or older, while 73 percent were 22 years or younger. Seventy-three percent were raised in an urban environment and 17 percent in a rural area.

While we do not believe that this sample is representative of the public at large, due to the rural location of the survey, inclusion of college students, and possible self selectivity of those choosing to participate in the tour, we believe it provides useful information. As mentioned previously, the orthogonal sample design allows estimation of partial utilities or preference structures for each respondent. Although not fully presented here, these may be segmented by demographic profile to identify and analyze differences in the preferences for various segments of the sample.

The conjoint analyses yielded estimated partial utilities (coefficients) for each level of the attributes (Figure 2). The partial utility measures the corresponding attribute level's contribution to the overall utility of an alternative. The total utility of any combination of attributes can be determined by summing the part worths for each attribute level.

Since the partial utilities are expressed on a common scale, the attributes can be compared by looking at the ranges of these utilities. The relative importance scores shown in Figure 3 were computed by taking the utility range for a particular attribute and dividing it by the sum of all the utility ranges. These scores indicate the relative importance of the particular attribute in the respondents' overall evaluation of the alternatives but do not indicate whether more or less of the attribute is preferred. On average, wildlife habitat was the most important aspect of the decisions for these respondents. The other attributes appeared to be about equal in importance. Cost, however, was not statistically significant.

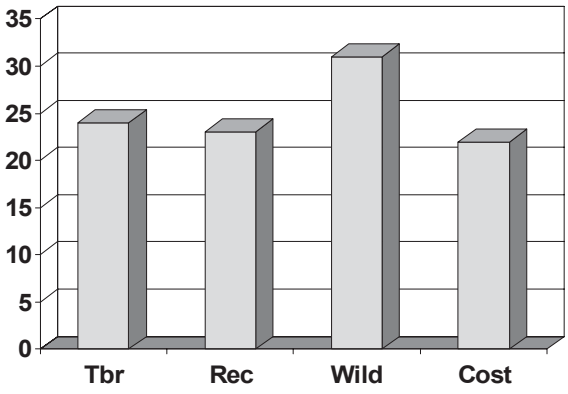

Figure 3.—Relative importance scores.

Examining the differences in the estimated partial utilities as the level of the associated attribute changes provides insight into the resulting impact on utility or overall preference. For example, a movement from the current (same) level of emphasis on timber management to a higher level (more) while holding all other attributes constant would decrease total utility slightly (0.0213 = 0.5387 - 0.5174). Respondents, on average, were basically indifferent to increasing efforts to improve timber management. Similar increases in emphasis on recreation and wildlife would result in utility increases of 0.1165 and 0.1747, respectively. However, providing a lower level of emphasis on management resulted in a decreased overall utility or preference of 1.5948 for timber, 1.4371 for recreation, and 1.8529 for wildlife. This information may be useful to managers or policy makers considering changes in programs impacting any of the attributes.

We also estimated the model for several demographic subsamples. We examined differences by gender, age group (22 years or younger and 30 or more years), and environment in which the respondent spent the first 16 years or his or her life (urban or rural). Preferences were surprisingly similar among the different groups. Although wildlife was the most important attribute for both men and women, it was slightly more important to women. Men were inclined to give slightly more consideration to timber and recreation management than women. Again, wildlife management was the most important attribute for respondents age 22 or younger and for those 30 and older. The older respondents weighted timber and recreation management more heavily than the younger respondents did. Respondents brought up in a rural environment weighted wildlife and recreation management more heavily in their decisions than did those brought up in an urban environment.

Several interesting results emerged from analyzing responses to the attitudinal questions. Most respondents (86%) strongly agreed or agreed that the availability of forest recreation is important to society, and 81 percent believe landowners should be permitted to restrict access to their land. However, only 48 percent believe landowners should be given incentives to allow public recreation on their land.

Most respondents (92%) also strongly agreed or agreed that rare or threatened species should be protected and 75 percent believe that landowners should be given incentives to enhance wildlife habitats on their lands. Nearly 57 percent agreed that keeping land in forest was important and would vote to give tax relief to landowners who agree not to develop their land.

Nearly half of the respondents believe landowners should be permitted to do as they please with their land, but 88 percent disagreed with the statement that "Society has no responsibility to provide healthy forests for future generations." About half of the respondents agreed that land should provide an economic return to cover expenses associated with ownership, though many believe too much emphasis is placed on economics in land-use decisions. Most respondents agreed that both ecology and economics should be considered along with the needs of future generations.

Nearly 90 percent of the respondents agreed that wood products are important to society, but only about 40 percent agreed with separate statements indicating that either public or private lands should be a source for wood products. Seventy-three percent agreed that landowners should be able to earn a profit from their land.

4.0 CONCLUSIONS

This analysis indicates that a variety of respondents interested in management of private forest lands in the northeast were very concerned about changes in efforts to improve wildlife habitats. Respondents preferred more efforts to improve wildlife habitat and were dissatisfied with lower levels. A similar pattern emerged for recreation, but differences among the levels of effort were less pronounced. Respondents also expressed dissatisfaction with less effort toward improving timber management but were indifferent toward increases beyond current levels. Responses among the demographic groups that we examined were remarkably similar, although some minor differences were noted. Additional analysis is needed to understand how respondents' preferences regarding management are affected by their attitudes toward private property, responsibilities to future generations, and economic

considerations. These results can be useful to policy makers to determine levels of public support for efforts to improve management on private lands.

5.0 ACKNOWLEDGMENTS

The authors thank Paul Sendak for helpful comments. We also acknowledge the work of Kerri Ryniker, Cecelia Martin, and Sally Bogdanovitch in administering the surveys, and the assistance of Michael Rechlin and Bruce Hansen in establishing the study.

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NATIONAL HERITAGE AREAS: EXAMINING ORGANIZATIONAL DEVELOPMENT AND THE ROLE OF THE NATIONAL PARK SERVICE AS FEDERAL PARTNER

Susan Martin-Williams
Concord University
PO Box 1000
Wall Box 42
Athens, WV 24712
swilliams@concord.edu

Steven Selin, Ph.D.
West Virginia University

Abstract.—Understanding the organizational development of National Heritage Areas (NHAs) and defining the National Park Service's (NPS) role within individual NHAs guided this qualitative study. Information gained during telephone interviews led to the development of an *a priori* model of the evolutionary stages of NHAs' organizational development and the role of the federal partner over time. This model will be tested during phase two of the study.

A snowball technique (Patton 2002) was used to identify key experts with knowledge of the National Heritage Area movement. These included current and former NHA executive directors, NPS employees, and other experts. In an open-ended interview process (Patton 2002, Yin 2003), experts were asked to identify evolutionary changes in the organizational development of NHAs over the life of the NHA and any key turning points (Isabella 1984) in the evolution. They were also asked to discuss the role of the NPS over the life of the NHA along with any key turning points in that relationship. Lastly, interviewees could discuss any other opportunities, issues, or concerns relating to the organizational development of NHAs.

The results found that a variety of organizational structures reflect the unique and diverse nature of NHAs. Additionally, NPS roles reflect NHA needs and evolve dynamically. Lastly, the role of the board is critical in NHA evolution.

1.0 INTRODUCTION

Since 1984, 27 heritage areas have proven their national historical significance and have been designated as National Heritage Areas (NHAs) by the U.S. Congress. Examining how the organization of NHAs evolves over time, researchers can identify the stages of organizational development and the role of the National Park Service (NPS) as a federal partner.

1.1 Research Questions

This qualitative research study analyzed designated NHAs. The following research questions guided the study design and methodology:

1.) What stages of organizational development do NHAs evolve through?

2.) How has the role of the NPS as a federal partner changed over the lifespan of the NHA?

3.) Are other issues, concerns, and opportunities effecting the organizational development of NHAs or the relationship with the NPS?

1.3 Literature Review

Heritage area partnerships may be defined as diverse interest groups working together at the domain level to achieve a common mission (Gray 1985). These may include a stakeholder pool derived from government entities, private citizens, non-profits, and businesses engaging in collaborative efforts (Gunn 1994, Selin & Chavez 1995, 1994). Conditions fostering collaboration provide the theoretical framework for partnership formation, which moves through identifiable stages (e.g., Gray 1985, Jamal & Getz 1995, Mandell 2001). Moreover, identifying the organizational steps of partnership formation provides practical and theoretical frameworks for existing and future research (Waddock 1989, Selin & Chavez 1995, Venter & Breen 1998, Caffyn 2000, Institute for Conservation Leadership 2004).

In addition, partnership formation is recognized as a driving force in conservation of protected areas, including those with cultural significance (Phillips 2003, Mitchell 2003). Heritage areas are considered integral

components of conservation efforts (Daly 2003, Judd 2003, Stowkowski 2003, Vivanco 2003, Bodurow 2003). Although descriptive case studies chronicle the NHA movement and the evolutions (Barrett 2003, Bodurow 2003, Eugster 2003, Gates & Morgan 2003), no empirical research exists examining the evolution of the organizational development of NHAs and the NPS' role as a federal partner.

2.0 METHODOLOGY

Data for this qualitative research (Patton 2002) project were collected as a pilot study of NHA organizational development and NPS' role as a federal partner. To ensure an information-rich sample, a snowball technique (Patton 2002) was used to identify key experts with extensive knowledge of NHA development. At the end of each interview, participants were asked who else was an expert on NHA organizational development and the role of NPS as a federal partner. Interviews continued until key names were mentioned over and over (Patton 2002). These names included current and former NHA executive directors, NPS employees, and other experts.

In an open-ended interview process (Patton 2002, Yin 2003), informants were asked to identify evolutionary changes and key turning points in the organizational development of NHAs. Participants were also asked to discuss the role of NPS over the life of NHA and to identify key turning points in that relationship. Lastly, respondents were given the opportunity to discuss any other opportunities, issues, or concerns related to the organizational development of NHA or the role of NPS as the federal partner over the lifespan of NHA.

During the summer of 2005 and spring of 2006, 22 interviews were collected representing current and former executive directors of 12 NHAs, and a variety of NPS representatives on the local, regional, and national levels. Twenty telephone interviews were digitally recorded and transcribed verbatim. Each interview lasted an average of 40 minutes. Two participants chose to respond in writing. Content analysis began with the researcher hand-coding data to organize information into themes and then into sub-themes (Patton 2002). Additionally, another colleague used Word Stat Analysis to identify themes and sub-themes. General themes were based on the guiding research questions. Data were organized under three main themes: organizational development and key turning points; NPS role and key turning points, and other opportunities, issues and concerns relating to organizational development and the role of NPS as a federal partner. In an iterative process (Patton 2002), data were further reduced to sub-themes based on information that emerged from the interviews.

3.0 RESULTS

Consistent with qualitative research, responses received during the interviews guided the interpretation of the data and produced the following themes and sub-themes.

3.1 Organizational Development of NHA

3.1a A Variety of Structures Exist

A search of the NPS/NHA website reveals that a variety of NHA management structures exists, such as federal commissions, non-profits, state agencies, municipal authorities, and university centers. Currently, the majority of NHAs are non-profit organizations, such as the Shenandoah Valley Battlefields National Historic District or Essex National Heritage Area. Yet other NHAs, especially those receiving NHA designation in the early years, are federal commissions, such as the John H. Chaffee Blackstone River Valley National Heritage Corridor and Cane River National Heritage Area. Others, such as The National Coal Heritage Area, are state agencies. The Tennessee National Civil War Heritage Area, is housed at Middle Tennessee State University and managed through the university's Center for Historic Preservation. Lackawanna Heritage Valley is a municipal authority.

According to respondents, this variety is in direct response to each NHA's individual needs. One participant said that the management structure of an NHA "depends on the area and the community…. The variation occurs because of the communities that they're associated with and the capacity of the community to support it and to do projects." Another explained that "management structures for heritage areas really needed to follow what they were trying to accomplish—kind of an architectural philosophy of form follows function."

Some respondents, for example, prefer the freedom that a non-profit structure provides. Interviewees suggest that non-profit organizations circumvent some of the rigid guidelines associated with federal agencies. One participant said, "We don't have quite as much red tape to deal with and it gives us more flexibility in raising federal funds."

On the other hand, some respondents suggested NHAs benefit from the credibility and validity associated with a federal commission. A participant explained, "Being a 'federal commission' … gives us a little bit of visibility—like ooh, that's kind of interesting. That gives them some sort of …prestige, I guess, that is seen in not being a local entity."

Hence, the diversity of management structures reflects the unique nature, needs, and goals of individual heritage areas.

3.1b. NHA Organizational Development is Dynamic

Moreover, NHA organizational development is dynamic. NHAs adjust their legal structures to fit the local conditions. A participant explained that a NHA's organizational structure "reflects the resources, the setting, the players who are involved…and the political culture." Another said that his/her NHA's legal structure, currently a non-profit entity, was created in direct response to community needs. The participant said that although the governing body was originally a federal commission, "the people in the valley very clearly said that they were uncomfortable with this federal commission actually carrying on the work of the management plan. Their request was that the federal commission be replaced by a private non-profit organization."

Moreover, some felt that another advantage to a federal commission was local buy-in. An interviewee said that his/her NHA chose to be a federal commission because it gave the managers the ability to cast the area in a new light for the local region. The participant said, "…it's often difficult to grasp, especially if you grew up in this area and you know what the resources are. A NHA kind of packages them in a new way…it's a challenge to build our identity within the community…." Another participant stated, "If we were a non-profit, we'd end up appearing as if we were competing with those organizations in this very small area where there are not a lot of external resources, especially funding resources."

NHA legal structures are a direct response to the communities they serve. As one participant stated,

> Unlike the structure of a national park, where you have a very defined bureaucracy, a very defined chain of command that works where you are, I think that one of the reasons heritage areas have been successful is that they have had the flexibility to adapt their management structure to the situation of the community or communities in which they are.

Finally, another response summarized,

> …I liken it to sailing. When you're sailing, you know where your destination is. But the tide and wind and the waves are always changing, so you adjust your course as you're sailing to accommodate the immediacy of the wind or the weather, but you still have your ultimate goal in mind. A good management plan should do the same thing. It should identify your goal and tell you how you're going to get there, but also give you the latitude to adjust your course with the prevailing winds, the changing of the winds."

Such statements reveal that a variety of organizational structures reflect the unique and diverse natures of the NHA's. Moreover, these structures are dynamic, with the ability to change in response to the needs of local stakeholders and other social, economic, and political factors.

3.1c. NHAs' Organizational Development Evolves Through Identifiable Stages

Interviews revealed that NHAs' organizational development evolves through similar and identifiable stages consistent with organizational development theory, which will be discussed in detail in the discussion section of this paper.

Table 1.—Five stages of national heritage area organizational development

Organizing	Implementing	Role Setting	Institutionalizing	Redirecting
Stakeholders define a shared vision. Stakeholders develop a shared identity. NHA designation provides structure NPS aids in planning/technical assistance.	Federal funds received. New or extended staff are hired. NPS serves as the conduit through which funds flow to individual NHA's. NPS continues technical assistance, but the role changes to reflect the specific needs of individual heritage areas.	Staff begins assuming more responsibility in day-to-day activities and direction setting. Board assumes a governing role. NPS continues technical assistance, but the role changes to reflect the specific needs of individual heritage areas.	Board assumes responsibility for fund raising and building ties with the community. Board refinement occurs as the organization actively recruits proactive, involved members. NPS continues technical assistance, but the role changes to reflect the specific needs of individual heritage areas.	Movement in a new direction or reorganization in response to such factors as changes in funding status and/or acquisition of new funding sources, sunsetting of the federal relationship. "Death" may occur as they terminate their efforts. NPS continues technical assistance, but the role changes to reflect the specific needs of individual heritage areas.

The first stage of NHA organizational development is called the "Organizing" stage. Almost unanimously, participants commented that NHAs organizational development began with NHA designation, which linked and defined the shared visions of the stakeholders. One participant stated that, although there was not one cohesive grassroots initiative driving the creation of its heritage area, many organizations throughout the region had been working individually towards this goal. Despite sharing a similar goal, these various groups worked in a his/her "very disparate and uncoordinated" manner. Another stated that, although in the beginning his/her NHA might have appeared to be the "epitome of pork barrel," public support already existed and became visible when the public began to understand the NHA movement; since "they didn't know they had the opportunity to extend [their grassroots efforts] to the region as a whole through the national heritage area model." Another participant stated that, prior to designation, there was interest from a variety of parties, but no "structural partnership." NHA designation brought all those forces around the same table, with a "formal structure to undertake things with credibility." This formal structure, in turn, increased stakeholder interest. Participants also observed that NHA designation led to increased stakeholder support. One person commented,

> What I did notice after it became a national heritage area was an increased interest from the public at large in what it was and what it was designed to do, and I think specifically what we saw was an increased desire by the public to participate in it.

Thus, the "Organizing" stage in NHA organizational development is the realization of a shared vision among stakeholders, the adoption of a formal structure in the form of NHA designation, and an increase in stakeholder interest.

Secondly, an "Implementing" stage occurred as the receipt of federal dollars served as the impetus for NHAs to begin developing as an organization by hiring staff and implementing management plans. One interviewee stated that after five years of designation, no funding had been received and no planning had taken place. Because there was little or no funding, the organization could not grow. The participant discussed the importance of initial funding: "With that initial funding, the heritage area was

able to begin the management planning process …and then also hire staff for the first time…the initial bout of funding was a major turning point….” Another NHA was designated in 1996 but did not receive funding until 1998 and “then we sort of ramped up and were fully going by 2000.” Another NHA waited for funding before creating “by-laws and the articles of incorporation for the corporation.” One participant stated that federal funding is what got the ball rolling: “It’s like once you jumpstart the process, it starts taking on a life of its own.” Another stated that the partnership that developed from the merging of several organizations into the formal structure of a NHA “was a step…necessary to ensure our success and hopefully superlative performance as a moderately sized National Heritage Area” by making provisions for new personnel and new avenues of funding, along with a new geographic focus. Hence, funding and staffing create the “Implementing” stage, the second step in the organizational development of NHAs.

Based upon participants’ responses, a third phase, “Role Setting,” emerges as NHA staff become more stable and proficient and as responsibilities shift from the board to the staff. One interviewee commented that a key turning point in his/her NHA’s evolution came when staff became more “professionalized, through staff changes and staff training, through just working—all of us working together to figure out how this heritage area can work, what it can do.” One interviewee called this the “implementation phase,” with “heavier work” and “heavier lifting” than the creativity that is required in earlier stages. Another said, “One group starts to take on a leadership role, where another is much more practical day-to-day kind of thing.” One participant noticed a shift between commission and staff: “Most of the direction or the ideas or the momentum is coming from the staff, because we’re aware of opportunities…. In the early days, I think it would have been most of the momentum was coming from the commission itself.” Another remarked that although, the budget and financial support came from a federal commission, the NHA had recently formed a non-profit under which the staff handles operations. Hence, in “Role Setting,” the staff becomes more specialized and assumes more responsibility in day-to-day operations.

As boards make the transition from the initial planning or “visioning” entity to assume the responsibilities of relationship building and fund raising, the fourth, “Institutionalizing,” stage begins. One participant remarked that “we had a major turning point when the board recognized that we were going to have to be a more active fundraising organization than we had in the past.” Another noted that the board of directors’ concentration recently expanded to community outreach. Also during “Institutionalizing,” organizations begin actively refining their boards to ensure productivity and recruit board members who will be involved and proactive. One respondent explained that the NHA was in the process of recruiting new board members who would be more effective in attracting private dollars and in “help[ing] us gather some money.” Another said that they now purposefully keep a few vacant seats on their board, “just in case there are other key players that we want to bring on—corporate people, people that can help with fundraising, individuals that have a particular expertise or interest.” One person explained that the effectiveness and quality of a NHA board at this stage hinges on “the ability to raise friends and funds.” Another NHA commented, “We’ve added more positions on the board, and we’re trying to get more diversity of the community on the board…[We] need to reach out and get more input in from the community.” In “Institutionalizing,” a proactive and involved board takes shape and assumes the responsibility of public involvement and fundraising.

Finally, the “Redirecting” phase occurs when the organizations begin moving in a new direction or reorganize in response to funding changes or other social, economic, or political forces. Although few NHAs have reached this stage of organizational development, participants’ responses indicated an anticipation of what the future would bring. One participant said, “Some of these grow to outlive their usefulness. Some of them spin off just like would happen in a business or something like that. Sometimes they’ll develop arms.” Others might redefine themselves to move forward, which is the case with one NHA. A participant remarked, “Our commission expired. It was renewed once and now it’s expired, and there is legislation that’s pending to reestablish the heritage area…[as a] regional not-for-profit.” One person commented that his/her NHA

was preparing for this stage to come by explaining that the NHA was going to have to "start behaving more like a traditional non-profit organization, instead of assuming we would rely on federal funding going into the future…. It's always something you have to plan for in the future." Another respondent feared that the NHA might cease to exist when the federal funding ran out. Hence, as their organizational development evolves, a stage of "Redirecting," may be reached and NHAs will be faced with deciding in what direction they want to proceed.

Thus, as NHAs evolve, their organizational development move through a series of stages: Organizing, Implementing, Role Setting, Institutionalizing, and Redirecting.

3.2 NPS' Role as a Federal Partner Changes Over Time

3.2a. Initially, The NPS has a Static Role as the Federal Partner

Interviews reveal that in the beginning, each NHA has a similar relationship with NPS. NPS is one of many collaborators in the partnership and has very specific functions during the initial stages of NHA evolution, such as offering technical assistance. NPS also serves as the federal agency through which Congressionally appropriated funds flow during the lifespan of the NHA.

Technical assistance in the early stage of NHA development comes in the form of planning and implementation of the plan. One Park Service employee stated,

> I'd say with every heritage area the Park Service plays a role in the early states, in the planning stages, public involvement, helping them build coalitions of support, defining the objectives, really doing the early stages of planning and pulling the area together and determining what direction they're going to take.

Another NPS employee stated, "Probably our most important role is helping in the planning in the beginning." Another representative stated that Park Service expertise might come in the form of helping develop the management plan, or in conserving or developing resources. One participant explained that dealing with the federal government's regulations are difficult for outside agencies like NHAs and described the relationship as being like "the earth's plates grinding against one another." The participant explained that NPS offers a "reconciliation of the private sector and the public sector" and can often ease that tension through interpretation of the regulations and advocacy on behalf of the NHA program.

For example, local or regional NPS offices not only serve as the "conduit" through which funds are channeled, they also assist individual NHAs in procuring funds. One participant explained,

> When we need technical support services, they've been involved, but I jokingly talk to the Superintendent and say, the most important thing you can do is when the money gets appropriated, fee it up and get it to us as soon as possible….The only way to speed that process is through the Park Service pushing and pulling and trying to get the money moving.

One NPS Superintendent said that the NHA in partnership with NPS unit did not get the start it needed until NPS intervened on behalf of the NHA to obtain funding. Hence, not only does NPS serve as the agency through which Congressionally appropriated funds flow, it also serves as a liaison in acquisitioning the money on behalf of individual NHAs.

Initially, the role of the NPS as the federal partner in NHA development is two-fold: it offers technical assistance and then continues to serve as the agency through which NHA funds flow.

3.2b As NHA Organizational Development Evolves, So Does the Role of the NPS

Although NPS continues to serve as the agency housing NHA funds, its role diversifies to reflect the needs of individual NHAs. One participant explained, "There's a relationship that develops, and it's going to be a little different depending on the interests that are involved in the creation of the heritage area, the enabling legislation,

and what the expectations are." For example, in areas where public mistrust of federal programs is prevalent, the NHA and NPS did not play up their relationship to the local community. An interviewee explained:

> They [the NPS] have taken a very low-key approach to our heritage area, because they didn't want to create any problems for us…. There is absolutely a legitimacy and a value and a credibility to the arrow and all of that. To the tourism public we want to appeal to that. To the general public here, we want to keep it low key.

With other NHAs, the two organizations function in a symbiotic relationship. One NHA director explained, "The national park lends a long-term stability, vision and expertise—technical expertise in many areas—preservation in this area and in research [and] in interpretation especially." The interviewee went on to say that the NHA "brings to the table the 300 years of the same cultures interacting in this area. Descendents of the original people are all over the Board….It brings to the table community relevance as it were for the park."

Another participant pointed out that NPS contributions were centered on the local conditions and stakeholders: "Probably more than anything, their mantra is these are local decisions, locally arrived at; we just support the local consensus." That sentiment is mirrored by one NPS Superintendent's observation that the NPS is "functioning as an enabler, not necessarily a leader, not necessarily as a doer." Other interviewees described the NPS as a "quiet enabler," as "woven" into the fabric of the NHA and community, and as the passenger in a vehicle being driven by the NHA.

Hence, as NHAs begin to evolve, so does the role of NPS as the federal partner, moving from a source of technical assistance to fill a role dictated by local needs and conditions.

3.2c The Role of the NPS as the Federal Partner will Continue to Evolve

Participants felt that the NHA/NPS partnership was a good one and offered suggestions about their future relationship. Some suggested that NPS serve as a "sounding board" among NHAs to open lines about best practices and successes so that future NHAs avoid pitfalls in recreating the wheel. Additionally, interviewees suggested a heightened level of collaboration. One NHA director explained, "I encouraged the NPS to consider enhanced funding for special joint projects involving 2 or more NHA's from within the same NPS region; for example, an educational initiative, or a marketing campaign themed to a shared industrial or cultural focus." Another participant anticipated joint educational programming through shared rangers from other parks to enlighten communities within the NHA. Although the role of the NPS varies among NHAs and reflects individual NHA needs, participants clearly saw a continuation and growth of the relationship in the future.

3.3 Other Issues, Concerns or Opportunities Relating to NHA Organizational Development or the Role of the NPS as the Federal Partner

3.3a Board Members Affect NHA Evolution

One opportunity that resounded throughout the interviews was that NHAs need to understand and encourage responsibility on their boards. Participants suggested NHAs could not achieve their vision, effectively raise funds, or engage the community without the support of an energetic, involved, and proactive board. Interviewees suggested the need to structure their boards and choose the right board members. One participant explained that effective board members must be "engaged" in the organization and that all too often, members are merely warm bodies rather than active participants. They continued, "I don't think people spend enough time really thinking about who needs to be on their boards and evaluating and trying to shape the board." Other participants spoke of the dangers of haphazardly choosing board members who might draw the NHA "off-course." Instead, they suggested using the management plan as a structure to "inspire and unite" the board. One participant commented that effective boards should "become imbued with the mission of the plan." Another sentiment was that managing the size of the board is also critical. One NHA cut the number of board seats after realizing that there were too many members to reach a quorum. Another NHA director said that large boards are too difficult to manage and "it just sort of loses focus." Hence, boards play a vital role in

NHAs. Therefore, NHA's actively "craft" their boards to ensure active engagement and participation.

4.0 DISCUSSION

Results from this qualitative study should be interpreted with caution. The small sample size limits generalizing the results to all NHAs and the NPS. Also, the researcher noted that some interviewees preempted any negative comments by saying, "Don't quote me on this" or simply avoided making any critical comments at all. Some seemed to paint an unusually "rosy" picture with their responses. This attitude may be attributed to personal bias, politics, or some other personal agenda on behalf of the interviewee. Moreover, the researcher did not employ a mixed-methods (Patton 2002) approach when gathering data since this project will be used as part of a large, more in-depth study during Phase Two.

Beyond these limitations, however, these interviews produced information-rich qualitative data that were used to examine the organizational development of NHAs and the role of the NPS as the federal partner. Results from the study confirm previous literature on partnership formation and organizational development. It also informed the definition of stages of NHA organizational development that will be tested in Phase Two of the research project.

Consistent with literature on partnership formation (Gunn 1994, Selin & Chavez 1994, 1995; Gray, 1985), participants suggested that NHAs are formed by stakeholder partnerships at various levels, including local, state, regional, and national levels. Respondents repeatedly credited partnership and collaboration among groups as a driving force behind NHAs. Venteer and Breen (1998) create a partnership model depicting an "overlapping" in interests between government and non-government entities. This overlap of interests creates a partnership forum through which issues are addressed. Respondents suggest that the overlapping of stakeholder groups and NPS as the federal partner create a partnership forum, or "network structure" (Mandell, 2001), through which the NHA takes life to address the common goal of preserving America's living landscapes and acknowledging those areas that served to create American heritage. This "shared vision" is also consistent with literature on partnership formation (Gray 1985, Selin & Chavez, 1994, 1995).

Likewise, many researchers have identified and mapped the steps associated with these partnerships' organizational development (Waddock 1989, Selin & Chavez 1995, Venter & Breen 1998, Caffyn 2000, Institute for Conservation Leadership 2004). Responses from this study show that NHA organizational development evolves through similar stages as these models. The Institute for Conservation Leadership (2004) found that non-profits move through four stages of development: Founding, "The Leap", Shared Governance and Institutional. Although NHAs operate under a variety of organizational structures, such as federal commissions, and non-profits), interviews suggest that all have evolved through stages similar to those defined by the Institute.

The Institute (2004) defines the Founding stage as: "an individual leader or a small group has an idea and forms an organization, run by volunteers." Challenges during this stage include lack of funding and professional staff.

This stage is confirmed during this research. Respondents in this study suggest that NHAs grow from a common vision among various stakeholders. Additionally, several participants expressed frustration in the beginning because they had no funding and no ability to hire staff.

One variation revealed during this research is that this stage of development is not limited to individuals or small groups. NHAs bring together entire states, regions, and both private and public stakeholders representing volumes of participants. Regardless of size, however, interviews reveal that "Founding" is a common stage among all NHAs' organizational development as it begins to evolve.

Secondly, NHAs experience a second stage of organizational development similar to the Institute's "The Leap" stage. Funds begin to roll in and staffing occurs. Challenges include "developing a systematic, effective way for the board to support and work with the executive director and staff."

Thirdly, the research corroborates the Institute's finding that the third stage, "Shared Governance," begins when "the board assumes the governance of the organization and delegates administration of programs to the executive director and staff." This research suggests that many NHAs are in the "Shared Governance" stage, especially since a point of concern among many participants was ensuring that board members stepped up to the plate in assuming their responsibilities as the governing body.

Participants suggest that a few NHAs have reached what the Institute terms as the "Institutional" stage, where the staff assumes more responsibility and has more control over the organization's direction while the board focuses "mainly on fundraising and community support."

While the Institute (2004) finds four stages in the organizational development of non-profits, this study also suggests a fifth stage, where NHAs may face what Selin & Chavez (1995) call an "outcomes phase," where partnerships "undergo a cyclical re-evaluation of purpose" that may lead the partnership in a new direction or allow it to dissolve. This research corroborates the existence of an "outcomes phase." Participants in this study are already anticipating this stage. Results suggest that some NHAs may redefine their focus if their sunset date is reached and their federal funding is cut. Having reached its sunset date, one NHA is attempting to redefine itself as a non-profit and secure further federal funding. Although "death" has not occurred for any NHA, several participants expressed concern that they would not be able to operate without the federal funds they currently receive.

5.0 MANAGEMENT IMPLICATIONS

The results of this study reveal that NHAs organizational development evolves dynamically and reflects the unique nature of individual areas. Managers should realize that there is no one-size-fits-all solution in managing NHAs. This finding has implications as the recent growth in the NHA movement has been met with increased public scrutiny about the use of taxpayer dollars to fund the projects, the need for performance- and outcome-based assessment and the need to address the accountability of the use of federal funds as described in the Government Performance Result Act. Attempts to standardize enabling legislation and to create assessment measures should be made with a heightened awareness that such actions might stifle the very creativity and uniqueness that defines each NHA. However, understanding the stages of organizational development that each NHA passes through might make this task less daunting.

Additionally, it is evident that the NPS as a federal partner plays an integral role in NHA start-up. This relationship evolves dynamically to reflect the needs of individual heritage areas, ranging from highly visible relationships to virtually hidden ones. This relationship will clearly continue in the future and the NPS roles as federal partner will become even more sophisticated as NHAs seek to partner among themselves in outreach, education, and even funding opportunities.

Finally, the interviews revealed that participants realize the important role their boards play and that they are concerned about creating an optimal board presence. Board development exercises will help NHAs recruit and structure effective boards.

6.0 RECOMMENDATIONS FOR FUTURE RESEARCH

This first phase of research helped identify NHAs to be used in implementing Phase Two of the project. Interview data collected in Phase One will be supplemented by secondary data, such as transcripts from meetings, feasibility studies, newsletters, meeting minutes, and NPS reports in a mixed-methods study (Patton 2002) to test the stages of organizational development and role of NPS as a federal partner as suggested by this study. This model may contribute information needed to develop designation and evaluation criteria and will serve as a useful management tool for current and forthcoming NHAs.

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PARTICIPATORY MODELING OF RECREATION AND TOURISM

Lisa C. Chase, Ph.D.
University of Vermont Extension
11 University Way #4
Brattleboro, VT 05301
E-mail: Lisa.Chase@uvm.edu

Roelof M.J. Boumans, Ph.D.
University of Vermont

Stephanie Morse
University of Vermont

Abstract.—Communities involved in recreation and tourism planning need to understand the broad range of benefits and challenges—economic, social, and ecological—in order to make informed decisions. Participatory computer modeling is a methodology that involves a community in the process of collectively building a model about a particular situation that affects participants' lives. This research attempts to combine the diverse perspectives gained through stakeholder involvement with the analytical tools of dynamic modeling to help communities make better-informed decisions regarding recreation and tourism development. A comparison of the developed models and an evaluation of the participatory process will yield a unified general model and inform the direction of future research.

1.0 INTRODUCTION

Recreation and tourism have long been considered "the other economic mainstay" in the Northern Forest [New York, Vermont, and New Hampshire] (Northern Forest Center 2002). Efforts to promote recreation and tourism in the region date back well over 100 years. During that time, tourism has been viewed as a savior and a scourge, and just about everything in between (Albers 2000).

Indeed, recreation and tourism development have led to mixed results. Many communities have come to rely on tourism as a way to diversify incomes in resource-dependent economies, yet tourism has a reputation of being unable to support "living-wage jobs," providing only minimum wages in the service sector with few opportunities for advancement (Northern Forest Center 2002). Recreation and tourism are sometimes credited with promoting environmental conservation, and often accused of contributing to environmental degradation. Unquestionably, tourism creates concentrated stress on natural and man-made systems that were not designed to manage large numbers of people and heavy use (e.g., water systems, roads, garbage disposal). Many cultural attractions are supported by tourism and even created for tourists, yet tourism can diminish the small-town charm and sense of place appealing to residents and tourists alike (Krannich & Petrzelka 2003).

Understanding the broad range of benefits and challenges—economic and social, as well as ecological—is essential for communities involved in recreation and tourism planning. Yet the amount of information and conflicting perspectives can be overwhelming. Identifying the intrinsically linked components of tourism is a first step in describing its potential as a development tool. Planning processes are needed that identify both the positive and negative aspects of tourism development and provide research-based tools for decision makers with regard to the type, size, scope, and potential of the development (Lowry, in preparation). The challenge is to bring communities together to create a shared vision that encompasses, but is not limited to, individual perspectives.

1.1 Systems Thinking and Dynamic Participatory Computer Modeling

Computers have long contributed to problem solving by providing decision-making support in complex systems. Dynamic model programming software allows for the quantification of components so that alternative scenarios can be simulated (Costanza & Ruth 1998). For example, the complex system of relationships associated with tourism in a particular community can be mapped out and quantified. Then variables can be changed to examine the effects. Simulations can be created that estimate how an increase in the number of tourists will impact different businesses, traffic patterns, land prices and other variables that can be incorporated into the model—or not—as a community sees fit.

Participatory computer modeling is a methodology that involves a community in the process of collectively

building a model about a particular situation that affects their lives. This approach "emphasizes the interactive involvement of affected stakeholders in the learning process about the complex system they are in" (van den Belt 2004). One of the most important aspects of modeling as a consensus-building tool is the process of its development, setting a stage for stakeholders to work together, share world views and, ideally, come to a common understanding of their shared systems. Computer modeling is a powerful tool to reconcile contrasting points of view, increase shared understanding, and resolve conflicts (van den Belt 2004).

2.0 GOALS AND OBJECTIVES

The overall goal of this research is to help sustain the economic viability and cultural vitality of rural communities in the Northern Forest. By combining the diverse perspectives gained through stakeholder involvement with the analytical tools of dynamic modeling, communities can make better-informed decisions regarding recreation and tourism development.

Specific objectives of the research include:

(1) Conducting a series of participatory modeling workshops to develop site-specific models illustrating the components and linkages related to recreation and tourism;

(2) Examining the null hypothesis that a general model exists that encompasses the site-specific models;

(3) Enhancing community capacity by involving citizens in interactive, facilitated workshops;

(4) Identifying strengths and weaknesses regarding the potential for sustainable tourism development within communities; and

(5) Evaluating the usefulness of the modeling process, and the validity and transferability of the models within the Northern Forest region.

3.0 PARTICIPATORY MODELING IN THE NORTHERN FOREST

Funding from the Northeastern States Research Cooperative supported a proposal on Participatory Modeling of Tourism and Recreation in the Northern Forest between October 2003 and June 2006. The participatory modeling research team included a modeler with more than 20 years' experience in modeling dynamic systems and a facilitator specializing in recreation and tourism, both of whom are faculty at the University of Vermont. Six communities were selected using a snowball sampling method: Saranac Lake, New York; Wilmington, New York; Northeast Kingdom, Vermont; Franklin County, Vermont; Colebrook, New Hampshire; and Carroll, New Hampshire. Key representatives involved in tourism and recreation were contacted in each state and asked to suggest communities that would be interested in such a study and to aid researchers in making contacts. The six communities were ultimately selected based on their level of interest and responsiveness to initial queries regarding the project. Once a key contact was established in each community, the researchers worked with them to identify between 10 and 20 community representatives to take part in the participatory modeling workshops. An effort was made to include a diverse set of stakeholders, including elected officials, business owners, and those that represented both advocates and opponents of recreation and tourism development.

A full-day workshop was held in each community with the intent of building a scoping model unique to each community. Each workshop followed the same agenda. The day began with a session in which community members were asked to brainstorm about tourism in their community. Initially, the facilitator encouraged each member of the community to participate in the discussion systematically. Before the brainstorming session was concluded, the conversation became more nebulous. In the afternoon, the focus turned to building a scoping model. Based on the information provided by the morning session, the modeler began to lay out the basic structure of the model using STELLA software. The modeler projected the computer screen so that all participants could see and participate in the building of the model. Community members were encouraged to interject and were frequently called upon to help define the connections and variables in the model. At the end of the workshop each participant completed an evaluation survey. Based on the information collected,

the modeler continued to refine the models following the first workshops.

4.0 COMPARISON OF MODELS AND DEVELOPMENT OF THE GENERAL MODEL

The six site-specific scoping-level models were broken into sectors containing one or sometimes two state variable(s) (i.e,. a resource stock) and its associated fluxes (i.e., withdrawals from and deposits to the resource stock) and influencing variables. This was done to achieve coarse categorization of the subsections of the models, as well as to make the models more amenable to visual comparison. Sectors were then named according to their main state variable, and aliases (i.e., ghosts) were used to maintain the relationships with variables that also were found in other sectors. The complexity of the models was determined based on the number of sectors a model contained and the number of components within each sector.

The models comprised five to seven sectors, and six prototypical sectors were identified: quality of life, culture, nature, economics, service, and infrastructure. The Saranac and the Wilmington models had the prototypical complement of six sectors, four of the six models had one or two unique or missing sectors, but all six of the models had a "quality of life" sector and a "natural resources" sector. The Northeast Kingdom model did not include a "cultural" or social capital sector and had a unique "risk management" sector. The Carroll model was missing an "infrastructure" sector, and the Franklin County model had an additional "trust" sector while lacking "service." Besides these differences, the Colebrook model was the most anomalous. It did not include an "economics" or "infrastructure" sector, and it had three unique sectors not found in other models.

This model comparison led to the construction of a general model (still in progress) which combines the similarities while reconciling the differences of the six site-specific models. The result will be one model that is based on shared insights on local development dynamics as perceived by six rural communities in the Northern Forest. The general model will be coded to allow the differences among the communities to be explored through the use of scenarios and through inputting data. In creating the general model, we will produce an economic planning tool for rural communities in the Northern Forest that is applicable beyond the communities that helped us to conceive it.

5.0 EVALUATION

Herman et al. (1987) distinguish between two different types of evaluation: summative and formative. Summative evaluations review the long-term effectiveness of a program to meet its goals. Formative evaluation is conducted earlier and repeatedly, focusing on program improvement. A formative evaluation helps determine gaps in understandings, and is often completed through self-evaluations mediated by a facilitator (Boston 2002). Our evaluation here is formative, as the research and management models have not been finalized, and we are not yet able to assess how the model will be used to aid in community decision-making.

We set out to build social capacity and help communities make better-informed decisions about tourism and recreation, with the ultimate goal of helping sustain the economic viability and cultural vitality of rural communities in the Northern Forest. Here, we will evaluate the extent to which we were able to accomplish this goal in the scoping model phase.

5.1 Survey Response

After each workshop, the participants completed an evaluation form to help researchers assess the value of the workshops and the process to the participants. Seventy participants, each attending one of the six workshops, submitted evaluation surveys. The evaluation form asked participants to comment on what they found most and least valuable during the participatory modeling process. In order to quantify the open-ended comment sections of the surveys, comments were allocated into general clusters of comment types. The frequency of comment types and the general patterns and trends were assessed. If one respondent included multiple comments that fit in different comment clusters, each of those comments was counted individually. Therefore, the number of qualitative comments assessed is greater than the number of surveys received.

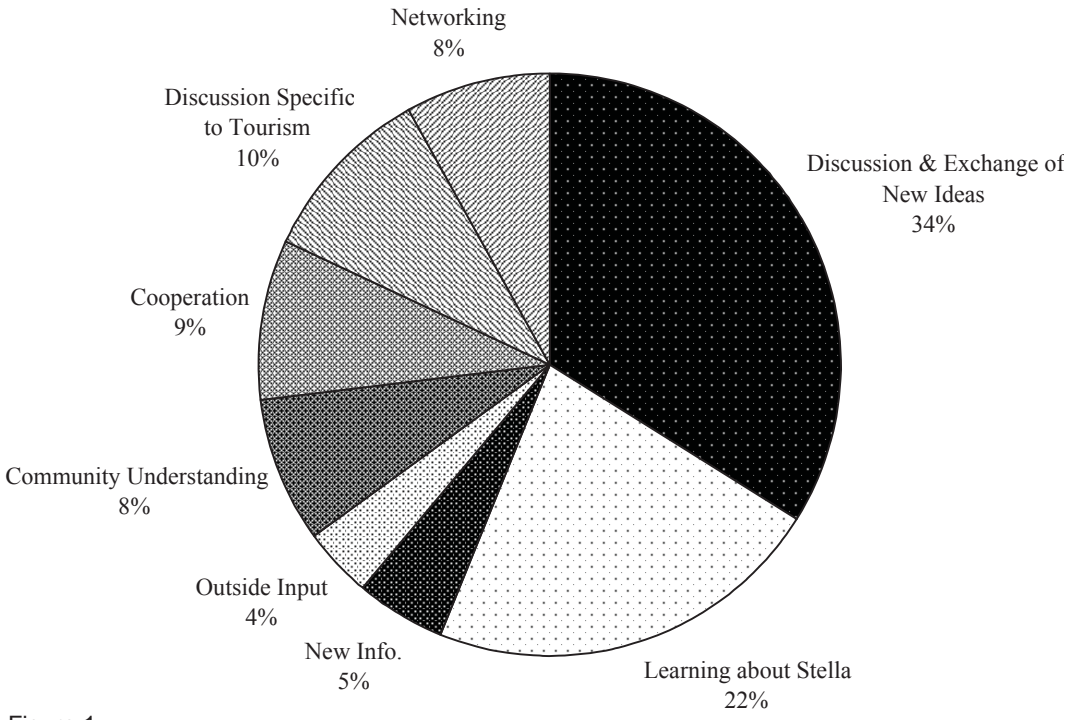

Figure 1.

5.2 Evaluation Findings

When asked what they valued most about the workshops they attended, participants submitted textual comments that were then divided into eight different categories. These categories included the following: 1) learning about the potential for modeling; 2) discussion and open exchange of ideas; 3) meeting people and networking; 4) discussing tourism; 5) interaction and cooperation; 6) better understanding of community and its issues; 7) outside input from the university; and 8) new information/data. All respondents provided some comment in answer to this question. The most commonly reported "valuable aspect" was the discussion and open exchange of ideas (Figure 1). One-third of the submitted comments addressed the importance of this workshop attribute. The second most common response was the value of systems modeling in a community-decision process.

Participants were also asked what they found least valuable about the workshops. Over one-third (35%) of respondents chose not to comment (Figure 2). Comments were clustered in the following categories: 1) no solid product, 2) nothing invaluable, 3) too slow in starting and more initial direction and focus needed, 5) key people missing, 6) lack of time, 7) the difficulty of learning modeling, 8) lack of data, and 9) miscellaneous. While the comments defining the most valuable aspects of the workshops were largely dominated by two categories, those comments describing the least valuable aspects were more varied and more evenly distributed. An approximately equal number of comments addressed the difficulty of learning modeling, the slow start and lack of initial direction and focus, the shortness of time, and the absence of a solid product (Figure 2).

6.0 CONCLUSIONS

Given that community members most valued the discussion and exchange of new ideas, we will proceed by conducting another round of workshops. This will continue the dialogue in the communities that wish to advance further in this process. In these workshops, we will present the participants with the general model and work with them to incorporate the necessary data to tailor it to their community. With the data in place, we will then be able to run scenarios chosen by the participants to illustrate different potential development choices.

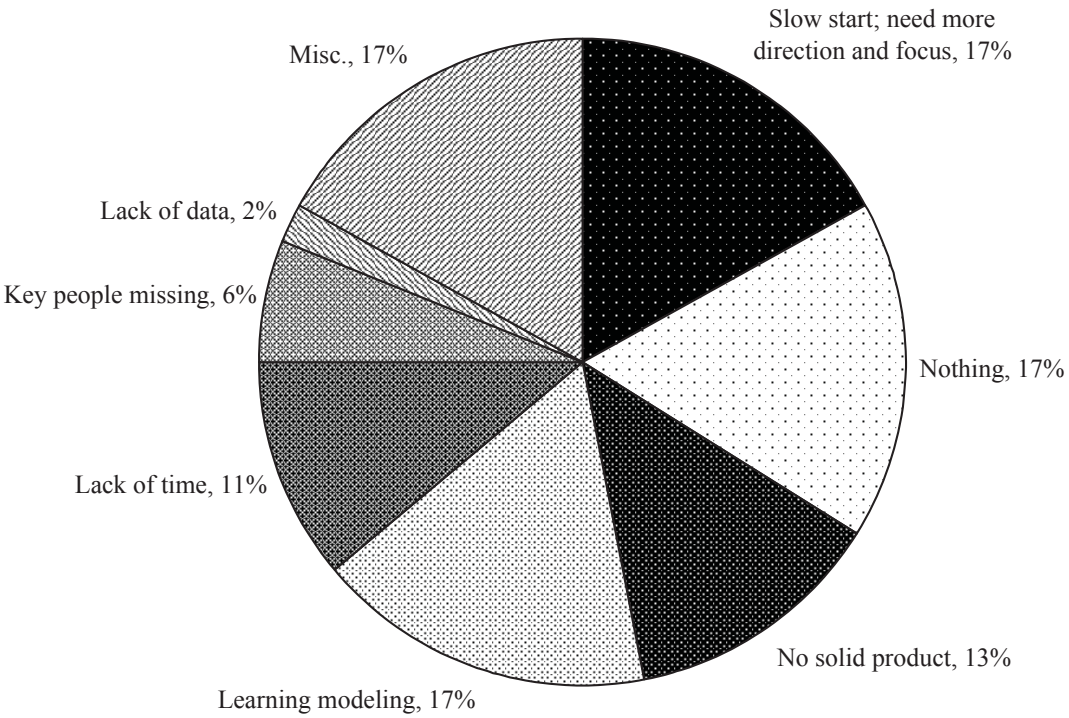

Figure 2.

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Management Roundtable

GETTING "BOATER" ALL THE TIME: MANAGING FISHING BY BOAT ON NEW YORK CITY WATER SUPPLY RESERVOIRS

Jennifer A. Cairo
Land Manager, Public Access and Recreation
New York City Department of Environmental Protection
Bureau of Water Supply - Watershed Lands and Community Planning
71 Smith Avenue
Kingston, New York 12401
jcairo@dep.nyc.gov

Abstract.—In 2003 the New York City Department of Environmental Protection Bureau of Water Supply undertook a five-year initiative to improve fishing by boat on its Water Supply reservoirs and controlled lakes in upstate New York. The project includes cleanup of administrative procedures and boat fishing areas on reservoir shores; improving two-way communication with anglers; inventorying, assessing and improving boat storage areas; and creating a long-term management plan for deep water fishing access. A focal point of the project is the development of Boat Area Rapid Assessment (BARA), an evaluation tool for establishing boat storage area carrying capacities.

1.0 INTRODUCTION

The New York City Department of Environmental Protection Bureau of Water Supply (DEP) is charged with ensuring a continuous supply of high-quality drinking water to nine million New York State residents. This water comes from a 2,000 square-mile up-state watershed that encompasses most of the Catskill Mountains and lands east of the Hudson River in the counties of Dutchess, Delaware, Greene, Putnam, Schoharie, Sullivan, Ulster, and Westchester. DEP owns over 120,000 acres of land in the watershed for the purpose of source water protection. These Water Supply lands are interspersed with private and public holdings, and lie within over 60 other municipalities.

Public access to some Water Supply lands for certain low-impact recreation is allowed by permit and in designated areas. Public access to Water Supply lands for recreation is established in the Water Supply Act of 1906, which requires DEP to accommodate ice fishing, shoreline fishing, and fishing by boat, and the 1997 New York City Watershed Memorandum of Agreement, which assures public access for historical hiking, fishing, and hunting on newly-purchased Water Supply lands by permit and where appropriate for public safety and water supply protection. These recreation opportunities are also provided to economically and culturally benefit watershed communities, promote appreciation and understanding of watershed conservation, and foster a land stewardship ethic among recreational users, who are often Water Supply neighbors and watershed residents (New York City Department of Environmental Protection Bureau of Water Supply 2003).

1.1 History

Fishing by boat on Water Supply reservoirs and lakes has been a popular activity for several decades. For many years DEP's approach to boat fishing has included permanent, on-site storage of anglers' privately-owned, non-motorized rowboats on the shore of the reservoir or controlled lake where the angler wishes to fish. On-site storage is required to reduce the possibility of contamination by substances or organisms, such as zebra mussel larvae, from other water bodies. In order to place a boat on Water Supply lands, anglers have their vessels inspected, steam-cleaned and registered at one of five DEP offices around the watershed. Areas of shoreline are designated as boat storage areas; in many cases these storage areas were created by anglers placing their boats in what they found to be desirable locations that were later designated as boat storage areas. Within these areas, anglers typically secure their boats by securing them to trees with chains or cables and locks. Boat storage and angler access near infrastructure is restricted by 500-foot no-entrance zones around intakes, dams, and similar features.

2.2 Current Status

In spring 2003, the Bureau of Water Supply reorganized, and management of boat fishing was assigned to a different division and reviewed. At that time, approximately 12,000 private boats were believed to be stored on the shores of all 21 controlled lakes and

reservoirs for fishing use. An accurate count of boats on Water Supply lands was difficult to obtain; enforcement of registrations had not been consistent at all locations, documentation of registrations varied between issuing offices, and records in some cases were difficult to access due to database limitations. Anglers were required to have three separate permissions to use a boat for fishing on Water Supply lands: a DEP fishing permit for the angler, a boat registration carried by the boat owner, and an annual boat validation sticker displayed on the boat.

Public complaints about fishing by boat were not excessive, but some issues raised by anglers and neighboring property owners were recurrent. These included boat crowding, trash in boat storage areas, unused boats blocking desirable storage spots, poor enforcement of registration and use rules, and unsightliness (New York City Department of Environmental Protection Bureau of Water Supply 2004)

Review of boat storage areas revealed conditions of concern to water quality protection, public safety, and recreational enjoyment. Boat storage areas frequently included exposed and eroded soil, social path networks, tree mortality due to girdling and constriction from chains used to secure stored boats, and non-native invasive vegetation. Some boat storage areas were also poorly located in relation to parking opportunities, such as on the opposite side of a four-lane highway on a blind turn, with ingress to the storage area blocked by continuous vehicle guide rails.

2.0 IMPROVEMENT STRATEGY

In the summer of 2003 DEP developed a strategy by which to assess and improve boat fishing. Goals for this project are to meet legal commitments, integrate boat storage and use closely into the Bureau of Water Supply mission, offer outstanding deep water fishing opportunities, and minimize agency resource expenditures. The strategy includes five initiatives to be completed over five years and maintained thenceforth. These include:

1. Clean up administrative procedures and documentation, permitting, boat areas, and abandoned boats;
2. Communicate with anglers by providing interpretation and outreach, and obtaining feedback;
3. Inventory, assess, and prioritize boat storage area issues;
4. Improve and maintain boat storage areas; and
5. Finalize a long-term management plan for deep water fishing access.

The strategy and ensuing project were informed by review of other boat fishing programs, especially on the Saltonstall Reservoir of the New Haven, Connecticut, water supply (Interview and site visit: Kate Powell, November 2002), and feedback from reservoir boat anglers. Observation of boat fishing administration, management, and storage area conditions, and the results of a Boat Working Group composed of DEP land management, water quality control, engineering, and police staff which met in May 2003 also helped develop the project approach.

2.0. CLEAN UP

From 2003 to 2005 cleanup of administration methods and boat storage areas were priorities. Boat registration databases were improved by removing errors and duplicates. They were then subsumed into the centralized database used for all other land management and recreation activities. This allowed boat fishing information to be linked to other Water Supply land activities, such as property inspections, hunting, hiking, and maintenance projects. Database processes for boat registration and management were developed, and the system made available at all offices involved in boat fishing. This helped assure consistent administration and documentation from office to office, as well as database integrity. It also allowed for more customer-friendly fishing; a permit formerly required of anglers became unnecessary and was eliminated, and boat registrations were extended to two-year duration rather than one. Centralization also reduced resources required for boat administration, freeing up local office staff for other duties.

In the field, nearly 5,000 unseaworthy and unregistered boats were removed or updated by their owners. The first

"reservoir cleanups" were also held; volunteers assisted staff with trash removal from reservoir lands. These are now an annual event with at least one reservoir cleanup scheduled for each reservoir and lake in the warmer months. Attendance in the 2005 season was over 220 participants at 20 locations with over 20 truck-loads of trash removed.

2.1.Communication

Also beginning in 2003, improved communications with boat anglers was recognized as a priority. Many anglers seemed unaware of registration obligations, responsible land use methods, and land managers' desire for angler feedback. To address this deficit, part of the biannual newsletter *Watershed Recreation* was dedicated to boat angler news. Registration renewal applications were also mailed directly to the boat owners before expiration to encourage compliance, and renewal applications included a boat owner survey to obtain information on boat use, program satisfaction, and improvement ideas. An e-mail address was created for direct communication on recreation-related comments and questions, and now handles an average of over 400 emails per month, which are regularly reviewed. Staff also reached out to some key stakeholders, such as sporting clubs and advisory groups, for feedback and ideas.

2.2.Inventory and Assessment

A baseline inventory and assessment of boat storage areas began in 2004. This was the first comprehensive review of boat area conditions to be conducted. Goals were to: 1) rapidly inventory significant characteristics in existing boat areas, 2) identify which boat areas could be improved or should be phased out of use, 3) determine boat storage carrying capacities, 4) retain some boat storage capacity on each reservoir and 5) develop initial boat area management criteria. As a first step, all boat areas were mapped using Global Positioning Systems technology and represented with Geographic Information Systems (GIS) software in the land management database, geo-referenced to City property. A method was then developed to help achieve these goals. This method is called *Boat Area Rapid Assessment* (BARA).

2.3.1 Boat Area Rapid Assessment

BARA is a systematic tool for inventorying boat storage areas and using the data to determine boat storage area carrying capacity. An existing boat storage area assessment tool suitable or adaptable to DEP's needs was initially sought. On-site storage of non-motorized row boats for purposes of angling and excluding general recreational use with a steam-cleaning requirement and on an unfiltered water supply appear to make the DEP situation somewhat unique, however, and no suitable model was found. BARA was therefore developed based upon staff experience with and observation of DEP boat storage areas and boat use, the limits of acceptable change (Stankey et al. 1985) and visitor impact management (Graefe et al. 1990) approaches, input from an academic authority on conservation area recreation (Interviews and site visit: R. M. Schuster, May 2004), and "trial and error" on some boat storage areas East of Hudson, where angler use is highest.

The first step in creating BARA was to identify the characteristics of boat storage areas that are important to inventory and could be used to determine boat storage capacity. Twelve characteristics were selected. These criteria are:

- **Access safety**—Can recreational users get to the boat storage area from parking in relative safety? This was evaluated by giving each parking access a number score. One point was deducted for more than two lanes of traffic and one for poor line of sight, or the inability to see oncoming traffic at a distance great enough to allow sufficient reaction time. Parking areas on the opposite road side from the boat storage area lost 2 points, and 0.5 was deducted for every 10 miles per hour of speed limit over 35 miles per hour. Boat storage areas for which the main parking access received a score of less than or equal to -3 total points were determined to be remarkable.
- **Parking capacity**—How many vehicles can park to access the boat storage area? One vehicle parking spot was considered to be 16 feet in length and wide enough to have both sets of tires

off pavement or outside the road shoulder line where lines existed.

- **Distance from parking to boat storage area—** How many feet away from parking are the stored boats? It is believed that a longer distance for anglers to walk will decrease use of a boat storage area.
- **Slope of boat storage area**—What is the average slope (%) of the storage area? A steeper average slope across a boat storage area could invite erosion directly into reservoirs and indicates accommodation of fewer boats. Slope was measured with a manual clinometer.
- **Slope of boat storage area at shoreline**—What is the slope (%) at shoreline in the storage area? Steeper shoreline slopes could be an obstacle for boaters trying to move their boats from storage to water and back, and is reason to accommodate fewer boats. Slope was measured with a manual clinometer.
- **Estimated extent of erosion**—What percentage of the boat storage area is estimated to be eroded due to boat storage and use of stored boats? Erosion on the shores of water supply reservoirs is a significant threat to water quality. The presence of erosion is therefore regarded as reason to limit boat storage.
- **Estimated extent of exposed soil**—What percentage of soil in the area has been denuded and exposed due to boat fishing? Exposed soil can become eroded soil more easily than vegetated soil, and is considered a limitation on boat storage capacity.
- **Tree damage**—Are 50 percent or more of the trees damaged due to fishing by boat? This included any type of impact that could be reasonably attributed to the activity of fishing by boat in the area, but most often was girdling or constriction by chains or cables wrapped around trees by boaters in order to secure their vessels.
- **Count of hitches**—How many opportunities for anglers to secure their boats exist in the boat storage area? While securing boats to trees is undesirable from a land management view, they were counted as boat hitches in this inventory for practical reasons; without trees most boat areas would have no hitching capacity. It is assumed that most anglers will not store boats in areas where they cannot secure them from theft.
- **Aesthetics**—Do boats appear crowded, is there trash, is the storage area visible from the nearest roadway, and does there appear to be 50 percent or greater wear, erosion, or vegetation loss in the storage area? These are all visible detractions from a boat storage area. This characteristic was given a numerical score; each positive response to these four factors earned a score of -1 for a possible total of -4.
- **Can a ten-foot vegetated buffer be established along the shoreline?** A minimum ten-foot wide vegetated buffer between the shoreline and stored boats is desirable to reduce direct inflow of runoff and the entrance of silt or contaminants into reservoirs. This characteristic evaluates whether or not a vegetated buffer may be established at some future time. At the time of inventory, boats in all areas were stored directly on the shore with little or no vegetated buffer present under or around boats. In some boat areas, for example, rock slabs or insufficient distance between the reservoir shore and roadway preclude the creation of a vegetated buffer, while in others, current storage of boats on the shore is the only obstacle.
- **Can the area be improved for boat storage?** This characteristic evaluates whether or not a boat area, given its limitations, is a good investment for remediation. In some cases, remediation of a boat area is not feasible, e.g., off-side parking on the blind turn of a four-lane highway or extreme steepness cannot reasonably be improved. These examples would be rated “no”. An eroded storage area that can be remedied through water management techniques, for example, would receive a “yes”.

Three of these variables were found to be useful for inventory, but not directly relevant to establishing carrying capacity and were omitted from that assessment.

Tree damage existed in nearly all storage areas, but in none did it exceed 50% of all trees; the measurement standard selected was not sensitive enough to capture tree impacts. Impact on trees was also observed to be unrelated to the number of boats stored in an area, rather on how anglers using the area treated the trees. It was decided that silvicultural needs on reservoir shores existed independent of boat storage and therefore should be omitted from boat area assessment, but might be used to help set reservoir maintenance priorities. Although a management concern, aesthetics was also determined to be unrelated to boat carrying capacity. Trash and vegetated screening are maintenance and management issues not necessarily related to the number of boats in the area, and wear and crowding would be adequately captured elsewhere in the assessment. Finally, the distance of the boat storage area from the primary parking opportunity, although a potentially useful descriptor, is not directly relevant to the number of boats an area should accommodate.

Several other inventory characteristics were initially considered but rejected. Measurement of soil compaction, exposure, and erosion were regarded to be too time-consuming for a rapid assessment tool. For the purpose of this project, soil compaction also seemed to be subsumed by exposed soil. A single slope measurement of each boat area was rejected as too broad to be a useful characteristic. Vegetation composition (e.g., extent and type of invasive non-native species) and trash accumulation were determined to be maintenance issues independent of boat storage area carrying capacity. The existence of guide rails between boat areas and access points was documented, but not used in boat area assessment because these can be modified as needed and, given their existence in several popular boat storage areas, are not likely a significant obstacle to access for many anglers. Finally, water depth and the quality of fisheries near the boat storage area were not included; it was assumed that over the decades anglers had selected storage locations based at least in part on these characteristics, thereby making these variables superfluous.

2.3.2 Establishing Carrying Capacity

BARA was used to establish each boat area's storage "carrying capacity," or maximum desirable number of stored boats, by revising a gross storage potential for each boat area in four consecutive steps according to the inventory data collected. The gross storage capacity of each area is the number of boats that could fit in each storage area regardless of all other characteristics. This value was obtained from the area of the location. The area of each storage location was calculated using GIS data. Since registered boats are 12 to 14 feet long and at least 4.5 feet wide according to DEP rules, and anglers need room to move around boats, 72 square feet were allotted for each boat.

With this quantity of boats as a starting point, inventory data are systematically used site by site to create a final boat storage carrying capacity. This analysis is in four sequential steps: 1) assess for elimination criteria, 2) establish an initial boat carrying capacity based on usable land area and hitching opportunities, 3) incorporate natural resource characteristics, and 4) recognize parking limitations.

1) Assess Elimination Criteria

Each boat storage area is assessed in regards to access safety and whether or not the opportunity to develop a vegetated shoreline buffer free of boats exists. These are the first characteristics considered because they are not realistically mutable and are regarded to be of primary importance to visitor safety and water supply protection. In this step, areas scoring less than -3 for access safety or given a "no" for the vegetated buffer characteristic are eliminated; they are closed for purposes of any new boat storage and are given a carrying capacity of zero boats. Boat areas given a carrying capacity of zero (K=0) in this step are not evaluated in steps two through four.

2) Establish Initial Boat Carrying Capacity

For each boat area not eliminated in Step 1, the area required for the ten-foot wide vegetated buffer (10* shoreline length) is deducted from the total boat storage area to describe the boat storage area that would be available with a vegetated buffer in place. The total estimated hitches in this revised boat storage area are calculated by deducting the estimated number

Table 1.—Reduction in boat area carrying capacity according to erosion level

Percentage of Boat Storage Area Eroded	Number of Boats Deducted from Ki
0 - 10 %	-0
11 - 15 %	-20
16 - 20 %	-40
21 - 25 %	-65
26 – 30 %	-96
≥ 31%	K= 0

Table 2.—Reduction in boat carrying capacity according to amount of exposed soil

Percentage of Boat Storage Area with Exposed Soil	Number of Boats Deducted from Ki_1
0 - 10 %	-0
11 – 20%	-20
21 – 30 %	-40
31 – 40 %	-80
≥ 41 %	K = 0

of hitches in the vegetated buffer, where no boats will be stored, from the total count of hitches. The estimated number of hitches in the vegetated buffer is derived by finding the average number of square feet per hitch in the boat storage area, then using this average to deduct the number of hitches that would be in the vegetated buffer. The remaining number of hitches is multiplied by two, since each hitch can accommodate two boats, to obtain a number of boats – an initial carrying capacity (Ki) - that can be stored in the area.

3) Incorporate Natural Resource Conditions

Three steps pertain to the natural resource conditions of the boat storage area. One step addresses erosion, one exposed soils, and one slope. The presence of erosion, exposed soils, and steep slopes in a boat storage area will reduce the boat carrying capacity of the area. For each characteristic, the amount by which the boat carrying capacity is reduced at each natural resource impact level was determined by observation and trial and error; while a number of boats may need to be limited in some areas due to natural resource conditions, boat storage opportunities for anglers could not be severely curtailed.

For erosion, a certain amount of boat storage capacity is deducted from Ki at each estimated level of erosion. As erosion increases, the number of boats deducted increases with extensive erosion, yielding a carrying capacity of zero (Table 1). The result of this assessment is the new carrying capacity, a number of boats Ki_1.

The presence of exposed soils is treated similarly, with the new Ki_1, after erosion reductions, being further modified to reflect conditions regarding exposed soils. The more estimated exposed soil in the storage area, the more boat carrying capacity is reduced (Table 2). The results of this assessment step is the new carrying capacity, a number of boats Ki_2.

Slope of the boat storage area is again treated similarly, with the new Ki_2, after exposed soils deductions, further modified to reflect the slope of the storage area. The greater the slope of a storage area, the more boat carrying capacity is reduced (Table 3). Where average slope across the boat area equals or exceeds the slope at shoreline, the deduction in boat carrying capacity is proportionately greater than in situations where the shoreline slope exceeds the average slope across the whole storage area. This is because

Table 3.—Reduction in boat carrying capacity according to storage area slope

Slope in percent, where % slope at shoreline > average slope of boat storage areas	Number of Boats Deducted from Ki_2
1 – 20 %	- 0
21 – 30 %	-30
31 – 40 %	- 60
≥ 41 %	- 120
Slope in percent, where % slope at shoreline ≥ average % slope of area	**Number of Boats Deducted from Ki_2**
0 – 15 %	- 0
16 – 20 %	- 10
21 – 25 %	- 30
26 – 30 %	- 60
≥ 31 %	- 120

greater shoreline slope is regarded to be self-selecting, with fewer anglers willing to maneuver their vessels in and out at a steep shoreline, and this requires less capacity reduction. Also, the potential threat of erosion from steeper slopes across the whole boat area is possibly more significant than a steep shoreline. The result of this assessment step is the new carrying capacity for the boat area, a number of boats Ki_3.

4) Recognize Parking Limitations

The boat area carrying capacity Ki_3 is now assessed in terms of parking availability. A minimum of 10 boats per parking space was selected as the per boat parking ratio based on existing boat/parking space ratios, and staff observations that relatively few boats were ever simultaneously in use, even on the busiest fishing days. Where Ki_3 exceeds parking, the carrying capacity is reduced to create a storage capacity of no more than 10 boats per parking space. This is intended to assure adequate parking for each boat storage area at maximum use.

2.4 Improve, Maintain, and Close Boat Storage Areas

By late 2005, certain boat storage areas that had been assessed with BARA could be maintained according to the established carrying capacities, and prioritized for improvement or eventual closing. Carrying capacities were established for most of the East of Hudson boat storage areas. Each was documented in the land management database and linked to the boat storage area so that staff can register boats for specific locations according to storage availability. The database tracks total carrying capacity for each area as well as current availability. The database also notes what characteristics of those evaluated present challenges at each boat storage area in anticipation of re-evaluation and the opportunity to undertake improvements.

Improvements to boat storage areas are currently undertaken as opportunities arise. In one instance, a storm water management project in early 2005 near a boat area also encompassed installing metal hitching posts and a gravel access apron at the shore in the boat storage area according to a site plan. This improvement could reduce shoreline impacts by steering traffic in and out of the water to a single, improved access point, encouraging the establishment of a vegetated buffer elsewhere on the shore, and providing structures for securing boats other than trees.

Storage areas that were identified in BARA as remarkable due to safe access issues and no opportunity to develop vegetated shoreline buffers are priorities for elimination. Anglers have stored their boats in the same areas for years and are attached to them, however, and on several reservoirs adequate additional storage for the boats that would have to be moved from these areas is not currently

available. For these reasons, storage areas that did not pass Step 1 of BARA are closed to new boat storage. It is anticipated that most will be eliminated by attrition as anglers remove boats on their own. Once new storage opportunities can be identified, anglers may be asked to move their boats from these areas.

2.5 Management Plan

Developing a management plan for fishing by boat is the final stage of the strategy. A primary part of the final management plan will be to integrate use of the database and inventory characteristics into regular inspection and maintenance of boat storage areas. Maintenance of boat storage areas currently includes only inspection of boat registrations with no attention to land or recreation resource conditions. The inventory effectively provides a baseline of boat storage area conditions; these should be monitored and remediation undertaken as needed, including changing boat storage carrying capacities as indicated by changes in inventory characteristics and improvement work in boat areas. The management plan should also describe the means to close and create new boat areas. The boat management plan should be integrated into land management at the reservoir level, coordinating boat fishing with other recreational uses (i.e., hunting), forest management, and property maintenance, and be related to recreational use levels and patterns, and user demographics, in the watershed community context.

3.0 RESULTS

Currently nearly 9,000 people own 11,400 boats on Water Supply lands, out of a total 97,000 estimated recreational users of City Water Supply property. Of the total 250 boat storage areas, 178 have been inventoried using BARA. These are all on Water Supply reservoirs and controlled lakes east of the Hudson River. Carrying capacities have been implemented for 150 of the assessed boat storage areas. Sixty-eight of these are closed to new boat storage, and one has been substantially improved. In the third year of the five-year initiative, steps one and two of the improvement strategy - cleanup and communication - are complete and the results are being actively maintained. Inventory is 71 percent complete, and assessment 60 percent. Improvement of boat areas is 10 percent complete and creation of a final boat management plan 20 percent; improvement of individual boat storage areas is expected to be gradual over several years as resources can be made available. Alternative means of providing deep water fishing access, such as fishing piers or providing boats for general public use, have been raised as a result of this project. A brief draft plan for boat management has been created. In 2006, data collection and assessment is scheduled to continue on the West of Hudson reservoirs as is reconvening the Boat Management Working Group to review what has been done to date.

4.0 DISCUSSION

A main point of interest in this project is the selection and use of the boat area inventory characteristics. Conducting the inventory on reservoirs west of the Hudson River may show that the inventory characteristics and their value in calculating carrying capacity may need modification; shorelines are generally steeper West of Hudson, angler use of boat storage areas more diffuse, distances from parking to boat storage areas longer, and boat storage areas larger with fewer boats.

It would be interesting to use the inventory characteristics to describe what makes a good boat storage area from the anglers' point of view. Since current boat storage areas were largely created by the anglers themselves, it would be informative to analyze boat area characteristics for their predictive potential –can we determine from the existing boat areas what characteristics of boat storage areas are most important to anglers? How are they weighted relative to each other? For example, is a short distance from parking to the storage area more important than the steeper slope of the area to the angler? Location of good fisheries, deep water, and other characteristics would likely need to be included in such an analysis. This analysis would help improve existing boat storage areas and create better new ones.

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TOURISM IMPACTS

HUMAN ECOLOGICAL SOURCES OF FISHING HERITAGE AND ITS USE IN AND IMPACT ON COASTAL TOURISM

Steve Jacob
Associate Professor of Sociology
York College of Pennsylvania
409 MAC Building
York, PA 17405

Jeff Witman
York College of Pennsylvania

Abstract.—Commercial fishers and fishing-dependent communities are experiencing tremendous challenges. For at least a decade, commercial fishers have seen increasing regulations, rises in operational and capital costs, increasing foreign competition, resource depletion, environmental degradation, changing allocations from commercial to recreational use, and coastal gentrification. We found that all members of commercial fishing families are involved in production, not just the fisherman. Natural resource production occupations, such as commercial fishing families and family farms, are perhaps the last sector of the economy where the traditional family is an economic unit. Traditional family structures once aided economic production in extractive jobs. Now fishing and farming can only rarely support a family and its labor resources. What we have lost is not the commercial fisherman, but rather a stable and traditional family structure that supported local seafood production and helped form the identity of the local community. This paper begins by examining the successful development of heritage tourism among farmers and the Amish. From these examples, we then outline strategies that might be of use in the development of heritage tourism in fishing communities so as to help preserve this way of life.

1.0 INTRODUCTION: LOSS OF FLORIDA'S CULTURAL HERITAGE

In times past, some coastal villages and communities in Florida were founded and organized around supporting commercial fishermen and the economy of such places was primarily geared toward fishing income. Now, few communities are organized around the commercial industry and even fewer places are heavily dependent upon commercial fishing income (Jacob et al. 2001). Though commercial fishing families are still actively fishing, the communities around them have shifted in orientation. This transformation of communities' economies can be characterized as a transition to other industries, such as retail and services. In many coastal communities, this transition has included the development and promotion of tourism and recreational fishing. Commercial fishing families have endured these changes, and worked hard to adapt to the many additional regulations that have impacted the industry. Now, a once vibrant fishing industry is reduced to a dwindling number of families who are no longer a central part of the greater community's economy. Many commercial fishing families have maintained their way of life, but the very communities around them have changed. Now, local communities do not always support commercial fishing, and many actually may hinder seafood production. These changes have hastened the transition of coastal communities so that this once important part of Florida's cultural heritage has been lost.

We had heard from some of our key informants that "taking the commercial fisherman out of Florida is like taking the Cowboy out of Texas." For many, the American cowboy represents rugged individualism: pitted against the elements, the man is tired and weathered, but formidable and resilient. The commercial fishermen in our study often portrayed this image, but we also saw fishing families that did not fit the stereotype. We found that all members of commercial fishing families are involved in production, not just the fisherman. In fact, (Smith et al. 2003) found most fishermen were dependent upon their wives' non-fishing income to continue fishing. Recent research indicates in a five-year period, Florida fishing families' reliance on income from fishing fell from 79 percent of family income to only 58 percent, with the majority of non-fishing income being contributed by wives (Smith et al. 2003). Natural resource production occupations, such as commercial fishing families and family farms, are perhaps the last sector of the economy where the traditional family is also an economic unit. Traditional family structures aided economic production in extractive jobs. Now fishing and farming can only rarely support a family and its

labor resources. What we have lost is not the commercial fisherman, but rather a stable and traditional family structure that supported local seafood production and helped form the identity of the local community.

There has been a significant cultural loss in the passing of the traditional way of life for Florida's commercial fishing families and communities. However, these families have shown great resourcefulness in continuing in an industry (and consequently a way of life) that has not been kind to them recently. It seems likely that fishing families will prevail, but not in the numbers we have seen in the past, nor will they look like they once did. Any opportunity to earn additional income from fishing-related activities would help these families and possibly help preserve this heritage. Following this section, we will review forms of cultural heritage to examine if fishing heritage tourism is a potential source of "fishing related - off water income" with survey data from fishers and residents of six coastal communities in Florida.

2.0 HERITAGE TOURISM AND EXEMPLARS

Cohen (1984) suggests that tourism for many is the modern equivalent of the religious pilgrimage in that they both are quests for authentic experiences, in contrast wtih the shallowness and inauthenticity of modern life. Often in tourist areas, authenticity is "staged" in tourist space, and this process leads directly to the commoditization of cultural heritage. As part of this process, according to Cohen (1984) tourism generates four stages of reactions among locals as it develops: 1) euphoria, 2) apathy, 3) annoyance, and 4) antagonism. Cohen (1984) suggests that tourism reinforces or generates inflationary tendencies on any scarce resource from the fish themselves to a space at the local diner. Thus, while tourism benefits those locals directly involved, it impacts everyone else negatively. In addition, the development of a tourist industry often leads to investment from outside the community and sometimes leads to loss of control over the industry (Cohen 1984).

According to Cohen, where small-scale, locally owned "craft" tourism is slowly introduced into a less-developed context, gross earnings may be smaller but a greater percentage will be retained and there will be fewer disruptive effects. Unfortunately, there is usually a lack of entrepreneurial skills and resources, including capital, among locals. Tourism could provide additional jobs to retain children, but often just attracts outsiders who come to be employed and live in the locale. Cohen notes that there is little evidence of any effect on social mobility. Small-scale locally owned tourism ventures probably make a greater contribution to sustainable development but make deeper penetration into the social and environmental fabric, moreso than large-scale ventures confined to clearly defined locations (Cater 1995, p. 25). Tourism demand has diversified; small towns and rural areas beyond the borders of many major cities have been recognized as containing many potential resource assets for tourism. Indeed, many such places are actively attempting to capture the economic benefits of the tourism industry as a means of diversifying and bolstering their fragile economic structures (Luloff et al. 1993).

However, if tourism development in fishing communities is to be successful, it must be approached with an eye towards maximizing the positive impacts while minimizing the negative impacts associated with such economic development. That is, fishing communities need to recognize that "ill conceived and poorly planned tourism development can erode the very qualities of the natural and human environments that attract visitors in the first place" (Inskeep 1991, p. 460). It is here that some authors have applied the notion of sustainability (French 1992). In this context, sustainability refers to a philosophy which emphasizes cultural and community diversity, concern for social justice and fairness, and a strong orientation toward stability (Dehart 1991).

Social justice and tourism are tangible issues in Florida. In 1994 a public referendum that altered the Florida constitution outlawed the use of gillnets in inshore waters (Smith et al. 2003). The use of a public referendum to influence natural resource policy by circumventing the agencies that manage the state's marine resources was unprecedented. In effect, through a political process, the net ban amendment permanently altered the allocation of marine fisheries resources from primarily commercial to recreational user groups. This was achieved by a campaign that painted commercial fishers as destroying

the marine environment. So in addition to the loss of effective gear to fish, fishers were stigmatized by these characterizations as destroyers of the fragile ecology. Many fishing families, both men and women, continue to feel a great deal of anger and resentment over this unique resource reallocation process (Smith et al. 2003).

Kneasfey (1998) suggests that cultural heritage tourism in Europe has been a trend towards the conversion of production spaces into spaces of consumption. "Coalmines become museums, factories become visitor centres and, most relevant to the case of Ireland, countryside becomes leisure landscape (Kneasfey 1998, p. 111)." The emphasis in these leisure landscapes focuses on soaking up the atmosphere of the place. In a real way tourism constructs and reconstructs place identity and provides a native self-image (Kneasfey 1998). A major theme in this literature is the idea that tourism destroys unique place identities (Kneasfey 1998). This is akin to the destruction or prostitution of once unique cultures (Kneasfey 1998). "An over-arching theme of these criticisms is the idea the heritage centers contribute to the 'trinketisation', commercialization, and trivialization of culture" (Kneasfey 1998, p. 113). This is a movement from an authentic community to one that commoditizes cultural heritage in tourist space (Cohen 1984).

2.1 Farm or Agro-tourism

Farm tourism in the United States has not received a great deal of attention in the social science literature. However, there is great evidence it is growing and becoming an increasing important strategy to supplement marginal farming operations and maintain family farms. Part of this emergence has been interest in niche marketing of special products, growing interest in the cultural heritage of farming, and a relatively unique set of endowments that potentially meet tourist demands. Farm tourism can also help preserve the visual and cultural landscape. Agricultural regions' natural endowments are an important draw for tourists. Their scenic vistas and cultural charms offer an important respite to those living in more densely settled areas. The United States has had limited experience with farm tourism as a means of assisting farm families with new economic opportunities. Unlike France, which has had a farm tourism policy since 1955, or the United Kingdom, Germany, and Denmark, where farm-related tourism has been recognized as a legitimate economic activity and studied extensively (Dernoi 1983, Dower 1973. Frater 1983, Urry 1992) or Italy, where the state has had laws governing farm tourism since 1985 and instituted a special tax law related to this sector in 1992 (Vellu-Zat 1992), the American experience has received far less attention.

2.2 The Lancaster County Amish

Tourism in Lancaster County is largely based on the exploitation of Amish cultural heritage and is clearly done on a very grand scale. Lancaster County attracts visitors from nearby cities, including New York; Philadelphia; Baltimore; Washington, D.C.; and other nearby densely populated areas. It is estimated that the county receives between three to five million visitors annually who spend in excess of $500 million annually (Kraybill & Nolt 1995). Certainly, tourism is big business in Lancaster County, but at least initially, it was not anything the Amish themselves would have wanted or promoted. However, a variety of factors are squeezing the Amish, and as a consequence, the Amish have become at least partially dependent on the flow of tourist dollars to make it possible for them to remain in Lancaster County (Kraybill and Nolt 1995). Increasingly, the Amish have participated in the tourism industry willingly as entrepreneurs, or unwillingly as cultural icons for tourists to view.

There has been a dramatic shift in occupations from farming to what Kraybill and Nolt (1995) describe as Micro-enterprises. The rising cost of farmland, increasing residential development, growing tourism, and rapidly growing Amish population have limited new Amish entries into farming (Kraybill & Nolt 1995). This poses problems because the Amish have a strong preference for farming occupations, which require a great deal of hard work and family unity, and offer relatively modest financial reward. Kraybill and Nolt (1995) that three classes of Amish have now emerged: 1) farmers, 2) entrepreneurs, and 3) day laborers. They note that nearly half of all Amish in Lancaster County are no longer employed in farming, and fully one-quarter of all households had at least one entrepreneur conducting a micro-enterprise (Kraybill & Nolt 1995). Interestingly, these businesses have a failure rate of less than four

percent, and the majority of these enterprises produce income in excess of $50,000 annually, with many exceeding $500,000 annually (Kraybill & Nolt 1995). This financial success is seen by many as a potential threat to the Amish rejection of worldliness (Kraybill & Nolt 1995). This success has come in spite of only an average of an eighth-grade parochial education, an absence of most modern technology such as computers, and a rejection of any form of governmental assistance (Kraybill & Nolt 1995). To their advantage is the fact that the enterprises are small, have low overhead, and most consistently avoid the temptation to grow large (Kraybill and Nolt 1995).

Even the earliest forms of tourism in Lancaster County commoditized Amish culture. In the early 1900s tourists guides appeared—complete with apocryphal descriptions of Amish culture and suggestions on photographing Amish children by bribing them with candy bars (Luthy 1994). Next were organized large-scale bus tours of Amish areas. As early as the 1930s, restaurants with a "Dutch" theme had emerged along with Amish greeting cards and other "Dutch Stuff" (Luthy 1994). Now one can find the full complement of trinkets relating to Amish culture, most made cheaply and imported from distant places, including things like felt and straw hats, Amish dolls, cookbooks, and popular books of Amish wit and sayings.

The influx of tourism in Lancaster County, according to Buck (1978), had initially served to strengthen Amish boundaries and highlights differences between the Amish and the larger society. The emergence of large-scale exploitation of Amish culture in many ways served to protect the Amish, as tourist centers agglomerated development in a central area, away from the authentic Amish residential and agricultural areas. Having commercially operated "Amish" farms and one-room school houses, complete with wax figures, served to relieve pressure on the Amish and to shield the Amish from the majority of tourists. More recently, however, things have changed as the Amish now have many specific micro-enterprises that are dependent on tourist dollars. Interaction between tourists and the Amish has increased greatly. This undoubtedly is more economically advantageous and allows greater tourist access to authentic culture, but also allows greater penetration of social boundaries. Kraybill and Nolt (2001) sum up this experience: "Their move toward entrepreneurship marks a pivotal moment in their history as a people---a most significant adjustment to the modern world. They have struck a bargain that nourishes their economic health without conceding their cultural soul---a bargain that appears to be a good one, at least for the present generation."

2.3 Fishing Communities and Heritage Tourism

There are very few studies in the academic literature about fishing communities and heritage tourism. Much of what we write here comes from direct observation of the six communities in our study or from generalizations from a more general heritage tourism literature. Interestingly, in most forms of farm tourism, the farmer is a direct beneficiary in the endeavor. In the case of the Amish, initially they were exploited, but now tend to more actively engage in the industry in a very profitable way. Fishers seem to be more like the Amish during initial tourist development, not yet extensively engaging tourists. Many in their communities who do not fish directly, however, are marketing the local cultural heritage and benefiting, while passing many of the negative externalities onto fishers.

The vast majority of our respondents find commercial fishing to be an attractive part of the landscape. This landscape is appealing to tourists as it lets them imagine a simpler time and place when communities were dependent on resource extraction (Hopkins 1988). These feelings are dependent on the cultural landscape, including the built environment, so the majority of communities in this study have central places near the water to attract tourists with an overdone nautical theme. When these inauthentic spaces are interspersed with workboats, docks, and fish houses, it generates the overwhelming idea that one is in an area completely dominated by commercial fishing (Jacob et al. 2005). However, in our study commercial fishing is a relatively small component of the overall economy of the communities. We have also observed great diversity in the types of tourists and related development that occurs in fishing communities. Observed forms of tourists include:

1) festivals,-goers 2) day visitors, 3) niche marketing of seafood, 4) overnight guests, 5) snowbirds, 6) recreational fishers, and 7) eco-tourists. All of these forms of tourism were thought to lead to growth of newcomers in the local community by our key informants.

Fishing culture is directly marketed and sold to many tourists. Shanty boutiques sell "nautical crafts" for interior decorating. Fish nets of wrapped plastic to be placed on a wall, marker buoys that are "distressed" with faux paint, and rowboat shelves are common in these stores. Trinkets targeted for children are also common, with rubber sharks, plastic bathtub boats, and captain's hats being among the favorites. In addition, many local restaurants specialize in seafood (usually with a nautical motif), but when we inquired if the fish and shellfish come from local sources we usually were told the seafood was imported.

3.0 METHODS

We used a typological approach to identify communities to study. We began in 2000 by placing all Florida coastal communities into six categories: 1) Atlantic Coast—gained commercial fishing employment; 2) Atlantic Coast—lost commercial fishing employment; 3) Atlantic Coast—neutral; 4) Gulf Coast—gained commercial fishing employment; 5) Gulf Coast—lost commercial fishing employment; 6) Gulf Coast—neutral. This determination of whether fishing employment was growing, declining, or holding steady was made for the time period 1994 -1996, a year before and a year after the 1995 Florida net ban, restricting the use of nets in inshore coastal waters (See Smith et al. 2003 for a review). One community from each of the six potential categories was chosen for intensive case study. Secondary data analysis as well as site inspection was used to select the six communities for the in-depth study. In addition, the research team felt that it was necessary to select communities from different regions throughout the state in an attempt to capture the diversity of fishing that exists in Florida. The case study sites were chosen on the following criteria: 1) maximizing geographical distribution within the state of Florida; 2) maximizing variation in population size; and 3) maximizing variation in economic structure (recreational/commercial fishing).

A telephone survey was conducted in 2001 in each of the six fishing communities to establish the perceptions of fishing dependence of residents of each community. The questionnaire included 79 questions and covered such topics as place attachment; fishing dependency; and community involvement. The responses to the questionnaire required between 20 and 40 minutes to complete by phone. Identical questionnaires were used in each study site. The full sample included over 1,200 respondents with a 65% response rate (completed divided by the number eligible). The sampling frame of the survey was drawn from randomly selected phone numbers within the zip codes for each community. The non-respondents were contacted five times on different days and different times. There were multiple reasons for non-response including 580 non-viable numbers (non-working, wrong number, and non-household), 49 were unavailable (out of town or deceased), and 11 did not speak English. Duplicates from the sampling frame were removed.

4.0 RESULTS

Table 1 presents a comparison of fishers' and community members' opinions on some components of heritage tourism. The items assess whether commercial fishing: 1) is important to the local culture, 2) attracts tourists, and 3) is an attractive part of the landscape. Over 94 percent of residents and 96 percent of fishers agreed that fishing was important to the culture of the area. Over 60 percent of residents and 73 percent of fishers felt that commercial fishing was an important tourist draw for the community. Last, 68 percent of residents and 83 percent of fishers felt commercial fishing was an attractive part of the landscape. For all three questions fishers were more likely to agree with the statements, and in every case the results were statistically significant. Both fishers and community members were very supportive of these statements, indicating they value the cultural heritage of fishing. These results suggest the residents and fishers recognize a potential for heritage tourism development.

Table 2 addresses community problems as viewed by fishers and community members. The first issue, growth of tourism, indicates that well over half of fishers (54 percent) felt that tourism was "somewhat of a problem"

Table 1.—Comparison of residents and commercial fishers views on culture and tourism

	Community	Fishers			
	N=999 Percent	N=222 Percent	χ^2	D.F.	P
Fishing is important to the culture of this area			5.6	1	.018
No	5.4	1.7			
Yes	94.6	98.3			
Commercial fishing is an important draw for tourists to the community			8.9	1	.003
No	38.1	27.2			
Yes	61.9	72.8			
Commercial fishing is an attractive part of the landscape			18.2	1	.000
No	31.9	17.4			
Yes	68.1	82.6			

or a "serious problem" locally while only 38 percent of community residents felt similarly. This difference was statistically significant, and suggests some possible antagonism related to tourism development and possibly related to the net ban issue. Increasing residential development was seen as "somewhat a problem" or a "serious problem" by 56 percent of residents, while 64 percent of fishers were concerned about this issue. This difference was statistically significant. Loss of commercial dockage was seen as "somewhat a problem" or a "serious problem" by only 48 percent of residents, while 71 percent of fishers were concerned about this issue. This difference was statistically significant. Obviously this is a salient issue for fishers and was often mentioned as a harmful consequence of tourist development by our key informants. For the item "increasing land values," 64 percent of residents and 68 percent of fishers indicated that this was a problem or a serious problem. The difference was statistically significant. Concern over increasing property taxes and unemployment were very similar for residents and fishers and were not statistically significant. However, fishers were far more concerned than residents about traffic congestion (58 percent compared to 44 percent) and increasing new-comers (57 percent compared to 50 percent), and both were statistically significant. Our key informants confirmed that they thought that tourism was responsible for increasing traffic and for new people moving to the area, which they felt made fishing more difficult.

5.0 DISCUSSION AND IMPLICATION OF THE LITERATURE AND ANALYSIS

It is clear from the empirical data that fishers do not want to see large-scale tourist development that might increase traffic, land values, residential development, and newcomers. However, fishers strongly believe that commercial fishing is important to the local culture, is a tourist attraction, and produces an attractive landscape. If tourism could help support the fishing enterprise with off-water income, it is likely that many families would participate, thus helping preserve or restore a traditional way of life.

A significant hurdle to the increasing engagement of fishers in the tourist industry is that they generally harbor a great deal of animosity over the net ban referendum, which reallocated the in-shore fishery from primarily commercial to recreational use (Smith et al. 2003). In that process fishers were described as destroying the environment. In addition, fishers are documented as having a high degree of occupational satisfaction, primarily derived from working alone and out on the water (Smith et al. 2003). This is not compatible with interacting with tourists, especially those who are recreationally fishing. However, fishers are more inclined to have a traditional family structure, with many family members engaged in some way in fishing operations—even if spouses and children hold outside jobs. Like farm tourism, development of income opportunities might

Table 2.—Comparison of residents and commercial fishers views on potential community problems

	Community N=999 Percent	Fishers N=222 Percent	χ^2	D.F.	P
Growth of Tourism			25.3	2	.000
Not a Problem	61.5	46.5			
Somewhat of a Problem	25.5	28.5			
Serious Problem	13.0	25.0			
Increasing Residential Development			14.4	2	.001
Not a Problem	43.6	36.4			
Somewhat of a Problem	33.2	28.5			
Serious Problem	23.1	35.1			
Loss of Commercial Dockage			58.4	2	.000
Not a Problem	52.5	29.4			
Somewhat of a Problem	26.2	25.3			
Serious Problem	21.3	45.2			
Increasing Land Value			15.4	2	.000
Not a Problem	36.1	32.0			
Somewhat of a Problem	26.8	17.6			
Serious Problem	37.0	50.5			
Increasing Property Taxes			0.8	2	.671
Not a Problem	26.0	23.1			
Somewhat of a Problem	27.0	28.0			
Serious Problem	47.0	48.9			
Unemployment			0.01	2	.961
Not a Problem	51.9	50.9			
Somewhat of a Problem	27.5	27.9			
Serious Problem	20.5	21.2			
Traffic Congestion			15.26	2	.000
Not a Problem	55.7	42.4			
Somewhat of a Problem	25.3	29.3			
Serious Problem	19.0	28.4			
Increasing New Comers			16.06	2	.000
Not a Problem	49.7	43.0			
Somewhat of a Problem	33.0	28.1			
Serious Problem	17.3	28.9			

keep the family more directly linked to fishing rather than to outside employment. This would enhance the traditional economic structure of the family, a prime cultural component of fishing heritage.

Lessons from the reviews of different forms of heritage tourism suggest that many problems of enterprise development can be avoided if efforts are kept small (at least initially), overhead is limited, and the business grows slowly (if the family chooses to do so). These lessons from Amish enterprise will maximize the possibility of success. In addition, these are good practices for those who do not have any specific business training or entrepreneurial experience, which the Amish and fishers are likely to have in common.

Somehow the antagonism of fishers with tourists must be healed. There is some indication that small-scale tourism interaction could actually accomplish this as a side benefit. If off-water family income can be increased, the main fishing enterprise can continue, as well as the traditional family structure where all family members support the economic endeavor of fishing. If this way of life could be preserved, perhaps fishing families

would not feel so threatened and antagonism could be reduced. Any formal program to help foster off-water income related to fishing should probably target a female audience. First, women were less likely to see tourism as a problem. Also, this is because the female partner is likely to hold outside employment. This transition from the traditional family-economic structure took place in fishing families in the early 1990s as increasing fishing regulations forced many families to seek outside employment, often for health insurance and to supplement family earnings (Smith et al. 2003). By 1997 almost three quarters of fishing families had the female partner working off-water jobs. Giving these families an opportunity to generate income related to fishing would greatly preserve the traditional family structure.

Heritage tourism can serve the dual purpose of providing economic benefits while enhancing identity of communities with their fishing traditions. Equally important as the economic benefits of heritage tourism is its potential to foster community development. Heritage tourism can enhance the identity of communities, as well as reinforce the importance of fishing to the local area and economy. With such recognition, fishers might come to feel more appreciated, contributing to an increase in their job satisfaction—no small feat for a sector of the economy that has experienced a great deal of insecurity, stress, and strain.

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QUALITY OF CUSTOMER SERVICE: PERCEPTIONS FROM GUESTS IN ALL-INCLUSIVE RESORTS IN JAMAICA

Joel L. Frater
State University of New York at Brockport

Abstract.—With data collected from guests in all-inclusive resorts in Jamaica, West Indies, the purposes of this study were to: (1) delineate unique dimensions of customer service perceptions among guests and (2) report the finding of a study that measured guests' perceptions of the quality of customer service in all-inclusive resorts. The study asked the following research question: Are there statistically significant differences in guests' perceptions of the quality of customer service based on gender, educational level, experience traveling to Jamaica, international travel experience, country of residence and age? The results delineated six factors with relatively high coefficients. These factors were used in further analyses using t-tests and ANOVAs that revealed statistically significant differences in guests' perceptions of various service dimensions based on the socio-demographic variables (1) level of education, (2) experience traveling to Jamaica, (3) experience with international travel, (4) country of residence, and (5) age.

1.0 INTRODUCTION

Since the nineteenth century, the concept of customer service has expressed the desire of retail stores, hotels, and restaurants to develop loyal customers who would provide repeat business and encourage their friends and colleagues to shop, sleep, or eat at the popular establishment. Attention to customers, and the services they want and receive, gained increased prominence with the marketing research of Parasuraman et al. (1988), who identified the elements most important to customers (reliability, assurance, tangibles, empathy, and responsiveness) and developed them into a schema called SERVQUAL (Hernon et al. 1999). Paraseraman et al. (1988) defined service quality as the degree of discrepancy between customers' normative expectations for the service and their perceptions of the service performance. Numerous organizations have started venturing into multifarious approaches to improve the quality of their services (Sureshchandar et al. 2001). Most emphasize the value of excellent customer service, but a large number only pay lip service to that value (Becer & Wellins 1990). Tourism managers strive to improve quality and levels of visitor satisfaction in the belief that this will create loyal visitors who are pleased they selected a destination, who will return to it, and who will recommend it to others (Tian-Cole & Crompton 2003). Research shows that the typical dissatisfied customer tells at least ten other people about poor service when encountered; many tell up to 20 people. The primary implication is that the business loses a customer who probably drives away.

The gradual migration towards service standardization by hotels, airlines, tourism attractions, and restaurants in an attempt to reduce variability of service outcomes has frequently produced sound service marketing strategies (Appiah-Adu et al. 2000). Customers' evaluations of service quality and their expressions of satisfaction are critical inputs to the development of these marketing strategies (Ofir & Simonson 2001). Customer satisfaction undeniably has come to be an important cornerstone of customer-oriented business practices for firms that operate in diverse industries and global markets (Szymanski & Henard 2001). Thus, customer satisfaction is a complex issue, experienced subjectively and containing quantitative and qualitative aspects, of which several are intangibles. Organizations should attempt to work within customers' framework, to gain insight into their subjective understanding of their experiences regarding customer satisfaction (Pothas et al. 2001).

Perceived service quality has proved among the most important, yet debatable, constructs in recent marketing literature. It has shown to be an input to both customer satisfaction and value (Oliver 1996). This in turn has had a direct impact on customer loyalty to the organization (Zeithalm et al. 1996). Customers who have salient expectations are likely to perceive deviations from their recollections with respect to the particular service episode. Simply stated, perceived service quality reflects how well the service delivery matches or exceeds a customer's expectations (Laroche et al. 2004). It is evident that the service revolution has become a

global phenomenon with developing countries joining the revolution in recent years. Businesses depend on customers; in fact, customers are the very livelihood of an organization (Oliver 1996). In this context, one could conclude that service quality is critical for any economy, but it is even more critical in the economies of developing countries, which are typically characterized by limited diversity of economic activities and an abundance of natural resources that are ideal for the development of tourist attractions.

Throughout the Caribbean, tourism has attracted increased numbers of visitors from North America, Europe, and other locations (Gmelch 2003). Many governments view tourism as the key to their economic development and began to welcome visitors with open arms in the 1950s. Some organizations touted tourism as having almost limitless growth potential in attracting foreign currency (Gmelch 2003). In Jamaica, for example, tourism is projected to be the primary source of foreign revenue and in 2006 was expected to generate more than $3.9 billion of economic activity (Total Demand). Travel and Tourism Economy (direct and indirect impact) in 2005 was expected to account for 36.2 percent of GDP and 394,189 jobs (31.9% of total employment). The industry was expected to grow 10.0 percent in 2005 and by 2.7 percent per annum, in real terms, between 2006 and 2015 (World Travel & Tourism Council 2005). While the importance of tourism to the country's economy is undeniable, the response to the changing nature of the industry has not kept pace as a national priority. In recent years, concern for quality reached unprecedented levels, fueled by exacerbated competition in all types of industries (Simon & Lam 1997). Despite its importance to the Jamaican economy, tourism research is primarily focused on defining new markets to boost teh economy. However, as noted by Sureshchandaret al. (2001), service companies are beginning to grasp the verities behind what their manufacturing counterparts learned in the last few decades: quality does not improve unless it is measured. It is generally accepted that the quality of customer service in Jamaica's tourism industry is good, as indicated by traditional guest comment cards. However, there is a paucity of empirical research that examines perception of quality customer service by guests, in general.

Jamaica has natural resources, primarily bauxite, and an ideal climate conducive to agriculture and tourism. Jamaican government economic policies encourage foreign investment in areas that earn or save foreign exchange, generate employment, and use local raw materials. The government provides a wide range of incentives to investors, including remittance facilities to assist them in repatriating funds to the country of origin; tax holidays, which defer taxes for a period of years; and duty-free access for machinery and raw materials imported for approved enterprises. The government of Jamaica hopes to encourage economic activity through a combination of privatization, financial sector restructuring, and reduced interest rates, and by boosting tourism and related productive activities (Jamaica 2006). The Jamaican economy is heavily dependent on services, which now account for 60 percent of GDP. The global economic slowdown, particularly after the terrorist attacks in the U.S. on September 11 2001, stunted economic growth; the economy rebounded moderately in 2003-2004, with brisk tourist seasons. Attempts at deficit control were derailed by Hurricane Ivan in September 2004, which required substantial government spending to repair the damage. Despite the hurricane, tourism looks set to enjoy solid growth for the foreseeable future (Jamaican Economy 2006).

2.0 OBJECTIVES

The purposes of this study were to (1) present an overview of the relative importance of the tourism industry to the Jamaican economy; (2) delineate unique dimensions of customer service perceptions among guests; and (3) report the finding of a study that measures guests' perceptions of the quality of customer service in all-inclusive resorts by answering the following research question: Are there statistically significant differences in guests' perceptions of the quality of customer service based on gender, educational level, experience traveling to Jamaica, international travel experience, country of residence, and age?

3.0 METHODOLOGY

The instrument for this study was developed based on a review of the literature and information gathered over eight years, during which the researcher conducted seminars in Caribbean tourism resorts, in the areas of

recreation programming, leadership, customer service, and cultural diversity. An initial pool of 80 questions on a seven-point Likert-type scale was reduced to 47 questions following a pilot test with 129 subjects using factor analysis. The decision was made to develop an instrument rather than using an existing instrument because of the limited amount of existing empirical research in the geographic location of this study. Face validity and content validity reviews were conducted by a panel of experts in the tourism profession and statistics and research specialists. These yielded sub-scales that were used to conduct ANOVA test of significant difference in guests' perceptions of the quality of customer service based on gender, education level, country of residence, experience traveling to Jamaica, international travel experience, and age. The purpose was to reduce the information in many variables into a set of weighted linear combinations of those variables (Fabrigar et al. 1999). The researcher obtained from the hotels a list of rooms with departure dates. Rooms were selected at random and questionnaires were left in each selected room the day prior to departure. Questionnaires were returned to a drop box at the checkout counter. Results were analyzed using SPSS as follows: (1) descriptive statistics; and (2) factor analysis resulting in 8 scales (1 = response to requests, 2 = response to feedback, 3 = courtesy to customers, 4 = communicating with customers, 5 = priority to customers, 6 = need for supervision, 7 = feeling about work hours, 8 = positive attitude) with eigenvalues greater than 1.00, t-tests and one-way ANOVAs. Cronbach's alpha coefficients were computed for each sub-scale. Factors 7 and 8 were eliminated because of the low alpha coefficients and the limited number of items that loaded onto these factors. Factors 1 through 6 were retained and used for further analyses.

4.0 RESULTS

Of the 500 questionnaires distributed, 329 usable guest questionnaires were returned, for a 66 percent response rate. The socio-demographic profile of the study participants was as follows: Forty-four percent were males and 56 percent females, 21.2 percent non-college educated and 78.2 percent college educated, 9.6 percent Americans, 65.2 percent repeat visitors to Jamaica and 91 percent having previous international travel experience. The predominant age group was 25-34 years.

A principal component factor analysis with varimax rotation was performed to test the factor structure of the scale. As shown in Table 1, eight factors with an eigenvalue greater than 1 were extracted. These factors accounted for 68 percent of the variance and were defined as follows: 1 = response to requests, 2 = response to feedback, 3 = courtesy to customers, 4 = communicating with customers, 5 = priority to customers, 6 = need for supervision, 7 = feeling about work hours, 8 = positive attitude. The Cronbach alpha for the total scale was .939. Additional Cronbach's alpha coefficients were computed for each dimension. Six of the eight dimensions had satisfactory alpha values, ranging from .698 to .981 as shown in Table 2. Thus, these six factors were retained.

A series of t-tests and ANOVAs were computed to determine if there were statistically significant differences in guests' perceptions of the quality of customer service for each dimension based on the socio-demographic variables. There was no statistically significant difference between males and females on the perceptions of the quality of customer service. However, as shown in Table 2, t-test results showed statistically significant differences at the .05 level between college educated and non-college educated guests in terms of their perceptions of the staff's delivery of customer service on the following dimensions: (1) response to questions, (2) response to feedback, (3) courtesy to customers, (4) communicating with customers, and (5) need for supervision.

As shown in Table 3, t-test results showed statistically significant differences at the .05 level between first-time visitors to Jamaica and repeat visitors to Jamaica in terms of their perceptions of the staff's delivery of customer service on the following dimensions: (1) staff's response to questions, (2) response to feedback, and (3) courtesy to customers.

As shown in Table 4, t-test results showed statistically significant differences at the .05 level between first-time international travelers and repeat international travelers in terms of their perceptions of the staff's delivery of

Table 1.—Principal component factor analysis of guests' perceptions of quality of customer service

Dimensions	Cronbach's Alpha		Variables
Factor 1: Response to questions	.945	.725	-Approaches unpleasant customers' requests diligently
		.691	-Provides service based the set schedule
		.661	-Encourages customers to come back for more assistance
		.655	-Helps customers to understand the culture of the country
		.651	-Is willing to give me individual attention
		.648	-Gives accurate answers to customers' questions
		.647	-Is willing to leave their work station to help a customer
		.639	-Delivers customer service promptly
		.627	-Is able to anticipate problems and take corrective action
		.626	-Treats all customers fairly
		.606	-Treats all customers equally
		.603	-Is always available when a customer needs them
		.569	-Is treated with respect and dignity by customers
		.551	-Is pleasant to customers who are unpleasant to them
		.519	-Handles multiple customers with a calm demeanor
		.479	-Always goes through the chain of command
Factor 2: Response to feedback	.802	.649	-Dependable handling customer service problems and issues
		.645	-Takes action when a problem occurs
		.633	-Are good listeners to customer complaints
		.624	-Apologizes to customers when necessary
		.556	-Accepts customer feedback or criticism very well
		.535	-Handles customer complaints with professionalism
		.513	-Takes customer complaints personally
		.512	-Works well as a team to ensure customers' needs are met
		.504	-Performs service right the first time
		.478	-Follows up with customers to ensure all their needs are met
Factor 3: Courtesy to customers	.887	.806	-Body language portrays a positive image to customers
		.736	-Always remembers to thank the customer
		.713	-Is courteous to customers
		.639	-Is approachable by customers
		.552	-Sounds happy and cheerful when talking on the phone
Factor 4: Communicating with customers	.878	.736	-Knowledgeable of company and ability to educate customers
		.702	-Communicates using terms customers understand
		.633	-Makes customers feel comfortable when communicating
		.627	-Deals with several customers at the same time without getting flustered
		.551	-Empowered to make decisions about delivering service
		.508	-Does not overwhelm customers with too much information
		.479	-Meets and exceeds customers' expectations
		.420	-Demonstrates a positive attitude to all customers
		.394	-Plan work day to ensure efficient customer service
Factor 5: Priority to customers	.981	.965	-Prioritizes customer requests
		.964	-Follows up all promises to customers
Factor 6: Need for supervision	.698	.797	-Monitored to ensure that they are following company rules
		.789	-Should be reprimanded if they are only a few minutes late
Factor 7: Feelings about work hours	.248	.550	-Seeks creative ways to make customers feel happy
		.409	-I feel a sense of guilt because the staff has to work on weekends and holidays
Factor 8: Positive attitude		.707	-Positive attitude to all customers

Table 2.—T-test results based on level of education

Dimension	Variable	N	Mean	t	df	Sig. (2 tailed)
Factor 1: Response to questions	No College Ed.	69	5.2594	2.388	324	**.018**
	College Ed	257	5.0132	2.619	123.161	**.010**
Factor 2: Response to feedback	No College Ed.	69	5.2368	2.964	324	**.003**
	College Ed	257	4.9049	3.379	131.723	**.001**
Factor 3: Courtesy to customers	No College Ed.	69	5.5913	2.829	324	**.005**
	College Ed	257	5.3078	3.354	141.829	**.001**
Factor 4: Communicating with customers	No College Ed.	69	5.3271	2.960	324	**.003**
	College Ed	257	5.0526	3.466	138.438	**.001**
Factor 5: Priority to customers	No College Ed.	69	5.1377	.242	323	.809
	College Ed	257	5.0215	.431	317.192	.667
Factor 6: Need for supervision	No College Ed.	69	3.2059	-2.090	321	**.037**
	College Ed	257	3.6275	-2.028	101.572	**.045**

Table 3.—T-test results based on experience traveling to Jamaica

Dimension	Variable	N	Mean	t	df	Sig. (2 tailed)
Factor 1: Response to questions	First Time Visitor	208	5.1343	2.839	317	**.005**
	Repeat Visitor	111	4.8842	2.682	191.519	**.008**
Factor 2: Response to feedback	First Time Visitor	208	5.0448	2.487	317	**.013**
	Repeat Visitor	111	4.8033	2.338	189.176	**.020**
Factor 3: Courtesy to customers	First Time Visitor	208	5.4288	2.119	317	**.035**
	Repeat Visitor	111	5.2423	2.017	195.736	**.045**
Factor 4: Communicating with customers	First Time Visitor	208	5.1701	1.928	317	.055
	Repeat Visitor	111	5.0145	1.875	207.661	.062
Factor 5: Priority to customers	First Time Visitor	208	5.2633	1.562	316	.119
	Repeat Visitor	111	4.6081	2.050	252.007	.041
Factor 6: Need for supervision	First Time Visitor	208	3.5413	.531	314	.596
	Repeat Visitor	111	3.4500	.538	230.954	.591

customer service on the following dimensions: (1) staff's response to questions, (2) response to feedback, (3) courtesy to customers, and (4) communicating with customers.

ANOVA results showed a statistically significant difference at the .05 level between the various countries of residence on the dimensions of (1) priority to customer. These results also showed a statistically significant difference at the .05 level between the various age groups of guests on the dimensions of (1) response to questions, (2) response to feedback, (3) communicating with customers, and (4) need for supervision.

5.0 DISCUSSION AND IMPLICATIONS

The objectives of the study were to (1) present an overview of the relative importance of the tourism industry to the Jamaican economy, (2) delineate unique dimensions of customer service perceptions among guests and (3) report the finding of a study that measured guests' perceptions of the quality of customer service in all-inclusive resorts. Factor analysis, t-test and ANOVA were the statistical analyses used to answer the research questions. Guests also rate the quality of customer service consistently high, as evidenced by the mean scores derived from the statistical analyses.

Table 4.—T-test based on international travel experience

Dimension	Variable	N	Mean	t	df	Sig. (2 tailed)
Factor 1: Response to questions	First Time Traveler	28	5.5491	3.756	308	**.000**
	Repeat Traveler	282	4.9988	5.671	43.848	**.000**
Factor 2: Response to feedback	First Time Traveler	28	5.5339	3.946	308	**.000**
	Repeat Traveler	282	4.8969	6.127	45.311	**.000**
Factor 3: Courtesy to customers	First Time Traveler	28	5.7857	3.159	308	**.002**
	Repeat Traveler	282	5.3273	6.220	67.382	**.000**
Factor 4: Communicating with customers	First Time Traveler	28	5.5913	3.938	308	**.000**
	Repeat Traveler	282	5.0697	6.840	52.985	**.000**
Factor 5: Priority to customers	First Time Traveler	28	5.6071	.861	307	.390
	Repeat Traveler	282	4.9893	2.496	285.445	.301
Factor 6: Need for supervision	First Time Traveler	28	3.4423	-.258	305	.797
	Repeat Traveler	282	3.5196	-.231	28.683	.819

The principal component analysis yielded six factors that revealed clearly defined dimensions of guests' perceptions of the quality of customer service. All dimensions featured elements of communication; however, each factor had unique features that distinguish it from the others. The "response to questions" dimension focuses on those situations that require staff to respond to some form of inquiry by the guests. Dimension two, "response to feedback," refers to guests' perceptions of the staff's receptiveness to criticism of their performance as service delivery agents. Dimension three, "courtesy to customers," refers to the perceived elements of respect or politeness the staff displayed to guests. Dimension four, "communicating with customers," focuses on solicited and unsolicited verbal and non-verbal interactions with guests. Dimension five, "Priority to customers," deals with the concept of putting customers first. Dimension six focuses on "need for supervision," where guests express their perceptions of the level of empowerment among the staff and the extent to which this impacts the timely delivery of customer service. Since the pioneering work of Parasuraman et al. (1985) in developing SERVQUAL, there have been numerous studies that extract dimensions of customer service in many companies, including the service industry. Most of the six factors extracted in this study approximated a combination of Becker & Wellins' (1990) 17-factor scale.

In terms of the demographic variables and their influence on guests' perception of the quality of customer service, there were no statistically significant differences between males and females on their perceptions of the quality of customer service. This was contradictory to the finding of Theodorskis et al. (2004), who found a statistically significant difference between males and females on their perceptions of customer satisfaction in health club settings. Further, the similarities in gender response may be influenced by the fact that the research sites were couples-only, all-inclusive resorts: these couples may have had similar experiences during their vacation. There were statistically significant differences on four dimensions based on educational level, with guests with no college education rating the quality of customer service higher than college educated guests on their perceptions of staff's (1) response to questions, (2) response to feedback, and (3) courtesy to customers. One could surmise that more educated guests are aware of the standards of expected quality service, have more international travel experience, and have a point of reference from which to make judgment about the quality of customer service. There were statistically significant differences between first-time visitors to Jamaica and repeat visitors to Jamaica on their perceptions of the quality of customer service on the following dimensions: (1) response to questions, (2) response to feedback, and (3) courtesy to customers. The same was true for first-time international travelers and repeat international travelers. However, the additional dimension "communicating with customers" was statistically significant for the latter. In all cases first-time guests rated the quality of customer service higher

than repeat guests. Again, the theory that guests with more travel experience have higher expectations of staff is evident. On the country-of-residence variable, only the dimension (1) "priority to customers" showed a statistical significance, with U.S. and Canadian guests rating the quality of customer service lower than guests from Europe and other countries. It must be noted that the largest number of guests to Jamaican all-inclusive resorts are from North America. With the age variable there were statistically significant differences for dimensions (1) "response to questions," (2) "response to feedback," (3) "communicating with customers," and (4) "need for supervision." The lowest rating for the quality of customer service was by the 45-54 age group.

These results should add to the body of knowledge on customer service research in Jamaica because tourism research is primarily focused on defining new markets as a means of economic growth despite the importance of tourism to the Jamaican economy. However, there is a paucity of empirical research that examines perception of quality customer service by guests. The above results suggest that there is relative consistency in guests' perceptions of the quality of customer service delivery in all-inclusive resorts in Jamaica, and that the service culture is taking hold in the tourism industry. Customer service workers in the tourism industry in Jamaica must guard against apathy, where the community takes the presence of tourists for granted and contact with the visitor becomes impersonal. Before the actual consumption experience, it is posited that consumers hold a set of expectations, based on previous or similar experiences primarily by communications, including word of mouth and advertising; this serves as a benchmark for quality interpretation of the service (Loroche et al. 2004). Customer service providers must take measures to ensure that these expectations are met consistently even when there are discrepancies between the guests and the hosts in terms of customs and service delivery standards. As stated by Johns et al. (2003), cultural values influence service predisposition of service providers through specific job attitudes. Respondents in their study perceived humbleness, loyalty to supervisors and tolerance of others to have the greatest positive effect on their job attitude. With Jamaica being an underdeveloped country, with employees delivering service to guests who are primarily from developed countries, the cultural gap is apparent and is recommended as an area of further exploration. It should also be pointed out that there were limitations to the study, such as the small number of respondents for some socio-demographic variables, and since the research sites cater to couples only, these couples may have influenced each other's responses to the research questions. Nonetheless, as observed by Becker & Wellins (1990), it is critical that organizations monitor and evaluate the perceptions customers have of their customer-contact people. They also noted the job skills of customer service people most likely need to be enhanced through training.

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RESIDENTS' ATTITUDES TOWARD TOURISM DEVELOPMENT: A CASE STUDY OF WASHINGTON, NC

Yasong Wang
Department of Park, Recreation, and Tourism Management
The Pennsylvania State University
201 Mateer Building
University Park, PA 16802,
E-mail: yxw161@psu.edu

Robert E. Pfister
East Carolina University

Duarte B. Morais
The Pennsylvania State University

Abstract.—This study examined the relationship between socio-economic and demographic attributes of local residents and their attitudes toward tourism in Washington, NC, a small community where tourism is in its development stage. Residents' attitudes toward tourism were measured by adapting 20 items from the Tourism Impact Attitude Scale developed by Lankford and Howard (1994). Factor analysis resulted in a 2-factor solution. Findings indicate that age, gender, and community attachment do not have relationships with the two factors, but education is associated with one of the factors, and perceived personal benefit has strong positive relationships with both factors. The study reinforced the need for further research on factors influencing residents' attitudes toward tourism during a destination's preliminary development stage. The findings support previous assertions that educating local residents about the potential benefits of tourism is critical in obtaining their support for tourism, enhancing their involvement in the industry, and achieving sustainable community development.

1.0 INTRODUCTION

It has been widely recognized that tourism development is a double-edged sword for host communities. Not only does it generate benefits, but it also imposes costs (Jafari 2001). By evaluating these benefits and costs, local residents develop their attitudes toward tourism. However, previous research indicates that the development of local residents' attitudes toward tourism is not determined by those perceived benefits and costs but is modified by various moderating variables (Lankford et al. 1994). In the past three decades, numerous studies have been conducted to find those variables influencing residents' attitudes toward tourism (Brougham & Butler 1981, Perdue et al. 1987, Ap 1992, Lankford 1994, Cavus & Tanrisevdi 2002). Those tested variables include residents' socio-economic and demographic attributes, but the results are mixed. In particular, it is not clear whether residents' attitudes toward tourism are related to their attributes when tourism is still in its early development stage in the host community and its impacts are not particularly noticeable (Mason & Cheyne 2000).

This study aims at identifying the relationships between residents' socio-economic and demographic attributes and their attitudes toward tourism by focusing on a small community where tourism is in the development stage. By conducting this research, the authors hoped to find the predictors of residents' attitudes and capture their current perceptions of tourism based on preconceived expectations and incomplete information about tourism. Furthermore, this research is noteworthy because most authors agree that initial community attitudes toward tourism are critical to community involvement in the industry (Murphy 1981), the formation of destination image (Echtner & Ritchie 1991), political support for development (Schroeder 1996), and ultimately a more sustainable development of the host community (Owen et al. 1993).

2.0 THEORETICAL BACKGROUND

Attitudes are defined as "a state of mind of the individual toward a value" (Allport 1966, p. 24) and as "an enduring predisposition towards a particular aspect of one's environment" (McDougall & Munro 1987, p. 87). They are built upon the perceptions and beliefs of reality, but are closely related to deeply held values and to personality. Based on this understanding of attitudes, researchers recognized that residents' attitudes toward tourism are not simply the reflections of residents' perceptions of tourism impacts, but the results of interaction between residents' perceptions

and the factors affecting their attitudes (Lankford et al. 1994). Previous research has revealed major impacts of tourism and identified the related variables, but theory is underdeveloped: "Currently there is limited understanding of why residents respond to the impacts of tourism as they do, and under what conditions residents react to those impacts" (Ap 1992, p. 666). Husband (1989) also addressed this issue by saying "There is, so far, no theoretical justification of why some people are, or are not, favorably disposed to tourism" (p. 239).

In order to clarify the relationship between the impacts of tourism and residents' attitudes toward tourism, several models have been developed. One of the most influential models is Doxey's Irridex model (1975) which suggests that residents' attitudes toward tourism may pass through a series of stages from "euphoria," through "apathy" and "irritation." to "antagonism," as perceived costs exceed the expected benefits. This model is supported by Long et al.'s (1990) research results, which indicate residents' attitudes are initially favorable but become negative after reaching a threshold. The Irridex model indicates that residents' attitudes toward tourism would change over time within a predicable one-way sequence. It suggests that residents' attitudes and reactions toward tourism contain a sense of homogeneity (Mason et al. 2000). However, this notion is challenged by some research findings that reported heterogeneous community responses and diverse residents' attitudes simultaneously existing in a community (Brougham et al. 1981, Rothman 1978).

In accordance with this argument, a more complex model has been developed by Butler (1975), who suggested that both positive and negative attitudes could be held by residents in a community simultaneously and be expressed via active and passive support or opposition. This model is supported by Murphy's (1983) research results, which reveal the distinct attitude differences among residents, public officials, and business owners in three English tourist centers. Although the model addresses the complexity of residents' attitudes toward tourism, researchers still lacked theories explaining relationships between residents' attitudes and tourism impacts until Ap (1992) applied social exchange theory to tourism.

According to the theory, exchange would initiate when asymmetrical inaction forms (Sutton 1967). Ap (1992) suggests that "residents evaluate tourism in terms of social exchange, that is, evaluate it in terms of expected benefits or costs obtained in return for the services they supply" (p. 670). He concludes that when exchange of resources is high for the host actor in either the balanced or unbalanced exchange relation, tourism impacts are viewed positively, while tourism impacts are viewed negatively if exchange of resources is low. Social exchange theory has been examined as a theoretical framework by researchers to describe residents' attitudes toward tourism impacts (Perdue et al. 1990, McGehee & Andereck 2004). In particular, its tenets have been supported by attitudinal research on tourism.

A review of research has revealed that most attitude studies focus on examining the differences in residents' attitudes according to their socio-economic and demographic attributes, but the study results are mixed. In their study of 16 rural Colorado communities, Perdue et al. (1990) concluded that there was little difference in residents' attitudes toward tourism by socio-demographic characteristics, while they found that personal benefits were closely related to perceived impacts of tourism. In a study of Flagstaff, Arizona, Schroeder (1992) reported that socio-economic variables were not good predictors of residents' attitudes toward tourism. However, Husband (1989) found that age and education were important variables in his Zambian study. Harrill and Potts (2003) also identified that gender and economic dependency were significant predictors of perceived economic benefits of tourism, though the relationship between length of residence and perceived tourism benefits was not found in their study of Charleston, South Carolina. Conversely, Liu and Var (1986) identified that length of residence was one of the most important socio-demographic variables explaining attitudinal differences in their Hawaii research. Since those studies were conducted using a variety of methods and instruments, it is difficult to compare such mixed results.

In response to the call for establishing standardized instrumentation for use in tourism impact research (Cromption 1990), Lankford and Howard (1994) developed the tourism impact attitude scale (TIAS),

which enables researchers to measure residents' attitudes toward tourism in different contexts. It has been used in various tourism settings over the past decades, e.g., Lankford (1994) in Oregon and Washington, Lankford et al. (1994) in Taiwan, Rollins (1997) in British Columbia, Vesey and Dimanche (2001) in New Orleans, Louisiana, Harrill et al. (2003) in Charleston, South Carolina. The results of the previous studies have proven TIAS as a reliable and valid instrument to measure residents' attitudes. Although those previous case studies have tested the impacts of demographic and socio-economic variables on residents' attitudes by using TIAS, none of them was conducted in a small East Coast community where tourism is not yet flourishing.

Based on this theoretical review, several key research questions are addressed in this study: (1) Is TIAS a reliable and valid instrument to measure residents' attitudes toward tourism for this case study? (2) What are residents' attitudes toward tourism in the study site? (3) Are socio-economic and demographic variables significant predictors of residents' attitudes toward tourism? (4) Do results in this case study support social exchange theory for explaining residents' attitudes toward tourism?

3.0 STUDY AREA

The study was conducted in Washington, a small community with a population of 9,500 located in the eastern costal area of North Carolina. With its strategic location at the junction of coastal and inland rivers, Washington used to serve as a regional shipping center, and its economy was strongly influenced by resource-based industries such as farming and manufacturing. In recent years, however, service sector industries have emerged as an important dimension of the local economy. In particular, tourism is increasingly perceived as a potential source providing local employment opportunities, tax revenues, and economic diversity.

Currently, Washington is undergoing revitalization to bring businesses and tourists into the local area to help boost the local economy. Victorian-era homes in the downtown district are being refurbished as an important tourist asset for the community, the waterfront is renovated to attract more visitors, and many historic buildings along the Main Street have been well preserved. The community also has a wide variety of attractions, ranging from historic sites, shopping, and dining, to special events such as Music in the Streets and the Summer Festival. In addition, an office dedicated to the full-time development of tourism and to helping Washington capitalize on its waterfront and historical district was established in 2002. Moreover, the city's Tourism Development Authority hired its first director in 2001 after ten years of operating with a volunteer staff. As a newly-developed tourist destination, Washington provides a unique opportunity to study residents' attitudes toward tourism from the standpoint of the planning and development process.

4.0 METHODS

This research attempted to identify the relationships between residents' socio-economic and demographic attributes and their attitudes toward tourism, which is in the preliminary stage in the study site. To examine residents' attitudes toward tourism in Washington, NC, the researchers adopted 20 statements from TIAS and built a 20-item, five-point Likert-type response format based on the following scale: (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree).

Perceived personal benefit by respondents has been suggested to be an important variable associated with residents' attitudes toward tourism (Ap 1992, McGehee et al. 2004). Thus, in this study, perceived personal benefit was presented operationally to respondents as a set of benefits derived from the economic, socio-cultural heritage, and activities observed within the study area. Eight items were identified from public documents, public brochures, and the local newspapers that illustrated benefits identified frequently in the literature (Fridgen 1996). The personal benefit associated with each item was assessed by respondents using a four-point scale (1 = not at all; 2 = very little; 3 = somewhat; 4 = a lot). To test the association of the personal benefit variable with the stated attitudes toward tourism, the variable was coded by adding up the overall mean score for each of the eight items.

The other tested variables include age, gender, level of formal education, and community attachment. In

this research, community attachment was measured in two ways: (1) the respondents' length of residence and (2) active membership in civic organizations in Washington, NC. Length of residence has been highly used in previous research as one of variables to measure community attachment (Sheldon & Var 1984, Um & Crompton 1987). Membership as another critical variable measuring community attachment was identified to be significantly correlated with attitudes toward tourism (Vesey et al. 2001).

A random sample of 436 residents in Washington, NC was selected from a list of all households appearing on the billing list provided by the local utility company. The structure and administration of survey were based on Dillman's (2000) mail-in survey methodology. A cover letter informing participants of their selection for the survey together with a copy of the questionnaire and a stamped return envelope was mailed to participants. Subsequently, a second mailing was made to those participants that did not return the questionnaire at the end of two weeks. The final step was a postcard to those who did not respond.

5.0 RESULTS

One hundred and thirty usable questionnaires were returned for a response rate of 32 percent. The mean age of study subjects was 54.3 years old, and there was a roughly even distribution of men and women with 49.2 percent for men and 50.8 percent for women. Educational levels were also roughly evenly distributed, with 26.6 percent possessing a high school diploma or less, 23.4 percent having an associate degree, 25.8 percent holding a college degree, and 24.2 percent earning a graduate degree. Respondents' length of residence ranged from 1 year to 80 years with a mean of 30.42 years. The majority of respondents did not belong to a local civic organization (64.7%) (see Table 1).

Exploratory factor analysis was conducted to assess the dimensionality of the 20 TIAS items. Kaiser's (1974) overall measure of sampling adequacy is 0.85, indicating that the data are appropriate for the principal components model. Values of 0.6 and above are required for a good factor analysis (Tabachnick & Fidell 1989). An examination of the scree plots derived from principal component analysis with oblique rotation indicated that a two-factor solution was appropriate for these data. These two factors explained 51 percent of the variance in attitudes toward tourism. Although this percentage is a little less than the 58 percent found by Lankford et al. (1994), the dimensionality that emerged from this analysis is the same as their two-factor solution (concern for local tourism development and personal and community benefits). Factor 1 comprises 12 items (0.917 alpha), and Factor 2 is composed of eight items (0.813 alpha). Factor 1 was annotated as "concern for tourism development" and Factor 2 was labeled as "contributions to quality of life." The overall reliability of the TIAS in the Washington study was 0.904, which is similar to Landford and Howard's (1994) alpha-value of 0.964 obtained with their sample from Oregon (see Table 2).

Table 1.—Characteristics of respondents

Variables	%
Gender (n=130)	
Female	50.8
Male	49.2
Age[a]	
20-29	8.1
30-39	11.3
40-49	15.3
50-59	24.2
60-69	21.0
70-79	16.1
Older than 80	4.0
Education	
High school or less	26.6
Associate degree	23.4
College degree	25.8
Graduate degree	24.2
Length of residence[b]	
1-10 years	23.8
11-20 years	19.4
21-30 years	17.9
31-40 years	10.4
41-50 years	6.0
51-60 years	9.0
61-70 years	7.5
71-80 years	6.0
Membership of local civic organizations	
Yes	35.3
No	64.7

[a] *M= 54.34; Mdn= 55; SD= 16.0.*
[b] *M= 30.42; Mdn= 25; SD= 22.9.*

Table 2.—Dimensions of attitudes toward tourism development

Dimensions and Factored Items	Factor Loading	Factor Mean	Alpha Coefficients
Concern for Tourism Development[a]		3.91*	0.917
I believe tourism should be actively encouraged in my community.	.862		
I support tourism and would like to see it become an important part of my community.	.802		
I am against new tourism facilities which will attract more tourist to my community.	.781		
I believe tourism should be actively encouraged in the State of North Carolina.	.759		
The city government was correct in supporting the promotion of tourism.	.753		
Generally, the positive benefits of tourism outweigh the negative impacts.	.731		
My community should become more of a tourist destination.	.706		
Long-term planning by city officials can control the negative impacts of tourism on the environment.	.636		
Tourism has reduced the quality of outdoor recreation opportunities in my community.	.596		
It is important to develop plans to manage the growth of tourism.	.578		
The tourism sector will continue to play a major role in the economy of the community.	.548		
One of the most important benefits of tourism is how it can improve the local standard of living.	.468		
Contributions to Quality of Life[b]		3.00*	0.813
Our household standard of living is higher because of money tourists spend here.	.770		
Local recreation programs have expanded due to the influx of tourist in my community.	.752		
The quality of public services has improved due to more tourism in my community.	.718		
Since tourists have arrived I have more recreational opportunities available to me.	.681		
Quality of life in my community has improved because of tourism facilities in this community.	.643		
Tourism sector provides many desirable employment opportunities for residents.	.593		
My community has better roads due to tourism.	.467		
Shopping opportunities are better in my community as a result of tourism.	.430		
Reliability of Total 20 Items	0.904		

[a] eigenvalue 7.4; variance explained 37.0%
[b] eigenvalue 2.8; variance explained 14.0%
* indicates significance at the $p < .001$ level

As indicated in Table 2, the mean value of Factor 1 is 3.91 (SD = 0.60), and the mean value of Factor 2 is 3.00 (SD = 0.62). The significant one-sample t-test results indicate that overall residents are generally favorable to tourism and demonstrated substantial concern about the positive effects of tourism development on improving their future household standard of living. However, residents were neutral concerning tourism's positive effects on their current quality of life. These results are consistent with Doxey's (1975) Irridex Model, which suggests that residents usually hold a relatively positive attitude toward tourism as tourism is introduced to the host community. Meanwhile, the results indicate that tourism benefits have not been substantial enough to be noticed because tourism is still in the preliminary stage of development in Washington, NC.

In order to explore the relationships between residents' socio-economic and demographic attributes and their attitudes toward tourism, multiple regression analysis was

Table 3.—Regression analysis of the relationship between variables

Independent Variables	Beta	t-statistic
Model 1:	Concerns for tourism development	
Model statistics	Adjusted R-square = .435, F = 7.185, p = .00	
Perceived Personal Benefits	.656*	6.390
Age	-.251	-1.778
Education	-.144	-1.334
Civic Club Membership	.045	.403
Length of Residence	-.050	-.358
Model 2:	Contributions to quality of life	
Model statistics	Adjusted R-square = .507, F = 9.752, p = .00	
Perceived Personal Benefits	.697*	7.201
Education	-.305*	-2.998
Age	-.171	-1.623
Civic Club Membership	-.049	-.381
Length of Residence	.014	.103

*Indicates significance at the p < .05 level.

Table 4.—Independent t-test of gender difference in factor 1 & factor 2

Gender	Mean	χ^2	*p*
	Support for tourism development [a]		
Females	3.93	.02	.818
Males	3.91		
	Community benefits [b]		
Females	2.97	-.06	.587
Males	3.03		

[a]n = 120; [b]n=121

performed. As indicated in Table 3, personal benefit has statistically significant relationships in a positive direction with both Factor 1 and Factor 2. It suggests that the more personal benefits respondents expected from tourism, the more likely they are to favor tourism development and the more likely they are to attribute the improvement in quality of life to tourism development. Additionally, education also has a small but negative significant relationship with Factor 2 in model 2. It indicates that the higher level of formal education the respondents have, the less likely they attribute the improvement of life quality to tourism development. Model 1 explains 43.5 percent of the variance in the dependent variable and model 2 explains 50.7 percent of the variance. Taken together, Models 1 and 2 suggest that when controlling for residents' socio-economic and demographic characteristics, personal benefit is a good predictor of attitudes toward tourism. Education also helps predict the perception of tourism's contribution to quality of life.

Since gender is a nominal variable, the independent t-test was performed to test whether there are significant differences in attitudes toward tourism between males and females. As indicated in Table 4, there are no significant differences in Factor 1 and Factor 2 between males and females.

6.0 DISCUSSION

In the previous studies, TIAS has been identified as a reliable and valid instrument to measure residents' attitudes toward tourism in various settings, which include well-developed tourism destinations (such as Hawaii; Charleston South Carolina; New Orleans, Louisiana), National Scenic Areas like the Columbia River Gorge region of Oregon and Washington, Penghu National Scenic Area in Taiwan, and large urban communities like Nanaimo, British Columbia where the "tourism industry has grown slowly and somewhat inconspicuously over the years" (Rollins 1997, p. 742).

The results of this case study reinforce the findings of those previous studies and indicate that TIAS can be used to measure residents' attitudes toward tourism in a small community where tourism has not yet appeared to be a significant economic area of activity.

This research partially supports the tenets of the Irridex model and indicates that residents in the study area overall have a favorable attitude toward tourism. The results show that they support the ongoing tourism development and express a positive attitude toward further development and tourism planning. Because tourism development is only in its initial stage, however, unfavorable tourism impacts in Washington are not readily evident. Thus, this research is limited in its ability to identify whether residents' attitudes would reach a threshold after which support for tourism would decline. Furthermore, the current level of tourism development may also explain why no differences in attitudes toward tourism were found by age, gender, and community attachment. The results support the assertion of Dogan (1989), who argued that the initial response to tourism development, particularly in rural or Third World settings, might be uniform within the residents.

Although age, gender, and community attachment were not identified as the predictors of residents' attitudes toward tourism, perceived personal benefit was found to be closely and positively related to residents' attitudes. The results are consistent with previous research findings, which showed that personal benefits are correlated with support for tourism development and tourism impacts (McGehee et al. 2004). Such results can also be explained by social exchange theory. According to the theory, attitudes in a host community should be favorable when the perceived benefits outweigh the perceived impacts, thus producing a positive social exchange. Moreover, this study also provides support for the previous findings that highly educated people were more likely to express concern about tourism impacts (Andriotis & Vaughn 2003).

The findings of this study indicate that to obtain residents' support for tourism in Washington, NC, and plan for and maintain its healthy development, local authorities should ensure that residents are aware of the long-term accruing benefits to them personally as a consequence of tourism development. Future research should identify whether residents' attributes variables are related to their attitudes toward tourism at the different stages of tourism development and whether tourism will reach a threshold after which residents' support for it declines.

7.0 CONCLUSION

This study reinforces previous research findings and supports the premise that TIAS is a reliable and valid instrument to measure residents' attitudes toward tourism. It also provides empirical evidence to support the assumptions associated with the Irridex model and social exchange theory. Additionally, the study findings provide a glimpse of residents' attitudes toward tourism in the study area. It indicates that most respondents are favorable, at least initially, toward tourism. Particularly, the findings supported previous assertions that educating residents about the potential benefits of tourism is critical in obtaining the political support for tourism in enhancing residents' involvement in the industry, and in achieving sustainable community development.

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Outdoor Recreation Among Specific Populations

PERCEIVED CONSTRAINTS BY NON-TRADITIONAL USERS ON THE MT. BAKER-SNOQUALMIE NATIONAL FOREST

Elizabeth A. Covelli
West Virginia University
P.O. Box 6125 Percival Hall
Morgantown, WV 26506
Email: eac231@psu.edu

Robert C. Burns
West Virginia University

Alan Graefe
The Pennsylvania State University

Abstract.—The purpose of this study was to investigate the constraints that non-traditional users face, along with the negotiation strategies that are employed in order to start, continue, or increase participation in recreation on a national forest. Non-traditional users were defined as respondents who were not Caucasian. Additionally, both constraints and negotiation strategies were examined to see if they predict participation for non-traditional users.

The study took place on the Mt. Baker-Snoqualmie National Forest in Washington, during the summer of 2005. A quantitative survey method was used, with a total of 235 surveys collected. More than half of the respondents were classified as non-traditional users.

The findings of the study suggest that non-traditional users were more constrained than traditional respondents. A majority of the significant constraints items were found in the structural domain, which are constraints items that can be influenced or changed by forest managers. Items related to information and awareness, along with cultural reasons, were significantly more constraining for non-traditional users. Although non-traditional users perceived more constraints than traditional users, the same results were not evident for the negotiation strategies. Overall, traditional users employed more strategies than non-traditional users.

1.0 INTRODUCTION

The Seattle, WA, metropolitan area lies within a short drive of the Mt. Baker-Snoqualmie National Forest, (MBSNF) which makes it a logical choice for outdoor recreation activities. This national forest provides a myriad of different recreation activities, from snow-based recreation to hiking and camping and more passive activities like sightseeing and picnicking. People from the entire region tend to gravitate toward Pacific Northwest national forests for recreation, resulting in nearly 34 million visits per year for the 19 national forests, and over 5 million visits to the two national forests near the Seattle area (US Forest Service 2004).

It has been noted in the recreation literature that non-traditional users (ethnic/racial minorities, persons with disabilities, etc.) may be overlooked by managers without a concerted effort to pursue these potential recreationists (Chavez 2001, Jackson 2000). Concerning racial and ethnic minorities, 13 percent of the U.S. population is of Hispanic/Latino ethnic background, over 12 percent is Black, and nearly 4 percent of the population is Asian-American (U.S. Bureau of the Census 2002). However, the proportion of Hispanic/Latinos in the Pacific Northwest is expected to double, from 4 percent of the population to 8 percent of the population between 2000 and 2010 (Chavez 2001). Although the Asian population is not expected to grow significantly in Oregon and Washington over the next 10 years, nearly half of the Asians in the U.S. (49%) reside in the western U.S. (U.S. Bureau of the Census 2002).

U.S. Forest Service officials from the MBSNF identified a need to understand the non-traditional users on the forest. Accordingly, a survey of visitors was conducted in the summer 2005 recreation season to identify visitor levels of participation and understand their perceived constraints. The main research question answered what leisure constraints items affected non-traditional users when trying to recreate on the forest.

Through the examination of constraints, researchers can better understand the factors, both internal and external, that influence participation in recreation (Jackson 2000). Jackson explains that understanding constraints within a particular sub-group, how they affect leisure and how

people adapt to them, is crucial for leisure researchers (p. 64). Understanding constraints helps managers and researchers understand other facets of recreation and leisure, including motivations, conflict, and satisfaction (Jackson 2000), which in turn improves the overall quality of services.

2.0 METHODS

Data for this study were collected as part of a larger study funded by the U.S. Forest Service (Pacific Northwest Region) to understand why some people visit national forests and why some do not. Specifically, the larger study examined both people who did recreate on the MBSNF (recreationists) and people who did not recreate on national forests (non-recreationists).

On-site interviews were conducted with 235 visitors over approximately 30 sampling days from May through August 2005. Forest Service managers provided a list of sites where non-traditional users typically recreated. From that list a systematic, random sampling method was used to determine days, dates, and times for surveys. Subjects were selected at random, using every third person or every third group in the recreation area.

The vast majority of the surveys were conducted at four major recreation areas, along with several lower-use sites. The four major survey locations were a blend of parking areas, trail heads, day-use, and scenic overlooks. By using these purposive sites, interviewers could locate non-traditional users that recreate on the MBSNF. If this method had not been used, the sample of respondents would have closely represented typical forest visitors over 93 percent of whom are Caucasian (U.S. Forest Service), 2002.

Leisure constraints were measured using a battery of 25 items patterned closely after the ones developed by Hudson (2000). These items fell under three domains: intrapersonal, interpersonal, and structural constraints. A series of independent sample t-tests and one analysis of variance were conducted to examine the difference in constraints items across socio-demographic variables. These variables included non-traditional/traditional users, gender, age and income.

3.0 RESULTS

3.1 Respondent Characteristics

Respondents were asked several socio-demographic questions including race/ethnicity, gender, age, income, and education. The results showed that over half of the respondents were male (56.%). Over a quarter of the respondents (27.9%) reported that they were between the ages of 18 to 30 years. A similar proportion (27.5%) were in the age groups of 31 to 40 and 41 to 50 (25.8%). Respondents who were 51 years or older accounted for one-fifth (18.9%) of the sample. The mean age of respondents was approximately 40 years of age (mean=39.79).

Regarding income, a large proportion of the respondents fell into the categories of $30,000 to $110,000 for total household income. Those who reported $70,001 to $110,000 (29%) made up the largest percentage of the sample, followed by $30,001 to $50,000 (23%) and $50,001 to 70,000 (22%). Respondents who earned under $30,000 accounted for 12 percent of the sample, while those who made over $110,000 made up 13 percent of the sample.

A vast majority of the respondents reported having a bachelor's degree or higher (80%). Respondents with a graduate or professional degree accounted for 41 percent of the sample, followed closely by those who had a bachelor's degree (39%). Respondents with an associate's degree or less made up 19 percent of the sample.

Over half (57%) of the respondents sampled were classified as non-traditional recreation users. Non-traditional users were those respondents who reported being of a racial or ethnic affiliation other than White/Caucasian. This category included respondents who reported they were of a racial group other than White, those of Hispanic or Latino ethnic origin, and respondents who reported being from a non-White/Anglo ethnic group but identified with the White/Anglo race category.

3.2 Constraints Differences

A series of independent sample t-tests was conducted to determine if there were significant differences in

Table 1.—Items used to measure constraints

Constraints Items	Major Reason	Minor Reason	Not a Reason	Mean
Intrapersonal Constraints				
Fear of the outdoors	<1.0	8.9	90.2	1.10
Poor health	2.6	11.9	85.5	1.17
Like to do other things for recreation	12.8	53.6	33.6	1.79
Fear of prejudice from other recreationists based on my racial/ ethnic identity	<1.0	3.8	95.3	1.05
I feel uneasy or not welcome at MBSNF	0	3.4	96.6	1.03
Interpersonal Constraints				
Don't have enough time because of family	13.2	24.7	62.1	1.51
Because of cultural reasons	.9	5.1	94.0	1.07
Don't have anyone to go with	6.4	26.4	67.2	1.40
Do not enjoy recreating with other people	1.7	8.1	90.2	1.11
People in my own cultural group don't accept my outdoor recreation activities	<1.0	6.0	93.2	1.07
Structural Constraints				
Have no way to get to there	6.0	9.8	84.3	1.22
Lack of information about recreation opportunities	6.8	30.2	63.0	1.44
MBS is too far away	6.8	25.1	67.2	1.38
MBS recreation areas are too crowded	5.1	32.8	62.1	1.43
Can't afford to go to the MBS to recreate	<1.0	6.0	93.2	1.07
People I want to go with can't afford to go	1.3	5.1	93.6	1.07
There is a lack of public transportation to MBSNF	6.0	14.0	80.0	1.26
Not aware of recreation opportunities on the MBSNF	4.7	22.1	73.2	1.31
Recreation opportunities that I like to participate in are not available on the MBSNF	2.1	10.2	87.7	1.14
Negative attitudes from FS employees or other recreation area employees	0	2.6	97.4	1.02
Areas are closed when I want to visit	2.1	11.5	86.4	1.16
Possible encounters with undesirable or dangerous animals and insects	1.3	19.1	79.6	1.22
Weather keeps me from recreating on MBSNF	10.6	50.6	38.7	1.72
Don't have enough time because of work or school	37.4	25.1	37.4	2.00
Because of recreation fees	3.4	12.3	84.3	1.19

Means based on a 3-point scale (1=major constraint; and 3= not a constraint)

the mean scores for the 25 constraints items across the traditional/non-traditional categories. The results showed nine significant mean score differences: six in the structural domain, two in the interpersonal domain, and one in the intrapersonal domain.

Six significant relationships were noted in the structural constraints domain, with two of these pertaining to information needs. Non-traditional respondents reported being more constrained than traditional users in each of these cases. *Lack of information about recreation opportunities* constrained non-traditional respondents (mean=1.59) significantly more then traditional users (mean=1.23) (t= -4.672, p<.001). Additionally, *not aware of recreation opportunities* was significantly more constraining for non-traditional recreationists (mean=1.18) than for traditional visitors (mean=1.41) (t=-3.268, p<.001).

Other significant structural domain items include *having no way to get there*, *recreation opportunities I like are not available*, *weather*, and *crowding*. Respondents who were in the non-traditional category reported being significantly more constrained (mean=1.30) than traditional users (mean=1.11) for the item *have no way to get there*, (t=-2.730, p<.01). Similarly, *recreation*

Table 2.—Results of comparisons of means of the significant constraints items with traditional and non-traditional respondents

Significant constraints items	Traditional	Non-traditional	Test of Significance (t)
Have no way to get to there	1.11	1.30	-2.730**
Lack of information about recreation opportunities	1.23	1.59	-4.672***
Because of cultural reasons	1.01	1.11	-2.776**
Poor health	1.10	1.23	-2.196*
Areas are too crowded when I want to visit	1.54	1.34	2.680**
People in my own cultural group don't accept my outdoor recreation activities	1.03	1.11	-2.132*
Not aware of recreation opportunities on the MBSNF	1.12	1.41	-3.268***
Recreation opportunities that I like to participate in are not available on the MBSNF	1.07	1.20	-2.502**
Weather keeps me from recreating on MBSNF	1.59	1.81	-2.636***

Means based on a 3-point scale (1=major constraint; and 3= not a constraint)
*= <.05; **= <.01; ***= <.001

opportunities that I like are not available was perceived to be more of a constraint for non-traditional respondents (mean=1.20) than for traditional respondents (mean=1.07) (t=-2.502, p<.01). Non-traditional subjects reported a higher mean score for *weather* (mean=1.81) as a constraint than traditional respondents (mean=1.59) (t=-2.636, p<.001).

The lone item that traditional respondents rated as more of a constraint was *areas are too crowded*. Traditional respondents reported a mean score of 1.54, while non-traditional users reported a mean score of 1.34 (t=-2.680, p<.01).

Within the interpersonal constraints domain, two significant differences were noted. Non-traditional respondents reported being slightly more constrained by *cultural reasons* (mean=1.11) than traditional recreationists (mean=1.01) (t=-2.776, p<.01). The item *my cultural group does not accept my activities* also showed higher mean scores for non-traditional respondents (mean=1.11) as compared to traditional respondents (mean=1.03) (t=-2.132, p<.05).

The single constraints item that showed significant differences across the traditional/non-traditional category within the intrapersonal constraints item was *poor health*. Respondents who fell in the non-traditional category were more likely to be constrained by *poor health* (mean=1.23) than those who were considered traditional users (mean=1.10). The t-test showed that this relationship was significant (t=-2.196, p<.05).

The independent samples t-test that examined gender differences resulted in three significant constraints items. The single interpersonal constraints item, *don't have anyone to go with*, was more of a constraint for females (mean=1.51) than males (mean=1.30) (t=-2.789, p<.001). Similar results were reported for the two structural constraints items. Females (mean= 1.33) were significantly more constrained than males (mean= 1.13) for the possibility of *encountering dangerous animals or insects* at the p<.001 level (t=-3.540). Additionally, females (mean=1.48) reported being more constrained by *areas being too far away* than males (mean=1.31) (t=-.2189, p<.05).

A one-way analysis of the variance was conducted for the age category, revealing four significant items. Three of the significant mean scores included items under the structural domain. Under the interpersonal domain the lone item showing significant differences was *not having enough time because of family*. Respondents between the ages of 31 and 40 (mean=1.70) reported being more constrained by the item than the other age groups. The age group 41 to 50 reported a mean score of 1.55, followed by 51 or older (mean=1.41), and 18 to 30 (mean=1.35) (F=2.98, p<.05).

Table 3.—Results of comparisons of means of the significant constraints items with gender

Significant constraints items	Male	Female	Test of Significance (t)
Don't have anyone to go with	1.30	1.51	-2.789***
MBS is too far away	1.31	1.48	-2.189*
Possible encounters with undesirable or dangerous animals and insects	1.13	1.33	-3.540***

Means based on a 3-point scale (1=major constraint; and 3= not a constraint)
*= <.05; **= <.01; ***= <.001

Table 4.—Results of comparisons of means of the significant constraints items with age

Significant constraints items	18-30	31-40	41-50	51 or older	f-value
Don't have enough time because of family	1.35	1.70	1.55	1.41	2.98*
Lack of information about recreation opportunities	1.63	1.51	1.30	1.18	6.479***
There is a lack of public transportation to MBSNF	1.41	1.32	1.13	1.07	5.009**
Not aware of recreation opportunities on the MBSNF	1.47	1.37	1.23	1.07	5.726***

Means based on a 3-point scale (1=major constraint; and 3= not a constraint)
*= <.05; **= <.01; ***= <.001

The significant constraints items under the structural domain were *lack of information about recreation opportunities*, *lack of public transportation*, and *not aware of recreation opportunities*. The first item was *lack of information about recreation opportunities*. Respondents aged 18 to 30 years (mean=1.63) were more constrained by the item when compared to those 51 years or older (mean=1.18) and those 41 to 50 years old (1.30) (F=6.479, p<.001). The items *lack of public transportation* and *not aware of recreation opportunities* showed similar differences across mean scores. Respondents who were between the ages 18 and 30 were more constrained by *lack of public transportation* (mean=1.41) than those who were 51 years or older (mean=1.07), 41 to 50 years old (mean=1.13), and 31 to 40 years old (mean=1.32) (F=5.009, p<.01).

The item *not aware of recreation opportunities* showed a similar relationship. Those who were 18 to 30 years of age were more constrained (mean=1.47), than those who were 51 years or older (mean=1.07), 41 to 50 years old (mean=1.23), and 31 to 40 years old (mean=1.37) (F=5.726, p<.001).

Scheffe's post-hoc analyses were conducted to further understand the differences in each of the four significant variables. For three of the constraints items (*lack of information, lack of public transportation,* and *not aware of opportunities*) a distinct pattern was revealed. Younger respondents were more constrained, and the constraints dropped in importance as age increased. The Scheffe's test for the item *no time because of family* did not reveal a distinct pattern.

A one-way analysis of variance test was conducted to identify significant mean scores in the income category, which revealed five significant mean score differences. Four of the significant differences were in the structural constraints domain and one was in the interpersonal constraints domain. The interpersonal constraints item *don't have anyone to go with* yielded significantly different mean scores. Those in the $30,000 to $50,000 income bracket reported being the most constrained by this item (mean=1.60), while those in the range of $70,000 to $110,000 were least constrained by the item (mean=1.19) (F=4.227, p<.01).

Within the structural constraints domain, respondents whose income fell in the category of $30,000 or less (mean=1.25) were more constrained by the item *people I want to go with can't afford to go*, while respondents in the over $110,000 category were not constrained by the

Table 5.—Results of comparisons of means of the significant constraints items with income

Significant constraints items	$30k or less	$31k- 50	$51k- 70	$71k- 110	Over $110k	f-value
Don't have anyone to go with	1.33	1.60	1.48	1.19	1.23	4.227**
People I want to go with can't afford to	1.25	1.06	1.04	1.03	1.00	3.143*
There is a lack of public transportation	1.58	1.45	1.16	1.12	1.03	6.198***
Not aware of recreation opportunities on the MBSNF	1.70	1.39	1.30	1.22	1.11	4.494**
Recreation opportunities that I like are not available	1.45	1.13	1.04	1.08	1.11	4.701***

Means based on a 3-point scale (1=major constraint; and 3= not a constraint)
*= <.05; **= <.01; ***= <.001

item (mean=1.00) (F= 3.143, p<.05). The constraints item *lack of public transportation* also showed significant differences across income brackets. As income increased, the respondents were less constrained by this item. Specifically, respondents in the $30,000 or less category reported being more constrained (mean=1.58) by this item, than those who reported income levels over $110,000 (mean=1.03) (F=6.198, p<.001).

A similar relationship was noted for the item *not aware of recreation opportunities*. Respondents whose income was less than $30,000 (mean=1.70) were more constrained than those who had higher incomes (F=4.494, p<.01). Lastly, the item *recreation opportunities that I like to participate in are not available on the MBSNF* showed significant difference in mean scores. Respondents in the $50,000 to $70,000 category (mean=1.04) were the least constrained by this item, while those in the $30,000 or less bracket (mean=1.45) were the most constrained (F= 4.701, p<.001).

The Scheffe's post-hoc analysis confirmed the existence of significant differences across the five income variables. Five post hoc tests were conducted, and a similar pattern was noted for four of the items. For the items *people I want to go with cannot afford to go, lack of public transportation, not aware of the opportunities*, and *the recreation opportunities that I like to do are not available*, the constraint dropped significantly as income increased. The post-hoc analysis for the item *don't have anyone to go with*, however, did not show a similar pattern. For this item, people in the middle income categories reported that these items were more of a constraint than either the lowest income respondents or the higher income respondents.

4.0 DISCUSSION

Although there has been a plethora of research on racial and ethnic groups and outdoor recreation, there is a limited number of studies that have focused on constraints to recreation and non-traditional users (Shinew & Floyd 2005). This study was aimed at understanding items that constrain non-traditional users from recreating more often.

The respondents of this study were not representative of those who generally recreate on the MBSNF (U.S. Forest Service 2002). A majority of the respondents were from urban areas and reported being in higher income brackets and with a bachelors degree or higher. Additionally, over half of the respondents were non-traditional.

It is clear that race and ethnicity play a large role in understanding what constrains certain people from recreating on this particular National Forest. Nine of the 25 constraints items showed significant differences when compared across the race/ethnicity categories. Some interesting findings were revealed when examining these differences. First, six of the nine significant constraints items fell under the structural domain. This in itself is not surprising, as there are 15 structural items compared to 5 intrapersonal items and 5 interpersonal items. However, three of the significant items within the structural domain were three highly significant items overall. These items included *lack of information*, *not aware of opportunities*, and *weather*. When looking at

these three items across the various socio-demographic variables, *lack of information* was also a significant item for the age variable, and *not aware of opportunities* was significant for both age and income, as well as race. *Weather* was a constraint only for the race/ethnicity variable.

This raises the stakes for management, as the items *lack of information* and *lack of opportunities* are both items that managers should be able to impact. Previous studies have shown that these items are often related to non-participation by non-traditional users, particularly for the race/ethnicity variable (Shinew & Floyd 2005). Also, these data show that these two items are impacting older people and people in lower income categories as well. Once again, this seems to indicate that managers need to focus on these items and develop strategies that will allow non-traditional users the opportunity to recreate, should they desire to do so.

The remaining constraints items that were significant across the race/ethnicity variable were *cultural reasons*, *lack of transportation*, *recreation opportunities that I like to participate in are not available*, *poor health*, *cultural reasons*, and *areas are crowded when I want to visit*. With the exception of the crowding variable, all of these items were significantly more constraining for non-traditional users than for traditional users. The item *poor health* was a constraint only for racial/ethnic minorities (ie., non-traditional users) and not any of the other socio-demographic groups. This variable was not significant across any other socio-demographic variable.

The question of why information and awareness variables continue to be more important for non-traditional users than traditional users remains unanswered. This discussion also reports that the items or things that constrain non-traditional users are distinctly different from those items that concern traditional users.

Speaking specifically to the role of constraints in non-traditional users' lives, two things were very apparent in this study. First, the non-traditional recreationists who were interviewed for this study had assimilated into the prevailing society of the Pacific Northwest. These subjects were part of the vast majority of recreationists in the Pacific Northwest who really enjoy hiking and recreating in the outdoors—regardless of their racial/ethnic backgrounds. It should be noted that many of the items that constrained people fell under the structural domain. These items may be things that resource managers can focus on, and affect changes within their communities. Transportation, for example, has long been listed as a constraint that limits people's ability to recreate on national forests.

A second obvious finding is that the respondents seemed not to perceive any sort of racial/ethnic discrimination as a constraint that impacted their recreation patterns. Items related to discrimination from natural resource managers, other recreationists, and even from within their own groups were not constraining factors.

Numerous differences were noted in the constraints faced by traditional and non-traditional users. And, as seen in the overall sample frequencies, most of the differences were in the structural domain. Virtually all of these differences showed that non-traditional users face very different barriers when attempting to recreate in a forest near the urban area in which they live. Forest users are not a homogenous group of people recreating, but there exist separate sub-groups whose needs are very different from the majority of recreationists on National Forests around the United States.

In conclusion, it is apparent that natural resource managers need to invest in understanding what constrains non-traditional users. As important is the fact that Forest Service managers are starting the process of understanding this particular user group. If National Forests are to remain relevant to the changing demographics of our nation, their managers will need to continue to understand and provide opportunities for all populations.

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Management Roundtable

GATINEAU PARK: A CASE STUDY OF MANAGING RECREATION IN THE WILDLAND-URBAN INTERFACE

Paul Heintzman
Leisure Studies Program
University of Ottawa
125 University
Ottawa, ON
K1N 6N5
Canada
pheintzm@uottawa.ca

Abstract.—Gatineau Park, a few kilometers from the Parliament Buildings in Ottawa, is a classic example of a park confronted by management issues related to the wildland-urban interface. The park, comprising 36,300 hectares of forested and hilly Canadian Shield terrain stretching 50 kilometres in length, extends into the National Capital region, which has a population of over one million. A new Master Plan was approved for the park in 2005. This study uses a case study approach where Gatineau Park is intensively investigated to obtain insights that might be helpful to other parks in managing recreation in the wildland-urban interface.

1.0 INTRODUCTION

Environmental impacts and recreational conflicts in the urban-wildland interface are intense, unique and complex due to high levels of diverse visitors with interests in a variety of different activities (Ewert 1993; Stein 2005). Gatineau Park, located just a few kilometers from the Parliament Buildings in Ottawa, Canada, is a classic example of a park confronted by management issues related to the wildland-urban interface: residential development adjacent to the park; conflicts among stakeholders relating to acceptable uses of the park, and conflicts between humans and wildlife. Gatineau Park is a unique park in that, unlike other large nature parks in Canada, it is not a National Park or a Provincial Park but is managed by the National Capital Commission (NCC), an agency of the Canadian federal government. It is managed under the authority of the National Capital Act. Another feature of Gatineau Park is its proximity to an urban area (Ottawa-Gatineau), which also distinguishes it from other nature parks in Canada. Figure 1 shows the geographic context of Gatineau Park in relation to other nature parks in eastern Ontario and Western Quebec. As can be seen from the figure, other large parks such as Algonquin Provincial Park, La Verendrye reserve and Mont Tremblant Park are a considerable distance from large urban centers such as Toronto, Ottawa, and Montreal, while Gatineau Park protrudes into the National Capital Region (see Figure 2).

The land comprising Gatineau Park was assembled between the 1930s and the 1970s. The Park contains 36,300 hectares of forested and hilly terrain within the Canadian Shield and stretches over 50 kilometres in length. The range of natural habitats in the park provides for a rich biodiversity including exceptional forests, 50 lakes and hundreds of ponds. The wildlife includes 230 bird species and 50 mammal species, such as deer,

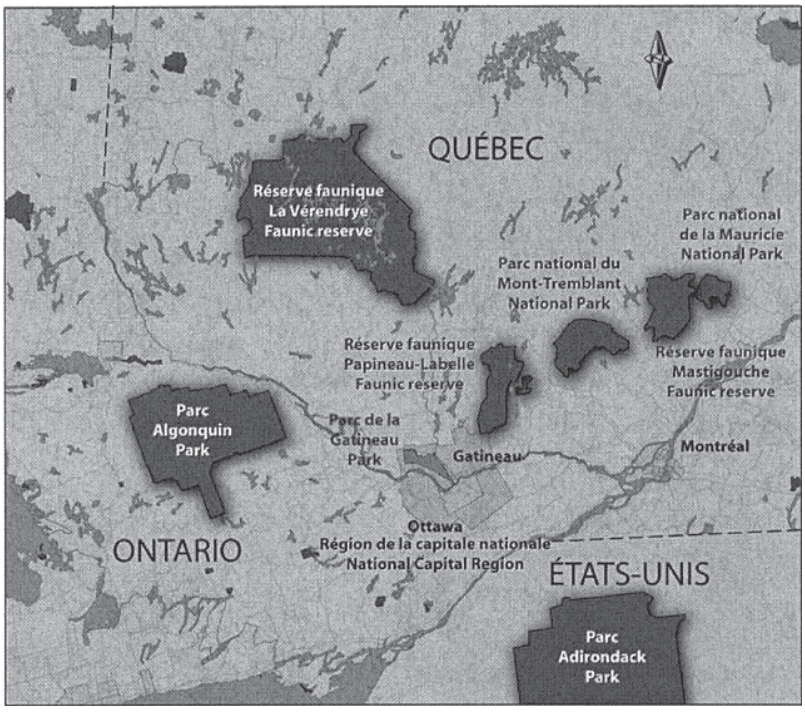

Figure 1.—Geographical Context of Gatineau Park. Source: National Capital Commission. (2005). *Gatineau Park Master Plan.* Ottawa, ON: Author, p. 3.

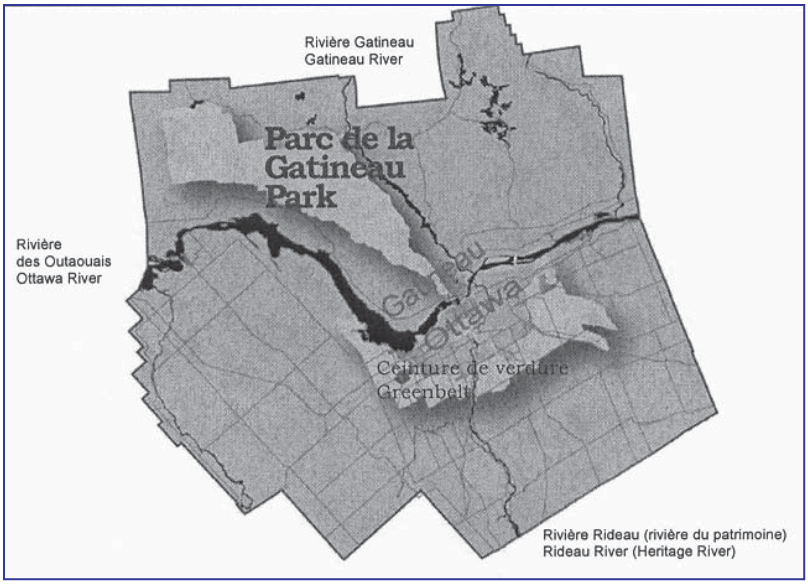

Figure 2.—Geographical Context of Gatineau Park in National Capital Region. Source: National Capital Commission. (2005). *Gatineau Park Master Plan.* Ottawa, ON: Author, p. 4.

black bear and wolf. During the nesting season 350,000 birds nest in the park. In terms of fauna, there are 1,000 plant species, of which 121 are endangered—the largest concentration of rare species in the province of Quebec.

Three-quarters of the land adjacent to the park is farmland. However, the southernmost part of the Park extends into the urban area of the National Capital Region, Canada's fourth largest urban community, with a population of more than one million people. The park is increasingly surrounded by new urban neighborhoods. It is predicted that increased urban growth around the southern portion of the park will add another 20,000 new residents by 2020 (Del Degan et al. 2004).

Summer recreational opportunities in the park include six beaches, 14 picnic areas, 40 km of scenic vehicle parkways, 165 km of hiking trails, of which 90 kms are also used by cyclists, 20 km of paved recreational pathways, and canoeing opportunities in the park's lakes. Winter recreational opportunities include 200 km of cross-country ski trails, 25 km of snowshoe trails, 10 km of winter hiking trails, and a privately operated downhill skiing center which has a long term-lease in the park. Cultural attractions include the Mackenzie King Estate, the estate of a former Prime Minister of Canada who played an instrumental role in establishing the park, which attracts 60,000 visitors a year. Special events attract over 265,000 people per year. Ninety percent of special-event visitors enjoy the changing leaf colors during the annual Fall Rhapsody, which also creates congestion on the parkways. This peaking of use during a specific season with associated congestion and managerial challenges is typical of the wildland-urban interface (Dwyer & Chavez 2005). Other special events include sports events, such as the annual Keskinada cross country ski loppet in the winter, which require a high level of services. Visitor use is primarily day use with low numbers of overnight users. There are 300 organized campsites and 60 overnight places in winter shelters. This emphasis on day use is also characteristic of wildland-urban interface areas (Dwyer & Chavez 2005).

Population growth in the region, aging of the population, an increase in demographic diversity, an increase in educated technology-sector employees seeking outdoor activities, and more emphasis on quality of life, health, heritage, and culture, have all led to a significant impact on recreational demand (Del Degan et al. 2004). The park is one of the most heavily used natural parks in Canada, with 1.7 million visitors per year. It has eight times the annual visits per square kilometres as Banff National Park, and twice that of Shenandoah National Park (see Figure 3). The impacts of this recreational use are positive in social and economic terms (the park contributes more than $25 million to the economy of the region and 420 person-years of direct employment), but negative in terms of ecological effect (Del Degan et al. 2004).

The National Capital Commission developed the first Master Plan for the park in 1980, followed by a second Master Plan in 1990. The 1990 Master Plan featured Gatineau Park as the "Capital's natural park" and emphasized a balance between conservation and recreation. In 2001, the NCC began a review of the 1990 Master Plan for the park and a Preliminary Master Plan for the period 2005-2015 was unveiled in October 2004 (Del Degan et al. 2004). Following public consultation

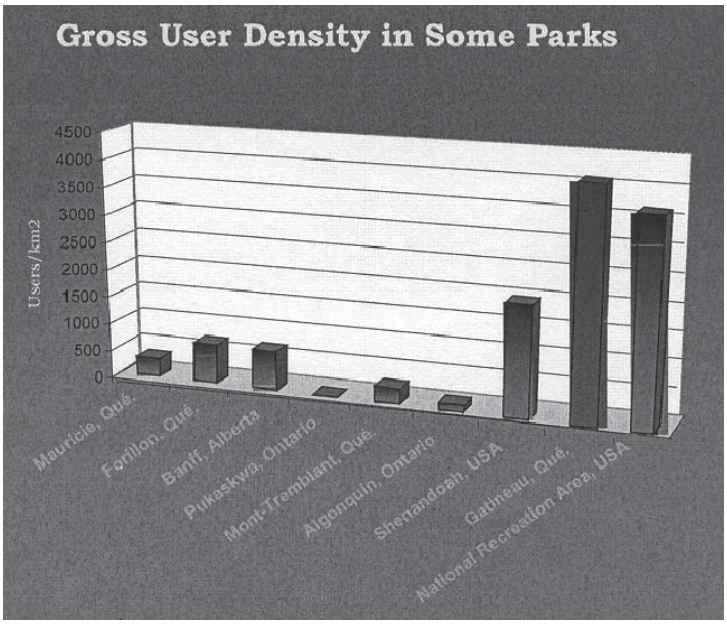

Figure 3.—Gross User Density in Some Parks. Source: National Capital Commission. (2005). *Gatineau Park Master Plan.* Ottawa, ON: Author., p. 9.

and some modifications to the Preliminary Master Plan, the NCC approved the new Master Plan in May 2005 (National Capital Commission, 2005).

2.0 OBJECTIVES

The objective of this study is to examine Gatineau Park and its new 2005 Master Plan to determine insights relevant to managing recreation in the wildland-urban interface. The study will specifically focus on the 2004 Preliminary Master Plan and how it was modified through the public participation process before final approval of the Master Plan in 2005.

3.0 METHODS

This study utilizes a case study approach where one case (i.e., Gatineau Park) is intensively investigated to obtain insights that might be helpful to other parks (Henderson & Bialeschki 1995). The results section highlights some of the key points in the 2004 Preliminary Master Plan and the approved 2005 Master Plan for Gatineau Park. In the discussion section, recreation related issues that were prominent in the public participation process will be discussed within the context of managing recreation in the wildland-urban interface.

4.0 RESULTS

4.1 2004 Preliminary Master Plan

Issues identified in the master plan review process were grouped into four principal concerns: environment, recreation, regional context, and management (Del Deganet al. 2004). Environment concerns included risk of habitat loss, disruption of natural processes, colonization of invasive species, ecological isolation, and loss of diversity and rare species. For example, new roads, such as a new access road to the Mackenzie King Estate and the McConnell-Laramée Road, which bisects the southern portion of the park, are creating fragmentation and ecological isolation. Recreation concerns involved risk of decreased quality of recreational experience, conflicts between recreational users, increase in users and overloads, and informal recreational activities in conflict with authorized activities and conservation goals. Regional context concerns consisted of the park's being increasingly circled by surrounding urban and agricultural development, difficulties in controlling general access to the park, and demand for public urban use such as roads, transmission lines, and sports fields that conflict with the park's mission. Management concerns included rationalization of resources and budget cutbacks, and lack of resources for control, conservation, and interpretation.

The vision of the park as stated in the 2004 Preliminary Master Plan was that of a conservation park: "the Park's vision for the coming decades should focus on the conservation of the natural and cultural environments… Gatineau Park will become a natural protected area, managed primarily for conservation then for recreational use" (Del Degan et al. 2004, p. 12). The balance of conservation and recreation that characterized the 1990 Master Plan would now be replaced with a focus on conservation so that the park would be known as the "Capital's Conservation Park" rather than the "Capital's Nature Park."

The priorities of the 2004 Preliminary Master Plan were identified as follows:

> "Preserve and enhance the unique natural and cultural heritages making up the park…."
>
> "Offer high quality recreational experiences that are respectful of the natural environment…"
>
> "Inspire all…to respect conservation values in order to ensure the survival of the Park for future generations..." (Del Degan et al. p. 12).

The Preliminary Master Plan identified six strategic objectives: environment, recreation, regional integration, heritage, national symbol, and management (Del Degan et al. 2004). In this paper we will focus on only two of these strategic objectives, namely, environment and recreation.

In regards to the environment strategic objective, the Preliminary Master Plan proposed the following: the preservation of ecological links; ecosystem restoration and reduction of fragmentation; and the relocation of recreational activities to less sensitive areas or if necessary, the termination of recreation activities. Recreational relocation would involve limiting human presence in some areas, eliminating unofficial trails and access points, and limiting new infrastructure and activities.

The recreation strategic objective in the Preliminary Master Plan included proposals to maintain recreation activities that are respectful of the environment, improve reception facilities and visitor service points, and place limitations on non-compatible recreational activities. The plan proposed no new competitive sports infrastructure, limits on extreme sports, limits on community recreation, and the elimination of off-road motorized activities such as motor boats and snowmobiles.

Specific recreation issues included the eventual banning of snowmobiling in the park by the year 2010, temporarily banning rock climbing for three years until a conservation plan is completed, limitations on mountain biking, and the elimination of informal trails by local residents.

4.2 Public Participation

Public consultations on the Preliminary Master Plan were held during the fall of 2004. The public participation process consisted of public meetings, six-question questionnaires distributed at the public meetings, the reception of comments and briefs, and an opinion poll. Public feedback on the preliminary plan ranged from those who slammed restrictions on recreational use to those who wanted more conservation, such as the Canadian Parks and Wilderness Society, which advocated emphasis on ecological integrity and legislative protection (e.g., National Park status) for the park (CBC 2004, Munter 2004). Some of the specific responses to the Preliminary Master Plan will be highlighted in the Discussion section of this paper.

4.3 2005 Master Plan

The new Master Plan was approved in May 2005. The new plan sets aside a larger area of the park as having a conservation priority, emphasizes respectful activities, and increases conservation activities to protect the natural environment. The park will be managed primarily for conservation and then for recreational use. Decisions about recreation include significantly reducing but not banning climbing activities, eliminating off-road motorized vehicles, including the use of snowmobiles by the year 2010 and naturalizing unused roads and informal trails.

5.0 DISCUSSION

The specific recreational issues that arose in the public participation process reflect broader issues common in the wildland-urban interface. The banning of snowmobiling reflects rural-urban lifestyle differences, the banning of rock climbing reflects ecological-recreation conflicts, limitations on mountain biking reflect user-group conflicts, and elimination of informal trails reflects urban encroachment. Each of these specific issues is a part of an overall debate between recreational use versus conservation within the park and a proposed shift from a "nature park" with a balance of conservation and recreation to a "conservation park" with a focus on conservation first, then recreation.

5.1 Rural-Urban Lifestyles

Rural and urban values often conflict and increase the complexity of management in the wildland-urban interface (Dwyer & Chavez 2005). Difficult decisions need to be made between views on both resource use and user expectations that arise from the very different environments—rural and urban—that come together at the interface. This type of rural-urban conflict is evident in the master planning process for Gatineau Park, where there are significant differences between the rural residents at the northwest end of the park and the urban residents increasingly surrounding the southern end of the park. As one newspaper column noted: "The socio-economic disparity of abutting populations at extreme poles of Gatineau Park is appalling." The writer goes on to describe a home on the northwest end of the park: "On the porch of a dilapidated shack surrounding by derelict pick-ups an obese man lounges on car upholstery" (Huggett 2004, p. B4). The contrast between the rural and urban was also illustrated by the physical grouping of residents at one of the public meetings as described by a newspaper reporter: "In one part of the room was a crowd of avid snowmobilers, including burly men sporting T-shirts touting their favourite make; in another corner was a group of earnest rockclimbers" (Drolet 2004, p. B2). Members from a snowmobiling club in the rural area just northwest of the park criticized the proposed snowmobiling ban effective in 2010. They claimed that snowmobiling did not affect the environment, and they felt it would hurt the economy of small communities near the park and have an adverse affect on gas stations, snowmobile dealers and bars in that area (Drolet 2004). The municipal government in this area (Pontiac), reflecting the values of its rural residents, has supported the use of an all-terrain vehicle trail through the northwest corner of the park even though motorized trail use is not approved in the park. The municipality has also approached the park with a request that local contractors be allowed to log in this part of the park. Many of the rural residents "view Gatineau Park as a 'lock-up' of their recreational back-yard. Most resent the restrictions which seem to favour the interests of urban visitors—focussed on 'smelling flowers'—rather than ripping around in four-wheelers" (Huggett 2004, p. B4). Despite the protests of the snowmobilers, the approved Master Plan calls for a gradual elimination of off-road motorized activities from the park. The National Capital Commission indicated they will work with snowmobile associations and other governments to relocate the snowmobile corridors outside of the park.

5.2 Ecological-Recreation Conflicts

The proposed ban on rock-climbing, along with the proposed ban on snowmobiling, received the most attention at a public meeting in 2004. Due to 17 environmentally sensitive species found in areas used by climbers, the Preliminary Master Plan would have placed an immediate ban on rock-climbing for three years while a conservation plan was developed. Rock-climbers argued to have continued access to a section of the sensitive Eardley escarpment, which contains the best rock-climbing in the Ottawa area, and represents, according to the chair of the Ottawa section of the Alpine Club of Canada, "really the only place to climb in the Ottawa area" (CBC 2004). The climbers argued that they had been climbing in the park for over 50 years, and that park officials had not worked with the climbers to come up with a compromise similar to the ones that have been established in other sensitive areas such as the Niagara Escarpment in southern Ontario. They claimed their activities have minimal impact as they do not use motorized activity but only their hands and feet. The rock-climbers were able to achieve a compromise in the approved Master Plan. Instead of banning rock-climbing for three years, climbing on the Eardley escarpment will be significantly reduced in order to assist in the protection and regeneration of the escarpment's natural ecosystems. Climbing will be restricted until a Natural Resources Conservation Plan is developed, and in the meantime, park officials will work with climbing groups to ensure the protection of the escarpment. Since the adoption of the Master Plan, the National Capital Commission and the Gatineau Park Climbers' Coalition reached a short-term agreement on the sites where rock climbing would be allowed. Rock climbing will be permitted on 22 sites, not permitted on four sites, and not permitted on sections of three sites (National Capital Commission 2006).

5.3 User-Group Conflicts

Dwyer and Chavez (2005) observed that new technologies for outdoor recreation are more popular in wildland-urban interface areas than in backcountry areas. For example, bicycle travel has become popular in interface areas leading to conflict with traditional trail users. During the public participation process, a letter to the editor of *The Ottawa Citizen* illustrated this type of conflict between users in Gatineau Park.

> With the increased popularity of snowshoeing and mountain-biking, it is becoming clear that the current practice of sharing trails is not reasonable. Two cyclists coming downhill behind me on the Wolf Trail affected my enjoyment of nature; presumably cyclists are disturbed when, as they come over the top of a hill, there are hikers spread across the trail. And in winter it is most frustrating for this back-country skier to come to a favourite downhill run on a trail to find snowshoers have made it into a snow luge. Control is virtually impossible, so off into the bush you go (Campbell 2004, p. A15).

The approved Master Plan specifies that mountain biking needs to be managed more stringently with restrictions on the areas of the park where it may take place so that negative effects on other user groups are minimized and the environmental impact of mountain biking is reduced.

5.4 Urban Encroachment

Urban encroachment is a significant issue in managing recreation in the wildland-urban interface:

> Changing private land ownership in the interface may bring more landowners,…and subsequently more pressure for the use of public lands. Increasing numbers of relatively small private holdings adjacent to public holdings create major challenges for the management of public lands, including managing the multiple interfaces between these many holdings and the public land, meeting the expectations of nearby residents…Controlling access to public lands in the interface is often critical to effective management given the large numbers of individuals living nearby, sometimes as neighbours who share a common boundary, as well as potential users from urban areas…(Dwyer & Chavez 2005, pp. 273-274).

Urban encroachment issues were identified in the Preliminary Plan as it proposed no new competitive sports infrastructure, limits on extreme sports, and limits on community recreation. In addition, the preliminary plan proposed the elimination of informal trails by local residents. During the public participation process some local residents opposed the elimination of these informal trails. For example, one resident stated: "We have our own natural trails that we've been maintaining, that give us connection to the park, and the whole idea of us moving up there is to have access to the park" (CBC 2004). However, park officials maintained that these trails are not natural, and that they wanted these trails returned to nature. The approved Master Plan states that the Park plans to naturalize informal trails and unused roads to reduce fragmentation in the park. However, new roads in the park, such as the McConnell-Laramée Road across the southern end of the park, currently under construction, and the new access road to the MacKenzie King Estate, have gone ahead despite opposition from conservation groups. These roads, which further fragment the park, may be seen as an almost inevitable result of urban development in the region. Another form of urban encroachment that was criticized was residential development on private land within the park (Cornish 2004).

5.5 Shift to Conservation Park

The new master plan reflects a shift in priorities, that is, a shift from a "natural park" as stated in the 1990 Master Plan to a "conservation park" as stated in the 2005 Master Plan, and a shift from a "balance between conservation and recreation" in the 1990 plan to "conservation, then recreation" in the 2005 plan. This shift reflects a shift that has been taking place in the main park agencies within Canada during the last 15 years. For the majority of their history, Canadian National Parks were guided by the dual mandate as outlined in the National Parks Act of 1930: "Parks are hereby dedicated to the people of Canada for their benefit, education and enjoyment,…so as to leave them unimpaired for

future generations." However, with an amendment to the National Parks Act in 1988, there was a new focus on ecological integrity, which was further reinforced in the Canada National Parks Bill of 2000. This legislation states: "Maintenance or restoration of ecological integrity, through protection of natural resources and natural processes, shall be the first priority…when considering all aspects of the management of parks." A similar shift is taking place concerning the management of Ontario Provincial Parks. The Provincial Parks Act of 1913, which was amended in 1954, states: "All provincial parks are dedicated to the people of Ontario and others who may use them for their healthful enjoyment and education." There was no environmental protection in this act. However a new Provincial Parks and Conservation Reserves Act that emphasizes maintaining biodiversity and ecological integrity along with providing opportunities for compatible, ecologically sustainable recreation has just been passed by the Ontario government. The difference between Canada's National Parks, Ontario's Provincial Parks, and Gatineau Park is that Gatineau park is much closer to a metropolitan area and therefore faces unique challenges in conservation. Will the shift from a "nature park" to a "conservation park" be merely a shift in policy or also a shift in actual management practice?

6.0 CONCLUSION

"The wildland-urban interface presents a situation where recreation conflict often occurs, and where management is challenged to seek appropriate actions" (Rollins et al. 1998, p. 107). The new Master Plan for Gatineau Park is an example of compromise between the conflicting views expressed by the various stakeholders—between recreationists and preservationists. On the one hand, snowmobilers, rock-climbers, and informal trail users wanted to continue their recreational activities in the park, while preservationists such as those represented by the Canadian Parks and Wilderness Association desired greater emphasis on ecological integrity. In such a situation a compromise is inevitable. As Lucie Bureau, the NCC's senior regional planner stated, "They can't please everyone" (CBC 2004). Ongoing research is needed to determine the effectiveness of the plan in managing the identified issues.

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Leisure Constraints

A COMPARISON OF THE LEISURE LIFESTYLES OF CHINESE AND AMERICAN GRADUATE STUDENTS AT THE PENNSYLVANIA STATE UNIVERSITY

Huan Li
Department of Recreation, Parks and Tourism Management
201 Mateer Building
The Pennsylvania State University
University Park, PA 16802
Email: hul119@psu.edu

Garry Chick
The Pennsylvania State University

Abstract.—The purpose of the research is to examine the leisure lives of Chinese graduate students at Penn State University as they compare with those of American graduate students. Current and desired leisure activities, perceived constraints, and feasible improvements were addressed for both cultural groups. Both Chinese and American male and female graduate students showed consensus in terms of their ratings of the importance of their current leisure activities, desired leisure activities and perceived constraints. However, none of them demonstrated consensus in terms of feasible improvements in their leisure. Future research should involve students from other institutions and from other countries, along with additional demographic and other data that would help explain within-group differences.

1.0 INTRODUCTION

In recent years, Chinese students have been the second largest group of international students at the Pennsylvania State University. Currently approximately 706 Chinese students are enrolled, most of whom are graduate students. (The largest of international groups at Penn State is from India, with a current population of 740 [ISS at Penn State 2003]). Coming from a country with a different cultural and social system, Chinese students encounter cultural differences in the classroom and their daily lives, including their leisure activities. Concurrently, they encounter new educational systems, study styles, language difficulties, and nostalgia. Furthermore, problems like dietary restrictions, financial stress, misunderstandings, and loneliness can occur (Furnham 1986). Leisure may play an important role in soothing the physical and psychological stress Chinese students face. However, Chinese students also experience constraints in their pursuit of leisure activities.

While the number of Chinese students is increasing each year (ISS, Penn State 2002), little concern has been paid to their leisure participation. Moreover, relatively little research has been directed at student ethnic groups with respect to the leisure lives they expect, the leisure opportunities they have, and the factors that constrain them from participating in those desired leisure activities from a cultural perspective. Given the sheer numbers of diverse immigrant groups and their roles in society, it is hard to overlook their effects in North America (Stodolska 1998). In addition the leisure opportunities of immigrant populations and the constraints that they face have certain characteristics that can be examined to better understand the constraints on the leisure behavior of minorities (Goodale 1992).

Life in American culture, which differs significantly from what they are accustomed to in China, poses numerous problems for Chinese students. In the long history of the Chinese civilization, Confucian ideology has been firmly ingrained as a system governing nearly all aspects of Chinese life. A feudalistic system of thousands of years has also dominated the Chinese view of themselves and the world (Xing 1995). Chinese culture tends to be collective as opposed to the individualism of American culture. As defined by Hofstede (1994), individualism describes the degree to which people prefer to act as individuals rather than as members of groups or collective clusters. According to Triandis and Suh (2002), China is a typical collectivistic culture within which people emphasize in-group cohesion, respect for in-group norms, and directives and cooperation. Therefore, there may be many differences between Chinese and American cultures pertaining to leisure.

Recent evidence indicates that leisure helps to alleviate stress and maintain both physical and mental health (e.g., Moen et al. 1989, Rook 1987, 1990). For instance, Cohen and Hoberman (1983) reported that positive

events, including leisure, help individuals protect themselves against the pathogenic effects of negative events to maintain good health. Wheeler and Frank (1988) investigated a set of 22 variables to determine the relative importance of each as a stress buffer and concluded that "there are four 'true' buffers: sense of competence, exercise pattern, sense of purpose, and leisure activity" (p. 78). Iwasaki and Mannell (2000) summarized the coping functions of leisure based on an integrative view of social psychological research and leisure research on coping. At the most general level, leisure coping refers to people's beliefs that their leisure helps them cope with stress. This contrasts with leisure coping strategies, which are actual situation-grounded behaviors or cognitions available through involvements in leisure. However, both functions work in coordination to mitigate stress (Iwasaki 2001).

The benefits of leisure and the increasing number of Chinese students in the United States make it worthwhile to examine the leisure lives of Chinese graduate students at Penn State as they compare with those of American graduate students. To this end, four major concerns were addressed: (1) What are the current leisure activities of Chinese and American graduate students? (2) What are the desired leisure activities of Chinese and American graduate students? (3) What are the constraints that Chinese and American graduate students face with respect to leisure? and (4) What feasible changes do Chinese and American graduate students believe would improve their leisure lives? Additionally, we wanted to determine whether members of our sample (grouped by national culture and gender) showed within-group agreement with respect to the four questions above.

2.0 RESEARCH METHODS

This research is based on cultural consensus theory and methods. In brief, according to cultural consensus theory, culture consists of agreed-upon knowledge among individuals. Cultural consensus analysis, which is similar to reliability analysis, consists of factor-analyzing a data matrix wherein the respondents are treated as variables. A single factor solution means that there is consensus among the respondents. There are three assumptions that underlie consensus analysis: (1) There is a single culture; that is, there is one culturally correct answer for every question asked, (2) informant responses are independent of each other, and, (3) items are homogenous and at the same level of contrast. That is, all questions are about the same topic and the probability that informants know the correct answer is the same for all questions. In the first step of the study, we used free listing to obtain our initial lists of leisure activities, desired leisure opportunities, leisure constraints, and feasible improvements. The use of free listing and cultural consensus analysis is based on the assumption that during interviews about culture patterns or items which are highly agreed-upon, reliable and valid answers can be obtained even with small numbers of informants (Weller & Romney 1988). The population for this study comprised all Chinese graduate students from mainland China and all of the U.S graduate students on University Park campus of Penn State. The sample was expected to contain several subgroups from those who responded to the surveys online. Respondents who answered the survey questions online were the sample. Because the full list of graduate students could not be released due to university policy, Chinese respondents were recruited through a mail list operated and used by Chinese graduate students at Penn State and American students were snowball-sampled by Chinese students who provided the survey website to their American colleagues or classmates. The questions for both groups were the same. Then, we developed a survey relying on informant responses to the free listing procedure. Items listed twice or more by both Chinese and American students and over five times by either of the two groups were selected to be rated on four-point Likert-type scales about their importance ranging from "Not at all important" (1) to "Extremely important" (4). For example, the American informants did not list Karaoke Singing while it appeared more than five times in the Chinese responses. Hence, this item was included in the subsequent survey. Informants were also asked to report their age, gender, major, marital status, number of children, if any, years at Penn State, nationality, level of income, and time spent on leisure compared to others in their ethnic group. Both the free listing and the follow-up survey were conducted in both Chinese and English versions to eliminate any misunderstandings of the questions because of language.

Table 1.—Top 5 items free listed by chinese and american graduate students

Current Activities	Watching TV; Watching movies; Reading; Surfing internet; Swimming.
Desired Activities	Travel; Swimming; Watching movies; Singing with Karaoke; Listening to music.
Perceived Constraints	Lack of time; Lack of money; Work and/or study pressure; Lack of companions; Lack of leisure facilities and/or resources.
Feasible Improvements	Find a job to earn more money; Work efficiently to gain more free time; Have less work and study; Make more friends; Decrease user fees.

3.0 RESULTS

Weller and Romney (1988) suggest a minimum sample size of 20 to 30 for free listing. Therefore, our sample of 48 informants for the free listing questions was adequate for the first step of data analysis. Of the 48 graduate students, 30 were Chinese and 18 were Americans. Among the 30 Chinese students, 16 were males while 11 of the American informants were males. For the survey phase of data collection, the sample consisted of 27 male and 27 female Chinese students, and 13 male and 20 female American students. This sample demographic structure is similar to that of the Chinese and American populations of graduate students at Penn State (Penn State Budget Office 2003).

Table 1 shows the five items free listed most frequently by informants. We applied cultural consensus analysis to four groups, namely Chinese males, Chinese females, American males, and American females. We employed Handwerker's (2002) five criteria to determine whether cultural consensus exists in these groups. These are: (1) all of the factor loadings should be positive on factor one; (2) the ratio of the eigenvalues between the first factor and the second factor should be no less than 3; (3) matrices that contain only one genuine factor should exhibit a dramatic scree fall between the first and second components; (4) on a two-dimension component plot, all variables should cluster at the positive end of the axis for the factor one if there is high cultural consensus; and (5) component loadings should ideally be equal to or greater than .50. We used principal components analysis to test the five criteria after transposing the informants into variables.

Most of Handwerker's (2002) criteria for cultural consensus are realized among Chinese male students regarding current leisure activities. The first component has an eigenvalue of 8.48 and explains 33.92 percent variance in the underlying cultural construct. The eigenvalue of the second component is 2.71 and accounts for 10.85 percent variance of the total. Therefore the ratio of the eigenvalue of the first and the second component is 3.13 (Figure 1). Figure 2 shows the informant loadings on factor 1 by those on factor 2. Although not all of the informants have component loadings above .50, all tend to cluster toward the positive end of the first component. These findings suggest that a single culture exists among Chinese male students in terms of the importance of their current leisure activities.

Similar analyses were applied to each group with respect to the four research domains. The results indicated that there is consensus among Chinese and American graduate students, both males and females, on the importance of activities, what activities they would like to have available, and what constrains their leisure. However, there is no consensus among members of any of the groups in terms of feasible solutions to the leisure constraints that they face.

4.0 CONCLUSIONS

The main factors that constrain Chinese graduate students are time, money, leisure partners, and leisure resources. Each of the subgroups (Chinese males, Chinese females, American males, and American females) demonstrated consensus on the importance of their current leisure activities, desired leisure activities, and perceived constraints but showed no within-group consensus on how their leisure could be improved. Perhaps it is possible that "current activities," "desired activities," and "constraints" are more natural and reasonable categories to think about than "feasible improvements." Hence, informants may find it easier to list and rate items in the more natural categories. So,

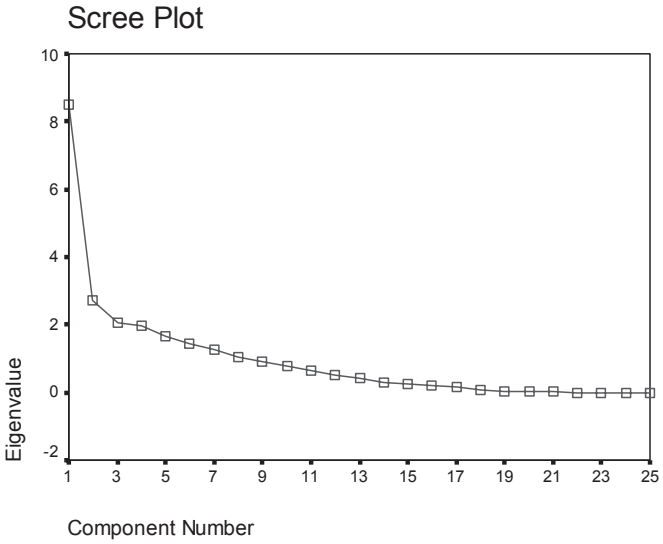

Figure 1.—Scree Plot for Principle Components Analysis of Male Chinese Students' Current Leisure Activities.

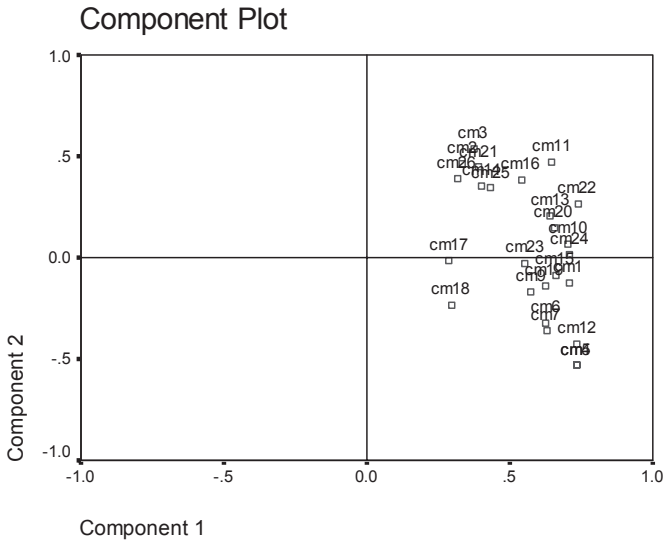

Figure 2.—Scatterplot of Chinese males' (cm) Loadings on Components 1 and 2 for Importance of Current Leisure Activities.

the result might be an artifact of the questions asked. It is also possible that people simply do not agree on what improvements are feasible.

Although there are sampling problems with this study, and we think that research with other student groups is needed at more universities, we can suggest that there is little agreement among either Chinese or American graduate students at Penn State with respect to how their leisure lives can be improved. Hence, we feel that this issue requires more intense and in-depth research. We also feel that university administrations should be sensitive to results such as these and attempt to provide the kinds of leisure opportunities that graduate students, such as those surveyed in this study, would like to have available to them. We also feel that our results may be valuable for other groups of international students in addition to the Chinese. If students are made aware of the constraints that they face in their leisure, they may be able to adjust their resources accordingly. For example, members of the Chinese Friendship Association, a group that promotes understanding among Chinese students and the public, could purchase several sets of Karaoke equipment and initiate competitions to involve Chinese students who love this activity. They might also rent the equipment to allow Chinese students access to their desired leisure activity.

The results of this particular study cannot be generalized as it is limited by the sampling method and socio-demographic background data. We therefore suggest that it would be worthwhile to conduct similar research in other U. S. universities that have large numbers of international students. Future studies should utilize different populations (e.g., Chinese, Indian, Japanese, African, and American students) as well as larger sample sizes. Finally, researchers could further explore both within-cultural and between-cultural differences in leisure activities, opportunities, and constraints and their possible effects on student adjustment, mental and physical health, and academic performance.

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A STUDY OF THE RELATIONSHIPS OF DEER HUNTERS PARTICIPATION INTENSITY AND CONSTRAINTS

Melissa S. Weddell
Research Assistant
Parks, Recreation and Tourism Management
292 Lehotsky Hall Box 340735
Clemson University
Clemson, SC 29634
mweddel@clemson.edu

Denise M. Anderson, Ph.D.
Clemson University

Ellen D. Rodgers, Ph.D.
George Mason University

Brett A. Wright, Ph.D.
Clemson University

Abstract.—Declines in hunting participation are of concern to wildlife agencies and their ability to fund and manage wildlife populations as well as sustain local hunting traditions. To understand declines in participation, it is important to understand current hunters' perceptions of barriers and constraints that could lead to hunting desertion. This study examined hunting participation with respect to hunters' overall perceptions of constraints, hunting participation intensity rates, demographics, and social-psychological data. In addition, differences between male and female hunters were examined to determine whether constraints varied based on hunting intensity rates that differ by gender.

1.0 INTRODUCTION

Leisure constraints have been widely researched across a broad spectrum of issues related to participation and non-participation (Crawford et al. 1991). Constraints are defined by Jackson (1988, p. 203) as "factors that inhibit people's ability to participate in leisure activities, to spend more time doing so, to take advantage of leisure services, or to achieve a desired level of satisfaction." Though the literature has examined constraints extensively (e.g., Crawford et al. 1991, Goodale & Witt 1989), they have rarely been examined in outdoor consumptive behavior.

Recent trends indicate a steady decline in hunting participation (President's Commission on Americans Outdoors 1987). The *National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*, which measured hunting participation in 1991, 1996, and 2001, exhibits an overall decline of just over 1 million hunters between 1991 and 2001. A study conducted by Responsive Management (1995) of inactive hunters found that lack of time, work obligations, and family obligations were the main reasons that they stopped hunting. Changing demographic trends and a variety of factors influencing hunters' participation, such as increased urbanization, competition with other leisure activities, and lack of available opportunities, are important to understand for the future of hunting (U.S. Fish and Wildlife Service 2001, Wright et al. 2001) so the benefits derived from participation are not lost (Barro & Manfredo 1996). Potential benefits lost from lack of participation include the loss of strong hunting traditions in rural communities (Heberlein & Thomson 1996, Li et al. 2003), cultural traditions and economic stability of areas that depend on hunting (Bishop 2004, Heberlein 2004, Needham et al. 2004), and the reduction of wildlife agencies' revenues from license sales resulting in the lack of funds to manage wildlife populations (Needham et al. 2004). Therefore, it is important to understand the variety of factors influencing hunters' participation, or lack thereof, so the benefits derived from the participation are not lost (Barro & Manfredo 1996).

Beyond examining the total sample of deer hunters' constraints, the study also focused on the constraints for female deer hunters, which has received even less attention in the literature. Females compose 51 percent of the general population in the United States, but are only 2.3 percent of those participating in hunting activities. Though male hunting participation has decreased over the last decade, female participation in hunting has nearly doubled and can be attributed to changing attitudes and roles in society (Responsive Management 2002, Johnson et al. 2001).

A study conducted by Adams and Steen (1997) examining Texas females' initiation, motivation, and constraints found significant differences between male and female initiation ages and hunting instruction as

well as structural and interpersonal constraints. The majority of women ranked "not enough time due to work" as the most important constraint limiting participation. Other constraints in respective order were high costs, too many unethical hunters, not enough time because of children, and travel distance (Adams & Steen 1997). All three types of constraints limited hunting participation, but structural constraints contributed more to nonparticipation than interpersonal and intrapersonal constraints.

Women who participate in outdoor activities are often socialized into the activity by a spouse or possibly a male relative (Toth & Brown 1997). Adams and Steen (1997), as well as Culp (1998), reported that with hunting, men typically begin in childhood and learn from their fathers or other male relatives. However, for women this process often starts at an older age than for men (Adams & Steen 1997).

In an attempt to understand overall deer hunters' constraints, as well as differences for male and female hunters, the following study was conducted. A random sample of 5,000 (2%) Virginia hunters were drawn from the license records maintained by the Department of Game and Inland Fisheries. We examined demographics and social-psychological data, along with hunting participation intensity rates, with regard to hunters' overall perceptions of constraints.

2.0 METHODS

All individuals who purchased a general Virginia state resident hunting license, a county/city license, or a senior (65+) license for the 1995-96 season (N=282,492) composed the eligible population. Procedures outlined by Dillman (1978; 2000) were employed to collect survey data. A total of 2,766 usable questionnaires were received, resulting in an effective response rate of 63.5 percent (effective n=4,354).

2.1 Sample

A stratified random sample of 5,000 Virginia hunters was drawn from license records maintained by the Administrative Services Division of the Virginia Department of Game and Inland Fisheries. All persons who purchased a general state resident hunting license, a county-city license, or a senior license for the 1995-96 season were eligible to be drawn (n=282,492). The sample was stratified by type of license purchased. Consideration was also given to ensure the representativeness of the sample geographically, although there was no way to determine *a priori* where subjects hunted. Therefore, the most feasible strategy was to also stratify the sample by where the individuals purchased their licenses.

2.2 Questionnaire

Using data from a larger study on Virginia hunters, the focus of this article is on the measurement of multiple aspects of hunters' participation within the state of Virginia, including constraints to participation. Also included in the questionnaire were a number of demographic questions that were used as background information and for profiles of study participants. Demographic variables such as parental status and marital status were deemed highly relevant in light of the specific focus on the differences between male and female hunters.

Constraints to hunting were measured by asking hunters to respond to 29 possible barriers through the use of a 5-point Likert-type scale (1=strongly disagree, 5=strongly agree). Examples of items included "Work commitments leave little time for hunting," "Public hunting lands are too crowded," and "None of my family or friends hunt, therefore I have no one to hunt with."

In order to profile hunters, respondents were asked to answer questions pertaining to types of animal hunted, location in which they hunt, and opinions of regulations on hunting. Demographic variables included marital status, gender, parental status, age at first hunt, resident status (urban vs. rural), and questions about family and friends' experiences with hunting.

2.3 Data Analysis

Two types of data analyses were used to examine the data. Using a statistical software program, SPSS, analysis of variance (ANOVA) and multiple regressions were run to test for differences between male and female hunters' satisfaction with hunting, and their perceptions of constraints while hunting. Additionally, regression

was used to determine correlations between the battery of independent variables, dependent variable(s), and demographic variables among females.

3.0 RESULTS

The average hunter's age was 42.3 years (males=42 and females=38). Males were 97 percent of the sample. The average age of males when they first hunted was 12, while the average age for females was 17. Independent t-tests found significant differences between males and females with regard to age first hunted ($t=(-8.63)$, $p<0.01$) as well as spouses' ($t=3.09$, $p<0.01$) and friends' attitudes toward hunting ($t=(-5.74)$, $p<0.01$). However, no significant differences were found among the various categories of constraints. Males learn to hunt at an earlier age than females and are introduced to the sport mainly by their father (59%). Further examination using ANOVA unraveled numerous differences when accounting for participation intensity. There were statistically significant differences among intensity groups (low, moderate, to high participation indicated by days hunted) regarding statements such as, "I do not perceive any barriers to my hunting activities" ($F=15.0$, $p<0.01$), "family activities leave me little time for hunting" ($F=25.3$, $p<0.01$), and "work commitments leave little time for hunting" ($F=23.1$, $p<0.01$). Hunters with high participation (number of days hunted) perceived fewer barriers and fewer family and work commitments then low intensity hunters. Interestingly, female hunters perceived no barriers to hunting when factoring for participation intensity.

4.0 CONCLUSIONS

The study reveals differences regarding perceptions of constraints when examined in light of different demographic groupings, social-psychological data, and hunting participation intensity. Results suggest men tend to perceive more constraints than women, particularly when it involves family and work commitments for low to moderate deer hunting participants. Study results identify barriers to participation that could lead to declining hunting participation. Declines in hunter numbers could reduce the ability of wildlife management agencies to control wildlife populations, have an adverse economic impact on job availability, and reduce tourism associated with hunting as well as recreational benefits tied to hunting. To attempt to revitalize outdoor consumptive activities, it is important to understand constraints that may impinge on hunter participation.

5.0 ACKNOWLEDGMENTS

The study was supported in part by funds provided by Pittman-Robertson Federal Aid to Wildlife Restoration Project-WE99R.

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EXPLORATON OF THE AGING PHENOMENON IN HONG KONG FROM A LEISURE PERSPECTIVE

Kam Hung
Ph.D Student
Texas A&M University
2261 TAMU
College Station, TX 77843
kamh@neo.tamu.edu

John L. Crompton
Texas A&M University

Abstract.—This study explores perceptions of a sample of Hong Kong's elderly on aging and life satisfaction, and suggests implications for leisure service delivery. Interviews were conducted with 25 elderly in Tsuen Wan District in Hong Kong. The study found that some of the propositions which have been developed in western countries to explain aging appear to be appropriate for explaining perception of "oldness" among the elderly in Hong Kong. Five perspectives appear to be applicable: chronological, biological, behavioral, sociocultural, and personal. The data suggested that aging was perceived to be explained by a combination of them. Depression was found to be a particularly influential factor leading to life dissatisfaction among interview respondents. The causes of depression reported by respondents were limited financial ability; feeling of loneliness; lack of leisure skills; dependency on others for care and financial income; and lack of companionship.

1.0 INTRODUCTION

The world's population aged 65 and older is growing by approximately 800,000 people a month (U.S. Department of Commerce News 2001). In 2000, those aged 65 and older in the United States constituted 35 million (12%) of the total population (U.S. Census Bureau 2001). The aged population is projected to continue to grow, with particularly high growth occurring after 2010, when the baby-boom population reaches the age of 65 (Baloglu & Shoemaker 2001). A rising population of elderly people will result in a corresponding increase in demand for services for the elderly (Kwan 1990). Neglecting the needs of the elderly can lead to problems such as depression, alcohol abuse, smoking, and deterioration in health. Indeed, depression and decline in health are the two main causes of suicides in later life (Teague & MacNeil 1992). In the context of Hong Kong, Liu et al. (1993) reported that depression is a serious problem; approximately 11 percent of elderly males and 15 percent of elderly females report they are depressed. Social support has been recommended as a cure to help Hong Kong elderly recover from depression (Chi & Chou 2001).

Over the past 40 years, several studies in western countries have reported on the relationship between leisure and aging (e.g., McGuire et al. 2004, Teaque & MacNeil 1992). These studies provide evidence that recreation plays a role in maintaining the life satisfaction of the elderly. They indicate that people who are engaged more in recreation activities or settings tend to be more satisfied with their lives. However, few eastern studies have investigated the relationship between recreation and successful aging. In Hong Kong, for example, most aging research focuses on reporting daily activities and the health status of the elderly. Research seldom explains how aging is defined, what aging means to old people, and how it affects this age group's leisure behavior or vice versa. To help the elderly achieve life satisfaction, leisure managers in Hong Kong need to be equipped with better knowledge of the aging phenomenon of their population. This study explores perceptions of the elderly on aging and life satisfaction, and suggests implications for leisure service delivery based on the reports from a sample of Hong Kong elderly.

2.0 LITERATURE REVIEW

2.1 Definition of Aging

There is no universal definition of aging. According to Teague and MacNeil (1992), the meaning of "old" can be defined from six different perspectives: chronological, legal, biological, behavioral, sociocultural, and personal. A researcher's selection of a particular definition of being old depends on the focus and goal of the study.

2.11 Chronological Model

The chronological model, which uses calendar years as a measure of age, is the most frequently used perspective

(Teague & MacNeil 1992). Levinson et al. (1978) identify four stages of the life cycle: childhood and adolescence, early adulthood, middle adulthood, and late adulthood. Each stage occurs at a specified chronological age. A transition period is identified between each of the stages. According to this model, the late adult transition begins at age 60 and five years are allocated for the transition. Thus, late adulthood begins at age 65. Iso-Ahola (1980) suggested that leisure behavior should be analyzed as a sequential function of developmental phases and transitional periods. However, the heterogeneity emanating from various biological backgrounds, means that caution should be exercised when applying these stages to different populations to avoid overgeneralization of their applicability to all social groups and cultures (Iso-Ahola 1980). Nevertheless, a majority of people are likely to pass through the sequential life stages indicated in the model (Gould 1975).

2.12 Legal Model

Teague and MacNeil (1992) pointed out that the law often assigns legislative responsibilities or benefits to specified chorological ages. The law defines legal age as "the age at which a person becomes old enough to make contracts. This is generally eighteen to twenty-one in most states, but it may be lower for specific purposes. The phase is sometimes used to mean the age at which a person can legally buy alcoholic beverages or legally consent to sexual intercourse" (Oran 1983, p. 242). For instance, in the United States, a minimum age of 21 is required in order to drink alcohol legally and a minimum age of 16 is required to drive legally. Age 65 is often used to define old age by the rules and regulations associated with Social Security payments, Medicare, assisted housing, and so on. For instance, Medicare, which is a health insurance component of Social Security used to cover hospital care and other medical care, is available only to those aged 65 or older and to certain disabled persons. People who fit in this age category are generally defined as old people.

2.13 Biological Model

Many have investigated biological changes in older adults attributable to the aging process (Teaff 1985, McGuire et al. 2004). The elderly often encounter changes in physiological characteristics such as changes in hair coloration, skin, and appearance which can be observed, such as white hair, wrinkled skin, and poor eyesight, and these are often used in interpreting the oldness of a person (Teague & MacNeil 1992). Other symptoms cannot be observed directly without technological assistance, such as changes in the brain, nervous system, circulatory system, and other internal systems.

2.14 Behavioral Model

Behavioral traits displayed by older people, such as forgetfulness and slower motor time, may be used to define a person as old (Kalish 1982). Often stereotypes are used to interpret the behavior of the elderly. McGuire et al. (2004) have summarized both negative and positive stereotypes about aging and indicated that there is a tendency for negative stereotypes to prevail. Often perceptions towards the elderly are determined in face-to-face interaction (Hazan 2000) based on predetermined stereotypes associated with older people.

2.15 Sociocultural Model

Teague and MacNeil (1992) indicated that many changes associated with aging are socially and culturally determined. Different roles have been assigned to different stages of life. People's roles change as they age. For instance, play and study are often the behavior associated with childhood. When people grow up, they are expected to obtain a job, get married, and have children. Old people often are expected to be grandparents, be retired, and eventually become widows or widowers.

2.16 Personal Model

The personal model suggests that age is defined by the person being evaluated (Teague & MacNeil 1992). Some may perceive themselves as still being young compared to others in their age group due to their active lifestyle. However, some may perceive themselves as being relatively old because of the miserable life conditions or difficult financial situation that they are facing (Teague & MacNeil 1992).

2.2 Successful Aging

Researchers have investigated what ingredients are keys to successful aging. They have found that successful aging is often related to high morale and life satisfaction (Teague

& MacNeil 1992). Therefore, maintaining high morale and life satisfaction in the elderly has been defined as a primary goal in leisure services targeted at the elderly. Adaptation has been viewed as an important process in successful aging. It is defined as a process of responding to the constantly changing demands of one's environment (Teague & MacNeil 1992). Both positive adaptation and negative adaptation can result, depending on one's ability to adjust to the changes. Three common sources of major adaptive change in later life have been identified (Rosenthal & Colangelo 1982): 1) sources related to the individual; 2) sources related to family; and 3) sources related to the social environment.

Although each of us has to adapt to changes, there is particular emphasis on adaptation in later life in the aging literature. This emphasis arises from the specific changes in physiological, psychological, and social facets of the lives of the elderly. McGrath (1970) indicated that stress can be induced when there is an imbalance between the need to change and the ability to change. Three threats have been identified in the changes (McGrath 1970):

1. Physical Threat—threats of injury, pain, or death.
2. Ego Threat—involving injury or pain to the psychological self.
3. Interpersonal Threat—disruption of social relationships.

Maladaptive coping procedures such as alcohol, drugs, and suicide can be adopted to cope with stress when the elderly fail to adapt to aging successfully. The most common psychological disorder among older people is depression (Teague & MacNeil 1992), which is perceived as being a negative adaptation to the changes. Four sources of negative adaptation in later life have been delineated by Teague & MacNeil (1992): 1) stress in later life; 2) lessened ability to cope with disruptive change; 3) loss of social supports; and 4) absence of socially defined norms and roles for elderly. Avoiding negative adaptation and pursuing positive adaptation in later life has been defined as a common goal for those servicing the elderly. It is believed that this approach will help them achieve successful aging.

3.0 METHODS

This study was undertaken in Tsuen Wan District in Hong Kong. Participants were recruited from different seating areas within the district's boundary which one of the authors observed to be gathering places. Those study areas are represented as black dots on the map in Figure 1. Interviews were conducted with 25 elderly participants.

Purposive sampling was applied in which respondents were chosen nonrandomly. The study's intent was to identify the range of perspectives that described the phenomenon of leisure and aging, rather than the distribution of these perspectives within a population. Hence, the number of participants was guided by the extent to which new interviewees added incrementally to the range of perspectives, rather than by an *a priori* determined sample size. After 20 interviews, relatively few new insights were forthcoming, so data collection was terminated after 25 interviews. The interviews were semi-structured, based on an interview guide of open-ended questions. They were tape-recorded unless respondents requested that this not occur. Note-taking was done for three interviews in which interviewees objected to being audio taped. Those interviews were transcribed from Cantonese to English immediately after the interviews to keep memory loss of data to a minimum.

4.0 FINDINGS AND DISCUSSION

4.1 Perceptions of Aging

Most participants reported that they felt old. Their reasons for feeling old included: increased age; deteriorated health condition; being unable to perform tasks which they could do as young adults; hair coloration; not having a job; slower motion; being less energetic; children having their own families; not able to work as fast as before; abundant life experience; and forgetfulness. These reasons are listed on the left side of Table 1. Although differences may exist among the elderly in different countries, some of the models which have been developed in western countries to explain aging appear to be appropriate for explaining perception of "oldness" of the elderly in Hong Kong. The corresponding models which can be used to interpret aging in Hong Kong based on the reasons provided by

Figure 1.—The area in which interviews were conducted.

respondents in this study are listed on the right side of Table 1.

4.11 Chronological Model

The chronological model (Gould 1975, Levinson et al. 1978, Iso-Ahola 1980) assigns ages to each life stage, and many respondents in this study classified themselves as "old" because of their chronological age. They categorized themselves into the older aged group and differentiated themselves from other age groups based on age differences. Therefore, the chronological model was used by some in Hong Kong to define aging.

4.12 Biological Model

The biological model of aging (Teaff 1985, Teague & MacNeil 1992, McGuire et al. 2004) defines "oldness" based on the physical characteristics of aged people. Changes in physical body attributes were used to determine oldness by some of the sample including: declining health, hair coloration, and being less energetic. Thus, the biological model was used by some to define their "oldness."

4.13 Behavioral Model

The behavioral model (Kalish 1982, McGuire et al. 2004) determines the oldness of a person based on the display of certain behavioral characteristics. Among such characteristics reported in this study were: inability to perform the same tasks which they could do when younger; slow motion; inability to work as fast as before; and forgetfulness. The changes caused some in the sample to realize they no longer had the capability to perform a task they did when they were young adults.

Table 1.—Perspective appropriate for defining "oldness" of the elderly in Hong Kong

Perspective which can be used to explain the "oldness" feeling	Reasons for the feeling of being old reported by the sample
Chronological model	• Increased age
Biological model	• Declined health • Hair coloration • Being less energetic
Behavioral model	• Unable to perform the same tasks which could be done in their young adulthoods • Slower motion • Cannot work as fast as before • Forgetfulness
Sociocultural model	• Not having a job • Children have their own families
Personal model	• Different personalities led to different perceptions of aging

4.14 Sociocultural Model

The sociocultural model (Teague & MacNeil 1992) assigns various roles to different life stages. Some respondents in the study reported that they felt old because they were not working and their children had their own families. They recognized the change in their roles in their later life. They were no longer head of the household. When they were young, they worked and took care of their families. Loss of these roles made them feel that they were no longer young. Therefore, this model also could be used to explain perceptions of oldness.

4.15 Personal Model

The personal model (Teague & MacNeil 1992) suggests that people define their own perception of oldness. The findings of this study were based on self-reported interviews, and respondents frequently injected their personal feelings into perceptions of their oldness, recognizing their personalities were an influential factor in determining their perceptions of their aging. Given the same conditions, those who have more optimistic personalities were likely to be happier about their aging, while those who were pessimistic were more likely to feel miserable in their later lives. As a result, in the same age cohort, some respondents felt old while others do not.

The explanatory capacity of the models above suggests that, although the context of this study may be different from studies that have been conducted in other countries, the basic conceptualizations which explain oldness are similar. The interview data also suggested the elderly's perception of oldness is explained by multiple conceptualizations rather than by a single model.

4.2 Life Satisfaction

Although some participants reported that they were satisfied with their life, others reported unhappiness. Depression, which has been reported as a common problem among the elderly in Hong Kong (Liu et al. 1993), was prevalent among interview respondents. Five reasons were identified as accounting for their depression: 1) limited financial ability; 2) feeling of loneliness; 3) lack of leisure skills; 4) dependency on others for care and financial income; and 5) lack of companionship.

4.21 Limited Financial Ability

Some who were constrained by limited financial ability were worried about their ability to survive. They either lived by themselves, or lived in an elderly care center. Most of them received only a small amount of financial assistance from the government.

4.22 Feeling of Loneliness

Most respondents indicated that they were occupied with working and family responsibilities before retirement. After retirement, they lost those roles. Often children established their own families and moved out. The feeling of loneliness led to life dissatisfaction and unhappiness.

4.23 Lack of Leisure Skills

Family-centeredness has always been central in Chinese society. Many participants indicated that they contributed most of their time when they were young to establishing a good quality of life for their family and children and did not plan for their later lives. They did not develop leisure skills in young adulthood. Their leisure activities tended to be highly routinized in later life. Although not all the activities reported by participants were the same, walking around, chatting with other elderly, going for Yum Cha, and watching television were common.

4.24 Dependency on Others

Chinese elderly are likely to be more dependent on others in their family for financial income compared to their western counterparts. Most Chinese elderly expect to be taken care of by their children in later life. However, a gradual diminishment of filial responsibility in Chinese society means that many children move out of their parents' house after getting married. The dependent characteristic which the society cultivated in the past leaves some elderly feeling miserable at its absence in later life.

4.25 Lack of Companionship

Some elderly remarked on their joy and happiness when they interacted with their children. One participant indicated that she eats only what she cooks for herself, since she does not like restaurant food. However, she goes for Yum Cha with her children even though she does not like the food in the restaurant since she wants to interact with her children. This illustrates her need for the companionship of her children. It is suspected that the need for companionship is especially strong among the elderly in Hong Kong, more so than in western countries, due to cultural differences. Therefore, the degree of benefit they receive from socialization when participating in leisure activities may also be greater.

5.0 IMPLICATIONS FOR LEISURE SERVICE DELIVERY

Three implications for leisure service delivery in Hong Kong emanated from the study: more research on aging and leisure should be conducted to facilitate development of culturally sensitive models to guide leisure service delivery; leisure education through "informed" mechanisms for the elderly is needed to cultivate leisure interests; and a client-oriented approach should be adopted when delivering leisure services to them.

5.1 More Research on Aging and Leisure

Most elderly in Hong Kong aged 60 or over are retired from work, so they have more time for leisure. How they spend their time greatly influences their level of life satisfaction. Leisure has been found to be an important part of their later life. Neglecting the elderly's needs in leisure can lead to unhappiness and life dissatisfaction. To tailor leisure services for the elderly, leisure managers need to understand the aging phenomenon, and leisure constraints and benefits experienced by the elderly. Given the lack of research in Hong Kong, this study acts as a stepping stone in developing knowledge on leisure and aging. However, more research should be conducted to investigate a variety of topics, such as the interrelationship between aging and leisure, the role of leisure in later life, and how leisure service providers can help the elderly achieve successful aging.

5.2 Leisure Education

This study shows that many respondents do not integrate leisure habits into their lives. Their diminished social roles and inadequate knowledge of leisure led to their being bored in later life. When they were young, they did not have a chance to participate in leisure activities. Most of their time was occupied by work and taking care of house chores and their families. Therefore, they do not know how to spend their time in later life. Leisure education is necessary in order to help them build a healthy leisure habit, which can possibly enhance their life satisfaction and happiness. Given that most elderly in Hong Kong have little education, leisure education should be conducted informally instead of formally. For instance, television and outreach teams could be good media to convey leisure messages to the elderly on topics such as how to keep their bodies fit; encourage them to join free tours and participate in various leisure activities; inform them as to where traditional Chinese drama will be located, and so on.

When designing leisure services, leisure service providers should take the financial constraints of the elderly into consideration. The activities offered should be free or partially financially supported by the government in order to give leisure opportunities to those who lack financial resources.

5.3 Client-oriented Approach

The contemporary emergence of Benefit-Based Management (BBM) appears to offer a useful framework for guiding leisure service delivery for the Hong Kong elderly population. This approach has been applied by a number of agencies in Canada and the United States (Driver & Bruns 1999). Allen (1996) described BBM as a process which can be divided into three phases: benefit and opportunity identification; Implementation; and Evaluation and documentation. Adopting the BBM approach means identifying benefits that the elderly seek at the beginning of the process, and integrating those benefits into the design of a service. Managers should decide which benefits they want to be the end products of a service based on the needs of the elderly, and tailor services so they facilitate those benefits.

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PERCEIVED CONSTRAINTS TO ART MUSEUM ATTENDANCE

Jinhee Jun
Department of Recreation, Park and Tourism Sciences
Texas A&M University
2261 TAMU
College Station, TX 77843-2261
Email: jjun@tamu.edu

Gerard Kyle
Texas A&M University

Joseph T. O'Leary
Texas A&M University

Abstract.—We explored selected socio-demographic factors that influence the perception of constraints to art museum attendance among a sample of *interested individuals* who were currently *not* enjoying art museum visitation. Data from the Survey of Public Participation in the Arts (SPPA), a nationwide survey were used for this study. Using multivariate analysis of variance, we examined five main effects (gender, age, income, number of children, and place of residence) and all two-way interactions on two dimensions of constraints, internal and external. Our findings illustrated that perceived constraints to art museum visitation were a function of not only separate but also interactive effects of the socio-demographic factors. Implications for both constraints theory and practice are discussed.

1.0 INTRODUCTION

Over the last three decades, a considerable amount of leisure research has been conducted examining factors that have constrained people's participation and enjoyment in leisure. These studies have examined constraints in multiple activity contexts such as pool (Chick & Roberts 1989, Chick et al. 1991), golf and tennis (Backman 1991, Backman & Crompton 1989, 1990), trailer use (Bialeschki & Henderson 1988), bridge (Scott 1991), hunting (Backman & Wright 1993, Wright & Goodale 1991), physical exercise (Shaw et al. 1991), and sport fishing (Ritter et al. 1992). This research has provided important insights for practitioners by highlighting the impediments to their clients' access or complete enjoyment of the services offered. In spite of the progress leisure researchers have made toward understanding leisure constraints, contextual issues complicate broad generalizations concerning how individuals experience and respond to certain constraints. One activity context that has received little attention is the arts. Only one study in a leisure and recreation context (i.e., Tian et al. 1996) has been published in the leisure literature. Without empirical evidence, we should not assume that constraints to art museum attendance are identical to those observed in other leisure activity contexts (Jackson & Scott 1999). With this in mind, the purpose of this investigation was to explore the effect of several socio-demographic indicators on the experience of constraints to art museum attendance among non-attendees who were interested in future attendance.

2.0 PAST WORK

In the literature review that follows, we provide an overview of work limited to examining the influence of socio-demographic variables on the experience of constraints and their conceptualization of constraints. Additional attention is also given to previous work on constraints to art museum attendance.

2.1 The Role of the Socio-Demographic Factors on Leisure Constraints

Leisure constraints can be defined as factors that affect people's leisure preferences, limit participation, or reduce the level of enjoyment and satisfaction (e.g., Jackson 2005, Tsai & Coleman 1999). A number of scholars have recognized that socio-demographic variables provide insight on how specific groups within our society perceive barriers to selected leisure activities (e.g., Jackson & Henderson 1995, Scott & Munson 1994, Searle & Jackson 1985). The salience of constraints can vary depending on the personal, social, and situational context signified by socio-demographic characteristics.

Among those socio-demographic descriptors thought to be influential that we consider in this investigation, gender, age, income, and the presence of children have received substantial attention in the literature (Jackson & Scott 1999). First, given that gender is a social construction that imposes specific roles and responsibilities on men and women (rather than a simple biological indicator), it has been useful for providing a

more nuanced understanding of how men and women experience constraints (Shaw & Henderson 2005). These social role expectations shape our lives and often limit our behavior, including leisure choices. Since the structural context differs between men and women, gender variations exist in leisure behavior and related constraints. Most literature on gender suggests that women are more constrained in their leisure life than men (e.g., Deem 1986, Horna 1989, Searle & Jackson 1985, Witt & Goodale 1981). In particular, women are more likely than men to score higher on constraint indicators such as time availability, transportation access, fear of crime, family responsibilities, lack of partners, lack of skill and ability, and lack of self-confidence (e.g., Horna 1989, Searle & Jackson 1985, Shaw & Henderson 2005, Witt & Goodale 1981).

Jackson and Scott (1999) also suggested that it is useful to examine recreationists' stage in the lifecycle when examining the constraints they face. The concept of a life cycle represents a process of continuing and expectable changes throughout the life course. Throughout various stages of a life cycle, an individual is constantly placed into new circumstances, such as having a job, starting a family, or retiring, which encompass new opportunities and restrictions. These circumstances could alleviate some constraints, but they might also build conditions in which new kinds of constraints start to appear, producing variation in constraints over the life cycle. The patterns of variation are significantly different depending on the type of constraint considered (Jackson & Scott 1999). In a comprehensive overview of constraint research, Jackson (2005) identified four stable patterns concerning changes in constraints as the life cycle progresses. Dimensions related to skill and ability gradually increase in importance across the life cycle, whereas cost factors decline with age. Alternately, level of commitment (e.g., work and family) increases in middle age but declines thereafter, which is typically characterized as an inverted U-shape relationship. The opposite pattern, a U-shape relationship, emerges for social relationship factors.

A stable pattern is evident with regard to changes in constraints as level of income increases. Problems related to cost, transportation, companionship, health and available activities/programs decline with increasing income (McCarville 1993, Scott & Munson 1994, Searle & Jackson 1985). A similar picture emerges when variations in the importance of constraints are examined by the number of children an individual has. The time and cost to participation increase as people have more children whereas the difficulty in finding a partner declines (Jackson & Henderson 1995, Searle & Jackson 1985). In this study, we also examined the influence of the place of residence given that large cities offer more opportunities to attend art museums than smaller cities or towns. While little has been published examining this factor's influence on art museum attendance, we anticipated that place of residence should be less of a barrier to residents of metropolitan areas.

While much research has examined the main effect of various socio-demographic indicators, less is known of how they interact to influence recreationists' perceptions of constraints. According to Jackson and Henderson (1995), constraint research needs to examine multiple characteristics simultaneously (e.g., age, gender, and income). Since subgroups defined by demographic characteristics such as "male," "female," "poor," and so on are not exclusive homogeneous groups, their experiences of constraints are also characterized by as many within-group differences as between-group differences (Altergott & McCreedy 1993, Buchanan & Allen 1985, Jackson & Henderson 1995, Scott & Jackson 1996). For example, Jackson and Henderson (1995) found that the level of constraints experienced by women was intensified depending on a different combination of other situational factors, such as age, the number of children, and income. Thus, in this investigation, we also explored the two-way interactions among these selected socio-demographic factors on our sample's perceptions of constraints.

2.2 The Nature of Leisure Constraints

Several authors have attempted to provide a conceptual framework that explains the effect of leisure constraints in the process of leisure engagement. In the context of this investigation, we adopted Francken and van Raaij's (1981) approach, which suggested an internal/external dichotomy. Internal constraints refer to personal capacities, abilities, knowledge, and interest whereas external constraints consist of problems related to time, money, geographical distance, and facilities. Constraints

were also recognized as blocking characteristics, which prevent participation, and as inhibiting characteristics. The conceptualization has extended to the consideration of possible constraints on leisure which affect preferences, thus affecting interest, in addition to those which affect participation.

2.3 Attendance at Art Museums

Despite the importance of constraints, there have been relatively few studies in which constraints have been incorporated into investigations of art museum attendance. Tian et al. (1996) looked at factors that inhibit museum-goers from attending the Galveston, Texas, museums. In Tian et al.'s study, five dimensions of constraint (i.e., cost, time, access, program, and interest) were examined. We are not aware of any previous study that has investigated the constraints to art museum visitation in the leisure literature. However, pioneer works on the nature and effects of constraints to art museum visitation have been done by Hood (1983, 1989, 1993). Her studies illustrated that physical and psychological discomfort were primary reasons for not attending among non-visitors and infrequent visitors. People perceive "user-unfriendliness" in museum amenities and services. Hood (1993) also indicated that psychological fatigue can arise from the confusion about what the museum intended, the norms of participation in museums, and "museum codes" of objects, symbols, and language. She noted that museums "are still pummeling visitors by overloading them mentally and physically, and then complaining that too few guests read every label, look at every object, or follow the sequence we laid out for them" (Hood 1993, p. 18).

3.0 METHODS

The Survey of Public Participation in the Arts (SPPA 1997) was used for this study. The SPPA was a nationwide survey conducted between June and October in 1997 to determine the extent to which adults throughout the United States participated in the arts. Households were sampled from randomly selected telephone numbers using the method called list-assisted random digit dialing (RDD). The individual in each household who was 18 or older was interviewed. The 1997 SPPA has 12,349 fully completed interviews with 55 percent of the response rate.

3.1 Measures

Our sub-group, *interested non-attendees* (n= 2,310), was selected based on their previous participation in art museums and interest in future attendance. The *previous attendance* was represented by binary variables (i.e., yes/no) recording whether or not respondents had visited art museums over the previous 12 months. *Interest* was measured by asking whether respondents were interested in future art museum attendance. Respondents were then requested to choose the reason they did not visit art museums. Nine *constraint* items were offered and respondents could cite as many as were applicable. Problems involving cost of entrance tickets, insufficient facilities/programs, feeling out of place, lack of companions with whom to go, child responsibilities, health problem, inconvenient location, safety, and limited time were listed as barriers to art museum attendance. Consequently, these items were used to form a summative index for each component (i.e., internal and external constraints) that provided respondents with overall constraint scores based on their responses to the constraint items. *External constraints* included barriers related to cost, programs, location and time while *internal constraints* consisted of feeling out of place, lack of companions, child responsibilities, health problems and safety. Five socio-demographic variables were used as independent variables: gender (1= male and 2= female), age, income, number of children under 18, and residential area (ZIP-code). Based on their responses, four socio-demographic factors were recoded into different categories: age (18-31, 32-42, 43-55, and 55<), household income (> $20,001; $20,001-$40,000; $40,001-$75,000; $75,000 <), residential area (metro/non-metropolitan area), and number of children under 18 (0, 1, 2-3, 4 or >).

4.0 ANALYSES, FINDINGS AND DISCUSSION

4.1 Testing for Main and Interactive Effects of Socio-Demographic Factors on Constraints

Multivariate analysis of variance (MANOVA) was used to examine the interactions and main effects of selected socio-demographic variables (gender, age, income, number of children under 18, and place of residence) on each constraint dimension (internal and external).

Table 1.—MANOVA statistics for 2-way interactions and main effects

	F	df	P
External Constraints [a]			
Gender x Age	2.697	3	.045
Gender x Number of Children under 18	3.873	3	.009
Place of Residence x Income	2.927	3	.033
Income	4.220	3	.006
Internal Constraints [b]			
Place of Residence x Age	3.591	3	.013
Place of Residence x Number of Children under 18	4.563	3	.003
Age x Number of Children under 18	2.381	9	.011
Number of Children under 18	5.250	3	.001
Place of Residence	9.586	1	.002

[a]= F=2.556, df=57, p<.000, R-square= .119
[b]= F=3.803, df=57, p<.000, R-square = .167

Table 1 shows significant 2-way interactions and main effects on external and internal constraint dimensions. Significant interactions were observed on the *external constraint* dimension for Gender x Age (F= 2.697, df= 3, p>.045), Gender x Number of Children (F= 3.873, df= 3, p > .009) and Place of Residence x Income (F= 2.927, df= 3, p > .033). The main effect of income was statistically significant on *external constraints* (F= 4.220, df= 3, p > .006). The data in Figure 1 clearly demonstrate different ways in which 2-way interactions affect the experience of external constraints. For the interaction between gender and age on external constraints, we observed a declining pattern for women across the life cycle while there was a relatively consistent level of external constraints for men. For the interaction between gender and number of children, we observed that women who have up to three children, perceived more constraints than women with four children. For men, the opposite pattern was observed. Last, for the interaction between place of residence and income, a relatively flat pattern relating to income was observed among people in non-metropolitan areas whereas a decline in income was observed among those in metropolitan areas.

Results also indicated three significant interactions and two main effects were observed on *internal constraints* (Table 1). There were significant interaction effects of Place of Residence x Age (F= 3.591, df= 3, p>.013), Place of Residence x Number of Children (F= 4.563, df= 3, p > .003) and Age x Number of Children (F= 2.381, df= 9, p > .011) and main effects of Number of Children (F= 5.250, df= 3, p > .001) and Place of Residence (F= 9.586, df= 1, p > .002). As shown in Figure 2, people in metropolitan areas generally perceived a higher level of internal constraints than those in non-metropolitan areas, regardless of their age. However, individuals aged between 42 and 55 in metropolitan areas showed the lowest scores on internal constraints. A relatively consistent level of perceived constraint was observed among people living in non-metropolitan areas regardless of the number of children they have, whereas those in metropolitan areas experienced a higher level of constraints as they have more children. Regardless of age, individuals with more than three children perceived the highest internal constraint level. The pattern of the number of children effect was noticeable among the youngest age group. For main effects, the more children respondents reported, the more internal constraints they felt. In addition, individuals in metropolitan areas perceived more internal constraints than their counterparts.

4.2 Summary of Findings and Discussion

The findings of this study illustrated that the experience of leisure constraints is influenced by multiple socio-demographic factors. Individuals differ in their experience of constraints depending on their personal context expressed in terms of gender, age, income, and the presence of children. For example, level of constraints to leisure varied between men and women and among groups of women because of the number of children they have. The number of children also mediated the experience of leisure constraints within residential groups

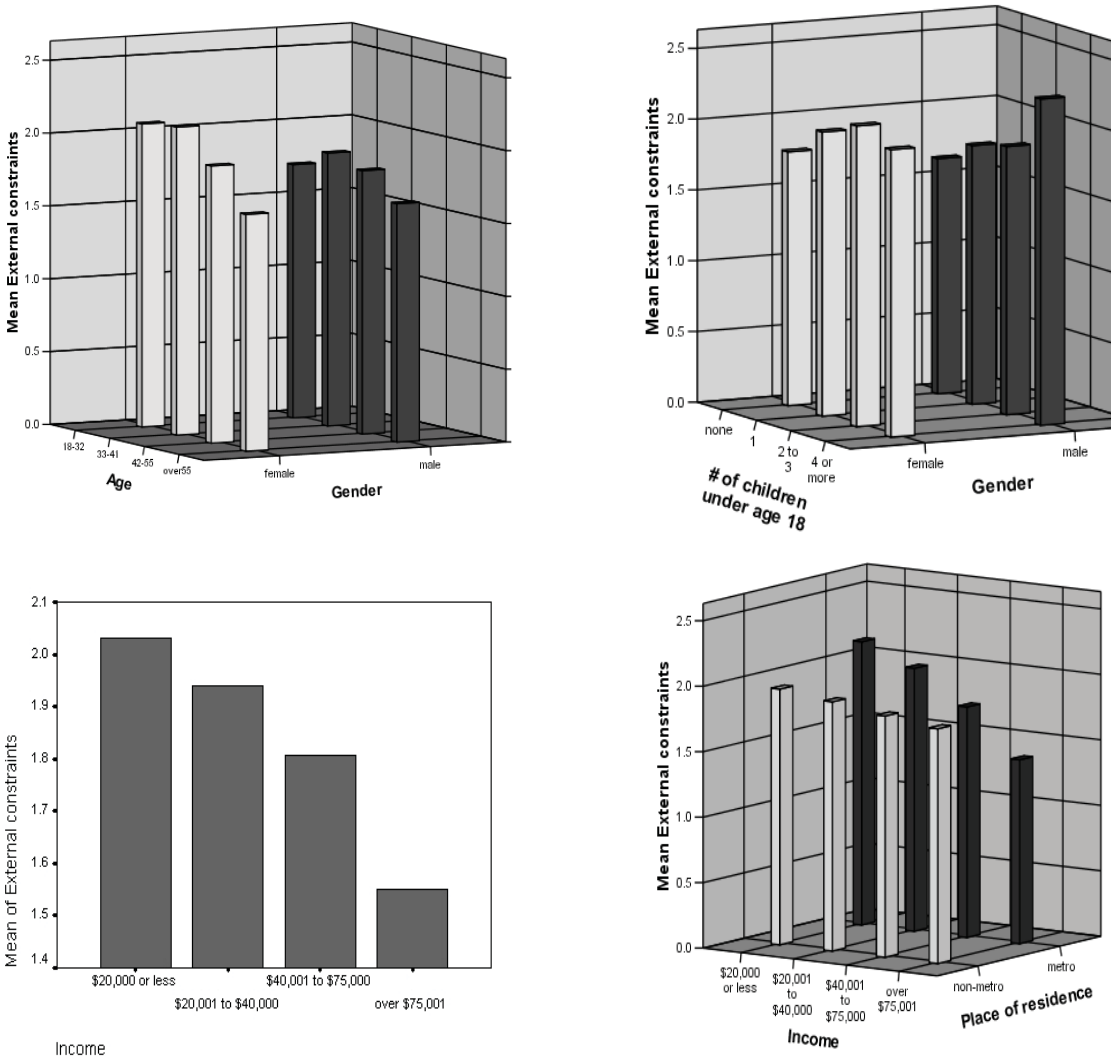

Figure 1.—Variations in mean scores of external constraints.

and across the life course. Increasing income generally alleviated the experience of external constraints, but the effect varied depending on the place of residence. The examination of selected contextual factors provided a more realistic picture of leisure than studies that focused solely on the impact of a single socio-demographic descriptor.

Results from our analyses of main effects were somewhat consistent with those studies that have examined the separate effect of income and the presence of children. We found that people with a lower level of income and greater number of children under age 18 are more likely to perceive constraints to art museum attendance on external and internal constraints, respectively. Surprisingly, we found that the place of residence is a significant factor in explaining people's experience of *internal* constraints. People living in metropolitan areas are more likely to experience internal constraints than those living in non-metropolitan areas. This finding is noteworthy because place of residence has not been incorporated systematically into previous constraint studies. However, there is a need to examine the relationship between the effect of place of residence and the level of awareness or interest. As individuals in large city areas are more likely to be exposed to the facilities, to have more interest, and therefore to pursue more art museum visitation, they might be more likely to confront constraints. People make themselves more vulnerable to a set of constraints as they are exposed to the opportunities (Kay & Jackson 1991).

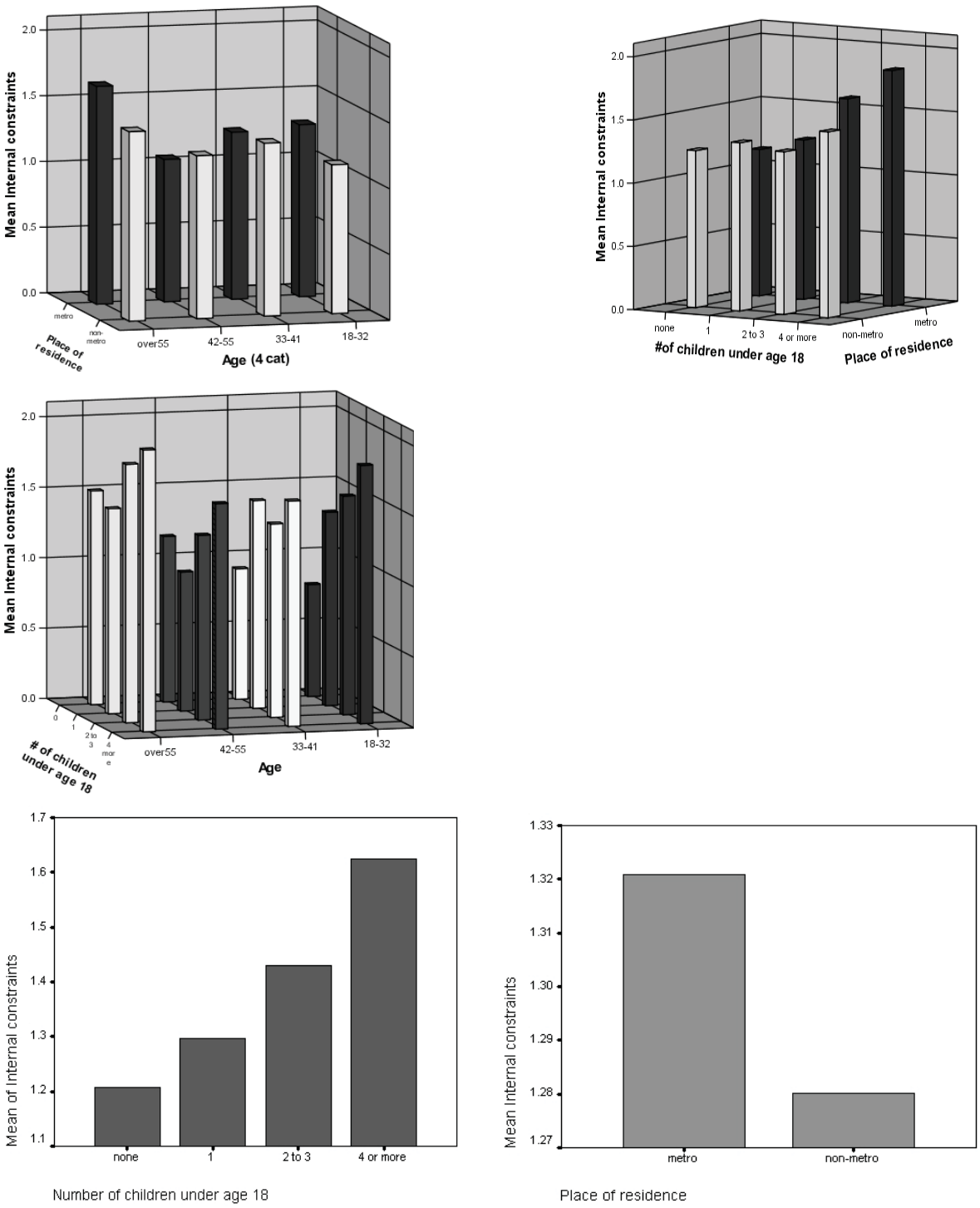

Figure 2.—Variations in mean scores of internal constraints.

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Environmental Attitudes and Values

ASSESSING WILDLIFE VALUE ORIENTATIONS IN CHINA: AN EXPLORATION OF THE CONCEPTS AND METHODOLOGY

Sharon Xiangyou Shen
The Pennsylvania State University
Department of Recreation, Park & Tourism Management
11/12 Mateer Building
University Park, PA 16802
Email: xxs114@psu.edu

Harry Zinn
The Pennsylvania State University

Alex Yasong Wang
The Pennsylvania State University

Abstract.—The wildlife value orientation (WVO) construct has been used to describe deeply-held beliefs about how humans should relate to wildlife. As part of a larger effort to test the usefulness of the WVO construct across cultures, we conducted pilot testing of the construct in China. Sixteen mixed-method interviews were conducted in five cities/towns in China. Participants included individuals from both rural and urban areas with equal numbers of men and women. Interviews employed a 30-to-60-minute series of semi-structured, open-ended questions followed by 45 quantitative questionnaire items. The qualitative data were analyzed using open coding methods. The inter-rater reliability and inter-method-reliability of the initial conceptualization of WVO dimensions was analyzed, based on which a reconceptualization was developed and used to guide a secondary analysis. The results as well as the strengths and weaknesses of the qualitative and quantitative methods were discussed.

1.0 INTRODUCTION

This study examines a developing conceptual framework of Wildlife Value Orientation (WVO) as well as the methodological issues in assessing WVO in a global context. The inception of the conceptual framework can be traced back to 1996 when Fulton et al. first proposed using wildlife value orientations to capture the patterns and direction of basic beliefs about wildlife. This body of research is embedded in a broader theoretical context of the value-attitude-behavior cognitive hierarchy theory in psychology.

The cognitive hierarchy structure is viewed as consisting of values, value orientations, attitudes, normative beliefs, behavioral intentions, and behaviors, each built upon another in an inverted pyramid structure with relatively few values forming the foundation and serving as the guiding principles for individual behaviors (e.g., Homer & Kahle 1988, Rokeach 1973). Values are theorized as fundamental, enduring beliefs or conceptions about preferred end states or preferred modes of conduct (Rokeach 1973). It is suggested that values concern broad and abstract notions that transcend situations; they are highly resistant to change and tend to be widely shared by people within a culture. Therefore, values are unlikely to account for much of the variability in low order constructs, especially more specific attitudes or behaviors which tend to be large in number, easy to change, and highly contingent on situations. Value orientations are theorized as clusters of interrelated basic beliefs within a given domain of interest (e.g., Homer & Kahle 1988). As an intermediate between fundamental values and more specific beliefs or attitudes, value orientations serve to strengthen and give individual meaning to the more general values.

Fulton et al. (1996) defined wildlife value orientations as "the pattern of direction and intensity among a set of basic beliefs regarding wildlife" (p. 29). One notion about the conception of WVO has received broad acceptance: WVO are composed of "dimensions," or sets of basic beliefs about wildlife and human-wildlife interaction. Several dimensions have emerged from subsequent studies, among which utilitarian and protectionist value orientations had been reported predictive of specific attitudes toward hunting, fishing, and wildlife management issues, which in turn had influenced individuals' corresponding behavior (e.g., Zinn et al. 2002, Zinn et al. 1998, Zinn & Pierce 2002). Teel et al.'s (2005) recent work in 19 states in the western United States revealed a similar bipolar dimension which they termed "mutualism-utilitarian."

The WVO construct has been applied in many studies, most done in North America, showing WVO are

Table 1.—Wildlife value orientation concepts and definitions—initial conceptualization[a]

WVO Dimension	Definition
Attraction/Interest	Interest in and a desire to know more about wildlife, including enjoyment of seeing wildlife, feeling that wildlife enhances life experiences, interest in learning about wildlife and their habitats and activities A non-religious spirituality element may be included which involves feelings of awe and wonder concerning wildlife and the natural world; a romantic idealism about the environment and wildlife
Caring	Personal emotional attachment to animals; animals make humans feel better and likewise humans want to help animals and prevent them from suffering
Mutualism	Humans and wildlife can interact peacefully; humans are not dominant over wildlife; human relationships with wildlife are similar to those with other humans; wildlife are often anthropomorphized in this view
Respect	Basic value (as opposed to a value orientation) that wildlife and their habitat should be respected and valued Respect may be expressed in many different ways: as a general respect for life; a more utilitarian respect which involves using wildlife in the proper way; a more mutualistic respect for interacting with wildlife and their habitat, etc.
Environmentalism	General concern for protecting the environment which can extend to preserving wildlife, feeling that humans are impacting the environment in a negative way through their actions
Rational/Scientific /Observation	Rational or scientific explanations about the way the natural world works and the way animals behave (as opposed to spiritual or religious explanations)
Spiritual/Religious	Viewing wildlife and the environment as created and controlled by a higher power(s); explaining the workings of the natural world and animal behavior through a spiritual or religious viewpoint (as opposed to a scientific or rational viewpoint)
Hunting/Fishing	Positive focus on wildlife as the object of hunting and/or fishing
Utilitarian	Wildlife exists for human use; human welfare is prioritized over that of wildlife
Concern for Safety/Fear	Fear related to interacting with wildlife, repulsion by wildlife
Faith in Technology	Belief that humans can solve any environmental problems by using science and technology

[a] Adapted from the *Report on Interview Method Pretest Conducted by CSU*

effective in the prediction of wildlife-related attitudes and behaviors from participation in wildlife-related recreation (Fulton et al. 1996) to individuals' attitudes toward related wildlife management policies (e.g., Zinn et al. 1998). This effectiveness has lent great momentum to expanding the use of the theory in a broader context. As part of a larger effort to test the utility of the WVO construct across cultures, we conducted pilot testing of the construct in China. An initial conceptual framework and methodology were developed by a group of researchers at Colorado State University (CSU) based on an extensive literature review and the results from a pretest conducted among CSU students in 2004. The proposed WVO framework consisted of 11 concepts (see Table 1). A semi-structured interview involving storytelling and questionnaire surveying was employed for eliciting wildlife value orientations. These suggestions were used as a guideline for the pretest we conducted in China during the summer of 2005.

2.0 METHODS

2.1 Data Collection and Study Sample

Culture-specific modifications were made to the above-mentioned interview protocol. Interviews employed a 30-to-60-minute series of open-ended questions asking participants to tell stories about their emotional experiences with wildlife. The four main questions were framed as "please tell me about your experiences with wildlife that make you happy/sad/angry/afraid." In order to provide a convergent validity check of interview techniques, participants also completed a 45-item WVO questionnaire that was designed to assess the same

Table 2.—The main characteristics of 13 interviewees

Place of Early Residence	Male	Female	Subtotal
Rural (village)	3	2	5
Urban (city)	1	3	4
County/Town	2	2	4
Subtotal	6	7	13

Table 3.—Results of initial coding[a]

Code for WVO Dimensions	Number of Passages	Number of interviews with Passages
Utilitarian	58	11
Mutualism	7	3
Hunting/Fishing	13	7
Rational/Scientific/Observation	25	8
Faith in Technology	--	--
Spiritual/Religious	4	2
Environmentalism	19	7
Fear/Concern for Safety	62	13
Caring	19	6
Attraction/Interest	30	9
Respect	9	4

[a] Due to low inter-rater reliability, only results from the first coder, i.e., the interviewer, were provided here

WVO construct and collect background information on participants.

A small convenient sample of participants was recruited with special considerations given to the following two theoretically relevant factors: gender and place of early residence. Sixteen interviews were conducted, and thirteen yielded usable qualitative data. The main characteristics of the 13 participants, with approximately equal numbers of men and women and individuals from rural, suburb, and urban areas, are shown in Table 2.

2.2 Data Analysis

The tape-recorded qualitative data were first transcribed into Word documents in Chinese. The interviewer and a naive coder then open coded all of the interview transcripts using deductive codes derived from the initial conceptualization of WVO. The definitions of the initial 11 WVO dimensions were used as a general guide for the meaning of the deductive codes. To ensure consistency in coding method, the two coders coded the first interview together before they independently coded the remaining 12 interviews. WVO dimensions were coded per passage. Typically one code was given for each passage. However, no code or multiple codes were given if the passage revealed none or more than one wildlife value orientation.

After coding each interview, each coder subjectively scored the interview from 1 (very low) - 7 (very high) on each of the WVO dimensions. The scores were based upon the coder's impression of the interviewee's wildlife value orientations after considering the interviewee's comments in totality and the frequency and strength of the interviewee's expressions of each of the concepts. No summary score was assigned if the interviewee did not express a wildlife value orientation or make statements in opposition to a wildlife value orientation. Scores were exported into SPSS 12.0 and inter-rater reliabilities were calculated. Meanwhile, the responses to the 45-item questionnaire were entered into SPSS12.0 by a third researcher. The results from this initial coding of qualitative data and the results from survey items were used to calculate inter-method reliability.

3.0 RESULTS FROM INITIAL CODING

The results from initial coding are presented in Table 3. The results yielded low inter-rater reliabilities for most of the initial 11 wildlife value orientation dimensions, ranging from 0.05 to 0.66 with an average of 0.42. In

Table 4.—Wildlife value orientation concepts—reconceptualization[a]

WVO Dimension	Description
Materialism	Focus on a utilitarian or dominant view of wildlife; view wildlife as a benefit or threat to food, shelter, economic survival, or a recreational resource
Mutualism	Humans and wildlife should co-exist in balance; believe that wildlife have rights like humans that deserved respect
Caring	Compassion and empathy toward wildlife; sense of companionship with wildlife; may include anthropomorphizing wildlife
Symbolic	Wildlife contributes to, signifies, and/or reveals important elements of social relationships and/or cultural institutions
Human safety/security	Concern for threats than wildlife may pose for human safety and security
Attraction	Degree of like, interest, or approach
Repulsion	Degree of dislike, disinterest, or avoidance

[a] Based on WVO global dimension revisions, February 2006

light of this, only the coding results from the primary coder, i.e., the interviewer, were used for the following inter-method reliability analysis, which yielded acceptable inter-method reliabilities (> 0.80) for all wildlife value orientation dimensions.

4.0 REVISIONS TO THE WVO CONCEPTUAL FRAMEWORK AND DATA ANALYSIS METHODS BASED ON THE INITIAL CODING RESULTS

4.1 Reconceptualization of WVO Framework

The results from the initial coding suggested that open-ended questions about emotional experiences with wildlife were effective in eliciting information about wildlife value orientations. However, the relatively low inter-rater reliabilities as well as other problems revealed by the results returned from other countries suggested the need to revise the initial conceptualization of WVO to make it theoretically sounder and more cross-culturally relevant. For example, it became clear that the dimension of *Hunting/Fishing* was ambiguous in that very different value implications could be derived from it depending on the prevailing need conditions people experience in different cultures. Specifically, besides recreational hunting common in North America, there are still hunting for subsistence needs (Mongolia); hunting for supplementary food, additional income, or defending properties/crops (China); hunting special species for spiritual/social meaning or hunting as self-defense in life-threatening settings (Kenya). Other problems with the initial conceptual framework included overlapping between dimensions, absence of certain concepts in interview data, and unbalanced instruments.

Based on an extensive discussion of the above-mentioned problems from the initial analysis, a reconceptualization was developed. The new WVO framework reduced the number of dimensions from 11 to seven (see Table 4). Five dimensions were eliminated for different reasons: *Environmentalism* and *Respect* overlapped with *Mutualism,* thus were removed to avoid redundancy; *Hunting/Fishing* was removed for the reason explained before; *Rational/Scientific/Observation* and *Faith in Technology* were deleted because these two concepts were not reflected or were rarely reflected in interviews. The remaining six dimensions were re-defined to reflect or incorporate new understandings of WVO concepts. One new dimension, *Repulsion*, was added to accommodate negative statements about wildlife such as dislike, lack of interest, or repulsion. The new conceptualization of wildlife value orientations is presented in Table 4.

4.2 Modifications to Coding Methods

The qualitative data from interviews were recoded using the deductive codes from the reconceptualization of wildlife value orientations. The definitions of the seven WVO dimensions were used as a general guideline for the meaning of the deductive codes.

It was decided that WVO dimensions would be coded per story (an extended account threaded by one common theme) in recoding instead of per passage (used in old

Table 5.—Results of recoding

WVO dimension	Frequencies[a]	Summary Score[b]	Inter-coder Reliability
Materialism	55	4.19	0.85**
Mutualism	25	2.54	0.88**
Caring	20	2.04	0.90**
Symbolic	6	0.58	0.60*
Attraction	30	3.00	0.47
Repulsion	24	2.50	0.28
Human safety/security	44	3.46	0.81**

[a] Average frequencies of two coders across 13 interviews
[b] Two coders' mean summary score
* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

approach) due to the uneven length of passages across interviewees. Typically, an account of a story clearly expressed one WVO dimension. However, some accounts reflected multiple WVO concepts. In either case, each concept, i.e., WVO dimension, was coded once within the same story. Finally, a summary score from 1 (very low) - 7 (very high) was subjectively assigned to each new WVO dimension by the coder following the same rule used in the initial coding. If the interviewee did not express a wildlife value orientation or make statements in opposition to a wildlife value orientation, zero was assigned for the interviewee on this WVO dimension, indicating an extremely weak belief. This is based on the assumption that compared to explicitly-held strong or moderately strong beliefs, very weak beliefs (and those absent) would much less likely emerge during an interview of limited length (30-60 minutes). Given that some concepts were frequently absent from interview accounts, treating the absence of these concepts as missing and not giving a final summary score would artificially increase the mean of these concepts and create a false impression of the whole group holding a relatively strong belief in that WVO dimension. This approach can be vastly misleading because only the opinions of those participants holding strong or moderate beliefs would be considered.

All scores were exported into SPSS 12.0.

5.0 RESULTS FROM RECODING

The changes of conceptual framework used to analyze the qualitative data resulted in an inequivalence between the two instruments, open-ended interview and survey items. Therefore, no inter-method reliability analysis was conducted in this secondary analysis. Inter-rater reliability was calculated using the recoded data. Table 5, which summarizes the recoding results, shows that high or acceptable reliabilities (≥ 0.6) were found for all dimensions except for *Attraction* and *Repulsion.*

6.0 DISCUSSIONS

The most important insight into methodology gained from this pretest is that using open-ended questions is an effective method to elicit information about wildlife-related attitudes and beliefs. Second, the qualitative data collection method appeared to work better across very different cultures. Compared to survey-item questionnaires, it was more culturally inclusive and thus could accommodate the diverse outlooks of multiple cultural groups. This strength, combined with "local" expertise, has effectively facilitated identifying WVO concepts, meanings, and experiences that differ across cultures. Third, given the complex theoretical and methodological issues involved in developing the WVO conceptual framework in a global context, multiple iterations are needed before a sound and cross-culturally relevant theory can be developed.

Regarding theory, the new conceptualization of WVO is a big improvement over the old one in terms of inter-rater reliability, suggesting the new approach greatly reduced measurement error. Nevertheless, the relatively low inter-rater reliabilities for a couple of WVO dimensions, namely, Attraction and Repulsion, call for

further examination of the framework (e.g., possible overlap between each of the two questionable dimensions and other WVOs; ambiguity of the concepts, and large random errors associated with the measurement of the two concepts).

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CHANGING VALUES AND THE IMPACT ON LAND USE AND SOCIAL NETWORKS IN THE NORTHERN FOREST REGION: A QUALITATIVE EXAMINATION

Jean Dedam
MS student
Antioch New England Graduate School
Keene, NH
jeandedam@fairpoint.net

Rodney Zwick, PhD.
Lyndon State College

Abstract.—Patterns of land ownership and economics are changing in the Northern Forest Region of New York, Vermont, New Hampshire, and Maine. The percentage of people living in the region who work in the resource extraction industry has become much smaller. Tourism and outdoor recreation are promoted as economic substitutes that will provide an alternate use of the natural resources and bring people and their money to the region. Many long-term residents have opposed tourism as an alternate industry due to lower wages, the types of employment associated with the hospitality industry, and the influx of new people to their communities.

The purpose of this research project was to explore the values and attitudes of long-term residents versus newcomers in three communities in the Northern Forest Region and to examine what impact the economic changes have had on attitudes toward development and social changes within these communities. This was a qualitative research project using the grounded theory method.

1.0 INTRODUCTION

This study first examined the historical dimension of community culture of selected communities of the Northern Forest Region through local and census data sources. Case studies were completed on three towns from the Northern Forest Region, representing communities in different stages of development from resource-extraction to service-based economies. The study clarified concepts, meanings and interrelationships of community culture, social relationships, relationship to land, development, and recreation and tourism through semi-structured intensive interviews. The purpose was to reveal differences in how newcomers and long-term residents value land and ascertain their attitudes toward development and community change.

The Northern Forest Region consists of 26 million acres located in northern New York, Vermont, New Hampshire, and Maine. The primary land use has been for farming and forestry. During the late 1800s, large industrial landowners purchased millions of acres of this forest for fiber for paper production. Since the late 1980s, much of the large industrial timberland has been consolidated or sold to Timber Investment Management Organizations that value some of the land as real estate rather than timber reserves. Often the manufacturing assets have been moved out of the region or the country. "Contractors" have also purchased large blocks of land for development purposes. Economically, short-term gain is taking precedence over long-term investment in the timber resources (Giffen et al. 2002, Kingsley et al. 2004). Agriculture in the region has seen a similar contraction. Since 1960 in the Northern Forest states of Maine, New Hampshire, and Vermont, the total number of farms dropped from 39,100 to 17,000 and the number of acres in farmland was reduced from 7,740,000 to 3,060,000 (Carsey Institute, USDA 2002).

With the changes in land use, there has been a corresponding change in employment. The following table shows the reduction in farm labor as a percent of the total workforce between 1969 and 1999.

In the ten-year period from 1987 to 1997, employment in forest product manufacturing decreased by 13 percent,

Table 1.—Percent change in farm employment as a part of the total workforce in three northern forest states. Source: Carsey Institute

Farm Employment	1969	1999
Maine	4.0	1.4
New Hampshire	2.1	0.6
Vermont	6.5	2.4

from 43,500 to 38,000 jobs. During that same period, employment in tourism and recreation grew by 16 percent from 91,500 to 108,350 jobs (Wilson 2000). Another trend reported by informants in the study has been the out-migration of youth for education or employment since the 1950s and 1960s. U.S. Census Bureau population statistics for the three case-study communities show a trend toward an aging population between 1990 and 2000, which would seem to confirm the observations of informants.

Another significant influence has been the growth in the second-home market since the 1990s. Maine has the highest percentage of second homes of any place in the country, followed by Vermont (Sneyd 2005). U.S. census figures show an increase from 23 second homes to 422 in the three case-study communities between 1990 and 2000. In an article by Peter Francese (2003) based on Bureau of Labor Statistics Consumer Expenditure Survey for 1999-2001, the average second-home owner is 55 years old, has an income of more than $80,000/year, and is a college graduate. Property values have risen with a shortage in available housing. In Vermont, property values increased by 54 percent between 1996 and 2003 while incomes increased just 20 percent over the same time (DeAngelis et al. 2004).

Three study communities were selected in the Northern Forest Region to represent the geopolitical spectrum. Millinocket, Maine, was a classic mill town built around the paper mill. The closing of the mill in 2003 for a year had a devastating effect on the community. Canaan, Vermont, represented a mixed resource based economy of farming and forestry. The community has remained relatively stable. Bethlehem, New Hampshire, had developed a strong tourism sector very early in its history. More recently it has experienced several boom/bust cycles in the second-home industry, and according to several informants, has now become a bedroom community to Littleton, New Hampshire.

Literature was reviewed that emphasized relationships of residents to land and to community. A number of studies have identified scenic values, outdoor recreation, privacy and a slower pace of life as reasons newcomers buy property in rural areas (Cadieux 2001, Inman & McLeod 2000, Smith 1997). For example, Ryan (1998) surveyed 120 rural property owners in two communities on the River Raisin in Michigan to discover their landscape preferences. The results showed a significantly higher preference by new residents for natural areas than long-time residents and farmers, who preferred farms and built areas (Ryan 1998). Cadieux (2001) explored how residents shape their environments and how the environment affects residents through a series of interviews with landowners living in an exurban environment outside Toronto, Canada. She found a conflict anchored in culture between two approaches to stewardship, one utilitarian and one of natural processes. Because most exurbanites did not understand natural processes, their attempts at land management were mostly based on the desire for a neat appearance. She found new residents were very excited about engaging with the landscape, but their enthusiasm drops off after the first year and does not re-emerge until they have been long-term residents (Cadieux 2001). Smith (1997) investigated the views of newcomers and long-term residents in three communities in the western Rocky Mountains. The qualitative and quantitative methods in his study produced conflicting results. The quantitative study found that newcomers and long-term residents do not disagree on the need for environmental protection, and they both want limits to population growth and economic and tourism development The qualitative study found that there were perceived differences on these issues within the two groups (Smith 1997). Finally, Bockenhauer (1996) examined the history of the myth of the "yeoman farmer" and the conflicting pragmatic values of private property, profit, and "getting ahead" held by most Americans. He concluded that this interaction is one of a largely taken-for-granted ideological conflict that plays a major role in the impressions that Americans seek to create and in the landscapes they actually do create. The research suggests that although there may be consensus on the need to protect the landscape, there are variations in what individuals imagine the landscape should look like or how it should be treated.

The studies that examined the attitudes about newcomers versus long-term residents showed similar results. Cadieux (2001) found that many new residents

enjoyed the amenities but did not understand what it takes to sustain the country ideal. She uses the open land concept and shared trails as an example. Newcomers who often gated the common trails on their property caused a loss of neighborliness that open properties symbolized. She says it takes time for in-migrants to become countrified. Keith (1999) supports that premise but adds that for a community as a whole to overcome fragmentation, all members must be involved in shaping its future. She notes that commuting to regional centers for work, shopping, entertainment, and other services adds stress to residents' lives and reduces the amount of time available to volunteer in the community. Commuting for work and other services also reduces the number of milieus and the frequency of interactions between community members, reducing community attachment and cohesion (Keith 1999). Salamon (2003) echoes this sentiment in her presentation of rural case studies in the Heartland, where she describes how small egalitarian and democratic agrarian communities evolve to become suburban areas for regional centers. She also describes the need for interaction in public spaces among all residents to establish a sense of community which is difficult to achieve when businesses, employment, entertainment, education, and other services, are obtained outside the community (Salamon 2003).

2.0 CASE-STUDY COMMUNITIES

Three communities were selected in the Northern Forest Region to represent the geopolitical spectrum. The shape Millinocket, Maine, and the land surrounding it had been formed by the Great Northern Paper Company, which built the paper mill and the town. The village is compact, and the forest land surrounding it was all owned by the paper company. Closure of the mill in 2003 devasted the community. The mill reopened in 2004 under new ownership, but with a work force less than half that of pre-closure levels. Informants stated that in the intervening year, most of the 18-45 age group had moved out of the community for employment. Property values plummeted leading to sales to second-home buyers and people seeking affordable housing. With closing the mill, the forest land has been parcelized and sold to a variety of ownerships with different rules for public access and different uses.

Canaan, Vermont, is located on the upper reaches of the Connecticut River with its extensive flood plain fields. The first Ethan Allen Furniture plant is located there and still operates today. Large paper mill land holdings that surrounded Canaan have been sold off in recent years to various public and private interests, leading to a variety of access and public use changes similar to that which occurred in Millinocket. Mechanization and consolidation in agriculture and timber operations vastly reduced the number of people who work on farms or in the area's forests. The number of farms has consolidated to three though the number of acres in agriculture has remained relatively stable. Many residents commute to work in regional centers or in the service industry.

Bethlehem is located in the White Mountain region in northern New Hampshire. It began as a poor agricultural community. However, its scenic amenities and pure air were apparently more valuable than its soils, and in the mid-19th century, it began to attract summer visitors from New England's cities. They arrived by train and lived in the many hotels that were built in Bethlehem's village center until the development of the automobile in the early to mid-20th century altered the vacation patterns of city residents. Traditionally, Bethlehem also had an active timber industry with several large paper companies owning forest land. Since the 1970s, Bethlehem has experienced several boom/bust development cycles where land has been converted from agriculture or forestland to subdivisions. Bethlehem still retains conserved or publicly held forest land mixed with subdivisions. Informants described the town as a bedroom community to regional centers that maintains a small tourism economy.

All three communities have experienced a contraction in resource-extraction employment and a general transition in the Northern Forest region from land valued for its timber or agricultural assets to its real estate values. Each has also experienced a steady out-migration of its youth for employment or education, and more recently, an in-migration of retirees and second-home owners.

3.0 METHODS

Interviewees were selected in each community to represent different lengths of residency, types of

employment, and types of ownership. Twenty-six resident interviews were recorded and ranged from one and a half to two hours in length. Fifteen of the respondents were classified as long-term residents, nine were classified as newcomers or short-term residents and one as a recreational home owner.

As this was a qualitative study, transcripts were completed for each interview and reviewed, coding schemes were developed for responses, and then compared across communities to ascertain common themes and contrasts. Transcriptions of interviews were then examined and coded for commonalities regarding: demographic change, in-migrant relationships, community social networks, newcomer expectations, resident values, economic/ infrastructure concerns, relation to land and perspectives on development, and views of recreation and tourism impacts.

Interview responses were examined for meanings, focusing on views of reality (articulated or inferred) by which interviewees defined their behavior and others', and how they defined for themselves a particular controversial area. Episodes and encounters that were remarkable to the respondents were noted as they affected the respondents and their relationships to others and their environmental milieu.

Relationships among residents and second-home owners, long-term residents and newcomers, and among residents and the surrounding environment were also examined; in the last category we were particularly interested in changes in the relationship to the land, changes in economic structures, and recreation and tourism impacts on interrelationships.

We were also interested in the economic, civic and cultural values related to the use of land and their effect on perspectives on how development should be controlled.

4.0 INFORMANT PROFILES

Examination of Table 2 reveales differences between the three study communities that appear to correlate with stages of transition away from a resource-based economy. Of the long-term residents of Bethlehem, New Hampshire, only one had been born and raised there and that individual spent most of his adult working life outside the region. All but one of the other long-term Bethlehem residents had been born and raised in an urban setting although all had rural or outdoor experiences in their youth. This result is in stark contrast with the long-term residents of Millinocket, Maine, where they all had been born and raised in town, with only one having had significant life experience outside the region. These profiles would appear to reflect the history of each community. Bethlehem's tourism economy may have attracted a higher percentage of in-migrants much earlier than Millinocket, which has only recently experienced an abrupt transition away from a primarily forest-based industry. In Canaan, Vermont, which had a mixed economy over most of its history, two long-term residents were born and raised in the community, one had grown up in another rural area, and two were from urban childhood homes but with experience in forestry or farming. In contrast, Table 3 reveals that all but two newcomers, in the three communities combined, had lived in urban areas in their youth.

The same relationship exists between occupation and an urban or rural childhood with long-term residents. Only one of five Bethlehem, but four of six Canaan and three of five Millinocket long-term residents were employed in a resource-extraction industry. In contrast, Table 3 shows that none of the newcomer residents in the three communities had farming or forestry as an occupation.

5.0 RESULTS

It became apparent that differences in the attitudes of newcomers and long-term residents lay in their relationship to the land and not generally in their preference for land uses. For long-term residents who participated in the resource-extraction economy of the Northern Forest region, stewardship and a long-term view were important values grounded in the understanding that the ability to earn a living off the land was dependent on the land's capacity to produce. Most newcomers valued land for its scenic and recreational amenities rather than its productive capacity.

The right to access private property to take game, fish, or fowl was established in the formative years of the

Table 2.—Long-term informant profiles: B – Bethlehem, C – Canaan, M – Millinocket

ID	Gender	Yrs in town	U - raised in urban area R - raised in rural area O - outdoor experience in youth B - born in community E - urban experience as adult	Occupation F- farm, forestry R - retail M - manufacturing G - government HW - house wife H - hospitality C - construction	Hunt, Fish, Trap	Retired	Friends (new, long term or both)
B1	M	45	R	F	Yes	Yes	Long term
B4	M	32	U/O	R	No	No	Both
B7	F	36	U,O	HW	Yes	Yes	Mostly long term, no second home, a few newcomers
B8	M	36	U,O	G	Yes	Yes	Mostly long term
B9	M	25+	B,E	G & M	Yes	Yes	Both
C1	M	18	R	F	Yes	No	Both
C2	F	70+	B	G	Yes	Yes	Long term, a few newcomers
C4	F	50+	B	F/R	-	No	Mostly long term
C6	F	?	Spoiled tape				
C8	F	18	U	F/R	No	No	
C9	M	50	U/O	F	Yes	Yes	Long term
M3	M	57	B, E	M,F	Yes	Yes	Mostly long term
M6	M	70+	B	M,F	Yes	Yes, No	Long term
M7	F	70	B	HW, H	Yes	No	Long term
M8	M	@50	B	F,M	Yes	Laid off	Long term
M9	M	@50	B	C	Yes	N	Long term

Table 3.—Newcomer Informant Profiles: B – Bethlehem, C – Canaan, M - Millinocket

ID	Gender	Yrs in town	U - raised in urban area R - raised in rural area O - outdoor experience in youth B - born in community E - urban experience as adult	Occupation F - farm, forestry R - retail M - manufacturing G - government HW - house wife H - hospitality C - construction I - Health/Insurance	Hunt, Fish, Trap	Retired	Friends (new, long term or both)
B2	M	2nd home	R youth U primary residence	M	Y	N	Long term
B3	M	2	U	G	N	N	Both
B5	F	2	U	Insurance	N	N	Mostly long term, no second home, a few newcomers
B6	M	2	U,O	G	Yes	Yes	Mostly long term
C3	M	2	U	G firefighter	Fish	Yes	Both
C7	M	4	U	Insurance	Yes in youth	Yes	Long term, a few newcomers
M1	M	2	U	I	N?	No	Mostly long term
M2	F	3	U	I	F	No	Long term
M4	F	2	U	I	N	No	Long term
M5	M	4	R	R	In youth	No	Long term

nation to protect the ability of all citizens to obtain wild food resources. Long-term residents recalled that in their youth "everyone" hunted and fished. Sportsmen were described by long-term residents as good stewards of the land and the resources. New uses of private property by the public for recreational activities were not associated with stewardship but, especially in the case of all-terrain vehicles (ATVs), were often associated with damage to property. Both long-term residents and newcomers accepted snowmobiling as an economic driver for the region, a nuisance to some people but less destructive and better controlled than ATVs. Newcomers, who disagree with sporting activities and post their land for security or privacy, were described by long-term residents as selfish and untrusting. Yet some long-term residents also noted that camps that used to be left open for anyone with a need for shelter must now be locked due to occurrences of vandalism.

It was apparent that culture change was occurring from within as fewer people worked in resource-extraction industries and as youth, migrated out of the region, seeking further education or better paying employment opportunities. Fewer youth are engaged in traditional sporting activities (hunting, fishing, and trapping) as organized sports, video and computer games occupy more of their free time. Stewardship values are being lost as the carriers of the culture participate less in stewardship activities and/or move out of the region.

Civic organizations or social clubs provide a mechanism for newcomers to make connections within the community. Newcomers who socialized with long-term residents or who originated from small rural communities adopted some of the attitudes of the long-term residents. Newcomers from urban areas find that the small rural communities offer a supportive friendly environment as compared to the anonymity of the city. Long-term residents (especially in Millinocket) mourn the loss of a close-knit community where relationships that were many-layered between extended family and social and business connections are being lost as young people leave, services become regionalized and people commute sometimes long distances to work. Both newcomers and long-term residents suggested that second-home owners have not integrated into the social networks of the communities.

Most newcomers and long-term residents wanted to retain the "character" of their communities. Two informants saw second homes as a way to increase the tax basis for their town without any additional demand for expensive school services. However, most informants cited negative impacts from second homes such as rising property values that put housing out of reach for young people and the lack of participation in the life of the community or support of civic institutions.

The need for employment opportunities for the region's youth and the long-term health of the economy was universally accepted. Most newcomers and long-term residents stated that large-scale manufacturing was not going to be a viable alternative for the future. Most informants saw tourism as a part of the economic future but felt that the community residents wanted light manufacturing or technology to provide better-paying jobs.

Most long-term residents stated that there is a need for some regulation to protect environmental values and control development, but that the cost of permitting can be detrimental to the ability of small operators or businesses to survive. Some also stated that environmentalists were hypocrites and were opposed to industry on principle without regard to the facts in specific cases. Some newcomers stated that long-term residents would sacrifice environmental values for jobs and tax income. Long-term residents stated that it is the responsibility of the landowner to manage the resources on their property with a long-term view toward future productivity and protection of the natural resources. Some long-term residents cited changes in uses (year-round camps, poorly planned developments, clear cutting) and population pressures that made it necessary to have some regulation.

The results of this study reveal that the general goals of newcomers and long-term residents are similar (retain community character, protect the environment) but that a different relationship to the land influences the

perception of what is or is not appropriate activity on that land and how impacts should be managed. In addition, the out-migration of young people, an increase in the number of people who commute to regional centers for work, and the rise of second-home ownership has affected community integration and function. Cadieux (2001) suggested that a narrative had to be provided newcomers that would help them to adapt to the country. This study supports the need for understanding stewardship as a land management technique both for resource extraction and for the new recreational uses. It is also important for communities to find new ways to support stewardship of institutions and social networks in this day when people often do not work, shop, or go to school in the community where they reside.

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RECREATION-RELATED PERCEPTIONS OF NATURAL RESOURCE MANAGERS IN THE SARANAC LAKES WILD FOREST AREA

Diane Kuehn
SUNY College of Environmental Science and Forestry
203 Marshall Hall
1 Forestry Drive
Syracuse, NY 13210
E-mail: dmkuehn@esf.edu

Mark Mink
SUNY CESF

Rudy Schuster
SUNY CESF

Abstract.—Public forest managers often work with diverse stakeholder groups as they implement forest management policies. Within the Saranac Lakes Wild Forest area of New York State's Adirondack Park, stakeholder groups such as visitors, business owners, and landowners often have conflicting perceptions about issues related to water-based recreation in the region's public forest areas. The main objective of this study is to identify the beliefs and attitudes of managers in the Saranac Lakes Wild Forest area regarding issues related to boat use. The Theory of Planned Behavior (Ajzen 1991), which illustrates the relationships among beliefs, attitudes, intended behaviors, and behaviors, provides the theoretical basis for the study. Fifteen managers of public and private properties within the region were interviewed in 2005. Interview data were recorded (with the permission of interviewees), transcribed, and qualitatively analyzed using N6 qualitative software. The interviews reveal basic issues perceived by managers concerning boat use, including environmental impacts from motorboat use (e.g., invasive species introductions) and noise generated by motorboats. Managers' beliefs concerning these issues and attitudes towards boat use are identified. Distinctions between public agency managers and managers of shoreline associations and other organizations are made.

1.0 INTRODUCTION

The Saranac Lakes Wild Forest (SLWF) comprises 67,000 acres of public forest lands and water bodies within New York State's Adirondack Park. The 142 water bodies in the area provide recreational opportunities for local landowners and attract many visitors to the area, contributing to the local economy and profitability of recreation-related businesses. Many stakeholder groups such as business owners, visitors, and local landowners have a long-standing tradition of using the public forest lands throughout this area as access for water-based recreation. However, because of differences in the recreation- and resource-related interests of these groups, a lack of consensus concerning management strategies often exists among managers and stakeholder groups.

This study seeks to identify the perspectives of land managers, visitors, landowners, and business owners in the SLWF area concerning water-based recreational activities. The study consists of two phases: (1) interviews with 15 land managers, and (2) quantitative surveys of three stakeholder groups (i.e., visitors, landowners, and business owners). This manuscript focuses on the results of the qualitative interviews with managers. The objective of these interviews was to identify the beliefs and attitudes of land managers in the SLWF area concerning water-based recreation. Managers' perceptions of the beliefs of the three stakeholder groups were identified from the interviews, but are not included in this manuscript. Results from the interviews were used to develop the questionnaires for the second phase of the study.

The Theory of Planned Behavior (Ajzen 1991) provides the framework in this study for understanding the relationship among beliefs and attitudes towards participation in water-based recreation (specifically, boating). *Beliefs* are an individual's conceptions about a specific behavior. Ajzen (1991) describes three basic types of beliefs: behavioral (i.e., beliefs about the likely consequences of a certain behavior), normative (i.e., beliefs about the expectations of others concerning a certain behavior), and control (i.e., beliefs about factors that may limit or enable a certain behavior). Beliefs influence *attitudes*, defined by Ajzen and Fishbein (1980) as an individual's positive or negative evaluations of performing specific behaviors. For example, an individual's beliefs about the consequences of a specific

behavior (i.e., behavioral beliefs) will influence his or her attitudes towards the behavior. Likewise, normative beliefs influence an individual's perceptions concerning the social pressure for or against a specific behavior (i.e., subjective norms) (Hrubeset al. 2001), and control beliefs influence the individual's perceptions concerning the ease or difficulty of performing a specific behavior (i.e., perceived behavioral control) (Ajzen & Driver 1992). These attitudes and perceptions (herein called "attitudes") concerning a behavior influence an individual's *intention* to carry out that behavior. Intention directly influences carrying out the actual *behavior* (Ajzen 1991). Results of the manager interviews were used to focus the second phase of this study (i.e., the surveys) on attitudes and beliefs related to the specific behaviors of participation in non-motorized boating, motorized boating, and personal watercraft use in the Saranac Lakes Wild Forest.

2.0 METHODS

During 2005 and 2006, 15 qualitative telephone interviews of land managers (eight state agency managers and seven shoreline association/non-governmental organization [NGO] directors) in the SLWF area were conducted by the second author. The interviews were tape-recorded for accuracy with the permission of interviewees. Interview length ranged from 30 to 120 minutes. Managers were asked to identify and describe the issues that they thought were most important concerning water-based recreation in the SLWF area and for their perspectives on these issues. Open-ended questions were used.

Following their completion, the interviews were transcribed by the second author and imported into QSR N6 software for qualitative analysis by the first author. Interviewee quotes were coded by issue, as well as manager beliefs and attitudes. Data were summarized to identify the number of managers indicating each issue, belief, and attitude.

3.0 RESULTS

The following issues were identified by managers as being important to water-based recreation in the SLWF:

- Sustaining the local economy.
- Water quality (boating & septic systems).
- Spread of invasive aquatic species by boats.
- Noise associated with motorboats.
- Conflicts between motorized and non-motorized boat users.
- Enforcement of boating regulations.
- Boating access.

Managers were asked to identify their perspectives concerning each of the issues that they identified. Their beliefs and attitudes concerning these issues were identified from their comments. Table 1 summarizes managers' beliefs according to the number of managers indicating each belief identified.

The belief that "boating is important to the local economy" was identified by ten of the managers (four state agency managers and six NGO directors). These managers indicated the importance of boating to local businesses such as stores, restaurants, accommodations, marinas, and campgrounds. One manager indicated this belief by stating:

> *"I think that there're a growing number of … retail stores in the area -- the facilities that provide canoes and guide boats and, and camping and boating equipment in general and there's a lot of those. They all depend on the tourism."*

The belief that "gas-powered boats negatively affect water quality" was mentioned by nine managers (four state agency managers and five NGO directors). Leakage of gas and oil from motorboat engines into water bodies was mentioned as the main concern. Several managers distinguished between 2-cycle and 4-cycle engines, indicating that 2-cycle engines were the main source of boat-related pollutants.

> *"…but there certainly is a water quality impact from two-cycle motors. They dump a lot of oil and unburned fuel into water bodies."*

The belief that boating spreads aquatic invasive species was mentioned by nine managers, and was almost equally split between state agency managers and NGO directors.

Table 1.—Number of managers indicating specific beliefs concerning water-based recreation (n = 15)

Belief	Total Number of Managers Indicating Belief	Number of State Agency Managers Indicating Belief	Number of NGO Directors Indicating Belief
Boating is important to the local economy.	10	4	6
Gas-powered boats negatively affect water quality.	9	4	5
Boating spreads invasive aquatic species.	9	4	5
Gas-powered boats negatively affect the tranquility of the natural setting.	7	3	4
A balance between motorized and non-motorized boat use is needed to prevent conflicts between users.	8	7	1
A balance between recreation and natural resource protection is needed to maintain resource quality.	7	5	2
Responsible (safe) use of water resources by all boaters is needed.	8	2	6
Recreational choice on state lands and water bodies is the right of all SLWF users.	5	1	4
Having access to water resources is a public right.	5	4	1
Existing low levels of boat access prevent crowding of boats on water bodies.	3	3	0
Access is adequate at the current level.	2	2	0

"...looking at it from the standpoint of invasive species coming in -- the plants ... are transferred from lake to lake through boating and the movement of boats between lakes."

Seven of the managers (nearly equally split between state agency and NGO managers) also indicated the belief that "gas-powered boats negatively affect the tranquility of the natural setting." Noise levels and the desire for maintaining a "quiet lake" were mentioned often.

"In some of the older two cycle engines ... noise pollution is a huge issue."

"I can live without jetskis personally for the … quiet lake we have."

Achieving balance in the SLWF area was mentioned frequently by state agency managers. For example, eight managers (seven of which were state agency staff) indicated that a balance between motorized and non-motorized boat use is needed to prevent conflicts between users.

"The more people you have there, the more you have the interface of paddling people, who are taking long distance canoe trips through Upper Saranac for example, encountering jet skis and motorboats going at high rates of speed. That becomes an issue."

Seven managers (five state agency managers and two NGO directors) indicated that a balance between recreation and natural resource protection is needed to maintain resource quality.

"Our responsibility is both the protection of the natural resource and …the provision of access to recreational opportunities for the public. It's a double-edged sword where you got two things that intuitively conflict with each other. We need to figure out where the balancing point is..."

The belief that "responsible (safe) use of water resources by all boaters is needed" was mentioned primarily by the NGO directors (six NGO directors and two state agency managers indicated this belief).

Table 2.—Number of managers indicating positive, negative, and neutral attitudes towards different types of boats (n = 15)

Types of boats	Positive	Negative	Neutral
Non-motorized	12	0	0
Electric engines	0	0	0
Gas-powered (general)	8	4	2
2-stroke engines	0	5	0
4-stroke engines	2	0	0
Personal watercraft	0	7	3

> *"I don't own a jet ski. I'm not a real fan of jet skis, but I can understand how people would enjoy them and I have no problem with them when they're used responsibly."*

Five managers (four of whom were NGO directors) indicated the belief that "recreational choice on state lands and water bodies is the right of all SLWF users." The following quote by one manager indicates an internal conflict between beliefs concerning recreational freedom and resource protection.

> *"... is anybody wrong? No. Nobody's wrong. I mean they have the right to do that and people are having a lot of fun water skiing. In the meantime the loon beds are being destroyed and a lot of private shoreline, incidentally, which is used to having no wakes, is being destroyed."*

Beliefs concerning access for boating varied somewhat among managers. Four state agency managers indicated that "having access to water resources is a public right." Three state agency managers indicated that "existing low levels of boat access prevent crowding of boats on water bodies" and two that access is adequate at existing levels. Several NGO directors indicated that boating access in general was an issue in the SLWF area, but did not indicate any personal beliefs about this issue.

Data were also analyzed for attitudes concerning different types of boats used in the SLWF area (Table 2). Non-motorized boats were viewed as positive by 12 out of the 15 managers. Eight managers had a positive attitude towards gas-powered motorized boats (excluding personal watercraft) in general; four had a negative attitude towards this type of boat. Five managers had a negative attitude specifically towards boats having 2-cycle engines. Seven managers had a negative attitude towards personal watercraft; three showed a neutral attitude by indicating that they did not like the noise associated with personal watercraft but would not want to see them banned from the area.

4.0 DISCUSSION

State agency managers and association directors both agreed and disagreed on their perceptions of several issues. Agreement was identified for four issues in particular. First, both types of managers indicated that boating is an important part of the economy of the Saranac Lakes area. Second, managers appeared to agree that gas-powered boats negatively affect water quality. Third, managers indicated that boating spreads invasive aquatic species. Finally, both types of managers indicated that gas-powered boats negatively affect the tranquility of the natural setting. This consensus between state agency managers and NGO directors may be useful in future discussions related to the management of water-based recreation in the Saranac Lakes Wild Forest area.

A slight difference appears to exist, however, between the state agency managers and NGO directors concerning management styles. For example, several state agency managers stated that balance among recreational activities and/or between recreation and resource protection is needed. To achieve this balance, it is likely that both direct and indirect management strategies would be needed. NGO directors indicated that they would rather enable visitors to choose the recreational activities in which they wish to participate, while encouraging

the safe and responsible use of boats. Offering visitors a choice indicates that NGO managers may favor indirect management strategies such as visitor education. However, it is important to note that several NGO directors indicated that the increased enforcement of existing water-based recreation regulations on water bodies within the SLWF (i.e., a direct management strategy) is needed.

In addition to these similarities and differences in beliefs, internal conflicts within individual managers appear to exist. For example, several managers indicated that they believe that individuals have a right to recreate as they choose on state lands. However, these same individuals also expressed concern about environmental impacts related to this recreational use. This conflict in personal perspectives may be difficult for managers to resolve satisfactorily since it seems likely that some management decisions will be needed either to achieve balance between the resource and recreation, or to manage for one above the other.

5.0 CONCLUSION

Public forest managers today are challenged with preserving natural resources and providing recreational opportunities for visitors and residents. This study shows that both similarities and differences exist between the two types of managers interviewed. Identifying similarities can provide an important baseline of consensus for discussion between state agency and NGO managers concerning management strategies. Management of the Saranac Lakes Wild Forest for water-based recreation, however, will also require that managers understand differences among themselves.

State agency managers may seek to balance recreation and natural resource protection through diverse management strategies, including access considerations and regulations. NGO directors may seek to encourage the responsible use of natural resources at existing levels of recreational activity through strategies that enable visitor choice. Perhaps through the combination of both direct and indirect management strategies, satisfying the recreational and economic needs of landowners and preserving the pristine natural resources of the SLWF area can be accomplished.

6.0 ACKNOWLEDGMENTS

The authors wish to thank the Northeastern States Research Cooperative for funding this research. Thanks also to the managers who participated in the interviews.

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Leisure Cognition

APPRAISAL OF AND RESPONSE TO SOCIAL CONDITIONS IN THE GREAT GULF WILDERNESS: RELATIONSHIPS AMONG PERCEIVED CROWDING, RATIONALIZATION, PRODUCT SHIFT, SATISFACTION, AND FUTURE BEHAVIORAL INTENTIONS

Rudy M. Schuster
State University of New York
College of Environmental Science and Forestry
One Forestry Drive
Syracuse, NY 13210
rschuster@esf.edu, 315-470-4863

David Cole
U.S. Forest Service,Rocky Mountain Research Station

Troy Hall
University of Idaho

Jennifer Baker
SUNY ESF

Rebecca Oreskes
U.S. Forest Service, White Mountain National Forest

Abstract.—Purposes were to describe on-site social carrying capacity from the users' perspectives, provide management applications, and refine constructs of product shift and rationalization used by visitors as coping responses to crowding. Data were gathered using on-site exit surveys of hikers in the Great Gulf Wilderness and analyzed with descriptive statistics, principal components analysis, confirmatory factor analysis, and structural equation modeling. Social carrying capacity did not appear to have been exceeded based on the users' perspectives. However, coping was employed by 50 percent of the population. An acceptable model of hiker appraisal and coping response was identified. A discussion of management application and future direction for redefining product shift and rationalization within a context are offered.

1.0 INTRODUCTION

The purpose of this report is to describe on-site social carrying capacity from the users' perspective and to offer refinement of recreational visitors' coping responses of product shift and rationalization. A conceptual model for understanding visitor coping response to crowding was framed using psychological stress-coping theory and recreation related stress-coping research. The theoretical model was tested using data from backpackers and hikers in the Great Gulf Wilderness. Social carrying capacity from the visitors' perspectives, management applications, and justification for future modifications to the product shift and rationalization constructs are discussed in the closing section.

The following objectives will be met to achieve the stated purposes.

1. Test the following hypotheses. As crowding increases, the use of coping mechanisms will increase (hypotheses 1). As the need to cope with crowding increases, overall satisfaction with the experience will decrease (hypotheses 2). As satisfaction with the experience decreases, the hiker will be more likely to modify future behaviors associated with the site (hypothesis 3).
2. Identify specific indicators of perception of the experience and response to on-site conditions.
3. Provide a discussion addressing on-site conditions in relation to visitor perception of experience.
4. Provide a discussion of the coping mechanisms of product shift and rationalization.

Psychological stress/coping theory and recreation research provided a foundation and theoretical model (Peden & Schuster 2005, Schneider 1999, 2000; Schneider & Hammitt 1995, Schuster 1999, 2000; Schuster & Hammitt 2001, Schuster & Hammitt 2003, Schuster, Hammitt, & Moore 2003, 2006; Schuster, Hammitt, Moore, & Schneider 2006). Appraisal of the person-environment interaction was operationalized as perception of crowding. Coping responses were operationalized as product shift, rationalization, problem solving, intra-site displacement and physical avoidance. Outcomes were operationalized as overall satisfaction with the recreation experience and future behavioral intentions to use the site again.

2.0 COPING WITH CROWDING

2.1 Emotion-focused Coping

Product shift results in a change in the definition of the recreation opportunity that is offered after the on-site experience does not match expected conditions. The research herein operationalized product shift using variables adapted from previous studies (Hammitt & Patterson 1991, Hoss & Brunson 2000, Johnson & Dawson 2004, Kuentzel & Heberlein 1992, Manning & Valliere 2001, Shelby, Bregenzer, & Johnson 1988).

The rationalization process in recreation related coping typically borrows a theoretical definition from Festinger (1957) and is rooted in cognitive dissonance theory. Rationalization is viewed as a one-time event in which the individual justifies the difference between on-site conditions and expectations to maintain cognitive consistency. The most consistent operational definition of rationalization is often associated with the expenditure of resources, such as amount of time and money spent to participate in the recreational activity. The resource expenditure definition has met with mixed results. The research herein embraced the move away from the resource expenditure definition. Rationalization was defined using the results from Hoss and Brunson (2000), Peden and Schuster (2005), and Manning and Valliere (2001) along with recreation coping research (Schneider 2000, Schuster et al. 2003, Schuster, Hammitt, & Moore 2006, Schuster, Hammitt, Moore et al. 2006). Rationalization was still theoretically defined as a one-time occurrence where the individual minimized the affect by ignoring it, doing what they felt was normal in the situation, avoiding responsibility, and moving forward with the experience.

2.2 Problem-focused Coping

The conceptualization of problem solving was based on recreation coping research (Schneider 2000, Schuster et al. 2003, Schuster, Hammitt, & Moore 2006, Schuster, Hammitt, Moore et al. 2006) and likely behavioral responses in typical wilderness crowding situations. We defined problem solving coping as behavioral responses that were directed at immediately reducing the impact of crowding. Solving the problem included directly addressing the individual causing the disturbance or simply moving away from the source.

Problem-focused coping mechanisms in recreation research are typically defined as displacement (Anderson & Brown 1984, Becker 1981). Sub-dimensions of displacement include inter-site displacement (leaving the site altogether), intra-site displacement (participating in the same activity at a different location on the same site), and temporal displacement (participating in the same activity at the same location at a different time of day, week or year). Displacement was conceptualized in the current model as having two components, the ability to physically avoid on-site problems as a coping effort and future intentions to exercise inter/intra site displacement (traditionally conceptualized). Physical avoidance in response to the on-site stress was defined as minor modifications in behavior to lessen the impact or avoid the problem and moving to a different area within the same site. Future intentions to use the site were akin to the traditional definitions of inter, intra, and temporal displacement. Future intention was conceptualized as a behavioral adaptation evoked by current conditions and an outcome of the process.

3.0 METHODS

The research was conducted with hikers exiting the Great Gulf Wilderness, New Hampshire, USA. The Great Gulf is a 5500-acre wilderness on the White Mountain National Forest. Data were collected during summer 2005. Five hundred sixteen visitors were contacted with a 77.5 percent response rate and 400 usable surveys were collected. All hikers were asked to respond to both the crowding appraisal and coping response questions. Respondents were provided the option to indicate that the coping mechanism was not used at all. Data were analyzed for the entire sample, not a subset of those who responded that the area was highly crowded. Including hikers with all levels of crowding provided a more complete view of social carrying capacity assessment and hiker behavior as opposed to that of a subset of Great Gulf hikers who perceived a high level of crowding. Variables and rating scales are shown in Tables 1, 2, and 3. Satisfaction was measured using a single, global satisfaction indicator (1=very dissatisfied to 10=very satisfied). The social condition appraisal, coping, and future behavioral intention variables were submitted to a confirmatory factor analysis (CFA) procedure to establish

Table 1.—Descriptive statistics and SEM results for crowding appraisal items

ID[a]		SEM coefficient [b]	SEM error	Mean	SD
		Ω = .70[c]			
1	How crowded did you feel on your visit to the Great Gulf today? [d]	.815	.580	1.7	1.3
2	Compared to what I expected, the number of groups I saw on this trip was? [e]	.531	.847	-.61	1.3
3	How many other groups did you see on your visit to the Great Gulf today? [f]	.228	.974	5.2	4.4

[a]Identification number of variable corresponds to identification numbers in Figure 1
[b]Standardized parameter coefficient is interpreted analogous to a beta weight in regression.
[c] Weighted Omega reliability coefficient calculated using parameter coefficients in SEM model
[d]Ten-point rating scale, 1=not crowded at all to 9=extremely crowded
[e]Seven-point rating scale, -3=far less, -2=less, -1=slightly less, 0=what I expected, 1=slightly more, 2=more, and 3=far more
[f]Respondent indicated number of groups seen by selecting a number between 0 and 32+ provided on a list

Table 2.—Descriptive statistics, results of PCA and SEM analysis of Great Gulf coping items [a]

ID[b]		SEM coefficient	SEM error	% used[c]	Mean	SD
	Emotion-Focused Coping					
	Rationalization α=.86	Ω = .92[b]				
4	Tried to view the problem in a positive way	.912	.409	23.2	.47	.95
5	Decided that the problem was a one-time occurrence	.826	.563	16.9	.30	.75
6	Learned to live with it	.787	.617	24.6	.49	.95
7	Let someone else handle it	.628	.778	11.2	.16	.50
8	Refused to get too serious about it and just had fun	.601	.799	31.2	.68	1.1
9	Went on as if nothing had Happened	.599	.800	25.2	.54	1.0
10	Acknowledged responsibility for the problem	.570	.822	11.2	.18	.57
11	Followed established trail etiquette	.510	.860	50.0	1.31	1.4
	Product Shift α=.75	Ω = .83[b]				
12	Decided that this should be expected in the Great Gulf from now on	.864	.763	13.0	.28	.70
13	Accepted the conditions as part of the normal Great Gulf experience	.761	.649	26.0	.53	1.0
14	Decided that my expectations for the number of other people in the Great Gulf were inaccurate to start with	.647	.504	17.1	.20	.57
	Problem-Focused Coping					
	Problem Solving α=.72	Ω = .84[b]				
15	I tried to talk the person responsible into changing their behavior	.868	.497	4.0	.05	.26
16	I dropped subtle hints that I was being bothered	.790	.613	3.8	.38	.07
17	Left my rest, view, or lunch spot earlier than planned	.535	.845	6.5	.10	.41
18	Expressed anger to the person(s) who bothered me	.354	.935	1.3	.02	.15
	Physical Avoidance α=.56	Ω = .60				
19	I stopped and waited to allow other people to get ahead so I could not see/hear them	.663	.749	30.0	.47	.82
20	I increased or decreased my hiking pace to get away from other people	.623	.775	31.0	.54	.90
21	I avoided social interaction with other hikers (e.g., eye contact, talking, answering questions…)	.327	.945	16.3	.22	.57
	I moved my campsite to get away from other people	ns		3.0	.02	.14
	Intra-Site Displacement α=.82					
	Left that part of the Great Gulf	ns		4.3	.07	.40
	Changed my intended hiking route or destination	ns		4.3	.07	.36

[a]All variables measured using a four-point rating scale, 0=did not use/not applicable, 1=used infrequently, 2=used occasionally, and 3=used frequently
[b]Identification number of variable corresponds to identification numbers in Figure 1
[c]Represents the percent of the population who used this coping mechanism at least one time during their trip

Table 3.—Descriptive statistics and SEM results for future intention to displace items[a]

ID[b]		SEM coefficient	SEM error	% likely to use[c]	Mean	SD
		Ω = .95[b]				
22	Avoid the great gulf at certain times of the year	.926	.377	15.3	-.96	1.3
23	Avoid certain trails/summits	.868	.497	16.4	-.94	1.2
24	Avoid the Great Gulf at certain times of the week	.861	.454	15.3	-1.0	1.2
25	Avoid certain camping areas	.861	.509	15.7	-.89	1.3
26	Go to a different wilderness area within the WMNF	.804	.595	11.8	-1.0	1.2
27	Avoid the Great Gulf at certain times of the day	.787	.617	6.7	-1.3	1.0

[a]All variables measured using a five-point rating scale, -2=very unlikely, -1=unlikely, 0=neutral, 1=likely, and 2=very likely
[b]Identification number of variable corresponds to identification numbers in Figure 1
[c]Represents the percent of the sample indicating likely or very likely to use the item in the future

factor validity. The hypothesized model was tested using structural equation modeling (EQS version 6.1).

Initial analysis of the data produced a multivariate kurtosis normalized estimate of 167 and a mean scaled univariate kurtosis of 3.8 suggesting a non-normal distribution of the data. To compensate, Robust Maximum Likelihood estimation was used with a covariance matrix developed from raw data. The Satorra-Bentler Scaled Chi-Square (S-Bχ^2) is sensitive to sample size. Additional robust fit indices used were the comparative fit index (CFI) and standardized root mean square error of approximation (RMSEA). A CFI greater than 0.9 and an RMSEA less than 0.1 were considered acceptable (Hatcher 1998, Hu & Bentler 1998, Marsh, Hau, & Wen 2004). A specification search using the Lagrange Multiplier and Wald Tests (Schumacker & Lomax 1996) was used to identify possible model-modifications to generate a better fitting or more parsimonious model.

4.0 RESULTS

Most people traveled in groups of two (45.3%), alone (20%), or as a group of three (16.8%). Groups of four to 16 people comprised 16.7 percent of the sample. Approximately 10 percent of the sample consisted of Appalachian Trail through hikers. Most hikers (49.3%) were on a day trip, 19.3 percent were on an overnight trip, 16.5 percent camped two nights in the Great Gulf, and 6.7 percent camped more than three nights. The average trip was 1.8 days long. Forty-eight pereent of the respondents were visiting the Great Gulf for the first time. Nineteen percent had visited on one or two previous occasions and 11 percent had been there three to five times. Hikers having visited the area six or more times comprised 15.7 percent of the sample. The CFA procedures produced acceptable fitting models for the appraisal, coping, and future intention factors. A detailed description of the CFA procedure can be found in Schuster, Cole and Hall (in press).

4.1 Objective One: Model Identification and Hypothesis Testing

The original model did not achieve an acceptable fit (see Table 4). The variable *As a result of the number of people I encountered today I am likely to go to a different wilderness area outside of the White Mountain National Forest* (future intention factor) had two significant residual correlations greater than 0.20 with other variables and was considered a source of poor fit (Schumacker & Lomax 1996). This variable was removed and the model tested again. Model 2 without the problem variable was tested and supported (see Table 4).

Table 4.—Confirmatory Factor Analysis and Structural Equation Modeling Process results

	χ^2	DF	CFI	RMSEA
	CFA Results			
Appraisal	91.7	3	.988	.053
Future intentions	1537.7	21	.988	.063
Coping 1	1043.8	231	.855	.045
Coping 2	836.7	171	.749	.104
Coping 3	836.7	171	.922	.035
Coping 4	836.7	171	.923	.035
	SEM Results			
SEM model 1	2382.3	435	.894	.044
SEM model 2	2101.5	406	.917	.038

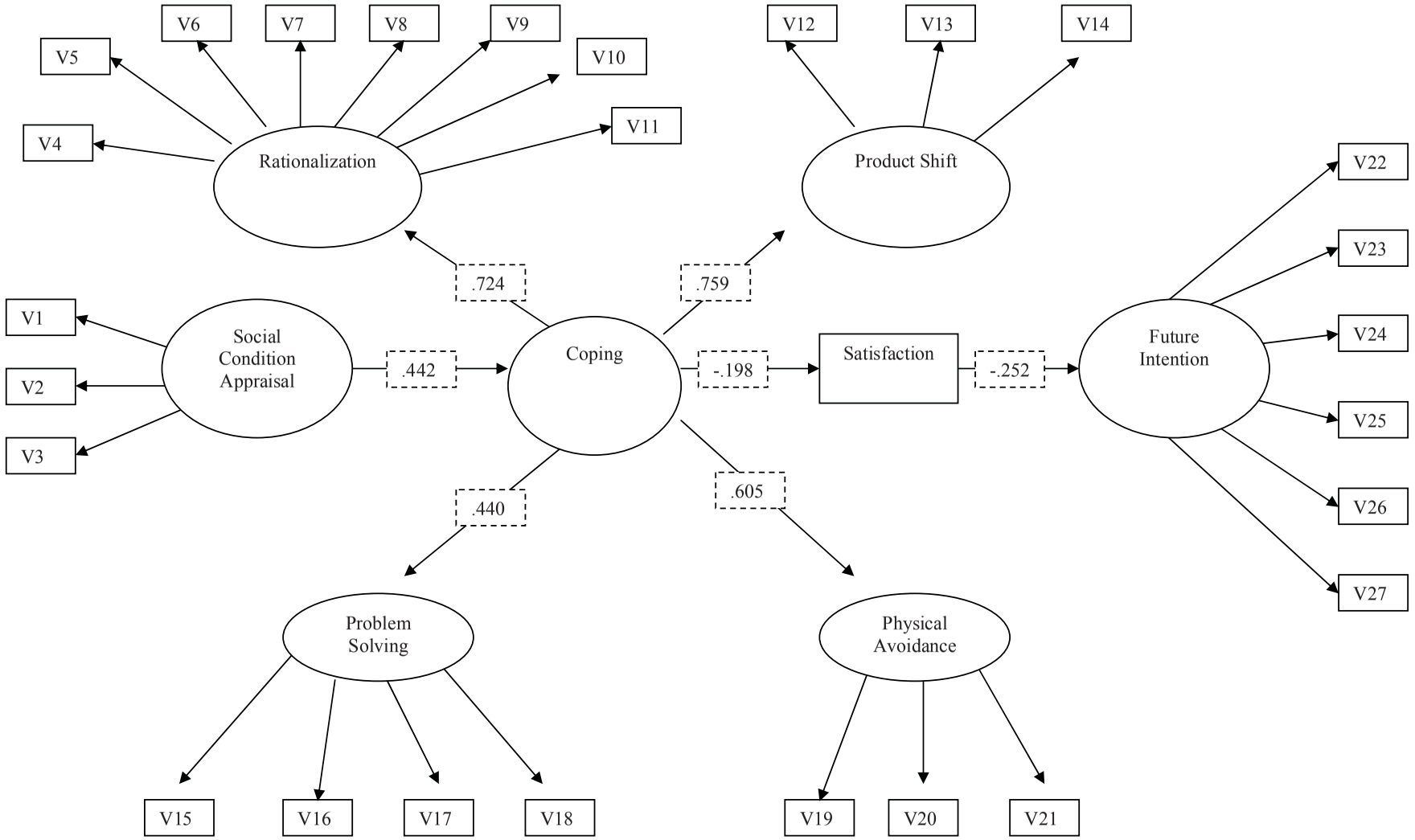

Figure 1.—Structural equation model illustrating significant parameter coefficients for crowding model. Standardized parameter coefficients for main relationships shown in dashed boxes. Manifest variable identification labels correspond to data in Tables 1, 2, and 3. Manifest variable parameter coefficients and error terms are listed in Tables 1, 2, and 3.

The standardized parameter estimates shown (see Figure 1) were used to satisfy objective two. As perception of crowding increased the use of coping mechanisms also increased (.422). Hypothesis one was accepted. A negative relationship between coping and satisfaction (-.198) indicated that as the need to cope with crowded conditions increased, hikers reported a decrease in overall satisfaction. Hypothesis two was accepted. Finally, a negative relationship (-.252) showed that as satisfaction decreased the likelihood that a hiker would modify future behavior associated with the site increased. Hypothesis three was accepted.

4.2 Objective Two: Indicators of On-site Experience

The parameter estimates and means for the crowding appraisal variables (see Table 1) can be used to identify specific indicators of perception of the Great Gulf experience and response to the on-site experience. Overall, hikers did not perceive crowding during their recreational experience. Descriptive statistics in Table 2 indicated that 50 percent of the population used the most popular coping response during that trip. While averages listed in Table 2 may seem low, clearly Great Gulf hikers are responding to on-site conditions that were not what was expected. The seeming low averages for coping are a result of using the entire sample to calculate the mean. Many other coping studies reduce the population by only including responses from people indicating that conflict existed or by creating and comparing sub populations; for example, Schneider (2000), Schuster (2006), and Vaskey et al. (1995). By including all respondents herein, this report provides a more holistic view of the on-site social carrying capacity condition at the Great Gulf. In this case, frequency of coping mechanism use may provide a better understanding of coping response.

The overall coping scheme predominantly consisted of a long-term cognitive response of redefining the experience and a short-term immediate cognitive fix using rationalization (see Figure 1). Hikers combined the cognitive responses with minor behavioral modifications that appeared to not have a large impact on the structure of their trip. The typical coping scheme in the Great Gulf consisted of combining product shift, rationalization and to a lesser extent physical avoidance.

The relationships between coping factors and manifest variables can also be used as indicators of the on-site experience. Product shift predominantly consisted of deciding that current conditions should be expected and are normal in the Great Gulf. Rationalization predominantly consisted of maintaining a positive outlook on the situation, deciding that it was a one-time occurrence, and simply learning to live with it. These cognitive responses were combined with physical avoidance of stopping and waiting for people to go away or modifying one's hiking pace to get away from others.

A high level of overall satisfaction (M=8.8, SD=1.6) with the Great Gulf experience was reported. The primary contributing item to the future behavioral intentions factor was to avoid the Great Gulf at certain times of the year (see Table 3). Hikers were less likely to change the time of day that their trips started. Considering frequency of response we see that 6 percent to 16 percent of the sample was likely to change their future behavior associated with the Great Gulf as a result of on-site conditions.

5.0 DISCUSSION AND RECOMMENDATIONS

This section will address objectives three and four and provide a discussion of on-site conditions in relation to visitor perception of experience and the coping mechanisms product shift and rationalization.

5.1 On-site Conditions

The White Mountain National Forest (WMNF) Forest Management Plan identifies four wilderness zones; the zones range from least (Zone A) to most heavily used (Zone D). The WMNF managers use the zoning system to understand both distinctions and commonalities among different areas in terms of use levels, facilities, campsites, vegetation/soils, managerial presence, and social conditions. The zone descriptions "typically represent the conditions during a particular area's peak use season or represent the highest development level within the zone. For example, some trails receive heavy use during the summer and fall months, but receive almost no use in the winter and spring. In these cases, the zones will reflect conditions during summer and fall. However, we will manage to maintain seasonal variation; that is, we will not manage to allow a trail that receives

heavy use in the summer and low use in winter to become a year-round high use trail" (WMNF, 2005, P. E-5).

The Great Gulf is designated a Zone D area. According to the Forest Plan, this zone includes areas within ¼ mile of developed facilities or 500 feet of high use trails and contains the most heavily used trails in the wilderness context. The landscape within this zone is modified by the developed trail system and associated structures, and may include bridges, primitive shelters and/or toilets, designated campsites, and impacts resulting from recurring recreation use. However, in most places the landscape still appears largely unmodified. One must remember that the term developed facilities and heavily used are relative to acceptable use levels within wilderness. Standards, monitoring methods, and management actions for perceptions of crowding and experience quality in Zone D wilderness are as follows. The area is beyond the standard if a majority of visitors indicate perception of overcrowding. In order to make this determination, a survey will be conducted once for baseline information and once halfway through the life of the Plan. Survey will focus on visitor perceptions of crowding at selected sites within the wilderness and quality of recreation experience (WMNF, 2005, P. E-5).

Our results indicated that hikers did not perceive much crowding during their recreational experience and they were highly satisfied with their experience. Based on these results the Forest Management Plan standards for visitor perception of crowding and experience quality have not been exceeded. However, it is worth noting that the strongest coping factor identified in the model was product shift. Product shift involves a change in the definition of the opportunity offered at the destination. Product shift accounted for the most variance when identifying a consistent coping scheme that influenced hiker satisfaction and their future intentions to use the area. This suggests that product shift was the most functional coping mechanism used. Descriptive statistics in Table 2 indicated that the most frequently used coping mechanism was rationalization (used by up to 50 percent of the sample). However, it did not have as consistent of a relationship with maintaining satisfaction as product shift. Finally, product shift and rationalization were used as part of a combined coping scheme. The use of product shift and rationalization suggested that while the area was appraised as not crowded and experience quality was high that Great Gulf visitors are exercising coping to make cognitive adjustments to maintain high satisfaction levels.

These results suggested that visitors adapted to social impacts and, therefore, that the baseline for evaluating these impacts is a floating baseline. Managers will need to decide if this is a problem or not. They should be aware that visitors' perceptions of acceptable conditions change to accommodate use level changes. Indicators based on perceived crowding are unlikely to suggest there are problems, even if use levels increase. Managers might want to consider supplementing the visitor perception indicator with an objective indicator of social condition, such as use density or number of encounters. Using an objective indicator might signal a potential problem that assessments of crowding or satisfaction are insensitive to.

The Forest Plan states that a goal is to "manage to maintain seasonal variation; that is, we will not manage to allow a trail that receives heavy use in the summer and low use in winter to become a year-round high use trail" (WMNF, 2005, P. E-5). The primary contributing item to the future behavioral intentions factor was to avoid the Great Gulf at certain times of the year (see Table 3); 15.3 percent of the sample population was likely to change their future behavior and visit at a different time of the year. WMNF should be aware that there is a potential for Great Gulf use to shift to shoulder seasons.

5.2 Product Shift and Rationalization

Product shift and rationalization are both important coping mechanisms used in response to crowding. While there are theoretical distinctions between the two constructs, it is often difficult to create operational definitions that are clearly independent. Theoretically, both mechanisms involve employing a cognitive shift that makes on-site conditions congruent with expectations. In the case of product shift the change is specifically defined as a shift in opportunity definition. In the case of rationalization, previous recreation research used the time and money expenditure definition. As stated, the resource expenditure definition found mixed results. The response used in the Great Gulf project was to create a more global construct that did not place cognitive change in a context

indicating how perception shifted. We found that making the construct more general sacrificed the ability to apply it in management situations. Changing from the resource expenditure definition to a general definition did not appear to improve our understanding of the situation in terms of how hikers used rationalization. It lacked sufficient context to make it a useful management tool.

Product shift is considered a process when defined as a coping mechanism. It requires having previous experience or information about the site, making an appraisal of the current situation, comparing the appraisal to the expected condition, and finally modifying the definition of opportunity offered. Theoretically, product shift may be closely associated with other components of the model. Product shift contains an element of appraisal and often shares language used in appraisal questions. However, product shift is not the appraisal process; it is the process of managing the situation that the appraisal identified as a problem. The operative distinction is that the appraisal does nothing to address the situation and product shift as a coping mechanism is an attempt to manage or solve the problem.

Using 11 questions to measure rationalization and product shift we were only able to identify that hikers were changing their mind concerning the opportunity offered based on the on-site experience. Rationalization and product shift may be too nebulous as a generalized constructs. Simply knowing that someone changed their mind about the situation does not provide manageable information. In addition, product has the potential to confound the appraisal component of the experience evaluation. We posit that additional work is necessary to create a research design that:

1. Avoids confounding appraisal and product shift as a coping mechanism;
2. Identifies theoretically and operationally distinct definitions for product shift and rationalization;
3. Identifies operational definitions for product shift and rationalization that provide usable management information.

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IDENTIFYING PREDICTORS FOR QUALITY AND QUANTITY RESTORATIVE CHARACTER OF WILDERNESS: USING EVENTS AS AN ANALYSIS UNIT

Chad D. Pierskalla
Associate Professor
West Virginia University
Division of Forestry and Natural Resources
PO Box 6125
Morgantown, WV 26506-6125
cpierska@wvu.edu

Jason M. Siniscalchi
U.S. Coast Guard Academy

William E. Hammitt
Clemson University

David A. Smaldone
West Virginia University

Steven J. Storck
West Virginia University

Abstract.—The purpose of this research is to understand whether and how trail design and resource impacts influence the quality and quantity of restorative experiences. The focus of past research has been on understanding the quality-side (what happens). What is missing is a better understanding of the quantity-side of experiences (how much happens). Gibson's environmental perception theory was used to conceptualize quality and quantity experiences. He suggests that events involving the coupling of actors and environments are meaningful. Events were used as a unit of analysis in this study. Quantity (i.e., amount of events) was measured on an eventfulness scale. Continuous Audience Response Technology was used to record degree of eventfulness during the viewing of videos simulating hiking events in the Monongahela National Forest. While walking along each of eight wilderness trail segments, 90 seconds of visual media was filmed as stimuli. As study participants (N=42) watched each video, they rated the restorative character by turning a handheld dial from 0 (low) to 100 (high). Following each video, respondents evaluated five components of restorative environments, overall quality, and eventfulness. The number of dial turns was correlated with eventfulness (r=0.21, p<.001) but not quality. Average restorative character across the video was more strongly related to quality (r=.65, p<.001) than to quantity (r=0.30, p<.001). Two models predicting quality (Adjusted R^2=0.54, p<.001) and quantity (Adjusted R^2=0.16, p<.001) of restorative character were developed. Independent variables include components of restorative character, average restorative character across the video, and number of changes (positive and negative dial turns) in character. Average restorative character and fascination were more strongly related to overall quality than to quantity. The number of positive changes in character and novelty were more strongly related to quantity. Results revealed that quality and quantity are different constructs. Quality is related to a cognitive process (fascination). Quantity seemed to be more objective and related to novelty—a process associated with direct perception. Providing more variety in scenery and minimizing resource impacts contribute to eventful and high-quality restorative opportunities.

1.0 INTRODUCTION

Recreation involves the production and transaction of goods and services, and the productivity of these markets is influenced by the perceived quality and quantity of the units produced. Brown (1984) proposed the recreation opportunity production process and suggested that the recreation product involves a combination of opportunities including activities, settings, experiences, and benefits. However, the evaluative measures of recreation opportunities used in research have not given equal consideration to both quality and quantity. Considering that the underlying goal of outdoor recreation has traditionally been to provide high-quality outdoor recreation opportunities (Manning 1999), managers have focused primarily on defining *quality* recreation opportunities; but what is missing from this goal and the evaluation of this goal is the *quantity* of events individual recreationists perceive during a recreational engagement. The purpose of this research was to use events as a unit of measurement and analysis to better understand whether and how trail design and resource impacts influence both the quality and quantity of restorative character of three hiking trails in the Monongahela National Forest, WV.

An event is an underlying concept in Gibson's (1986) environmental perception theory and was the main unit of analysis used in this research. Eventfulness was defined as the number of events perceived during a recreational engagement. For example, a hiking event might consist of several unfolding events such as stepping over downed trees, hiking to a vista, or hiking through mud. We propose that more events contribute to more eventful recreation outings, and the qualities afforded by each unfolding event can contribute to either improving or reducing the overall quality of the visit.

1.1 Traditional Measures of Recreation Quality

Manning (1999) documented the wide acceptance of satisfaction as a single-item measure of quality in outdoor recreation by highlighting its long history of use by managers and decision-makers starting in the early 1960s. The concept also has a strong theoretical foundation. Both recreation setting and subjective evaluation of participants are concepts that contribute to overall satisfaction (Whisman & Hollenhurst 1998). Expectancy/discrepancy theory suggests that satisfaction is a function of the degree of congruence between aspirations and the perceived reality of experiences (Vroom 1964, Porter & Lawler 1968). When visitor perceptions of reality meet or exceed their expectations, they tend to be more satisfied (Manning 1999).

Although a single-item measure of satisfaction has been widely used, it does have limitations. For example, visitors have uniformly reported high levels of satisfaction even when recreation opportunities change. The variable's lack of sensitivity to changing conditions is understandable given that visitors often self-select places that meet their recreational needs and are sometimes able to cope with less than high quality conditions (Manning 1999).

1.2 Traditional Measures of Quantity

The quantity of recreation has typically been measured as a total number of visitors, number of visits to an area, acres of recreational land, or length of visit. For example, a recreation visit day equal to 12 hours of recreation site use by any combination of users, is the measurement unit traditionally used by federal agencies such as the Forest Service. People at one time (PAOT) is a unit often used in crowding research and measures the number of people at one place and at one moment in time. However, none of these techniques simultaneously consider both the spatial and temporal dimensions of an individual's perception and experience. In fact, they inaccurately imply that high quantity (i.e., high number of visitors) equates to successful recreation management. In contrast, meeting new people and other social experiences are often rated as undesired experiences by recreationists (Manning 1999), and crowding is a common impediment to visitors achieving their expectations and motivations in wildland areas (Schreyer 1990). For example, Heberlein and Kuentzel (2002) found that higher hunter densities improved the success for doe hunters, but more hunters also increased crowding and decreased satisfaction. Length of stay measures can also be problematic. Losing track of clock time or the transformation of time is an important element of an optimal recreational experience that has been defined by Csikszentmihalyi (1990). Therefore, a more holistic and dynamic unit of recreation is needed to help measure the quantity of the recreation product. The measure needs to be effective in various recreation environments and applicable to visitors seeking different recreational outcomes. We propose an alternative concept, eventfulness.

1.3 Environmental Perception Theory

Gibson (1986) suggests that information is exchanged between a perceiver and the environment during human activity. The light, sounds, smells, tactual sensation, and taste of objects in the environment make up the type of information that is perceived. This information flows as the perceiver moves through the environment, runs his/her hand over an object, etc. The pattern of change perceived in this flow of information makes up a storyline consisting of unfolding events. A pattern of change can be perceived at various space-time scales and characterized as an event that affords positive or negative qualities. An event was operationally defined by Pierskalla et al. (in press) as the activity-movement (or preposition)-setting sequence (e.g., hiking-to-the overlook) of language that describes the relationship that exists between humans and the environment. For example, stepping (activity) over (preposition) downed trees (setting) is a pattern of change (event) that can afford positive or negative experiences (affordances)

depending on the motives of the perceiver. Therefore, there are two basic concepts when examining perception, affordances and events. Stoffregen (2000) suggested that the two concepts are not identical.

Recreational affordances are the relations between people and their environment that have aspects with functional consequences for action (e.g., hiking) and attainment (e.g., restorative experiences or family bonding) (Hammitt 1983). Affordances in a recreation environment (involving social and physical properties) infer a certain degree of compatibility between what the perceived environment has to offer and how a person prefers to function in that environment. Affordances provide the meaning associated with functions or events in an environment. "Affordances are not fully objective in that they make sense only in the context of an animal-environment system" (Chemero 2000, p. 38). Depending on the skills of visitors, the perception of certain kinds of affordances can be enhanced or limited (Pierskalla & Lee 1998). Affordances help define the qualities (ranging from low to high quality) of an event. By comparison, events are more objective (Chemero 2000). Because events are countable units, we propose that they can be quantified in terms of eventfulness (ranging from not much happened to a lot happened).

Marginal utility measures have been adopted from production economists to evaluate the effect of increasing visitor use on total units of satisfaction produced in a recreational area (Clawson & Knetsch 1966, Manning 1999). This type of productivity calculation includes both quality (satisfaction per visit) and quantity (number of recreationists) measurements; however, it fails to consider the multiple events that visitors might perceive during a single visit. As a result, it may over or underestimate the total productivity of a visit depending on the number of events an individual perceives. This assertion seems true only if an eventful and high-quality experience is desirable by recreationists seeking different experiences and benefits in different environments.

In an attempt to find instances where recreationists might seek uneventful but high-quality experiences, Pierskalla et al. (2005) conducted a meta-analysis of five studies including hunters, anglers, rock climbers, hikers, scenic drivers, and campers. Regardless of visitor motives, the researchers found significant relationships between quality and eventfulness measures. Although the strength of the relationships varied, they were consistently positive regardless of the experiences and benefits afforded by the events. Quality was also significantly greater and more uniform than eventfulness. Their findings suggest that visitors seek more eventful visits as the quality of their experiences improves. Based on their conclusions, it is proposed that eventfulness can also be a valid measure of restorative character—the focus of this study.

1.4 Components of Restorative Environments

Kaplan and Kaplan (1989) developed a theory to explain why viewing natural scenes contributes to reducing stress, promoting more positive moods and feelings, and facilitating recovery from fatigue. Restoration is a central concept in their theory and is defined as the recovery from mental fatigue, through environments that offer involuntary attention, by having four restorative components: being-away, extent, fascination, and compatibility. Laumann et al. (2001) added a fifth component based on their factor analysis of 22 restorative items. The "being-away" rating scales loaded on two separate factors, novelty and escape. The following were among those factor items with the highest factor loading scores in their study: I am in a different environment than usual (Novelty), I am away from my obligations (Escape), The elements here go together (Extent), I am capable of meeting the challenge of this setting (Compatibility), and I am absorbed in these surroundings (Fascination).

2.0 METHOD

2.1 Data Collection

Continuous Audience Response Technology (CART) was used to collect moment-to-moment responses from respondents about restorative character of video clips collected from three trails in the Monongahela National Forest. The technology has been used to conduct focus groups and to measure audience reaction to video (e.g., advertisements, films, and campaign messages). CART was used in this study to develop a timeline that recorded continuous measurement of change in response over time, and was used to pinpoint aspects of a video viewers liked or disliked. Data were entered by respondents continuously using a handheld dial.

Three trails in or near the Dolly Sods and Otter Creek Wilderness areas were used as study sites. The trails are important indicator trails identified in a monitoring program. Use of the area is expected to increase upon completion of a highway (Corridor H) within 20 miles of the Wilderness areas, thus substantially reducing the driving time from the Washington D.C./Baltimore area.

In the summer of 2005, researchers used a handheld DV Canon ZR100 camcorder to collected 90 seconds of visual and audio stimuli of six trail segments per indicator trail. Video clips were collected approximately every 1/3 mile from the start of each trail, resulting in a total of 18 video clips. Eight video clips that represented a wide range of trail conditions and environments were selected for use in this study. They include: Blackbird Knob trail (n=2), Red Creek trail (n=2), and Otter Creek trail (n=4).

A total of 42 West Virginia University students in an upper-level undergraduate outdoor recreation management course participated in the study in groups of 10. Each session lasted one hour. The session started by asking respondents to enter basic information (e.g., session and identification number) to help them become familiar with the handheld dials. Next, the researchers defined the functions of restorativeness in natural environments as the degree to which scenes contribute to stress reduction, promote positive moods and feelings, and facilitate people's well-being. The restorative character scale was anchored by asking respondents to turn their dials to the left until it read 0 when a picture of a natural environment with low restorative character was presented and to the right until it read 100 when a picture of a highly restorative environment was presented. Before playing each video clip, respondents were asked to turn their dial to the midpoint (50). As they watched each video, students were instructed to rate the restorative character of randomly ordered trail segments by turning a handheld dial with a scale ranging from 0 (low) to 100 (high). Data were automatically recorded at one-second intervals. Following each video, respondents were asked to evaluate the visual stimuli by rating the five components of restorative environments on a 7-point scale (1=very little, 2=rather little, 3=neither little or much, 4=rather much, 5=very much, and 6=completely). The items representing the five components include: In these surroundings I would feel I am in a different environment than usual (Novelty); In these surroundings I would feel away from my obligations (Escape); All of the elements of this scene go together (Extent); I feel I would be capable of meeting the challenge of these surroundings (Compatibility); and I would feel absorbed in these surroundings (Fascination). Respondents were also asked to rate the overall quality (0=poor to 100=excellent) and eventfulness (0=uneventful or not much happened to 100=eventful or a lot happened), and write down elements that improved or detracted from the restorative character of the video.

2.2 Data Coding

The pattern of change in restorative character was coded by counting the number of positive (improving restorative character), negative (declining character), and total dial turns (changes in character) that were made by each participant during the videos.

The average restorative character was plotted on a timeline for each video clip. Events of Significance (EoS) were identified and coded for each of the eight timelines using the following two criteria: (1) at least 30 percent of participants simultaneously turned the CART dial during a one-second moment in time that potentially marked the approximate start and end of an event (ascending or descending trend or pattern of restorative change identified on the timeline) and (2) the average restorative character reported during the start and end of an event changed by at least one standard deviation. The setting elements that improved or detracted from the restorative character for each EoS were coded by referring back to the video and coded open-ended comments.

2.3 Data Analysis

Pearson's correlation coefficients were used to examine correlates of eventfulness and overall quality with the following: total number of dial turns, number of positive dial turns, number of negative dial turns, and overall average restorative character. Stepwise regression was used to develop two models that predict eventfulness and overall quality (dependent variables). The independent variables that were entered into the analysis included:

Table 1.—Description of events of significance (EoS)

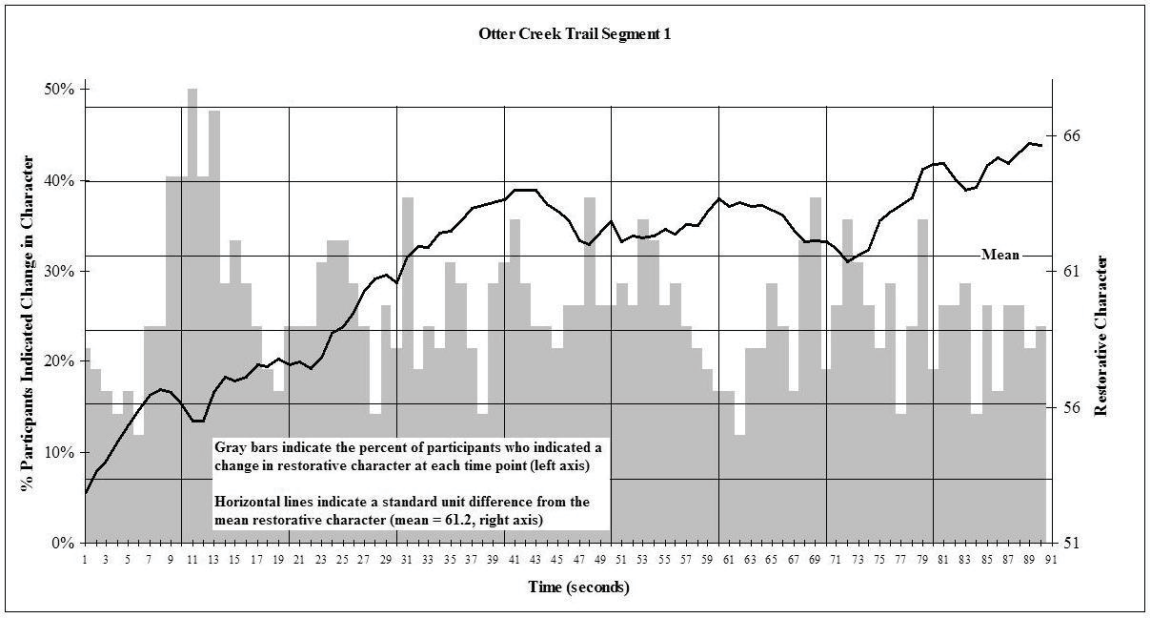
Trail Segment	EoS	Event Description
Otter Creek 1	1	Crossing over stream.
	2	Lush forest; wide and defined trail; hear and occasionally see river.
Otter Creek 3	1	Walking through mud/standing water with squishy noise; sounds of running water.
	2	Leaving muddy area; narrow and well defined trail along ridge between steep hill and steep drop off to water; glimpses of water.
Otter Creek 5	1	Entering a dense vegetative enclosure.
	2	Cannot see trail or ground in the dense enclosure; hear vegetation brushing against video
	3	photographer.
		Park like stand of large trees with low ground vegetation buffer; well defined straight trail; quiet.
Otter Creek 6	1	Well defined trail; plenty of clearing space; see river through trees; buffer of low vegetation along trail.
	2	Approaching/stepping over a series of 3 downed trees crossing trail (on the ground & slightly elevated).
	3	Completed crossing downed trees; well defined trail along ridge between steep hill and steep drop off to water; glimpses of water; slight sounds of running water.
	4	Maneuvering over limbs crossing trail (elevated and off the ground); slight sounds of running water.
	5	Completed maneuvering through limbs; well defined trail along ridge between steep hill and steep drop off to water; glimpses of water; slight sounds of running water; step over decomposed tree crossing trail.
Blackbird Knob 4	1	Through an enclosure prior to field; multiple tread; narrow clearing width.
	2	Open field; knee height grasses and flowers; well defined single trail tread.
Blackbird Knob 5	1	Park like stand of small trees with view beyond into field; well defined narrow trail.
	2	Park like stand of small trees with view beyond into field; trail widens and is eroded.
	3	Leaving park like stand of trees; smaller shrubs; sever erosion and multithread.
Red Creek 1	1	Hikers emerge from around a corner and pass by.
	2	Passed by two hikers in a field of high grasses; narrow trail with little clearing width; well defined trail; approaching a stream crossing.
	3	Crossed stream; very wide and eroded trail with scattered rocks.
	4	Ground vegetation buffering large trees along trail; well defined straight trail; crepuscular rays present.
Red Creek 4	1	Through a rhododendron enclosure; patchy sun; well defined trail; open view; sounds of running water.
	2	Walking around a corner to open vista of river with an open expanse of rocky shore and conifers in background; sounds of running water.

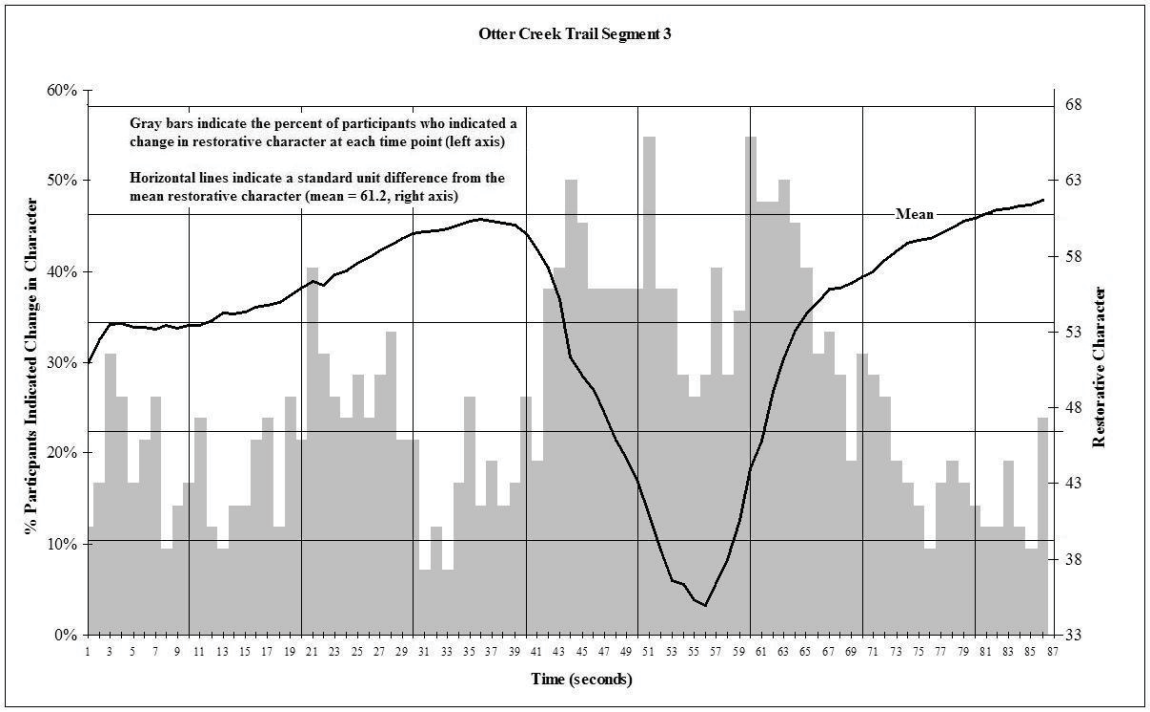
total number of dial turns, number of positive dial turns, number of negative dial turns, overall average restorative character, and ratings for the five components of restorative character.

3.0 RESULTS

Using the criteria described earlier, each EoS was identified by examining the continuous measurement of change in average restorative character over the course of time (Figures 1-8). The overall mean score of restorative character is labeled in each figure. Each horizontal line indicates one standard deviation. The vertical bars represent the percent of respondents that turned the dial (indicating the percent of agreement). The solid bars indicate the temporal duration and pattern of change (improving or declining) associated with each EoS in the videos. Each EoS is described in detail in Table 1.

Pearson's correlation coefficients (2-tailed) were used to examine correlates of eventfulness and overall quality with the following variables: total number of dial turns, number of positive dial turns, number of negative dial turns, and overall average restorative character. The total number of dial turns was correlated with eventfulness ($n=313$, $r=0.21$, $p<0.001$) but not quality ($n=316$, $r=0.10$, $p=0.077$). Average restorative character across the video was more strongly related to quality ($n=317$, $r=0.65$, $p<0.001$) than to eventfulness ($n=314$, $r=0.30$, $p<0.001$). Positive dial turns (improvement in restorative character) were related to both quality ($n=316$, $r=0.21$,

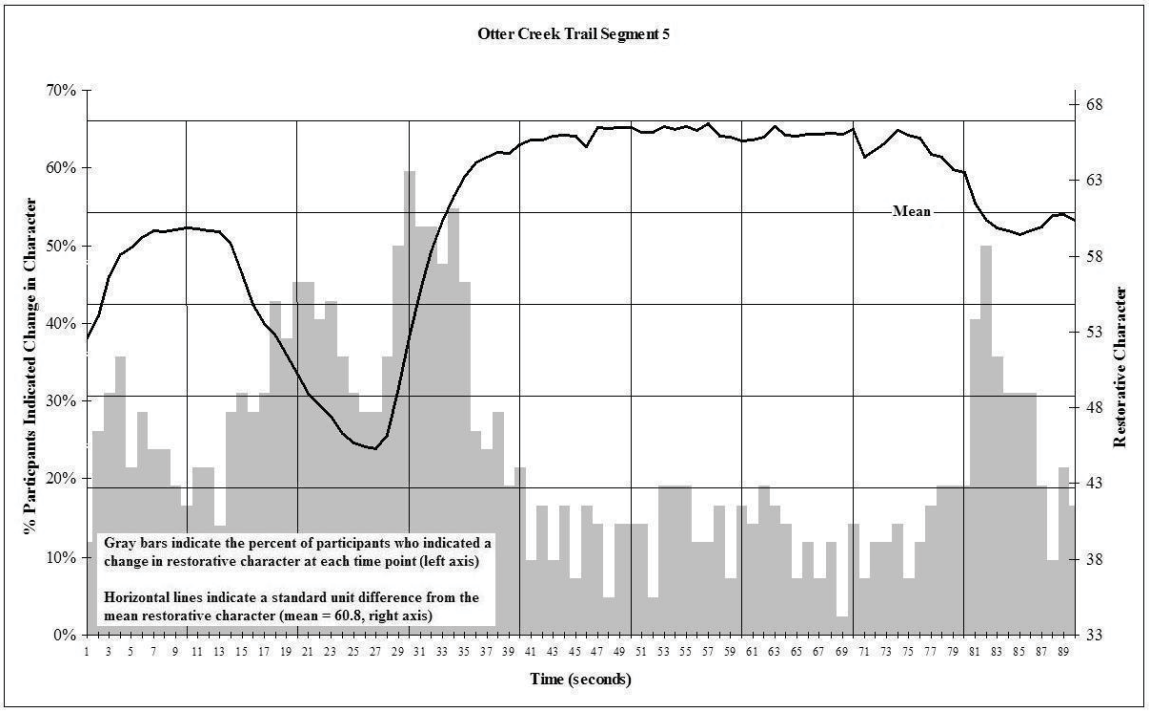


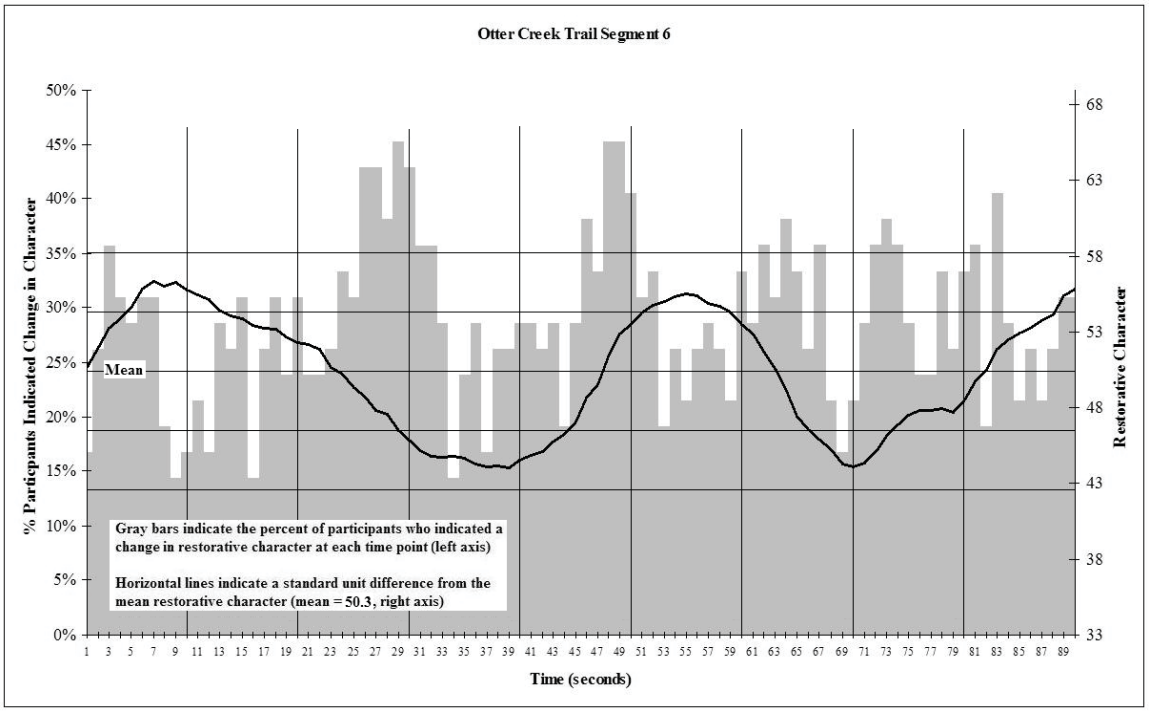


Figures 1 and 2.—Otter Creek Trail.

p<0.001) and eventfulness (n=313, r=0.26, p<0.001). Negative dial turns (detraction of restorative character) was related to eventfulness (n=311, r=0.13, p=0.027) and not quality (n=314, r=-0.04, p=0.533).

Two models predicting quality (F(3, 309)=124.6, Adjusted R^2=0.543, p<.001) and quantity (F(3, 306)=20.2, Adjusted R^2=0.157, p<.001) of restorative character were developed using stepwise regression (Tables 2 and 3). Independent variables considered in the analysis included the five components of restorative character, average restorative character across the video, and number of changes (positive and negative dial turns) in character. Average character and fascination (absorption in the surroundings) were more strongly related to overall quality when compared to quantity.



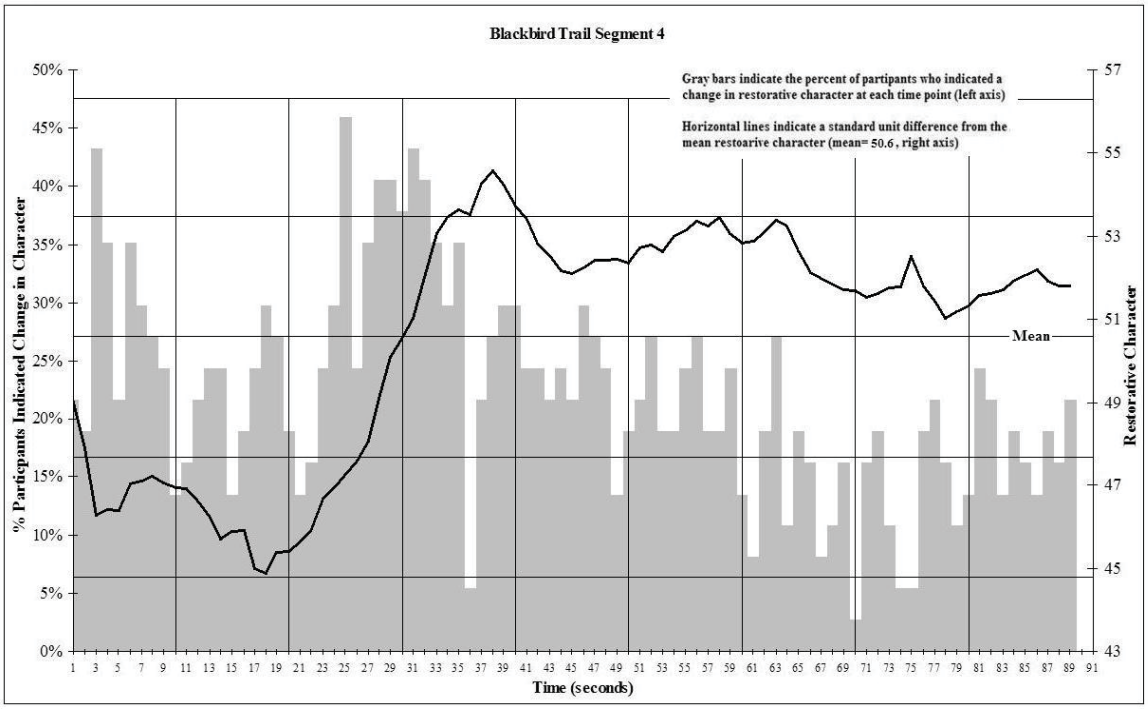


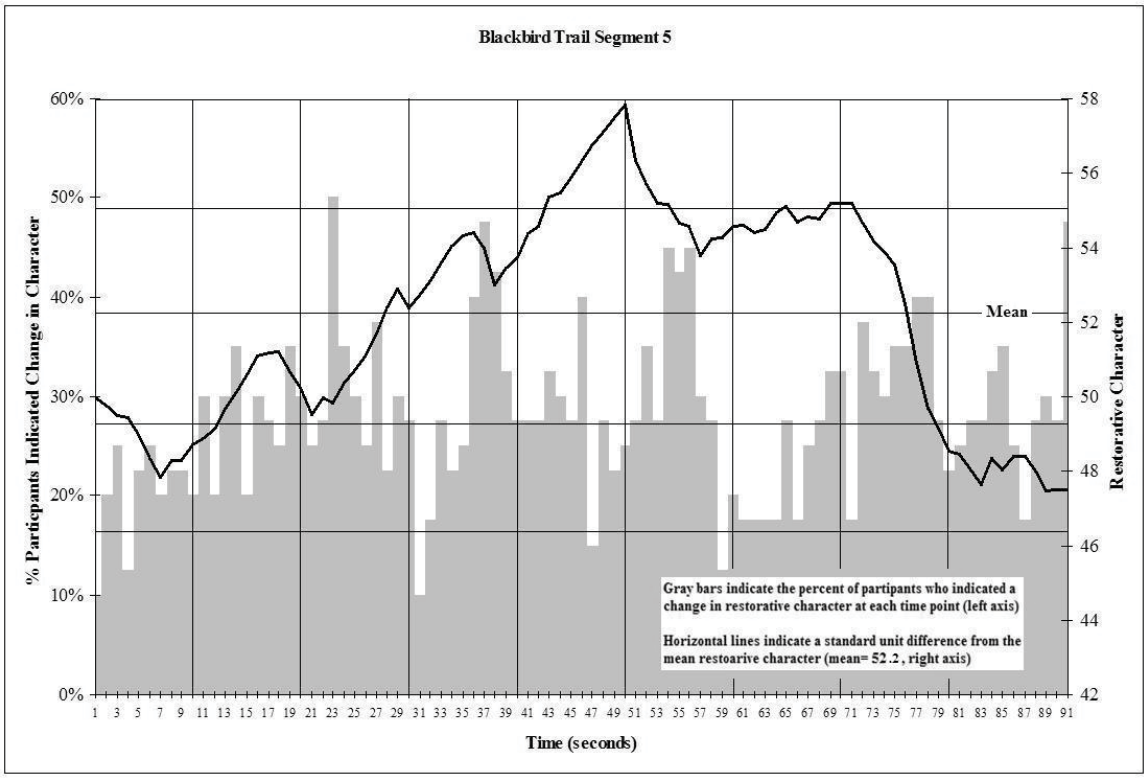
Figures 3 and 4.—Otter Creek Trail.

The number of positive changes in character and novelty (differences perceived in the environment) were more strongly related to quantity.

4.0 DISCUSSION

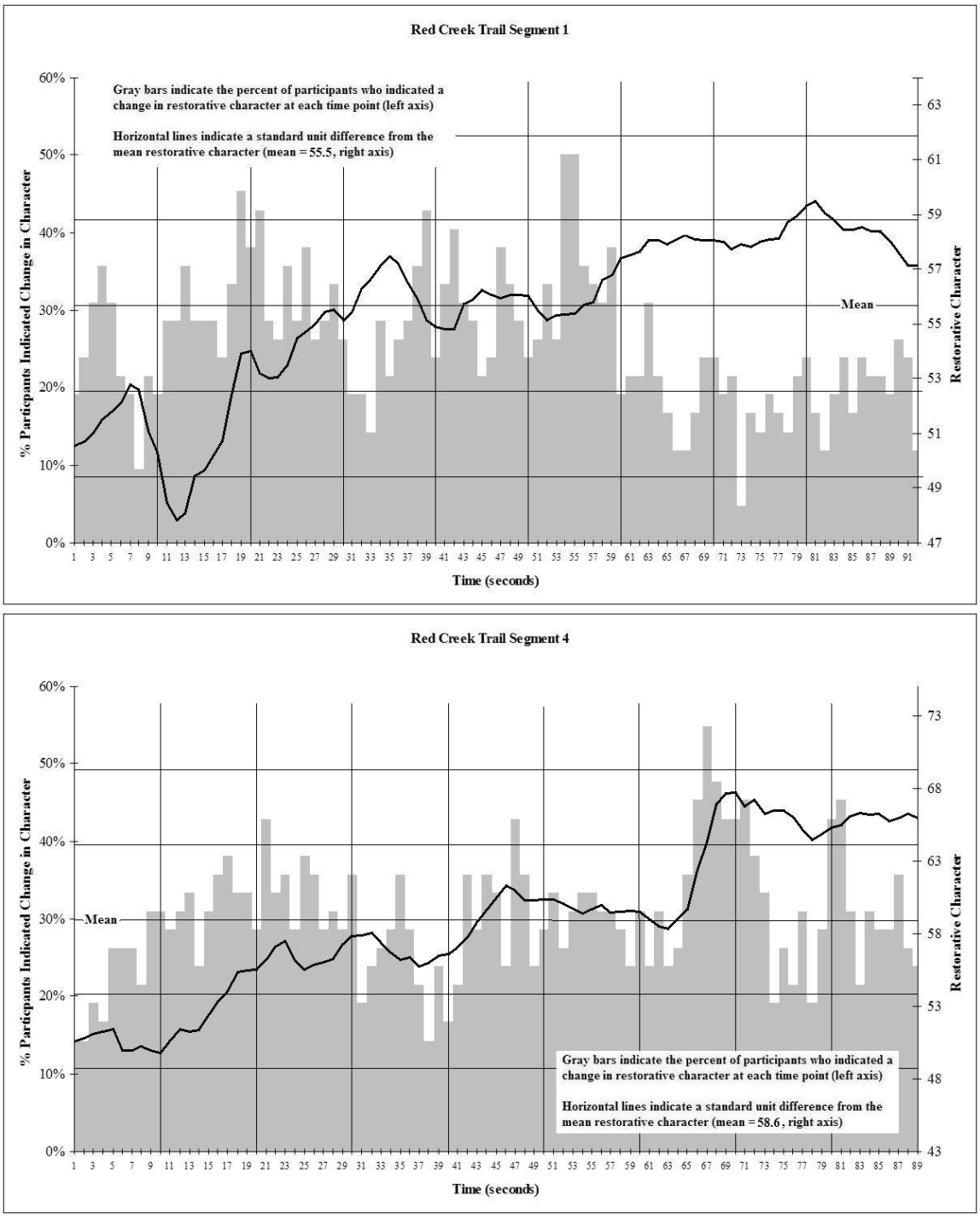
The purpose of this research was to use events as a unit of measurement and analysis to better understand whether and how trail design and resource impacts influence both the quantity and quality of restorative character. A total of 22 EoS (or approximately 2 EoS per minute of video) were identified in our study of three trails (eight trail segments). At least one EoS that detracted from the restorative character was identified in each of the study trails. These findings suggest that certain segments of





Figures 5 and 6.—Blackbird Knob Trail.

each study trail had conditions that significantly and negatively impacted restorative character and visitor experience. Without monitoring and managing these conditions over time, the situation is likely to worsen due to heavy visitor use on soils that are often poorly suited for trail use. The 2004 National Visitor Use Monitoring study indicated that forest trails are the most used facility in the Monongahela National Forest (USDA Forest Service 2006). Use of the Forest trails is likely to increase upon completion of Corridor H, especially in Dolly Sods and Otter Creek Wilderness areas.



Figures 7 and 8.—Red Creek Trail.

Given current visitor use trends, poor suitability of soils, and the number and wide range of EoS that are realized on trails, there is good reason to continue monitoring restorative conditions on trails, especially those conditions identified as most salient in this study. Well defined and narrow trails, park-like stands of trees, ground vegetation buffer along trails, glimpses/sounds of water, enclosures with views of openings, and vistas were among the setting attributes that contributed positively to restorative character. Mud, downed trees, eroded trails, undefined and wide trails, multitread, adequate trail clearing width, and encounters with other hikers were among the setting attributes that detracted from restorative character. These attributes should

Table 2.—Predictors of eventfulness

Variable	Regression coefficient (B)	Stand. coefficient (β)	Adj. R-Square
Intercept	3.510	-2.97	0.543
Average restorative character	.750	.477	
I would feel absorbed in these surroundings	5.052	.369	
Number of positive changes in restorative character	.184	.092	

Table 3.—Predictors of eventfulness

Variable	Regression coefficient (B)	Stand. coefficient (β)	Adj. R-Square
Intercept	6.523	1.668	0.157
Average restorative character	.455	.220	
Number of positive changes in restorative character	.554	.212	
In these surrounding I would feel I am in a different environment than usual	2.938	.176	

be considered when developing indicators for trail monitoring in the future.

The study findings also suggest that quality and quantity are different constructs and are related to different components of restorative character. Quality seems to be related more to the cognitive process associated with evaluating and experiencing fascination and average restorative character, whereas quantity seems to be more objective and more closely related to novelty and changes in restorative character—a process associated with direct perception. Events had both positive and negative qualities, and eventfulness was related to positive and negative changes in character. Rationalization is among several coping behaviors that have been used to explain why people consistently report high-quality evaluations regardless of conditions (Manning 1999, Festinger 1957). Given the relatively stronger association between positive qualities and eventfulness measures, it is possible that perceivers might tune-out some undesired information when evaluating trail conditions.

Providing more variety in scenery (e.g., spur trails and vistas) and minimizing resource impacts through management can contribute to more eventful and high-quality restorative opportunities for hikers—a more productive wilderness experience. When evaluating these conditions in the future, both quality and quantity measures are needed to more completely assess the productivity of recreation. Using quality as the only indicator of productivity might underestimate or overestimate the value of a recreation outing, and it can misinform managers about the needs of their visitors.

Additional research is needed to expand the ecological and external validity of the results reported in this study. The findings reported in this paper represent the perceptions of students that participated in a laboratory study. The perceptions of other stakeholders of the forest will need to be considered. Perhaps future research will confirm that recreation productivity (quality*eventfulness) might be a better global measure than either quality or quantity alone. That is, by pursuing only the goal of quality in recreation, we may be learning only part of the story.

5.0 CITATIONS

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PERCEPTIONS AND COGNITIONS FROM AN INTERPRETIVE TALK: COMPARING VISITOR RESPONSES TO EXPERT REVIEWS

Lisa K. Machnik
Department of Parks, Recreation and Tourism Management
Clemson University
263 Lehotsky Hall
Clemson, SC 29634-0735

Brett A. Wright
Clemson University

William E. Hammitt
Clemson University

Abstract.—Interpretation is a communication process which aims to reveal meanings and encourage relationships between visitors and natural or cultural resources rather than simply communicating factual information (Larsen 2003, National Association for Interpretation 2000, Tilden 1957). Effective interpretation offers visitors opportunities to connect with and perceive the resource as personally relevant. The purpose of this study was to determine visitors' responses to interpretive talks, and to compare these responses to opportunities for connection identified by trained National Park Service interpreters. Findings are discussed in terms of the similarities and differences of salient themes across these two groups.

1.0 INTRODUCTION

Interpreters in a variety of settings seek to provide inspiring, enjoyable, and memorable educational experiences while fostering the development of a personal stewardship ethic and encouraging increased appreciation and understanding of natural and/or cultural resources (NPS 2001). For example, a specific goal may be to influence the visitors' perspectives with respect to cultural or natural resources or protected area values. Interpreters do not simply transmit information; they are agents of discovery that aid visitors in developing their own relationships with the environment (Beckmann 1999, Hammitt 1981). Interpretation has been described as informal or free-choice learning, where motivation to attend programs is internal, attendance is voluntary, learners have diverse backgrounds, content is variable, and settings are varied (Falk 2005, Ham & Shew 1979, Koran et al. 2000). Visitors who attend interpretive talks are not a captive audience, and visitors' responses may or may not be what the interpreter intended (Falk 2005, Ham & Krumpe 1996).

An interpretive talk (hereafter, a "talk") is a planned presentation to an audience that provides opportunities for visitors to become aware of natural and/or cultural resources and the values or meanings they represent. For example, a talk may present the purpose of a place, as well as human relationships to and relationships among the natural, cultural, and/or historical environments (Beck & Cable 1998, NPS 2000). A talk may relate to and build on visitors' past experience and previous knowledge, or may be their first exposure to the subject. In a free-choice learning setting, constructivist learning theory suggests that visitors' responses to a talk will reflect the context of the experience.

Visitors' judgment of what is important or meaningful is related to their prior knowledge and experience as well as the social and cultural context of the experience (Cobb 2005, Falk 2005, Hammitt 1981). For example, responding to the story of an unknown soldier with joy or surprise versus responding with sadness may reflect an individual's previous beliefs or be influenced by a reaction from the social group. However, patterns or themes in what visitors find important and meaningful illustrate aspects of interpretive talks that are more or less effective. Past research suggests that while interpreters desire successful programs, they may not correctly identify visitor responses that result from experiences at an interpretive talk or employ techniques effective in eliciting desired responses (Anderson & Blahna 1996, Knapp & Benton 2004). Therefore, continued research and evaluation assessing the effectiveness of interpretation in stimulating desired visitor responses is necessary (Beckmann 1999, Roggenbuck & Propst 1981, Silverman & Barrie 2000).

Intuition and informal feedback may be the only sources of evaluation received by many interpreters. With limited funds, agencies may prioritize other areas

or focus on developing "new" interpretation instead of evaluating the "old" (Beckmann 1999). The National Park Service (NPS) Interpretive Development Program (IDP) conducts peer reviews of interpretive talks but does not compare the results of these reviews with associated visitors' responses. This omission suggests a need for research that enhances theoretical and practical understanding of the visitors' responses to interpretation, interpreters' expectations for those responses, and the relationship between the two.

1.1 Study Purpose, Objectives, and Research Questions

The purpose of this study was to: 1) identify visitors' responses to talks; 2) determine potential responses (opportunities for personal connections) identified through the NPS peer reviewer process; and 3) determine the relationship between these two sets of responses. The first objective was to identify how visitors responded to aspects of a talk, and what visitors found memorable and important.

R.Q. 1: What are visitors' affective and cognitive responses to interpretive talks?

The second objective was to explore the relationship between visitors' responses and the potential responses identified by NPS peer reviewers.

R.Q. 2: What are the potential responses identified by NPS peer reviewers, and what is the relationship between these expectations and visitors' reported responses?

2.0 METHODS

2.1 Study Area, Interpretive Talks, and Participants

This research involved the National Cemetery Talk at Gettysburg National Military Park in Pennsylvania. All visitors aged 18 and over were asked to complete a brief survey immediately after attending one of nine systematically identified interpretive talks over the course of one week in July, 2005. Talks were selected to capture morning and afternoon as well as weekday and weekend visitors. Five interpreters (one permanent and two seasonal NPS employees, one volunteer and one intern) presented the 35-45 minute talk.

2.2 Data Collection

All adult visitors arriving at the meeting point for the National Cemetery Talk were met by a researcher and invited to participate in the study. The first objective was addressed with open-ended questions in a survey instrument, for example, "What was memorable about the topic of this talk?" Additional questions explored visitors' responses to specific aspects of the interpretive talk. An overall response rate of 78 percent (n=117) was achieved. The second objective was addressed by recording each interpreter's talk on DVD for analysis by NPS peer reviewers.

2.3 Data Analysis

2.3.2 Visitors' Affective Responses

A thematic conceptual matrix was constructed for the analysis of visitors' affective responses to the talks through a process of data reduction, display, analysis and conclusion drawing (Miles & Huberman 1994). This process was based on the six primary emotion categories identified by Shaver et al. & (1987). As part of the on-site survey, visitors were asked to fill in the blanks to the question: "I felt ____ when the interpreter told us about ____." Based on Shaver et al.'s (1987) hierarchical cluster analysis, visitors' responses to ("I felt ___") were categorized. The second step in this process was to code visitor responses to ("… when the interpreter told us about ___") and to identify themes and patterns.

2.3.3 Visitors' Cognitive Responses

Miles and Huberman (1994) described clustering as the process of grouping items with similar patterns or characteristics and conceptualizing more general categories or themes through aggregation and comparison. Visitors were asked to describe, in their own words: 1) what the talk was about; 2) what was most memorable; and 3) what were the two most important things the interpreter said. These responses were coded and clustered in a series of three iterations.

2.3.4 NPS Peer Review Procedures

Part of the mission of the NPS IDP is to "connect people to parks so that parks are preserved and future generations may make their own meaningful resource connections" (NPS 2003). As part of the IDP program,

Table 1.—Visitors' affective responses to the interpretive talk

Emotion Category	Visitors' affective responses
Love	compassion, admiration, empathy, reverent, respect
Joy	amused, good, pleased, glad, grateful, blessed, thankful, uplifted, inspired, captivated, pride, patriotic, relief, moved, awe, impressed, wonderment, honored, warmed, touched, peaceful
Surprise	shocked, surprised, amazed, puzzled, distracted
Anger	disgust, repulsed, sickened, mad, concerned, terrible
Sadness	saddened, ashamed, sad, shame, small, sorrow, sorry, grief, 'a lump in my throat,' overcome, overwhelmed, moved, disappointed, sympathy, remorse, touched, humble, humility, solemn,
Fear	horror, disturbed, aghast, horrified, 'grossed out'

Table 2.—Frequencies (%) of visitors' affective responses for response categories

	Lincoln/ Gettysburg Address	Unknown/ ID/Soldiers	Casualties/ Sacrifice/ Death	Graves/ Cemetery	States/ Sides	Medical/ Townspeople	Other
Love	3	5	2			1	
Joy	22	10	4	5	3	2	3
Surprise	3	5	8	2	3		1
Anger		1	1	1	1	1	1
Sadness	3	16	30	4	5	3	3
Fear		3	5				
Total*	31%	40%	50%	12%	13%	7%	8%

*Total exceeds 100% due to multiple responses from visitors.

peer reviews are conducted to assess the achievement of professional standards within competencies, including that of the Interpretive Talk. Selected senior interpreters are trained as peer reviewers to evaluate talks using a standard rubric (the IDP Analysis Model). These evaluations focus on the identification of opportunities for visitors to form intellectual or emotional connection with the meanings inherent in the resource (NPS, 2003). Eight experienced NPS peer reviewers identified visitors' potential responses to the National Cemetery Talks. A descriptive matrix was developed to reduce and display the data corresponding to visitors' potential affective responses, paralleling the categories created from the visitors' responses. Visitors' potential cognitive responses were coded and clustered into groups representing major themes.

2.3.5 Comparing Visitors' Responses with NPS Peer Reviewers' Potential Responses

The second objective was to assess the relationship between visitors' responses and the potential responses identified by the NPS peer reviewers. The similarities and differences between visitors' reported affective responses and those identified by the peer reviewers and the thematic conceptual matrices for reported and potential affective responses were assessed. The relationship between visitors' reported cognitive responses and the potential responses identified by NPS peer reviewers was assessed through a review of the themes that emerged through the two separate processes of analysis. Specific examples referenced by both visitors and peer reviewers were also compared.

3.0 RESULTS

3.1 Visitors' Affective Responses to the Interpretive Talk

All six of Shaver et al.'s (1987) major emotion categories were represented in visitors' responses to the National Cemetery Talk (Table 1). The thematic conceptual matrix (Table 2) displays the percentage of affective responses associated with the major categories that emerged from the analysis of themes. All themes/categories elicited both positive and negative responses from visitors. For example, some visitors described feeling "honored" and "grateful" while other visitors felt "sad" and "grief" when the talk addressed the sacrifice of the soldiers.

Table 3.—Selected examples of visitor's responses. Theme 1: Lincoln and the Gettysburg Address

When asked…	Visitors responded…
What were the most important things the interpreter said?	Interpretation of Gettysburg Address past/present/future…Gettysburg Address- main reason Lincoln gave this address was to honor the dedication of the long sought after burial of the dead soldiers and the new birth of freedom… That the Gettysburg address is still relevant today…How important/poignant the words Lincoln spoke… What Lincoln said about consecrating the ground…Irony of Everett's speech- 2 hours, 42 pages of notes, Lincoln's speech- 2 minutes!... That the Gettysburg address may have many meanings
What was memorable about the topic of this talk?	Abe Lincoln's talk on what our nation is!...Gettysburg Address…In particular the Gettysburg Address breakdown…Lincoln was not the keynote speaker- he spoke for 2 minutes and that speech went down in history…Lincoln's speech and the 5 copies…Lincoln's role…President Lincoln's words at the dedication placing the Gettysburg address…Recitation of Gettysburg Address…The simple, concise elegance of Abraham Lincoln and his success at reuniting the nation… The universality of Lincoln's words

Table 4.—Selected examples of visitor's responses. Theme 2: The establishment, formation, and history of the Gettysburg National Cemetery

When asked…	Visitors responded…
What were the most important things the interpreter said?	How the cemetery was designed…Describe the importance of this area…The graves- how they moved them to make the cemetery…Beginnings of cemetery, facts, thoughts behind…1st National Cemetery in US…This was the first soldiers national cemetery…Importance of setting aside and consecrating and maintaining a cemetery…The meaning and history of the place…How the land was set aside immediately after the battle
What was memorable about the topic of this talk?	1st cemetery dedicated to soldiers…The layout of the cemetery…From battleground to hallowed ground…Gave vision of battlefield as it was- gave history of the development and idea of National Cemetery…Layout of cemetery…The founding of the cemetery…The geometry on how they were laid out

Table 5.—Selected examples of visitor's responses. Theme 3: Casualties, sacrifice and death

When asked…	Visitors responded…
What were the most important things the interpreter said?	The number of dead…What to do with all the bodies…Stressing the number of casualties and dead…It's important to remember the sacrifice…The quantities/number of soldiers…The suffering that consumed the landscape here 143 years ago…Explanation of the loss of life…Amount of devastation during the battle…The awful aftermath of senseless killing…How government was very unprepared to handle casualties of war
What was memorable about the topic of this talk?	51 thousand men lost their lives, thousand buried in mass graves…Ambulance train 17 miles long, 1st Army field hospital established at camp Letterman… Hearing about the blood, disease, and death. I had never heard about the death of so many horses…Learning about how casualties were cared for… More people die from disease than bullets, infection, the smell of death permeating the fields…Number of lives lost and personal accounts and words of the people who witnessed the war, descriptions of wounded… The suffering

3.2 Visitors' Cognitive Responses to the Interpretive Talk

Six major clusters or themes emerged from the analysis of visitors' responses. These themes were similar to those identified in the analysis of visitors' affective responses. Visitors described the importance of learning about Lincoln and the Gettysburg Address (Table 3). A second theme was the establishment, formation, and history of the National Cemetery at Gettysburg. Visitors recognized the significance of the cemetery from a variety of points of view (Table 4). A third theme reflected visitors' awareness, insight, and increased understanding of the casualties and deaths that resulted from the battle (Table 5). Soldiers' identification was another primary theme. Sub-themes included: 1) the soldiers' fear of dying and remaining unidentified (plight of the unknown soldier), 2) attempts and efforts to identify soldiers, and 3) recognition of individual soldiers and their stories

Table 6.—Selected examples of visitor's responses. Theme 4: Soldiers' identification

When asked…	Visitors responded…
What were the most important things the interpreter said?	How the dead were identified…We should take the time to read the names of those interred… Information about the unknown soldiers…Soldier identification…That so many were never identified… Magnitude of "unknowns" buried in cemetery surprising…The unknown…The struggle to ID the dead…identifying the New Yorker…How soldiers were identified…Identification of dead
What was memorable about the topic of this talk?	The process of ID before internment…Burying and identifying the dead soldiers- could tell North and South by underwear…How the dead were identified…How one soldier was identified by the picture of his kids… The many unknown dead soldiers…The method used to identify the soldier from New York… The unknown soldiers, how difficult identifying soldiers…How much time and care was taking to identify and properly bury every soldier who fell

Table 7.—Selected examples of visitor's responses. Theme 5: Scenes and surroundings

When asked…	Visitors responded…
What were the most important things the interpreter said?	Description of battle…Baseness of past battle mess…Description of battle and scene…The suffering that consumed the landscape here 143 years ago…Knee high in July…Describing the battle…How townspeople and soldiers helped bury all… Amount of devastation during the battle…Hearing about the smells…How the site figured in the battle…Words and stories of people who returned descriptions of scene
What was memorable about the topic of this talk?	"What would you see"….Aftermath of battle… Excellent "visualization" of the effects of all aspects of the battle: help audience see the real picture…So peaceful a piece of land saw so much violence, yet is returned again to a peaceful resting place…Description of devastation of area…What the sight must have been like in the days after it was over…The description of what the residents would have seen/ smelled, how they reacted…Personal accounts and words of the people who witnessed the war

Table 8.—Selected examples of visitor's responses. Theme 6: Honor/respect/remember

When asked…	Visitors responded…
What were the most important things the interpreter said?	Never forget to honor soldiers and their commitment…The importance of the cost of freedom…"There are no common men buried here"…About honoring the soldiers even if they could not be identified… Honor, valor, and love of country shed in blood and sweat…That the men should not be forgotten… Ground was dedicated by the men who fought…Honoring, remembering, preserving…Respect the fallen soldiers
What was memorable about the topic of this talk?	Importance of honoring war dead…Importance of honoring sacrifice of soldiers, today…The closing statement of needing to remember and honor all there and those since…The obvious respect for the men who lost their lives in the war as well as this battle…The lives of all the soldiers unknown or otherwise, Union or Confederate are honored for their valor…

(Table 6). Insight into the surroundings prior to the conflict, scenes of battle, and the aftermath for both soldiers and townspeople (Table 7) and the need to honor, respect, and remember the soldiers (Table 8) were also distinct themes for the visitors.

3.3 Relationship between Visitors' Responses and Peer Reviewers' Expected Potential Responses

3.3.1 Affective Responses

There were distinct similarities in visitors' reported affective responses and the potential responses identified by the peer reviewers. Visitors described feeling uplifted and proud, and having a sense of admiration regarding Lincoln's role and the Gettysburg Address. Peer reviewers also identified this major theme and suggested that visitors might feel admiration, pride, and a sense that Lincoln's speech is still relevant today. Across five of the six categories, peer reviewers recognized the potential for a range of both positive and negative responses. Feeling respect for and sadness about the unidentified soldiers was described by both visitors and peer reviewers; grief and pride could be experienced regarding the casualties suffered. However, in the states/sides category, a small

number of visitors reported an affective response (e.g., sorrow about the segregation of the dead, pride in the actions of soldiers from a specific state). Peer reviewers expected potential awareness or insight regarding the actions of states or sides, but did not recognize potential affective/emotional responses to these aspects. Visitors' responses may be a result of the individual visitors' previous knowledge or interests guiding their response, and may be an area for further investigation.

3.3.2 Cognitive Responses

Peer reviewers' expected potential responses were classified into six major themes. First, peer reviewers expected visitors to learn about the role of Abraham Lincoln and the Gettysburg Address. For example, peer reviewers believed that interpreters' descriptions, quotes, storytelling, and "comparing and contrasting" different events offered visitors opportunities for insight into why Lincoln's speech is still relevant, understanding of the political background, and awareness of the brevity of his words. These potential responses were reflected in visitors' own words (Table 3). Second, opportunities to understand more about the history and formation of the national cemetery were described. Peer reviewers suggested that visitors might gain insight into the planning, design, and completion of the cemetery. Explanation of the intended purpose of the cemetery and quotes describing the consecration of the ground may have promoted visitor learning and a sense of discovery (Table 4). Third, the presentation of statistics (such as the number of soldiers killed and wounded), definitions of 'casualty,' and sensory descriptions of the battlefield and its aftermath were all expected to provoke awareness, comprehension, revelation, and discovery. Peer reviewers expected visitors to gain insight and understanding into the number of casualties—not just the sheer number of human bodies but also the incredible number of wounded and the resources needed to care for them. In addition, visitors could potentially be expected to learn about non-human casualties (horses on the battlefield), the difficulty of burying so many dead, the types of wounds suffered by the soldiers, and the lack of medical care. These potential responses reflect the visitors' responses in Table 5.

The fourth theme, identification, was prominent for peer reviewers. Two primary sub-themes were: 1) that many soldiers were afraid of dying and remaining unidentified, and that they would take steps to prevent this from happening, and 2) the process and techniques of identifying dead soldiers was difficult and could be overwhelming. Through stories of individual soldiers, examples, and explanations, interpreters offered opportunities for visitors to learn about the need for and process of identification. Peer reviewers suggested that the comparison and contrast in identification techniques then and now may have provoked insight, or that the practice of brainstorming identification techniques with the audience may have promoted visitor learning and discovery (Table 6).

Peer reviewers also expected visitors to gain insight into what the conditions of the time might have been for both soldiers and townspeople. For this fifth theme, interpreters told stories and described scenes to help visitors understand what it may have been like to have the fear of war all around them; visitors could learn about the mud, the heat and the cold, the stench of death and overall destruction, gaining awareness of the physical and social impact of such a battle (Table 7). The sixth theme, honor/respect/remembrance, was related to the history and formation of the national cemetery, but also reflected an expectation for visitors to understand and appreciate the need to acknowledge the soldiers' sacrifice. For example, while a description of the layout of the cemetery may have promoted understanding of the purpose of the cemetery, stories of individual soldiers and being present in the field of unknowns may have deepened this insight for visitors (Table 8).

4.0 DISCUSSION AND IMPLICATIONS

A variety of responses can be associated with similar concepts (i.e., stories of the identification of unknown soldiers can provoke both joy and sadness). In addition, the same concept may provoke affective, cognitive, or a combination of responses among different visitors. Although visitors construct their own meaning from the experience of an interpretive talk, patterns and similarities in the reported results suggest interpretive techniques

that vary in their effectiveness. For example, affective and cognitive responses to specific examples, such as stories of individual soldiers and surprising statistics, were regularly cited by both visitors and peer reviewers. This finding suggests that while visitors appreciate specific information, sharing stories of individuals that visitors can relate to across a variety of contexts is also an effective technique for eliciting responses.

4.1 Practical and Theoretical Application

As a method for analysis of the effectiveness of NPS interpretive talks in providing opportunities for visitors to experience and connect with park resources, this study suggests a format for identifying and understanding visitors' responses. It has been shown that interpretive programs have specific, measurable results. Understanding these results may prove useful in training as well as in ongoing program evaluation. This research may further understanding of how interpretation, as a form of informal/free-choice learning, results in affective, cognitive, and conative responses. Thus, understanding of the results of interpretation is extended beyond measures of satisfaction or tests of retained knowledge. Recognizing the relationship between visitors' reported responses and the responses predicted by peer reviewers may enable managers and interpreters to effectively communicate specific information and to achieve the goals of interpretation. For example, knowing that visitors respond positively to "stories" of individual soldiers, interpreters may integrate messages of resource stewardship to further site-specific goals.

4.2 Limitations and Future Research

The results of this research suggest additional questions. First, why do some visitors respond differently to similar objects, ideas, or resources? Why were some saddened and horrified, while others were intrigued? In addition, the NPS peer evaluators who assessed the programs used in this research were senior employees. Would the same expectations and results be achieved with peer reviewers who were less experienced (including seasonal staff, volunteers, and interns, who make up a large number of the interpretive workforce), or with a larger number of reviewers? Finally, this research addressed the visitors' immediate response to an interpretive talk. As Whatley (1995) suggests, the success or failure of an interpretive program is determined not only by the visitors' immediate perceptions of personal relevance, but also by their understanding and recognition of program content over time. Thus, future research could focus on the affective loading of different cognitive aspects of interpretive talks and other forms of interpretation, the expectations of a range of NPS interpreters, and the results of interpretive talks over time.

5.0 ACKNOWLEDGMENTS

This research was funded by the National Park Service. The staff of Gettysburg National Park is thanked for supporting and participating in this research. The support and assistance of the NPS Interpretive Development Program is gratefully acknowledged.

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Environmental Education and Experimental Learning

ENVIRONMENTAL EDUCATION AND TECHNOLOGY: USING A REMOTELY OPERATED VEHICLE TO CONNECT WITH NATURE

Mark Gleason
Ph.D. Candidate, Michigan Technological University
813 Ottawa Street, Harbor Springs, MI 49740
gleason@mtu.edu

Laurie Harmon
Assistant Professor, George Mason University

Kwame Boakye-Agyei
Graduate Assistant, George Mason University

Abstract.—One hundred seven young people (12-14 years old) and 183 adults (25-86 years old) used an underwater remotely operated vehicle (ROV) to explore shipwrecks and marine habitats in the Great Lakes and various inland lakes during the summer of 2005. Content analysis of responses regarding the types of impact the ROV had on their perception and experience with the natural environment revealed various positive perceptions. Positive impacts expressed included increased accessibility to marine environments, opportunities for experiential education, and ease of using the ROV. Although less frequently noted, negative impacts were also expressed, primarily focusing on the potential for environmental disturbance. However, the disturbances noted were relative to the boat in which the ROV was used rather than the ROV itself.

1.0 INTRODUCTION

Today more than ever before, technology is playing a larger role in the everyday life of most Americans. There is a perception that this increase in the use of technology has led to a change in the relationship between individuals and nature (Louv 2005). That change can include less time outside and an emphasis on activities that result in a separation of the individual from nature. Although technological equipment is often cited as creating a barrier between people and nature or drawing them away from the natural environment, it may also be possible that this same equipment can enhance individual interactions with nature.

Using the marine environment as one representation of nature, this study sought to examine impacts of underwater ROV activities on individuals' interactions with and connection to the natural environment. As part of this study, educators were asked in focus groups what their perception was of the impact of technology on young people's relationship with nature. Their overwhelming response was that technology is playing a role in the distancing of young people from the outdoors through a change in activities. According to these educators, young people are choosing to relate to the outdoors through computers and other formats that are technology-based. Instead of directly being in nature, the youth of America are visiting web sites to have their nature experience. For the natural resource manager, this change in the relationship brought about by the increased use in technology could have major implications in the long-term public support

2.0 PREVIOUS WORK

Researchers have suggested that technology is affecting our way of interacting with nature. Ewert & Shultis (1999), for example, question whether individuals are using technology to access wild places or are visiting wild places to use technology. Louv (2005) recently discussed how young people are interacting less frequently with the outdoors, in part, because of their preference for indoor technology usage. At the very least, he suggested, young people are having a different interaction with nature than the older generations of Americans had. Conversely, Ballard's (2006) current work with ROVs in youth education provides anecdotal evidence suggesting technology is useful in connecting young people to the natural environment. However, little empirical evidence is available to support that observation.

A review of the literature relative to technology and its use in facilitating human connections to the natural environment, reveals minimal empirical evidence. Therefore, this study was designed and undertaken to add to that knowledge base.

2.1 Similar Programs

The ROV programs developed by Ballard in the early 1990s currently deliver educational activities to thousands of young people through an effort referred

to as the Jason Project. The Jason Project uses ROV technology to foster an understanding of underwater resources. Utilizing distance-learning techniques, Ballard undertakes programs that involve ROVs transmitting live footage of underwater explorations from distant locations to school groups in the United States. Often those school groups have an opportunity to view these programs in a museum setting. These programs are primarily directed toward young people with the primary objective to develop not only a stronger interest in science but also a greater understanding of the natural resources located underwater through observation of these activities. The Great Lakes ROV programs that are being used in this study are modeled after the Jason Project programs.

An additional national program referred to as Marine Advanced Technology Education (MATE) involves the design and construction of an ROV by groups of individuals. College and high school students compete with their self-designed ROVs to complete a series of underwater tasks (i.e., a mission). This study included one MATE program that was sponsored by Thunder Bay Sanctuary that involved educators constructing their own ROV.

3.0 METHODS

We used a small underwater robot to test how certain technological advances could be incorporated into natural resources educational programming and influence an individual's connection to nature. Worldwide there are many types of ROVs engaged in a number of activities, including oil exploration, military applications, and research. The ROV used for this study is small, weighing less than 15 pounds. It has two TV cameras, one color and one black /white, a manipulating arm to pick up small items, forward and rear lights, and three motors that propel it forward, backward, upward, and downward through the water. Power and control is supplied through an attached tether that allows for operation from the surface. This ROV has the capability to reach depths of 500 feet underwater, but rarely went below 150 feet in the course of this study.

3.1 Data Collection

Several study sites were identified whose current environmental education programs would also be able to facilitate using the ROV as part of an educational program. The ROV was either observed or operated by participants at each location. The educational programs were located in the Great Lakes region and included small inland lakes as well as the larger lakes Huron, Michigan, and Superior.

This study was conducted in three phases. First, three separate focus groups were conducted with 20 to 30 K-12 educators. Pre-developed interview questions guided the focus group discussions; however, participants were encouraged to contribute their personal experiences and ideas for developing an effective educational program related to the ROV. Data gathered from this stage of the study were used to develop the educational program tested in phase two. In addition, focus group comments were used in developing the questionnaire that was part of phase three of the study.

Phase two of this study involved the pilot testing of the educational program to be used in phase three. The goal was to design the ROV program in such a way that it could be repeatedly delivered consistently. After over 70 pilot programs, two final consistent programs were adopted. Those two programs were then used for the final phase of the study.

In phase three of the study, 27 programs were conducted with the ROV, and data were collected using written questionnaires. Two basic programs were used in this phase of the study. The first program involved participants observing the ROV in operation but not operating the vehicle. For this program, a technician operated the ROV at different depths of the lake(s) (e.g. 2 feet to 70 feet, 2 feet to100+feet). While the technician operated the ROV, an environmental educator explained changes at each depth. In the observed programs, there were three to four stops per outing.

The second program was designed to allow participants to operate the ROV themselves as well as observe

Table 1.—Location distribution and mean age of all respondents

Location	Program content & design	Number of respondents	Age of respondents
Thunder Bay Marine Sanctuary	Adult educators constructed own ROV & operated study ROV in a pool	13	Mean = 45.77, s.d. = 11.08
Lake Michigan	Environmental education program for adults to observe	16	Mean = 50.73, s.d. = 15.28
Black Lake	Environmental education program for adults to observe	37	Mean = 52.97, s.d. 19.70
Douglas Lake	Environmental education program for adults to observe	99	Mean = 56.20, s.d. = 15.08
Clear Lake	Environmental education programs 8-person youth groups with adult educators	122	Mean = 14.15, s.d. = 9.00

colleagues operating the ROV. Similar to the observation-only programs, the ROV was used to explore underwater but only in shallow water usually at depths of 2 feet to 20 feet. In these programs, minimal educational interpretation was offered to participants, but self-directed education using visual aids such as fish charts were available.

3.2 Sampling

One of the goals for this study was to include responses from both younger and older age groups, as well as relatively equal representation from males and females. Every student participant and educator participant in each of the 27 programs conducted during phase three of the study was asked to complete a questionnaire. Ninety percent of adults (i.e., educators) and 75 percent of youth (i.e., students) completed questionnaires. Adult questionnaires were completed; however, 12 percent of the youth questionnaires were incomplete and unusable, resulting in final samples of 107 youth and 183 adults.

4.0 RESULTS

A total of 290 respondents completed the questionnaire during the summer months of 2005 from five study sites (see Table 1 for complete breakdowns). Ages ranged from 10 to 86 years old, but the Clear Lake site was predominantly composed of 13- and 14-year-olds.

Respondents were evenly split into women (49.0%) and men (51.0%) but lacked ethnic diversity (i.e., 95.1% indicated they were white or Caucasian). All of the respondents were from Michigan and among the adult respondents, residences varied from farm or rural area to large city (see Table 2). However, they expressed having a higher income than the average Michigan resident (i.e., 2005 median income = $44,476) (U.S.Census Bureau 2005).

When asked about their overall perceptions of the ROV in relation to their recent interaction, respondents indicated agreement predominantly with positive aspects of the vehicle (See Table 3). However, some negative perceptions were noted as well.

Among respondent, 83 percent indicated the ROV impacted their natural resources educational experience. When further asked to identify specific advantages and drawbacks to using the underwater ROV, respondents expressed a variety of opinions. Positive comments were expressed more frequently than drawbacks. Three primary categories of advantages to using the

Table 2.—Characteristics of adult respondents

Characteristic	Responses
Residence	
Farm/Rural	26.9%
Small Town	26.9%
Large Town/Small City	12.6%
Medium City	21.6%
Large City	12.0%
Income	
<$20,000	3.0 %
$20,000 - $39,000	13.5%
$40,000 - $59,000	18.0%
$60,000 - $79,000	13.5%
$80,000 - $99,000	18.0%
$100,000 or more	33.8%

Table 3.—Perceptions of the underwater remotely operated vehicle expressed by all respondents

Perception	Mean	Standard Deviation
The ROV is creative	4.50	.99
The ROV is exciting	4.38	.98
The ROV is educational	4.36	1.04
The ROV helped me to understand the natural resources	4.17	1.08
The ROV was easy to operate	3.82	1.23
The ROV was relaxing to operate	3.59	1.22
The ROV was difficult to operate	2.03	1.27
The ROV was stressful to operate	1.75	1.22
The ROV was boring to operate	1.38	.91

*Responses were on a 5-point scale with 1=strongly disagree and 5=strongly agree

ROV in their educational programs were identified: environmental education, first-hand experience, and, accessibility. Exploration, science and research, fun, natural resource conservation, technology, low impact, safety, interesting, and natural resource connection were also identified as advantages. Environmental education was expressed by older participants in statements such as:

> *"Better education and more interest in conservation using the ROV."*
> *"Better understanding of human impacts on natural resources."*

Both younger and older respondents indicated they felt the ROV was a good opportunity for interacting first-hand with marine environments they may not have previously been able to experience. For example, one Clearwater student stated:

> "Being able to see what is below makes it more real."

Meanwhile, other respondents indicated:

> "Visuals speak a thousand words."
> "We are visual creatures and need to see and feel what is going on versus what is read." Adult, 48 yrs. Old.

Repeatedly, participants in the ROV programs were also found to express the importance of increasing accessibility to marine environments. This young student, for example, said:

> *"The exploration of natural resources is available to everyone."*

Again, although positive comments were expressed more frequently, drawbacks were also identified. The most predominant concern was related to the environment. Respondents were concerned about the potential for environmental degradation based on the actual ROV, as in this statement:

> *"Potentially intrusive"*

However, they were also concerned about the potential problems of the vehicle used to bring the ROV to open water as seen in this statement:

> *"Big boats could leak gas and oil to disturb shorelines."*

Finally, some respondents indicated a general concern with technology, rather than the ROV specifically as exemplified by this expression:

> *"Technology provides means of damaging the natural resources, e.g. jet skis."*

Additional concerns identified were the cost of operating and maintaining the ROV, and the potential for replacing humans, e.g., divers, in particular job situations. Overall, though, respondents were generally in agreement that the advantages of using an underwater remotely operated vehicle were important enough to negate potential drawbacks.

5.0 DISCUSSION AND IMPLICATIONS

The purpose of the study was to examine impacts of an underwater ROV on individuals' interactions with and connection to the natural environment. Over 90 percent of respondents were in agreement that the ROV positively impacted human interaction with the environment and perceived the use of ROVs as creative, exciting, and educational. To most respondents, the use of ROVs enhanced their environmental education experience by offering hands-on, real-time observation and access when exploring nature.

ROVs were found to create access to previously minimally explored water areas. The ROV can provide opportunities for exploration to individuals who previously did not have access to marine environments. It can also provide a safe alternative to divers, who may be likely to encounter dangers resulting in underwater accidents. However, using an ROV rather than a diver can negatively impact divers, who have long been relied upon to descend to the depths of harbor waters to investigate ships, docks, and other structures.

ROVs were also found to facilitate the experiential learning process. Visitors seek benefits when visiting recreational sites such as becoming more knowledgeable about nature, and learning more about how visual information is gathered. ROVs take advantage of our visually engaging nature.

Generally, the overall position of respondents was positive, although there were also potential limitations and difficulties. Some respondents felt using the ROV was a stressful and boring experience. Though the potential exists for high levels of engagement in an educational setting, the methods for best utilizing ROVs in classrooms are yet to be fully explored.

In summary, participants in marine-based environmental education program perceived the use of ROVs as an overwhelmingly positive enhancement to the program. Although the majority of respondents indicated that ROVs impacted their experiences, for those whose experiences were not impacted, it would be valuable to know the reasons for that outcome. The effectiveness of ROVs may vary based on different learning styles, and further research is suggested to identify that relationship.

Other suggestions for future studies include measuring the differences between direct use and observed use of the ROV, and assessing learning outcomes. An interactive long-distance education where students and educators at additional schools and universities participate in real-time live chats via internet with streaming videos from expedition sites is currently planned as a future study. Students worldwide will be able to witness, study, and share experiences as a long-distance training program using ROVs as a tool in marine education and international networking.

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Note: The authors wish to thank VideoRay for their continuing support of this research. The ROV used in this study was built by VideoRay, based in Phoenixville, PA. They facilitated this study by offering technical operating advice as well as equipment support.

SCHOOL TO COMMUNITY: SERVICE LEARNING IN HOSPITALIY AND TOURISM

Kimberly Monk
Associate Professor of Hospitality, Tourism and Culinary Arts
Southern New Hampshire University
2500 North River Road
Manchester, NH 03106

Jessica Bourdeau
Southern New Hampshire University

Michele Capra
Southern New Hampshire University

Abstract.—In the effort to augment hospitality and tourism education beyond classroom instruction and internships, the added instructional methodology of community service learning is suggested. Service learning is an instructional method where students learn and develop through active participation in organized experiences that meet actual needs, increasing their sense of social responsibility and citizenship.

For the purposes of this paper, 60 hospitality and tourism students completed service learning activities in a variety of communities that were connected either to a course assignment or as an expectation of a student organization and excluded internships. Participants were able to address issues relative to value, satisfaction, and competencies obtained. This experience has proven to be successful in that it was unique and flexible and offered a variety of opportunities for students to learn from the community. Findings indicated the majority of the participants were mostly satisfied with their experiences and their preparation for future employability and civic duties.

1.0. PURPOSE OF THE STUDY

Evidence on service learning effectiveness is limited, especially as it relates to hospitality and tourism education. This exploratory paper describes the extent and types of involvement of hospitality students in community service activities, their perceptions regarding the value of their experiences, and the ability of the experiences to prepare them for future hospitality and tourism employment. By integrating efforts to increase student involvement in public service with hospitality and tourism curricular reforms that encourage active learning and critical thinking, it may be possible to establish a model of undergraduate education that promotes the development of responsible citizens.

2.0. LITERATURE REVIEW

Learning is complex and multidimensional and appears to be inextricably connected to the learners' experiences (Dewey 1938, Knowles 1988). Humanistic learning theorists see learning as grounded in experience, involving both affective and cognitive processes that lead to pervasive changes (Rogers 2005). Socio-cultural approaches to learning are based on the concept that human activities take place in cultural contexts, are mediated by language and other symbolic systems, and can be best understood when investigated in their historical development (Knowles 1988, Vygotsky 1978). These theoretical underpinnings emphasize that learning takes place not only through observation and modeling, but also in social settings.

2.1. Constructivism in Education

In applying constructivism to learning, two primary models, those of Piaget (1970) and Vygotsky (1978) differed in the focus of attention and the role of formal academic knowledge. Piaget's (1970) "cognitive constructivist" (p.10) model focused on the individual and his/her construction of meaning, emphasizing the importance of language and social interactions. He wrote "There is no longer any need to choose between the primacy of the social or that of the intellect; the collective intellect is the social equilibrium resulting from the interplay of the operations that enter into all cooperation" (p. 114). Vygotsky's (1978) model of "situated social constructivism" (p. 3) focused on language and social interactions in which cultural meanings were shared and internalized. He suggested that "increased learning will occur if the specialist uses a learner-centered approach, where facilitators utilize the learner's experiences and knowledge in the learning process, where they develop methods in which students interact and reflect on the subject matter" (p. 3).

Meaningful learning takes place when the subject matter is relevant to the personal interests of the student. According to Bostock (2000), educational identities are shaped by curricula in three domains: those of knowledge (based in discipline-specific competencies to develop subject specialists); action (competencies acquired through clinical practice), and self (educational identity formed in relation to a subject). Freire (2000) focused on the learner's experience as essential to the ideology that places the learner at the center of the process of education and describes the process of "conscientization, by which adults achieve a deepening awareness of both the socio-cultural reality which shapes their lives and their capacity to transform that reality through action upon it" (p. 64). The importance of social construction of knowledge and reflective ***learning*** in the workplace is further supported by Marsick (1988), whose central arguments are grounded in the need for people in modern organizations to be prepared for change: to be capable of independent thinking and risk analysis to a level commensurate with expectations in a globally competitive society.

It appears, therefore, that a learner-centered approach with opportunities to explore through questions, discussions and action learning are necessary. Working within the social constructivist framework, Trentin (1999), states that the concept of learning rests on a view that knowledge is something that is not delivered to students, but that emerges from active dialogue. Drawing on Vygotsky's (1978) theory that conceptual understandings are developed through verbal interaction, Bostock (2000) found that a socially constructed learning environment is essential for effective learning.

2.2. Service Learning

Bringle and Hatcher (1995), supported service learning as a course-based, credit-bearing educational experience in which students (a) participate in an organized service activity in such a way that meets identified community needs, and (b) reflect on the service activity to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility. Service learning, a form of constructivist's education, engages students with meaningful community service that is linked to the student's academic experience. The power of learning through experience allows students to use multiple senses, and increase retention of what is learned as the process of discovery of knowledge and solutions builds competence and confidence. Extending the classroom into the community provides opportunities for reflective activities designed to develop students' critical thinking skills.

2.3. Service Learning and the Hospitality Industry

Goodman and Sprague (1991) believed that career and vocational educators focused too much on preparing their students for the needs of the prevailing job market and not enough for the future. Other educators agree; Schlager et al. (1999) support the combination of on-the-job training and classroom learning as the most effective way to prepare future managers for productive careers in the hospitality industry, providing students with breath and specialization. Knowledge sources are de-centralized, as practical teaching shifts from the instructor, and students learn lessons from their interactions with industry leaders and customers (Smith & Cooper 2000).

The changing hospitality environment and the development of graduates are fundamental to the evolution of a flexible, efficient workforce. Usher and Edwards (2001) described learning that is oriented to performativity, as that which seeks to optimize the effectiveness of economic and social systems. A solution is to engage hospitality and tourism students in community-based academic service learning which links the outside community with university instruction or learning activities. Service learning represents an effective teaching tool providing students with valuable academic, practical, and introspective knowledge as well as direct experience with a variety of people (Papamarcos 2005). A strength of service learning projects is that they contain both concrete experiences and reflective opportunities. This allows students to be responsive to service learning experiences regardless of their learning styles. Most important, to be actively involved, students must engage in such higher-order thinking tasks as analysis, synthesis, and evaluation. Kolb's (1984) experiential learning model supported the claim that service learning has a positive effect on students and the community. He proposed that

individuals may cognitively process knowledge in one of four different ways: concrete experiences, reflective observations, abstract conceptualizations, or active experimentations.

3.0. METHODOLOGY

A phenomenological qualitative methodology was used to provide a descriptive account of service learning from the perspectives of hospitality and tourism students. Phenomenology is a descriptive method that seeks to grasp the essential character of the object's experience. A qualitative approach originating in urban studies and other social sciences permits the researcher to focus on developing an in-depth analysis and allows approaching fieldwork without being constrained by predetermined categories of analysis (Creswell 1998). The design of the questionnaire and descriptive interview questions was to discover "what events, beliefs, attitudes, or policies [shaped] the phenomenon being studied" (Marshall & Rossman 1999, p. 33).

3.1. Selection of Participants

The 60 participants were current and prior hospitality and tourism students who were over 18 years of age and had completed a minimum of one community service activity. To select the participants, we used purposive sampling which, according to Marshall and Rossman (1999), "is based on the assumption that one wants to discover, understand, gain insight; therefore one needs to select a sample from which one can learn the most" (p. 48). Balance was achieved based on the different service learning experiences.

3.2. Instrumentation

The self-administered questionnaire consisted of two parts. Part 1A with seven questions, explored the participants' demographics. This descriptive information identified the participant's age, sex, major and area of concentration, type of service experience chosen, community sites, and competencies obtained. Part 1B with 10 questions explored the experience and perceived post-graduation employment skills using a four-point Likert scale—the most appropriate tool for measuring attitudes (Marshall & Rossman, 1999) - based on the following range: (1) strongly agree; (2) agree; (3) disagree; and (4) strongly disagree. Participants were asked to circle the value of each question that best matched their experience and two types of cumulative percentages used:

a. cumulative agreement percentage which combined strongly agree and agree categories; and
b. cumulative disagree percentages which combined strongly disagree and disagree categories.

Each interview consisted of six questions and allowed participants to address issues relative to value and satisfaction that may not have been reflected in the quantitative areas of the questionnaire. The wording and sequence of questions were determined in advance to allow respondents to answer the same questions, thus increasing comparability of responses and facilitating organization and analysis of the data (Patton 2002). Interviewing also allows "participants perspectives on the phenomenon of interest [to] unfold as they view it" (Marshall & Rossman 1999, p. 108).

Several factors acted as limitations. First, the questionnaires were randomly distributed in hospitality and tourism classrooms and at community service sites. The time lapse between enrolling in the community service experience and participating in the study may have affected students' impressions of their experiences and it is not possible to determine if the students completed the questionnaire, or answered the questions accurately or without bias. Second, it is possible that the interpretations of the participants' perceptions could be viewed differently by other researchers. Third, due to the sample size, the demographics of the population may not be representative of the more general population. Creswell (1998) points out that small or non-representative samples can cause concern about reliability. Although the data might suggest that this group is representative of a similar culture, generalization cannot accurately be ascribed to similar populations in other institutions. Thus, discussions are specific to the participating field of hospitality and tourism and are not generalizable. However, according to Yin (1994), generalizability is not an emphasis in qualitative research since assumptions of this design reflect specifically to real individuals and contextual interpretations.

Table 1.—Distributions of participants by concentration

	N	Percent
Bachelor of Science in Hospitality and Tourism Management with a concentration in:		
Hotel and Resort Management	21	35
No Concentration (Hotel Administration)	12	20
Convention and Event Management	10	17
Restaurant and Culinary Management	15	25
Tourism Management	2	3
Totals	60	100

It has been assumed that the participants responded truthfully to both the questionnaire and the interview questions, and that the researchers' interpretation of the data represents a reasonable picture of the phenomenon under study.

3.3. Procedures

All qualified participants completed a questionnaire. Responses were coded and analyzed using the Statistical Package for the Social Science (SPSS) version 12.0 for Windows to compute frequencies, percentages, and cross-tabulations. Participants completed face-to face interviews which were approximately 20 minutes in length. All participants were asked the same six open-ended questions, although probe questions were often added. Transcripts were analyzed for statements that fit into categories; themes and patterns were sorted, providing the context for the findings and discussion.

4.0. FINDINGS OF THE STUDY

Participants were able to address issues relative to value, satisfaction, and competencies obtained, providing significant understanding of perceptions regarding service learning. Service learning is most effective when there is context in both application and experience. This experience has proven to be successful in that it was unique and flexible and offered a variety of opportunities for students to learn from the community and committed professionals. Findings indicated that the majority of the participants were satisfied and felt their confidence and skills were positively influenced as a result of participating in service learning.

The findings are presented in three sections. The first and second sections focus on the results of the questionnaires from 60 participants. The third section presents the results of the open-ended interviews with 27 (45%) participants. Themes, many consistent with the elements of constructivist theory, emerged. In presenting the findings, pseudonyms are used and interviewees are quoted to capture the finer nuances of the responses.

4.1. Participant Questionnaire: Part 1A - Demographic Survey

The participants represented diversity in age, service learning experiences, sex and educational level: 42 (70%) were females, 19 (32%) were between the ages of 18-20, 36 (60%) between the ages of 21-24, and five (8%) over the age of 30. The participants represented five different areas of study (Table 1). The majority of the participants 22 (37%) participated in six or more service activities (Table 2). and completed their service learning activities at 166 combined sites and/or activities; the highest concentrations were associated with food, clothing, and/or book drives (n=39) and food and beverage worksites (n=22) (Table 3).

Twenty-three participants chose their activities voluntarily, 19 were part of a course assignment, and 12 participated through outreach programs/students' organizations (Fig. 1). Some of the participants attributed the success of their experience in part to the fact that they could decide the type of service institution and the

Table 2.—Service activity participation

Service Activity	N	Percent
1	08	13
2-3	20	33
4-5	10	16
6+	22	37

Table 3.—Distributions of service learning worksites

	N	
Hospitality and Tourism Industries		
Food and Beverage	22	
Event Planning/Meetings/Convention	18	
Lodging	13	
Chamber of Commerce	8	
Theme Park/Recreation/Museum	4	
Tourism Office	4	
Charitable Organizations		
Drives – Food (19); Clothing (13); Book (7)	39	
Outreach Programs	28	(Salvation Army, Red Cross, Habit for Humanity)
Before/after School Programs	19	
Soup Kitchen	11	

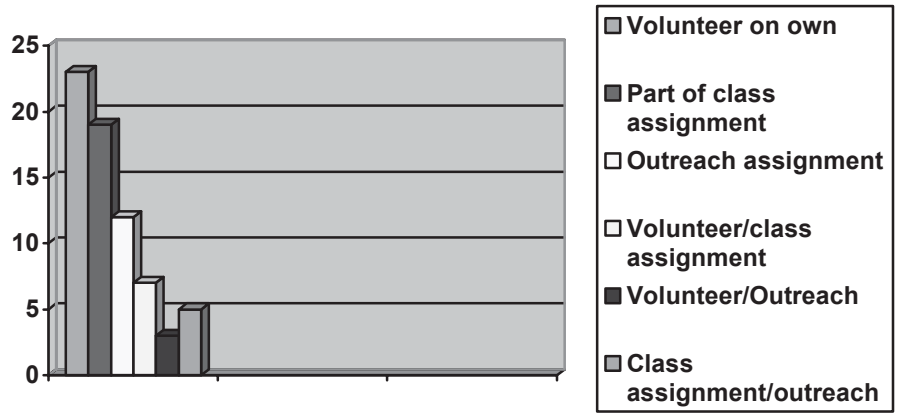

Figure 1.—Choosing Experience.

location and nature of the activities. Manchester observed that an advantage of the service learning activity is "the freedom to choose organizations you are interested in." She completed service learning activities in a variety of positions and organizations. Allowing students to choose their own experiences supports the argument made by Usher and Edwards (2001) that "in seeking to enhance students, we may be enhancing their capacity to self-regulate in relation to workplace discourses" (p. 26).

4.2. Participant Questionnaire: Part 1B – Exploration of the Service Learning Experience

Outcomes of the 10 questions suggest that hospitality and tourism students are satisfied with, and are in favor of, service learning experiences that are positive and constructive. The majority of participants 53 (88%) stated that service learning has been a valuable learning tool throughout college and 36 (60%) believed that the experience helped them make sense of classroom theories. Fifty-three (88%) strongly agreed or agreed that the experience provided meaningful applications (skills and knowledge) for future hospitality or tourism employment (Table 4).

The everyday practice and engagement with authentic activities during service learning were consistently viewed as effective and indicate that students were mostly satisfied with their experiences and their preparation for future employability and civic duties. These results support Bostock's (2000) view that the construction of knowledge requires interaction with more expert others and that situated learning is co-constructed from cognitive processing and sociocultural interaction.

Table 5 provides the competencies learned. Thirty-nine (65%) participants cited social responsibility as the area in which they experienced the greatest learning, 35 (58%) cited leadership skills, and 31 (52%) cited

Table 4.—Part 1B: participant questionnaire results

Statement	Strongly Agree/ Agree	Strongly Disagree/ Disagree
1. The organization provided orientation to my job description and/or role.	80%	20%
2. The organization provided organized and efficient training.	72%	28%
3. I was assigned a mentor who offered advice and help	55%	45%
4. I understood and complied with the corporate culture of my service employer	95%	5%
5. Service learning has been a valuable learning tool throughout my college years	88%	12%
6. Service learning should be a required part of the university curriculum	93%	7%
7. I was provided with a diversity of experiences	78%	22%
8. My service learning experience provided me with new knowledge about the hospitality and tourism industry	77%	23%
9. The service learning experience helped me make sense of classroom theories	60%	40%
10. My service learning experience (s) provided me with meaningful applications (skills and knowledge) for future hospitality or tourism employment	88%	12%

Table 5.—Learning competencies

	Number of Participants Obtaining Competency	Ranked Level
Social Responsibility	39	1
Leadership Skills	35	2
Analytical and Problem Solving Skills	31	3
Communication Skills	30	4
Critical Thinking Skills	24	5
Civic/community responsibility	23	6

analytical and problem-solving skills. Student responses to more general questions confirmed this, as exemplified by the comment, "I found this experience to be rewarding; not only did I find out about myself, but also about the community in which I live" (Sara). Service learning also gave many students their first meaningful experience with diversity. As stated by Angel, "during my work at the African Center, I learned a lot of valuable knowledge about another culture ….it helped to break down stereotypes. Another said, "the most challenging part of this experience has been the diversity between those I helped and myself…being from a small town, I have only worked with people like me" (Kim). "It gets different types of people together…to share experiences (Mike).

Fifty-six (93%) participants believed service learning should be a requirement and added to the hospitality and tourism curriculum. "The experience has given me confidence to face any challenge and opportunity that may arise each day…to get out there and not be afraid; to get your point across…for the future" (Jade). "As a manager, you need to know all aspects of the business… how to make people happy…it [the service learning experience] gave me great insight into what goes into the process of running a business, especially a non-profit" (Jane). "Service learning provided me with an experience not encountered in the classroom…I consider it to have been the highlight of my university education…I encountered obstacles not found in a normal academic setting, [requiring] the autonomous resolution of real

Table 6.—Domains and categories

Interpersonal Development	"learned to work as a team", "demonstrated service "enjoyed helping others"; across gender and cultural groups", "assumed leadership roles", "patience".
Intrapersonal Development	feeling of accomplishment", "self- reflection", "self esteem", "confidence", "exhibited critical thinking skills "managed time and balanced priorities", "exhibited self-discipline and responsibility",
Communication	"understood the principles of effective communication to a range of audiences"
Professional Development	"understood the necessary competencies and professional opportunities of chosen industry"; "contributed to academic growth"

world issues…The practical education I received, as well as the gratification of helping others, is unparalleled" (John). It is argued that service learning in management programs provide students with opportunities to enhance their managerial potential by honing interpersonal and leadership skills while gaining a great appreciation of the need for ethical and citizenship behaviors (Papamarcos 2005).

4.3. Participant Questionnaire: Part 1B—Service Learning Exploration

Community sites structured around service learning experiences inspire interests, nurture personal and professional development, and give students an experience which generally would not occur alone in the traditional classroom. Students are provided with the opportunity not only to put the theory learned in the classroom into practice, but also to bring the lessons learned from that experience back to the classroom, thus enriching the learning environment for others.

Emerging from the discussion are three dominant themes: social responsibility, competence, and confidence. Participants expressed general awareness of social and ethical responsibility to their community, competency in the distinctive learning that occurred, and confidence, especially relative to their preparation for careers in the hospitality and tourism industry. Table 6 is a representation of the participants' statements.

Personal and Professional Development. The service experience had a powerful impact on the participants' personal and professional development. "The experience has changed me forever. I met people from all over the world, learned tolerance and the danger of not practicing it. There is only so much you can learn in the classroom versus the real world" (Megan). Oslo worked with the Red Cross…"that helped me on my resume…it has given me self-esteem and confidence during job interviews in the hospitality and tourism workplace." "Employers like it and you get good teamwork and leadership skills" (Paul). John was also positive about his experience: "I encourage everyone to do it…even when you are not paid; what you learn pays off more than the money. "I believe that academic growth, especially in the hospitality industry, should include working with customers. The hospitality industry is driven by customers and their level of satisfaction. Service learning means providing a level of hospitality for customers that are greatly in need of your services. Understanding these specific needs can only come from experiencing them in person. This is essential for understanding the nature of the industry and should be the background for all classroom material" (Annie).

Fosters shifts in perspective. According to Sam, "I did something for another person who was not a family member or friend…I like being able to help and seeing the benefits of my work." "I think everyone should participate in service learning…everyone has their own qualities and can give back to the community (Paul). Megan stated that "being involved in service learning makes you want to be a better student…you walk away with a rewarding experience...what you put in is what you take out."

The statements made by the participants are supported by Piaget's (1972) notion that the capacity for abstract thought develops over time through experience with the concrete. Kolb (1984) also stresses the continuous movement back and forth between the concrete and the abstract.

5.0 CONCLUSION

This study succeeded in several major areas, and the findings are congruent with the theory of constructivist learning. The study generated themes that represented specific outcomes of the participants' experiences. These emerged themes make clear the models of Dewey (1938), that learning from experience requires purposeful engagement with the experience, and Kolb (1984), that limited learning takes places without conscious attention to one's experiences.

Social responsibility and citizenship are the key objectives of service learning and hospitality and tourism education. Service learning enables students to act as agents of change, fosters the development of competence, and encourages the act of working together in an informal education process that contributes toward lifelong learning. Fundamental to experience in citizenship are the principles of interaction and continuity. Dewey (1938) views active involvement of students in the learning community as key in preparing them to take control and responsibility of their individual actions.

The success of these students suggests that hospitality and tourism institutions need to implement service learning as part of their graduation requirements. By offering projects based on community activities, students were actively engaged in multiple forms of learning; developed social responsibility, leadership, and analytical skills; and became ethically more sensitive.

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FOREST CERTIFICATION FOR NORTHERN MINNESOTA'S FAMILY FOREST LANDOWNERS: KNOWLEDGE, INTEREST, AND PREFERENCES FOR EDUCATION

Andrea J. Ednie
Graduate Research Assistant
Parks, Recreation and Tourism Program
Department of Forest Management
University of Maine
5755 Nutting Hall
Orono, ME 04469

Jessica E. Leahy, Ph.D.
University of Maine

Abstract.—Forest certification is a voluntary opportunity for landowners to undergo an assessment and verification of the quality of their forest activities. It has been well received by large industrial landowners; however, family forest landowners have not yet embraced the concept. This paper presents the first component of a study investigating whether greater knowledge increases interest in family forestland certification, and exploring family forest landowners' preferences for education. Eight focus groups were conducted in four counties across northern Minnesota. Results indicated that segmenting the family forest landowner population according to value orientations can provide an opportunity for tailored educational programs. However, regardless of their value orientations, individuals desired educational material outlining combined or balanced information. Focus group data will inform the development of research instruments for a mail-out survey assessing interest in forest certification, and inform local agencies of strategies for improving current forest-related educational outreach programs.

1.0 INTRODUCTION

The creation of forest certification marks an important turning point in global attitudes toward forest health. Forest certification, initiated by the Forest Stewardship Council in 1993, marks the realization that future forest products are limited without sustainable management. Globally, more than 247 million acres have become certified, and there are currently more than 10,000 certified wood product lines on the market (Molnar 2003). Forest certification involves inspection and monitoring of forestlands to ensure they are being managed according to set standards. Several certifying programs have been established in the U.S. and worldwide, including those operated by the American Tree Farm System, Green Tag Forestry, Sustainable Forest Initiative, and Forest Stewardship Council. In the U.S., forest certification has been well received by large, industrial forest landowners—65 million acres of forested land have been certified, comprising 13 percent of the total timberland. Forest certification, however, has not yet been popular among the non-industrial private forest landowners. This group of landowners, also referred to as family forest landowners, represents people owning between 10 and 1,000 acres of land. In Minnesota, nearly all of the major corporate owners have certified their land. However, the family forest landowner group, which accounts for 39 percent of the state's land (6.5 million acres), is mostly un-certified (Kilgore et al. 2005). The purpose of our study, therefore, was to investigate family forest landowners' knowledge and interest in forest certification, as well as their preferences for forest certification educational outreach programs.

2.0 THE MINNESOTA CONTEXT

A study completed by Kilgore et al. (2005) investigated Minnesota family forest landowners' knowledge, attitudes, and preferences for forest certification. Findings from this study shed light on reasons this group of landowners has not committed to forest certification. Results indicated that familiarity with certification was low: 53 percent of the participants had never heard of forest certification; 27 percent described their familiarity as minimal; and only three percent of the respondents displayed an extensive understanding of the forest certification process. Their survey included questions inquiring about likeliness to certify, and findings indicated only four percent of family forest landowners were indeed likely to commit to certification. Seventy-seven percent of the study respondents stated that, while they had formulated an opinion about certification, they remained persuadable, but a full 20 percent stated they would never want to certify. Study participants were also asked to describe drawbacks they considered

to be associated with forest certification, and results pointed to four prominent issues: 1) the perceived loss of control over land use and management decisions, 2) the cost of becoming certified and the paperwork involved with the certification process, 3) the need to follow a forest management plan, and 4) the required on-site inspections. Their study closed with a call for five immediate actions, one of which was to identify effective methods for informing Minnesota's family forest landowners about the forest certification process.

Responding to Kilgore et al.'s (2005) call for immediate action, this current project proceeded with four main objectives and reports the first stage of a larger research project. The objectives were:

1. To identify what forest landowners want to know about certification,
2. To explore how the landowner population could be segmented to tailor forest education about certification,
3. To examine how principles of interpretation can be implemented to make certification more appealing, and
4. To develop an understanding of the outreach formats that would encourage Minnesota's family forest landowners to learn more about certification.

The larger study investigates two main research questions: 1) Does greater knowledge increase interest in certifying family forestland? and 2) What are family forest landowners' preferences for education? Figure 1 describes the study by Kilgore et al. (2005), leading into the current study, whereby the circled portion represents the section reported in this paper. Findings from the present study will be incorporated into educational outreach programs, and will serve to develop the research tools for the future mail-out survey examining attitude changes as a result of educational treatments.

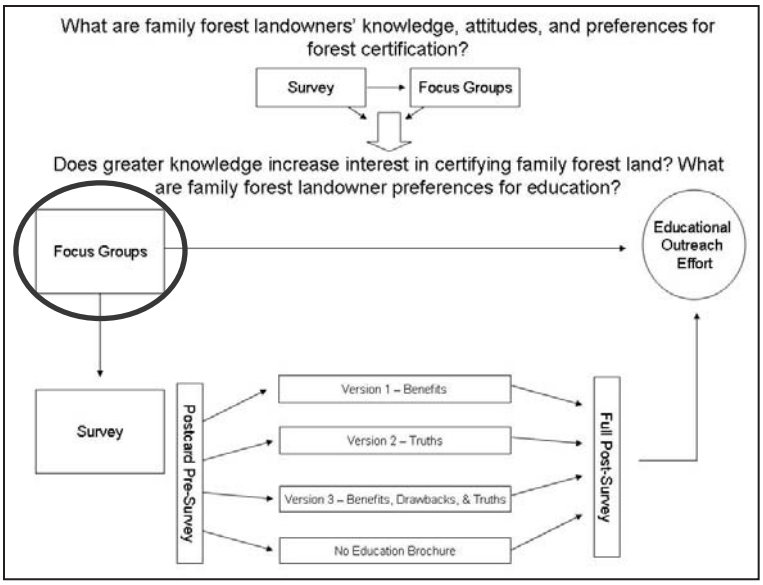

Figure 1.—Study outline.

3.0 LITERATURE REVIEW

The forest certification literature includes discussion regarding value orientations that strongly affect the likelihood of family forest landowner certification. Maser and Smith (2001) highlighted the difference between products and systems value orientations, which they suggest are important for individuals considering forest certification. Product-oriented individuals tend to focus on individual pieces of a system or the perceived products in isolation of the system itself. Systems-oriented individuals take more of a process approach to thinking. Product-oriented individuals tend to be more resistant to change, particularly in the context of forest certification, where no clear immediate or monetary benefits are imminent.

Another relevant scale of value orientations is the protection–use scale implemented by Manfredo et al. (2003) in a study examining the shift in public values toward wildlife. They hypothesized that factors such as affluence, education, urbanization, and declining residential stability influenced a shift away from traditional wildlife values that emphasized use and management of wildlife for human benefit. They highlighted the importance of considering value orientations, given that values provide the foundation for an individual's attitudes and norms, which in turn guide behavior. McFarlane and Boxall (1999) devised a similar value scale to examine forest-related protection-use values.

A plethora of studies exists examining the use of interpretation for changing human attitudes. For

example, Nielson and Buchanan (1986) compared the effectiveness of two interpretive programs for changing knowledge and attitudes regarding fire ecology and management. They found a significant relationship between attitudes and knowledge, and concluded that negative attitudes toward fire management were often due to a lack of knowledge. A study by Loomis et al. (2001) similarly found that information provision made participants more knowledgeable about fire management, and also more tolerant of prescribed fire.

The literature regarding interpretation and attitudes also provides discussion of other factors that may affect attitudes. For example, McComas and Scherer (1999) found that the timing of information provision is important. They suggested information may have little influence on opinions if it comes too late in a decision process. This consideration supports the timing of this study, considering the majority of Minnesota's family forest landowners are currently unfamiliar with forest certification (Kilgore et al. 2005).

4.0 STUDY METHODS

The study objectives required the investigation of "how" and "why" type questions, which can be best explored through qualitative inquiry. Focus groups were conducted because study questions sought to examine group beliefs and behaviors. Our goal was to understand different preferences; therefore, the focus group procedures best enabled groups to describe their opinions (Schmoldt & Peterson 2000). Eight focus groups were conducted in five locations with individuals owning forest land in one of four counties of northern Minnesota. Focus groups were held in Aitkin, Cass, Itasca, and St. Louis counties, and two meetings were also held in the Twin Cities (Minneapolis - St. Paul) to capture a sample of attitudes from the large population of absentee northern Minnesota landowners who reside in the metropolitan part of the state.

Minnesota state tax records were used to select a random sample of family forest landowners in each of the four selected counties as well as in the Twin Cities. Landowners were contacted by phone, presented with a brief explanation of the study, offered a free meal, and asked to participate. Telephone contacts continued until a minimum of 12 participants had agreed to participate in each of the eight focus group meetings. Overall, 535 households were contacted. During the telephone-contact process, the decision was made to offer a $40 honorarium, which raised consent rate from 3 percent to 16 percent (see Table 1). Landowners who gave consent received an information package in the mail, followed by a reminder call the day prior to each focus group meeting.

Table 1.—Rate of consent for participation

	Household contacted	Agreed to participate
Before honorarium	119	3%
After honorarium	416	16%

One hundred ten landowners representing 78 households agreed to participate, and 57 attended the focus group meetings. Acres owned ranged from 11 to 211, with a mean of 52 acres. Fifty-seven percent of the study participants stated they lived on their land. Table 2 demonstrates out of that 57 percent, about half have lived on their land for 20 years or longer. Thirty-seven percent of study participants were retired, and age ranged from 15 to 83, with a mean of 56.

Two interpretive brochures were developed as prototypes of the education materials to be used in outreach efforts. The brochure content was selected based on findings from the recent study by Kilgore et al. (2005). The two brochures were identical except for the front page. They both included an introduction to forest certification, a list of the required standards of certification, the steps involved, the cost of certification, and contact information for further details. The first brochure differed by providing a list of benefits associated with certification, while the second brochure listed truths

Table 2.—Years lived on land

Years on land	% Participants
1-10	17.9%
11-20	32.1%
21-30	21.4%
31-50	10.7%
50+	17.9%

to clarify any misperceptions individuals may have regarding the certification process. Possible benefits associated with certification were wide-ranging, including improved wildlife habitat, increased timber growth and health, increased water quality protection, balanced timber harvesting with ecosystem health, and support for local community economic development. Examples of truths provided in the second brochure include the following: (1) that decision-making responsibilities related to the land are maintained, (2) the freedom to decide who can harvest the timber is kept, and (3) with certification, organizations or government agencies do not have a greater say over what can and cannot be done on the land.

Following an introduction and discussion regarding confidentiality, focus group procedures involved several questions for group discussion regarding forest certification and the brochures. Focus group questions included:

1. What are your general impressions of the brochures?
2. What information was missing that you still have questions about?
3. From the list of benefits, which one would be most important to you? Why?
4. Which brochure do you prefer? Why?
5. How would you like to learn about certification in terms of format?

This was followed by the completion of a one-page survey. The participant survey included a scale of forest values, assessments of familiarity with forest certification and likelihood of becoming certified, and inquiry into participants' preference for brochure content. The sessions were recorded and transcribed, and transcripts were inductively coded to thoroughly analyze the data.

5.0 STUDY RESULTS

5.1 What Family Forest Landowners Want to Know About Certification

Although we received a wide array of suggestions regarding information that landowners may seek with respect to forest certification, several points were particularly prominent among the transcript data. Participants wanted greater detail about the restrictions involved with becoming certified, especially with respect to the development of a management plan. They wanted to know exactly what a management plan entails, and how developing a management plan changes their decision rights on every-day forest-related actions. Participants did not have a strong understanding of how becoming certified would change their current management scheme, if at all. Many landowners felt they were taking care of their land already, and worried that becoming certified would allow someone other than themselves to make decisions about how best to harvest or conserve their land. Participants sought more detail regarding the benefits of certification, and wanted more detail on tangible benefits in particular. They also requested further detail regarding the costs associated with certification, including the initial cost of becoming certified, and cost of future inspections. Participants requested more information about the history of forest certification, how it began, and whether it is run by government, industry, environmental organizations, or other groups. Further details were also sought regarding the link between forest certification and water quality or wildlife habitat protection. Landowners wanted a more direct description of how certifying their land would lead to ecological health.

5.2 Segmenting Family Landowners to Tailor Forest Education

Data analysis revealed that many of the study participants could be segmented according to Maser and Smith's (2001) product versus systems value orientations. The data clearly demonstrated that some individuals were concerned with one particular aspect of the certification process (most often cost), while others voiced feelings of overall benefits of certification, some even on a global scale. Two sample comments illustrating product-oriented values were:

> *"You've really got to focus on what's in it for the landowner. What do I get for my ten bucks an acre?"*

> *"I think those benefits have to be more tangible…"*

Table 3.—Information preference according to value orientation

	Benefits	Truths	Combined Information	Balanced information
Protection oriented	19.4%	3.2%	29.0%	48.4%
Use oriented	17.6%	0	52.9%	29.4%

A sample comment voiced that illustrated a systems value orientation was:

> *"I just want to leave it. I don't want to do anything to my land, but [with certification] you could help wildlife by helping along the management."*

The focus group data fit particularly well with the protection–use value orientation scale developed by Manfredo et al. (2003). Participants in each meeting often appeared separable according to how they used their land, and how they believed land should be used. Some participants actually provided a description about the nature of this division; for example:

> *"It seemed like each [brochure] was geared toward a different group of the public. There are those that are thinking about the environment, and there are those thinking about their land and their money and their trees."*

This individual described how the "truths" brochure may be better suited for use-oriented individuals, and the "benefits" brochure for protection-oriented landowners. The data were also rich with quotes exemplifying either protection or use orientations, for example:

> Protection: *"We want to have good, healthy property to hand down to our children and grandchildren, so they can be good stewards of the land."*

> Use: *"I manage my woods. I cut timber. I've sold poplar and pulp wood, I harvest wood for fire, I've built my house, I do different things with it."*

The survey data illustrated use-oriented participants were slightly more likely to certify, whereby 64.7 percent of the participants who prioritized use-oriented forest values reported they were likely to certify or may want to certify. Only 51.6 percent who strongly agreed with protection-oriented forest values indicated they were likely or may want to certify. Use-oriented participants also demonstrated a slight preference for combined information, while protection-oriented individuals tended to want balanced information. A brochure containing combined information would include the "truths" and "benefits" associated with forest certification, while balanced information would include benefits and drawbacks associated with the certification process. Table 3 illustrates preferences for information according to value orientation. The data demonstrate that participants have a general preference for the greater quantities of information; they prefer combined or balanced over single message (benefits or truths), approaches.

5.3 Using Principles of Interpretation to Make Certification More Appealing

A variety of interpretive mechanisms was suggested in the focus group meetings to increase the appeal of educational brochures regarding forest certification. Most prominent among the data were suggestions regarding the credibility and relevance principles of interpretation (Ham 1992). With respect to credibility, participants noticed the current color scheme of the brochures resembled that of the Minnesota Department of Natural Resources. They suggested if a goal is to inform the public that certifying does not mean the government will have greater control over their land, the color scheme should be changed to avoid misperception. Study participants also suggested the University of Minnesota logo would help gain credibility among the public, as would printing brochures on certified paper. Many participants felt the "truths" brochure appeared to be defensive, particularly given overall knowledge toward certification was low. They suggested that positive information or variety in messages presents more appeal than a brochure stating what certification is not.

Participants often made suggestions for increasing the relevance of educational material. For example, many suggested that local and more official contact information would encourage individuals to further inquire about details regarding the certification process. Study participants wanted self-referencing information, or educational material tailored specifically to family forest landowners. Another common suggestion was to incorporate the concepts of heritage and legacy into educational material. They suggested items such as pictures of grandparents and children walking through forests together.

5.4 Formats for Encouraging Landowners to Learn More about Certification

The focus group data were rich with suggested formats for education programs, including:

Websites: Detailed information with links to related sites.

- Programs at local events: Presentations and displays at county fairs, lake association meetings, church meetings, etc.
- Intensive workshops: Multi-day workshops offering a variety of programs for landowners to pick-and-choose from.
- One-on-one visits with foresters: Having local foresters visit their land to walk through the forest suggesting possible management options.
- Case studies and testimonials: Literature and contact with other certified family forest landowners.
- Information: Coverage in newspapers, magazines, and community media.

6.0 DISCUSSION

Overall, the focus group data strongly suggested that Minnesota's family forest landowners require more specific information about forest certification before they will fully consider commitment to the certification process. Useful information was received concerning participant value orientations that will help guide future educational strategies. However, the data suggest that individuals, regardless of their value orientations, require:

1. Educational materials outlining combined information (benefits and truths);
2. Educational materials with balanced information (benefits and drawbacks).

The focus group discussions provided researchers with plenty of input for improving the appeal and effectiveness of educational material, and clear format preferences emerged, including surprises. For example, it was surprising to learn that the vast majority of participants use the internet regularly, especially considering the age range and rural focus group locations. The frequency of requests for local foresters to walk through private land was also an unexpected finding.

Data from these meetings will be used to develop research instruments for a large pre-test, post-test mail-out survey with four treatments including a control (see Figure 1), and will also serve directly to inform local agencies of strategies that may improve current educational programs.

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Management Roundtable

USING TECHNOLOGY TO INTERACT WITH THE NATURAL ENVIRONMENT: PART II

Laurie Harmon
Assistant Professor, George Mason University
School of Recreation, Health & Tourism
204 Bull Run Hall, 10900 University Blvd., MS 4E5
Manassas, VA 20110
LHARMON3@GMU.EDU

Mark Gleason
Michigan Technological University

Abstract.—In 2005, the underwater remotely operated vehicle (ROV) was introduced at the Northeastern Recreation Research Symposium as a tool for connecting people with the natural environment. During 2004 and 2005, we used the ROV to support research and involve the public in educational programs, thereby fostering a greater understanding of our underwater resources of Lake Superior and other Great Lakes and, potentially, strengthening the connection visitors felt toward these places. In this management session, opportunities for using the ROV for public monitoring of invasive species and for remote marine observation were explored in depth. Challenges encountered, such as light and power limitations, entanglement, expense, and operator requirements were also part of this discussion. Prior to the session, conference attendees used the ROV in Lake George. Feedback confirmed the ease of using the ROV and gave attendees the opportunity to observe and negotiate challenges discussed in the management session.

1.0 INTRODUCTION

This management session addressed the issues regarding using an underwater remotely operated vehicle (ROV) to explore marine environments, monitor underwater habitats, and educate people regarding aquatic ecosystems. Two issues that emphasize the importance of this topic are the role that education has traditionally played in natural resource management and the increased prevalence of technology in the United States.

Natural resource education has played an important role in supporting management objectives of public land managers (Jensen & Guthrie 2006). From the beginning, organizations such as the National Park Service and U.S. Forest Service have used public education in the process of gaining the support needed to maintain those organizations. Sharing of information by writers (e.g., John Muir and Anne LaBastille), painters (e.g., Thomas Church), poets, and photographers (e.g., Ansel Adams) played a significant role in the creation and protection of public lands throughout the United States. Early managers such as Stephen Mather further strengthened the beginning educational efforts that are represented in today's parks by supporting the development of on-site museums, public displays, and ranger presentations.

More recently, natural resource education is being influenced by technology. The widespread use of technology and multitude of technological advances (e.g., GPS units, waterproof materials, lightweight metals, computers, and Internet access) has changed and impacted the way Americans view much of their lives as well as their relationship with nature. These changes can have a long-term impact on the way people view public lands and the way they are managed.

This session examined, in-depth, how a remotely operated vehicle, a relatively recent type of technology, can be used to help the public understand their underwater natural resources. Many public land areas have resources within them that are located underwater, and rarely does the public explore or understand those areas firsthand. Because of the advancement of technology, public land managers have an opportunity, to expose the general public to those underwater resources through educational efforts.

1.1 Underwater Remotely Operated Vehicles

Underwater robots, referred to as ROVs, were used for public program demonstrations in various natural resource areas in the Great Lakes during 2004 and 2005. ROVs are designed in many different sizes, from hand-held to those requiring cranes to move them from ships to marine environments, and accomplish a wide range of missions under water. Generally, ROVs have cameras, navigational motors, and lights, and are controlled

from the surface by a tether which provides power to operate the motors, cameras, and lights. ROVs can be operated from boats or, in some instances, the shore. Often a technician operates the ROV, but in many cases, participants are also allowed to operate the ROV.

1.2 History of Underwater ROV Development

The use of underwater ROVs dates back to approximately 1950, when Jacques Cousteau used an underwater sled with automatic cameras to explore the Atlantic Ocean. While Cousteau found his early ROV demonstrations to be useful, they were not as successful as the manned submersibles used on marine exploration and data-gathering expeditions (Ballard & Hively 2000). As a result of the success of manned submersible, Cousteau continued development of marine environment exploration, but he did not return to unmanned vehicle development.

Following Cousteau's early efforts, an American explorer, Edwin Link, developed an ROV to be used in submarine rescue. This was largely in response to the death of his son in a small submersible and was designed to facilitate the rescue of manned submersibles as well as allow for unmanned marine exploration. That ROV was the forerunner of the ROVs in use today. Interestingly, Link's ROV was ultimately used to explore the shipwreck, *Edmund Fitzgerald*.

People have become familiar with ROVs through the work of Robert Ballard, who is credited with discovering the shipwreck *Titanic*. As part of that exploration, he used the small ROV, *Jason*, to explore the wreck. He then produced and contributed to several films widely available to the public, including *Return to the Titanic* (Ballard 2004). His work facilitated the development of numerous underwater ROV education projects and research programs. His primary program, *The Jason Project*, continues to be a model for education programs using underwater ROVs (The Jason Project 2005). In addition, Ballard's work was instrumental in the use of ROVs to explore deep ocean areas by movie directors such as James Cameron, who increased public awareness of ROVs through popular movies such as *The Titanic* (Cameron 1997) and *Aliens of the Deep* (Cameron & Quale 2005).

2.0 DEMONSTRATION PROJECTS

Six demonstration projects (see Table 1) using a small underwater ROV were conducted during the spring and summer of 2005. For each of these projects, a small (approximately 24" x 18" x 18") ROV was used to facilitate education programs in a number of settings. The ROV was low-impact, able to explore up to 500 feet under water, had two TV cameras, lights, and a small arm, and weighed about 12 pounds. Controlled from the surface via a tether (or cable), it was operated from boats and from shore.

The settings for these demonstration projects varied from the Great Lakes to smaller inland lakes and wetlands. The locations included a marine sanctuary (National Oceanic and Atmospheric Administration Sanctuary at Thunder Bay, Michigan), a U.S. Forest Service site (Clear Lake),

Table 1.—ROV demonstration program descriptions

Program Location	Participants	Program Description
US Forest Service camp at Clear Lake	Junior High students on a multi-day camp experience	The participations operated the ROV in shallow areas of Clear Lake. They received brief instructions in the operations of the ROV and were then encouraged to teach each other. Additional structure was provided by asking participants to look for fish they could identify and to find zebra mussels (an exotic species) in the lake environment.
Indiana Dunes National Lakeshore (participating partner: Grand Valley State University)	K-12 Educators	For this teacher workshop, participants operated the ROV in a wetland located in Indiana Dunes National Lakeshore and then off the Grand Valley State University research boat, WB Jackson, in Lake Michigan. In this workshop, participants were able to observe and explore the underwater resources using the ROV, but a technician operated the vehicle.
Great Lakes on the Pier Wisconsin Tall Ship Denis Sullivan	General Public and K-12 educators	This demonstration involved two programs. The first program involved adults and the general public who were part of a Lake Superior cruise. During the cruise, the ROV was deployed to explore several shipwrecks, the lake bottom, and fish habitats. Participants observed the ROV explorations via video monitor on the ship's deck. The second program involved live TV broadcasts from NOAA's sanctuary at Thunder Bay, MI. Again, the ROV was operated from the ship's deck. The video feed was transmitted to classrooms in Michigan and Wisconsin. In those classrooms, students were able to hear a live explanation by two educators and observe the ROV technician operating the vehicle.
Inland lakes in northern Lower Michigan (participating partner: See-North)	General public – mostly adults	With the cooperation of See-North, small groups of adults were offered the opportunity to explore several small inland lakes in northern Lower Michigan using the ROV. They started exploring in depths of less than 5' and worked, in stages, to depths of up to 100' with an educator interpreting the observations.
NOAA Sanctuary at Thunder Bay (participating partner: Marine Advanced Technology Education - MATE)	Environmental and K-12 educators	For this demonstration, participants were first involved in an ROV building workshop (modeled after the MATE programs) designed to instruct educators in the usefulness of ROVs in the classroom. Participants designed and built ROVs and then operated them in a school pool. Upon completion, they were also able to operate our ROV in a pool.
George Mason University	College students	Undergraduate students operated an ROV in either a pool or small pond at the Prince William campus during which time they observed aquatic environments (in the pond) or negotiated small obstacle courses (in the pool).

a National Park Service unit (Indiana Dunes National Lakeshore), a Tall Ship (Pier Wisconsin) and a university pond (George Mason University). Participants were asked to conduct a variety of tasks during each of the demonstration projects (see Table 1).

3.0 ROV BENEFITS

For each of the demonstration projects, participants identified various benefits. As a research tool, the opportunity for real-time experiential learning was frequently noted. For example, participants in the See-North program were tasked with counting zebra mussels in a defined space. Follow up discussion explored the benefits (e.g., water filtration) and drawbacks (e.g., competition with native species) the introduction of this non-native species has had on the Great Lakes ecosystem.

In exploration situations, participants identified access as a major advantage. The *Denis Sullivan* programs, for instance, primarily involved shipwreck and marine habitat exploration in the Great Lakes at depths of greater than 100 feet. Participants were able to negotiate these situations without diving expertise and without the safety requirements associated with deep water dives.

Another benefit of the ROV was the ability of students to observe from a distance while receiving concurrent interpretation from their instructors, as in the case of the live broadcasts to classrooms in Wisconsin and Michigan from Thunder Bay. Students and instructors alike cited the real-time virtual interaction with the environment as a significant enhancement to their environmental education classes.

3.1 ROV Challenges

In addition to benefits, there were several challenges encountered during the demonstration projects. The most frequently encountered concern was entanglement, particularly when young people were operating the ROV. The horizontal movement of the ROV is operated by a standard joystick, similar to a video game, with circular knobs used to manage vertical movement. Unlike video games, however, the joystick is highly sensitive and even small movements result in quick responses from the ROV. Project participants, particularly younger people, tended to move the joystick in a forceful way, causing the ROV to speed forward, backward, and sideways in fast and jerky movements. The results were frequently an ROV that became quickly entangled in its tether or nearby objects. However, adults were more likely to use tentative movements and learned to operate the ROV at a speed that allowed for more control and extended observation of the underwater surrounds. These behaviors were also observed during the ROV demonstration in Lake George at the Sagamore Resort prior to this management presentation.

Light also presented a limitation to the usefulness of the ROV in settings such as highly silted or deep water. Movement from the ROV, particularly when near the bottom of a water basin, often stirred up any settled materials, which would then obscure the camera's view. Additionally, light filtration decreased as the ROV was sent to deeper locations, and the penetration of the ROVs lights was also reduced. This greatly limited the field of vision during deep dives and contributed to the increased possibility of entanglements with hidden objects.

An obvious limitation of the ROV is the tether, which is an integral component. A 500 foot tether, such as was used in these demonstrations, limited the field of exploration to approximately 450 feet in any direction. As the end of the tether was reached, participants found it difficult to maneuver the ROV. Additionally, the tether was influenced by the water currents. For example, strong currents were able to push the semi-buoyant tether in a direction that, in some cases, was counter to the direction in which participants were trying to send the ROV.

Finally, the most frequent challenge was keeping the ROV operational. Breakdowns that occurred during various demonstration programs were the result of cracked housing, broken wires, and loss of power. Replacement of the tether posed the most problems since it required purchase of a new tether which had to be sent from the ROV producer. Tethers frequently became unusable because they would be bent or strained beyond their design intent (often by users running the ROV at the end of the tether at high speeds) resulting in internal wire breakage. In other cases, the internal wiring of the vehicle became damaged due to excessive high-speed contact with immovable objects. In these instances, the ROV had to be dismantled and rewired, a process taking 4-8 hours. It is worth noting, however, that the ROV used in these demonstrations was particularly robust, and the company producing the ROV was very responsive to repair needs. This greatly facilitated the continued use of the ROV for the demonstration projects.

4.0 CONCLUSION

The use of technologically advanced equipment in natural resource settings is increasing. Whether people go into the environment to use their technology or use their technological equipment to get to the environment (Ewert & Shultis 1999), it is evident that technology influences interaction with these places. An underwater ROV is one technological tool that increases the ability of visitors and managers to interact with aquatic environments, in particular. Using the ROV as a tool for exploration as well as a way to empower individuals through self-exploration of underwater places may facilitate connections between managers and visitors with respect to recreation places. In addition, using the ROV allows visitors to explore environmentally sensitive areas with minimal disturbance.

While underwater ROV challenges such as operator expertise, equipment limitations, and environmental conditions must be negotiated, advantages (e.g., increased access and experiential learning) will continue to influence its use as an exploration and educational tool. The range of applications for managers is not yet completely explored. The ROV has been operated in the shallowest of wetlands to the deepest points in Lake Superior (over 1300 feet deep); it was maneuvered during hot summer days as well as under the ice during the middle of winter. Demonstration project participants from 10 years old to 85 years old have learned to successfully maneuver the ROV in a variety of settings.

Education has always been an important part of a manager's ability to support an organization. Continued efforts by managers to negotiate the challenges and explore the benefits associated with new technology are an integral component of successful public land management. The underwater ROV provides one such opportunity.

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Note: The authors wish to thank VideoRay for their continuing support of this research. The ROV used in this study was built by VideoRay, based in Phoenixville, Pennsylvania. They facilitated this study by offering technical operating advice as well as equipment support.

Wildland-Urban Interface Issues

COMMUNITY VIEWS OF FUELS MANAGEMENT: ARE NATIONAL FOREST LOCAL RECREATION USERS MORE SUPPORTIVE?

Christine Vogt
Associate Professor
Dept. of Community, Agriculture, Recreation and Resource Studies
Michigan State University
E. Lansing MI 48824
vogtc@msu.edu

Greg Winter
Cornerstone Strategies

Sarah McCaffrey
USDA Forest Service, North Central Research Station

Abstract.—Significant advances in social science-based wildfire research have occurred in the past five years. Managers, policy makers, and researchers have worked to better understand the perspectives of homeowners, residents, tourists, and recreationists on fire and fuels management and how to better involve them in the planning process. This research examines how the recreational usage of residents living near the Mark Twain National Forest influences levels of support for fuels management. Findings suggest cognitive factors that influence fuels support are different across recreation users and nonusers, but support itself was similar.

1.0 INTRODUCTION

Significant advances in social science-based wildfire research have occurred in the past five years (Jakes 2003, Cortner and Field 2004). Managers, policy makers, and researchers have worked to better understand the perspectives of homeowners, residents, tourists, and recreationists on fire and fuels management and how to better involve them in the planning process. Many of these studies aim to predict social acceptability of fuels management (McCaffrey 2002, Shindler et al. 2002, Shindler and Toman 2003, Blanchard and Ryan 2004). Shindler et al.'s research thus far has focused primarily on statewide citizen polling, whereas our research has looked more closely at the wildland-urban interface (WUI). The WUI is often attractive to residents, permanent and seasonal, for the nearby recreation opportunities and natural, aesthetically pleasing setting that a forest can provide (Stewart and Stynes 1994, Monroe and Nelson 2004, Winter et al. 2005).

Past fire policies that called for minimal fuels reduction and full suppression have left many national forests with dangerous levels of flammable materials at a time when more residents are building homes near the forests. In response, forest policies have emphasized the need for greater efforts to reduce fuels and prepare communities for catastrophic wildfires. Recent research has aimed to assist resource managers in identifying fuel management approaches that yield desired benefits and are locally accepted and implemented. Our research has looked closely at local attitudes toward several fuel management approaches and support for their implementation.

Both nearby resident and recreation users are important publics for resource managers and community officials to engage in risk reduction efforts and fuels work. Residents need to practice defensible space around their homes and burn trash responsibly; recreation users need to follow recommended campfire use and be watchful of other activities that may cause fires (e.g., ATV use, cigarettes). In a summary of a series of wildfire studies that examined the role of recreation use in fuels management and wildfire prevention, Winter et al. (2005), concluded that recreationists made moderate behavior adjustments for wildfire risks or actual fires. Communication was found to be an important strategy for informing and educating recreation users on the risks of wildfire and fire-safe forest uses, as well as influencing the acceptability of fuels management in forest management. Building on the studies that Winter et al. examined, our research continues to examine recreation users who reside near a national forest. We expected to find that recreation users, through their visits and engagement with forest staff, would hold more positive attitudes toward fuels management and report higher levels of trust in forest managers implementing fuel programs than residents who are not actively recreating in the national forest.

2.0 METHODS

In this study, we assessed attitudes toward and intentions to support two fuels management approaches (prescribed burning and mechanical fuel reduction) in a six-county area of southern Missouri that included five forest ranger districts for the Mark Twain National Forest (MTNF) that were planning fuel reduction activities. This area can be characterized as a WUI composed of a hardwood forest, on a mix of federal and private land, that is populated primarily with permanent homeowners. The area has moderately frequent wildfires and use of prescribed burning. Mechanical thinning was more actively used during the time of this research because of a 2002 tornado that caused significant blown down fuels. A sample of residents was purchased from a commercial list broker and included 400 randomly selected individuals in each of the six counties (Carter, Howell, Iron, Oregon, Reynolds, Shannon). A preferred list would have been digitized or geocoded tax assessor records to restrict the sample to residents who lived in, or close to, WUI areas, but such a list was not available. Twenty-four hundred questionnaires were initially mailed with 274 questionnaires undeliverable. After three mailings, following Dillman's (2000) mail survey steps, 715 questionnaires were returned for an overall response rate of 34 percent. By county the response rates ranged from a low of 28 percent in the most urbanized county to 38 percent in the county with recent wildfires and prescribed burning. Data were weighted by population to account for the different population sizes in each of the six counties. A nonresponse effort was also implemented with a subsample (n=300) of those who had not returned a completed survey. The nonresponse survey was also mailed, but it was only two pages long. Slightly over 10 percent returned this survey and through t-test analysis with respondents we deemed nonrespondents were different only on their approval of prescribed burning.

The questionnaire employed scales with extensive reliability and validity testing with focus group sessions used to formulate relevant constructs and wording. Specifically, a modified theory of reasoned action framework (Ajzen & Fishbein 1980) and seven-point scales developed from that framework were employed. Belief outcomes, attitude, and intention to support are the main constructs of the cognitive-behavior prediction model. Research (Vogt et al. 2005. Winter et al. 2004) on fuels has also shown the importance of trust and personal importance to be predictive of attitude and acceptance (or intent). The questionnaire has also been successfully applied in several other WUI areas (see Winter et al. 2002, Vogt et al. 2005). This analysis uses descriptive statistics and t-tests to determine whether recreation users differed from nonrecreation users.

In addition to replicating the reasoned action framework to predict acceptance of fuel treatments, we have also been interested in "discovering" other explanatory factors. During focus groups held in three communities near the MTNF, as well as during discussions with forest staff, recreation users appeared to be a strong constituency group with extensive hunting and fishing opportunities in the forest. Both the Forest Service planners and the authors were interested in how recreationists may differ in their support for fuels management. Given that recreationists, particularly those from local areas, can be expected to have had greater opportunity to be exposed to fuels treatments and informed of fuels planning, our hypothesis was that recreation users would hold more positive attitudes, indicate greater personal importance, and be more trusting and supportive of fuels management by the USDA Forest Service than those who do not use the forest for recreation purposes.

3.0 RESULTS

A large proportion (73%) of respondents used the forest for recreation purposes. Those who didn't (27%) cited age, poor health, a disability, lack of transportation, preference for other leisure activities, dislike for outdoor activities, no time to recreate in the forest, too far to travel, poor access to the forest, laws or too many restrictions (e.g., on ATV use), and preference for recreating on their own land.

Respondents to the survey were primarily male (Table 1), recreation users were even more likely to be male than nonrecreation users. Most (85%) respondents were permanent area residents, and recreation users were more likely to be permanent homeowners and renters than nonrecreation users. About one-third of households had someone with a respiratory ailment. About 80 percent of all respondents earned $60,000 or less at a household

Table 1.—Demographic profile of respondents

	All respondents	Recreation users	Nonrecreation users	Significance test
Gender				X^2=6.4, p<.05
Male	72%	75%	66%	
Female	38	25	34	
Residency				X^2=15.2, p<.01
Permanent	85%	86%	80%	
Seasonal/vacation	2	2	3	
Renter	6	7	4	
Other	6	5	13	
Respiratory ailment in household	31%	30%	32%	NS
Income				X^2=32.9, p<.001
Less than $20k	27%	21%	43%	
$20k-$40k	30%	30	27	
$40k-$60k	23%	25	18	
$60k-$80k	11%	13	6	
$80k-$100k	6%	7	3	
Over $100k	4%	4	3	
Education level obtained	13 years	13.5	13.1	t=2.3, p<.05

NS=not significantly different

Table 2.—Cognitive elements of fuel management acceptance

(Mean scores reported)	All respondents	Recreation users	Nonrecreation users	Significance test
Personal importance of: [a]				
Prescribed burning	5.1	5.2	4.7	t=3.5, p<.01
Mechanical thinning	4.8	4.9	4.6	t=2.3, p<.05
Attitude toward the use of: [b]				
Prescribed burning	5.2	5.4	5.0	t=2.3, p<.05
Mechanical thinning	5.0	5.2	4.6	t=4.0, p<.001
Approval of use of: [c]				
Prescribed burning	5.1	5.2	5.0	NS
Mechanical thinning	5.1	5.1	5.0	NS

Scales
[a] 1 equals not at all important and 7 equals extremely important
[b] 1 equals extremely negative and 7 equals extremely positive
[c] 1 equals strongly disapprove and 7 equals strongly approve
NS=not significantly different

level. Nonrecreation users were much more likely to live in households earning less than $20,000 per year. On average, the education level of respondents was slightly more than high school level (13 years of formal education). Recreation users were slightly more educated than nonrecreation users.

Following the theory of reasoned action, selected cognitive elements were examined for recreation and nonrecreation users. Table 2 shows that the level of personal importance of prescribed burning (p<.01) and mechanical thinning (p<.05) was higher for recreationists than for nonrecreationists. A similar result was found with attitude toward the use of prescribed burning (p<.05) and mechanical fuel reduction (p<.01), where those who used the forest for recreation were more positive than others.

Approval of the two fuel management approaches was relatively high (5.1 mean on a 7-point scale) and was shared, on average, by recreation and nonrecreation users. Acceptance, measured using a dichotomous scale,

Table 3.—Trust elements of fuel management acceptance

"I trust the government in…" (mean scores reported)	All respondents	Recreation users	Nonrecreation users	Significance test (independent-test)
Use of prescribed burning	4.8	4.9	4.4	t=3.0, p<.01
Notifying about prescribed burning	4.3	4.3	4.3	NS
Use of mechanical thinning	4.7	4.7	4.6	NS
"Gov't does a good job…."				
Managing public land	4.6	4.7	4.5	NS
Communicating about forest issues	4.1	4.1	4.1	NS
Protecting private property from wildland fires	4.9	4.9	4.8	NS

Scale: 1 equals strongly disagree and 7 equals strongly agree.; NS=not significantly different

of the two practices had similar results: for prescribed burning, 85 percent accepted its use in the local area; and 81 percent accepted use of mechanical thinning. Unlike attitudes and personal importance, there was no significant difference between recreation and nonrecreation users for either acceptance or approval of prescribed burning and mechanical thinning.

For trust in the U.S. Forest Service's implementing prescribed burning and mechanical fuel reduction programs on the MTNF, recreation users and nonusers hardly differed (table 3). The only difference noted was that recreation users were more trusting of the Forest Service using prescribed burning (p<.01). Overall, respondents rated the trust in the federal government's protecting private property from wildland fires the highest of the trust items.

4.0 DISCUSSION

Cognitively, residents who recreate in the MTNF have more favorable attitudes towards and place greater value on both fuel management approaches than residents who do not recreate there. However, these cognitions do not translate into recreationists' being more likely to approve of the use of either treatment method. Overall, both groups of residents living in the wildland urban interface of the Mark Twain National Forest appear to have strong support for the use of both prescribed fire and mechanical thinning techniques on public land (80% support).

Our hypothesis is thus only partially supported. While recreationists placed more value on and had more positive attitudes towards use of prescribed burning and mechanical fuels reduction, this finding does not appear to translate into their having higher approval levels than non-recreationists. In addition, recreationists were not consistently more likely to trust the Forest Service. However, given that prescribed burning can be a controversial practice, the fact that recreationists had greater trust in this area is not unimportant. The lack of major differences between the two groups may result from the fact that both groups live near the forest in what is a relatively rural landscape. Thus both groups may have fairly similar exposure to fire management issues and to National Forest personnel. It therefore would be worthwhile examining whether our initial hypothesis holds for recreational and non-recreational users from more urban areas that are less proximate to a National Forest.

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SOURCE CREDIBILITY AND THE EFFECTIVENESS OF FIREWISE INFORMATION

Alan D. Bright
Department of Natural Resource Recreation and Tourism
Colorado State University
Fort Collins, CO 80523-1480
abright@warnercnr.colostate.edu

Andrew W. Don Carlos
Colorado State University

Jerry J. Vaske, Ph.D.
Colorado State University

James D. Absher, Ph.D.
U.S. Forest Service,Pacific Southwest Research Station

Abstract.—Understanding how residents of the wildland-urban interface (WUI) react to information about firewise behavior can enhance efforts to communicate safety information to the public. This study explored the multiple roles of source credibility on the elaboration and impact of messages about conducting firewise behaviors in the WUI. A mail-back survey to residents of the wildland-urban interface in Colorado measured their response to information flyers about firewise behaviors for protecting homes. Using the elaboration likelihood model as the conceptual framework, source credibility, message clarity, elaboration, and behavior change were measured related to the flyers. Results indicated that source credibility was an important factor influencing the likelihood that information would change behavior and that the ability of respondents to understand the information influenced elaboration of that message. Implications include joint communication efforts across several agencies and development of messages that consider their clarity and the credibility of the source.

1.0 INTRODUCTION

Residential development near natural forested areas in northern Colorado has increased dramatically. These areas have been described as the wildland-urban interface (WUI) (Gardner et al. 1985). Recent wildland fires in Colorado and throughout the western United States have raised concerns regarding the safety of people and property located in the WUI. Fire management agencies have highlighted the direct role that residents of these areas play in fire protection. While federal, state, and local fire management agencies are often best equipped to directly combat wildfires once they start, mitigation efforts that also include private citizens can be effective in reducing the overall impact of the fire (Bright et al. 2003, Cortner 1991, Cortner et al. 1990). Creation of "defensible space" around homes in the WUI, for example, has been promoted by government agencies, local fire authorities, university extension services, and insurance companies, and in the popular media. Defensible space is an area around a structure where fuels and vegetation are treated, cleared, or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire's moving from the building to the surrounding forest and provides an area for fire suppression operations to occur (Dennis 2003).

Encouraging the public to take action (e.g., creating defensible space) that can reduce the likelihood of wildfire damage in their communities and decrease the likelihood of injury is a common approach to increasing wildfire safety. Communication campaigns have been employed to describe how WUI residents can protect themselves and their homes from wildfire. In northern Colorado, one prominent example of an agency communication effort is the Firewise information campaign. This campaign, launched by the Colorado State Forest Service in cooperation with several federal, state, and local authorities, includes a package of instructional materials that provide information to residents on how to be firewise around their home. Included in this information package is a set of flyers that describe seven areas of firewise behavior for WUI residents. Specific topics contained in the flyers include: Access, Water Supply, Defensible Space, Trees and Shrubs, Construction Materials and Design, Interior Safety, and What to Do When a wildfire approaches.

Evaluating the effectiveness of agency efforts that focus on persuasive communication is an important aspect of responsible natural resource management (Absher & Bright 2004). Evaluation of current information campaigns is necessary to determine their effectiveness in encouraging behaviors that will ultimately reduce damage

caused by wildfire. Understanding how residents of Colorado's WUI react to educational material such as the Firewise information flyers can enhance future efforts to communicate important safety information to the public.

1.1 Study Purpose and Objectives.

This study explored the multiple roles of source credibility on the elaboration and impact of messages about conducting firewise behaviors in the WUI. Our objectives were to examine the extent to which:

1. The credibility of the source of information impacts how much WUI residents carefully consider messages about firewise behaviors and the extent to which the clarity of the message mediates the credibility-elaboration relationship.

2. The relationship between source credibility and self-reported behavior change is moderated by the level of message elaboration that occurs.

3. WUI residents rated three agencies, the U.S. Forest Service, the Colorado State Forest Service, and local fire authorities on their credibility as sources of information about forest fire issues and firewise behaviors.

2.0 CONCEPTUAL FRAMEWORK

A prominent social psychological theory that addresses information processing is the *elaboration likelihood model* (ELM) (Petty & Cacioppo 1986). An important component of the ELM is the extent to which message relevant thinking, or elaboration, occurs about the information in a message. Elaboration implies that a person (a) attends to a message, (b) processes the message in light of relevant associations, images, and experiences accessed from memory, and (c) draws inferences and an overall evaluation about the merits of the arguments within a message (Petty & Cacioppo 1986). When an individual elaborates on the content of a message and its arguments, the resulting attitude change occurs through a central route of information processing. When an individual does not elaborate on the information, yet attitude change takes place due to other factors tangential to the message, the person is using a peripheral route of information processing. Factors that influence a person's motivation and ability to elaborate on information include (a) context factors such as the method with which the information is presented, (b) recipient factors such as working knowledge (Biek et al. 1996), (c) source factors, such as credibility (Heesacker et al. 1983), and (d) message factors, such as the relevance of the issue described in a message and message clarity (Hafer et al. 1996). For this study, we examined source credibility and message comprehension as they influence elaboration and attitude change.

2.1 Source Credibility

Source credibility influences the motivation to elaborate on a message. Heesacker et al. (1983), for example, found that message recipients were more motivated to elaborate on information when it was provided by an expert than a non-expert. Similar findings were found by Manfredo and Bright (1991) in examining the effects of U.S. Forest Service brochures on canoer behavior in the Boundary Waters Canoe Area Wilderness in Minnesota. Although source credibility may impact an individual's motivation to elaborate on a message, it also serves as a tangential cue to the quality of the message under low elaboration (Petty & Cacioppo 1986). The credibility of message source has been found to be positively correlated to attitude-change when factors limit the recipients' ability to elaborate on the message, such as when they are distracted or when issue knowledge is low (Wood & Kallgren 1988).

2.2 Message Clarity

Message clarity is also positively related to an individual's ability to elaborate on a message. For example, the complex messages are often elaborated upon less because it takes more cognitive effort to understand them (Hafer et al. 1996). For people to consider information, they must understand it.

3.0 METHODS

3.1 Data Collection and Sampling

Data for this study were obtained from a mail survey. An introductory postcard, two full questionnaire mailings, and a reminder postcard were sent out during June and July 2005. The study area included seven counties in northern Colorado (Jackson, Grand, Gilpin, Clear Creek, Larimer, Boulder, Jefferson). Residences in Jackson, Grand, Gilpin, and Clear Creek counties were considered

to be entirely within the WUI. In Larimer, Boulder, and Jefferson counties only selected areas (e.g., at the foothills of the mountains) were included in the sampling frame. Using these geographical boundaries, a random sample of 1,200 residences was purchased from a commercial sampling firm.

Of the 1,200 surveys mailed to households, 149 were undeliverable. From the remaining 1,051 households, 402 usable surveys were received for an overall response rate of 38.2 percent. Shortened nonresponse surveys were sent to a random sample of 250 residences who had not returned the original survey for the purpose of comparing respondents with nonrespondents. Of the 250 nonresponse surveys mailed out, 71 were returned for use in the nonresponse analysis. No significant differences were found between the respondent and nonrespondent surveys and thus, the data were not weighted.

3.2 Experimental Design

Prior to mailing the questionnaire, households were randomly placed into one of three groups. Each group was told that the information was from one of the following sources: U.S. Forest Service, Colorado State Forest Service, or a local fire department organization. Each household received a survey that included flyers related to each of three of the seven firewise topics. An orthogonal design procedure was conducted to determine what combination of three topics would be included in each survey. This was done to make sure that each topic was included an equal number of times across all surveys.

3.3 Variables Measured

The questionnaire included measures of source credibility, message clarity, message elaboration, and behavior change. Respondents rated the credibility/trust of one information source, which was provided randomly from three potential sources as above. Credibility was measured as an index of four 7-point items. Message clarity was addressed by asking respondent to evaluate how difficult the information provided was to understand. Responses were coded on a 5-point scale. For message elaboration, respondents were asked how carefully they had read the information provided them (5-point scale). Finally, respondents were asked, on a 5-point scale, how likely it was that the information would change their behavior regarding specific firewise actions.

3.4 Data Analyses

The first objective of this study was to determine the extent to which message clarity mediated the relationship between source credibility and message elaboration. Following procedures outlined by Baron and Kenny (1986), three regressions were used to explore this objective. First, the criterion variable (elaboration) was regressed on the predictor variable (source credibility). If this relationship was significant, the mediator variable (message clarity) was regressed on the predictor variable (source credibility). If this relationship was significant, the criterion variable (elaboration) was regressed on both the predictor and mediator variables (source credibility and message clarity). If, in the third regression, the message clarity/elaboration relationship was significant and the source credibility/elaboration relationship was not, message clarity fully mediated the source credibility/elaboration relationship.

For objective 2, moderation analysis, using procedures described by Kenny (2004), was used for the situation when both the predictor (source credibility) and moderator (elaboration) are continuous variables. Elaboration was dichotomized by placing respondents in either a high elaboration or low elaboration group. A correlation between source credibility and behavior change was then run for each elaboration group. If the source credibility/behavior change relationship was significant for one group but not the other, elaboration moderated the source credibility/behavior change relationship. The third objective was explored using a one-way analysis of variance of source credibility across the three information sources.

4.0 RESULTS

4.1 Mediation Results

For 5 of the 7 firewise information topics (Access, Construction, Water Supply, Trees & Shrubs, and What to do When), there was no significant relationship between source credibility and message elaboration (regression 1) or message clarity (regression 2), and therefore no opportunity for the hypothesized mediation

Table 1.—Results of mediation and moderation analyses for each firewise topic

	Objective 1: Mediation of Message Clarity on the Source Credibility-Elaboration Relationship[a]			Objective 2: Moderation of Elaboration on the Source Credibility-Behavior Change Relationship[b]	
Firewise Topic/Study Variables	Regression 1 DV: Elaboration	Regression 2 DV: Clarity	Regression 3 DV: Elaboration	Low Elaboration Group; Correlation of Source Credibility with Behavior Change	High Elaboration Group; Correlation of Source Credibility with Behavior Change
Access					
Source Credibility	.152	.157	.056	-.081	.167
Message Clarity			.268*		
Elaboration					
Construction					
Source Credibility	-032	.140	.013	-.088	.161
Message Clarity			.309*		
Elaboration					
Defensible Space					
Source Credibility	.273*	.174*	.229*	-.041	.332*
Message Clarity			.256*		
Elaboration					
Water Supply					
Source Credibility	.039	.018	.037	-.067	.226*
Message Clarity			.119		
Elaboration					
Interior Safety					
Source Credibility	.206*	.189*	.012	.184	.220*
Message Clarity			.200*		
Elaboration					
Trees & Shrubs					
Source Credibility	.073	.016	.069	.180	.338*
Message Clarity			.250*		
Elaboration					
What To Do When					
Source Credibility	.111	.099	.085	.127	.360*
Message Clarity			.264*		
Elaboration					

* β (mediation analysis) and *r* (moderation analysis) are statistically significant at $p \leq .05$.
[a] Mediation analyses were conducted following procedures outlined by Baron & Kenny (1986).
[b] Moderation analyses were conducted following procedures outlined by Kenny (2004) when both the predictor (source credibility) and moderator (elaboration) are continuous variables.

by message clarity to occur (Table 1). For the Defensible Space topic, source credibility was positively related to message elaboration (β= .273, p = .004) and message clarity (β = .174, p = .048). For the Interior Safety topic, source credibility was again positively related to both message elaboration (β = .206, p = .028) and message clarity (β = .189, p = .050). Regression was run for these topics to determine if message clarity mediated the significant relationship between source credibility and elaboration. For the Defensible Space topic, both source credibility (β = .229, p = .014) and message clarity (β = .256, p = .006) were significant predictors of message elaboration, indicating no mediation occurred. For the Interior Safety topic, message clarity was a significant predictor of elaboration (β = .200, p = .024) while the relationship between source credibility and elaboration

became non-significant (β = -.012, p = .892), suggesting that message clarity fully mediated the source credibility/ elaboration relationship.

Message elaboration was also regressed on source credibility and message clarity for the other five topics. Message clarity was a significant predictor of message elaboration for Access (β = .268, p = .005), Construction (β = .309, p < .001), Trees & Shrubs (β = 250, p = .006), and What to do When (β = .264, p = .003). Message clarity did not significantly predict message elaboration for the topic of Water Supply.

4.2 Moderation Results

The level of message elaboration moderated the effects of source credibility on behavior change for five of the seven firewise topics. The relationship between source credibility and behavior change was statistically significant for the high elaboration group yet not significant for the low elaboration group, suggesting moderation. This occurred for the topics of Defensible Space (r = .332, p .003 vs. r = .041, p = .826), Water Supply (r = .226, p = .031 vs. r = .067, p = .682), Interior Safety (r = .220, p = .050 vs. r = .084, p = .431), Trees & Shrubs (r = .338, p = .003 vs. r = .180, p = .235), and What to do When (r = .360, p = .002 vs. r = .127, p = .594). There were no significant correlations between source credibility and behavior change by elaboration group for either the Access or Construction topics.

4.3 Source Credibility

One-way analysis of variance was used to determine if the three groups differed on their perceived credibility for providing information about forest fire and firewise issues. All agencies were perceived as at least somewhat credible in providing information about these topics. The Colorado State Forest Service was perceived as most credible (m = 6.02 out of 7.00), statistically higher than the credibility of the U.S. Forest Service (m = 5.50) and the organization of local fire departments (m = 5.68) (F = 5.28, p = .005).

5.0 DISCUSSION

This study explored the role of source credibility on the elaboration and impact of messages about conducting firewise behaviors in the WUI. According to the elaboration likelihood model (Petty & Cacioppo 1986), source credibility may play multiple roles in information processing. Source credibility may enhance elaboration of a message. For example, if an individual views the local fire department as a credible and trustworthy source of information, that person may make special effort to carefully consider, or elaborate on, information provided by this group. Source credibility may also play a role in behavior change when elaboration of a message does not occur. For example, a message from the U.S. Forest Service may describe several things individuals may do to protect their home from wildland fire. Instead of carefully considering the arguments for (and/or against) these firewise behaviors, individuals may simply assume that the U.S. Forest Service employees are experts and based on that heuristic, assume that whatever the agency says must be right.

In this study, source credibility influenced the level of elaboration of messages for only two firewise topics, Defensible Space and Interior Safety. For the information about interior safety, the significant effect of source credibility on elaboration was fully mediated by the clarity of the message. For all the firewise topics, message clarity was the primary factor influencing elaboration. This is consistent with the tenets of the elaboration likelihood model, which suggests that message clarity, or comprehension, is an important factor that affects one's ability to elaborate on information. Our conclusion is that, in our study, source credibility had relatively little influence on elaboration of firewise messages.

Source credibility influenced behavior change. For five of the seven firewise topics, source credibility had a significant and direct impact on the likelihood that a person's firewise behavior would change as a result of the information. This occurred for those people who elaborated on the message. For those who did not elaborate on the information, source credibility was not related to behavior change. It should be noted that this is contrary to the tenets of the elaboration likelihood model. Source credibility is posited to be a factor that will effect attitude and behavior change when elaboration does not occur. One explanation may involve issue salience, which was not measured here. People who did not elaborate on the information may have determined

that it was not relevant to their situation or that they were not in a position to take the types of actions supported by the messages. Regardless of the credibility of the source, they would be less likely to change their behavior. For some of the topics, an individual homeowner may not be in a position to act (e.g., using appropriate construction materials or improving access to homes or neighborhoods). Behavior change was more likely for topics that homeowners could do in a relatively short time, such as trimming trees and shrubs, and installing sprinklers and making an escape plan to insure the interior is safe.

Management implications of this research suggest that agencies should consider joint communication efforts, as illustrated by the relatively high credibility of all sources studied—national, state or community level. Of particular relevance is ensuring that information is clear to people. Message clarity had a significant impact on one's ability to consider, or elaborate on, a message, and in turn, affects desired behaviors related to wildland fires.

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SALIENT VALUE SIMILARITY, SOCIAL TRUST, AND ATTITUDES TOWARD WILDLAND FIRE MANAGEMENT STRATEGIES

Jerry J. Vaske
Human Dimensions in Natural Resources Unit
Colorado State University
Fort Collins, CO 80523

James D. Absher
U.S. Forest Service, Pacific Southwest Research Station

Alan D. Bright
Colorado State University

Abstract.—Using the salient value similarity (SVS) model, we predicted that social trust mediated the relationship between SVS and attitudes toward prescribed burns and mechanical thinning. Data were obtained from a mail survey (n = 532) of Colorado residents living in the wildland-urban interface. Results indicated that respondents shared the same values as U.S. Forest Service managers, and trusted the agency to plan prescribed burns and use mechanical thinning effectively. As hypothesized, social trust fully mediated the relationship between SVS and attitudes toward prescribed burns and mechanical thinning. As SVS increased, social trust in the agency increased. As social trust increased, approval of prescribed burns and mechanical thinning increased. These findings reinforce the role of social trust in gaining public support for wildfire management and support prior SVS research suggesting that trust mediates the relationship between value similarity and attitudes.

1.0 INTRODUCTION

Recent severe wildland fires in the western United States have heightened awareness of the potential risks associated with wildfires (Miller et al. 2000). To minimize the negative consequences of wildfires, the U.S. Forest Service has shifted from a traditional emphasis on total fire suppression to policies designed to reduce the probability/severity of wildfires and to restore ecological conditions. Two major techniques used are prescribed burns and mechanical thinning. Prescribed burning involves the controlled use of fire to burn off excess vegetation in the forest. Mechanical thinning reduces the amount of vegetation in the forest by physically removing some trees and shrubs. With either prescribed burns or mechanical thinning, management objectives are to: (a) decrease the likelihood of large, potentially uncontrollable fires; (b) reduce the severity of a fire; and (c) improve the ability to control a wildfire.

Although this policy change has ecological advantages, a successful fire mitigation program requires public support (Kneeshaw et al. 2004a, 2004b; Manfredo et al.1990; Vogt et al. 2005). Attitudes, value orientations toward wildland fires, and trust in the management agency have all been shown to influence support for management policies (Absher et al. 2006, Vogt et al. 2005). Using salient value similarity (SVS) measures, Winter and associates (Winter & Cvetkovich 2004, Winter et al. 2004) examined the direct link between shared values and social trust in the management agency. In this paper, we build on this work by exploring the relationships among shared values, social trust, and attitudes toward prescribed burns and mechanical thinning.

1.1 Conceptual Model

The SVS model examines the relationship between salient values and perceptions of trust in a managing agency (Siegrist & Cvetkovich 2000, Siegrist et al. 2000). *Salient values* include individuals' beliefs regarding important goals and processes that people and agencies should follow in specific situations. *Value similarity* reflects the extent to which a person's values are similar to those of the managing agency. Siegrist et al. (2000), for example, showed that people who perceived themselves as having similar values as managers of nuclear power plants had a high degree of trust in the managers and perceived less risks associated with nuclear power compared to those who expressed dissimilar values and distrusted the managers. These findings have been replicated in the contexts of artificial sweeteners, hormones in milk, cancer treatment, chemical plant hazards, hydroelectric power, commercial aviation, hazardous waste disposal sites, and chronic wasting disease (Needham & Vaske, in press).

Social trust is an integral component of SVS related models (Cvetkovich & Löfstedt 1999, Slovic 1993). Social trust is "the willingness to rely on those who have the responsibility for making decisions and taking

actions related to the management of technology, the environment, medicine, or other realms of public health and safety" (Siegrist et al. 2000, p. 354). The adjective "social" emphasizes that the people being trusted are those with formal responsibilities within organizations that may not be personally known to the person making the trust attribution (Siegrist et al. 2000).

Research has shown that social trust in a managing agency influences risk perceptions (e.g., Siegrist et al. 2000). People who trust the managing agency tend to perceive less risk compared to those who do not trust the agency (e.g., Hallman & Wandersman 1995, Siegrist & Cvetkovich 2000). A related variable, agency performance in handling risk situations, has been suggested to correlate with trust in the agency. Siegrist et al. (2003), for example, showed that confidence in the managing agency and evaluations of agency performance were related to perceived risk associated with electromagnetic fields.

1.2 Wildfire Management Research

Research has explored a range of cognitive variables related to wildland fire and its management (Knotek 2006). One line of inquiry, for example, has considered the influence of basic beliefs (Absher et al. 2003, Bright et al. 2005) and norms (Kneeshaw et al. 2004a, 2004b) on respondents' support or opposition to wildland fire policy (Absher et al. 2006, Absher & Vaske, in press). Bright et al. (in review), for example, found that the basic beliefs about wildland fire management influenced the relative effects of current conditions, wildfire history, and forest location on attitudes toward prescribed burns and mechanical thinning. Winter and Cvetkovich (2004) showed that for wildland fire opinions, trust resulted when values were shared and agency actions were viewed as consistent with those values. In a survey of homeowners in three different ecosystems that differed in fuel management strategies, Winter et al. (2004) found that trust in the agency influenced perceived risks/benefits and perceived agency competence.

1.3 Hypotheses

Consistent with prior SVS related models (e.g., Siegrist et al. 2000, Winter & Cvetkovich 2004, Winter et al. 2004), trust is predicted to mediate the relationship between SVS and attitudes toward prescribed burns and mechanical thinning. Stated more formally, we hypothesize:

H_1 Social trust will fully mediate the relationship between SVS and attitudes toward prescribed burns and mechanical thinning.

H_2 As SVS increases, social trust in the agency will increase.

H_3 As social trust increases, approval of prescribed burns will increase.

H_4 As social trust increases, approval of mechanical thinning will increase.

2.0 METHODS

Data for this study were obtained from a mail survey of Colorado residents living in the wildland-urban interface (WUI). The study population consisted of individuals over the age of 18 who reside in Boulder, Larimer, Gilpen, Grand, Jackson, and Clear Creek counties. A random sample of residents was purchased from a commercial sampling firm. Four mailings were used to administer the survey. Residents first received the 12-page questionnaire, a pre-paid postage return envelope and a personalized cover letter explaining the study and requesting their participation. Ten days after the initial mailing a reminder postcard was sent to participants. A second complete mailing was sent to non-respondents 10 days after the postcard reminder. To further increase response rate, a third complete mailing was sent one month following the second complete mailing. A total of 532 completed surveys were returned with an overall response rate of 47 percent (532 returned/1,200 sent - 56 non-deliverables).

As a check on potential non-response bias, a telephone survey was conducted of non-response residences (n = 100). Perceived effectiveness, approval, and aesthetic impacts of prescribed burns and mechanical thinning variables were included in the telephone survey. For all of the variables compared, differences between respondents and non-respondents were "minimal" (Vaske et al. 2002). Thus, non-response bias was not considered to be a problem, and the data were not weighted.

2.1 Variables in Model

Predictor – SVS. Following Siegrist et al. (2000), SVS was measured with five survey items. Respondents were asked: With respect to forest fire management, I feel the U.S. Forest Service: (a) shares similar values as me, (b) shares similar opinions as me, (c) thinks in a similar way as me, (d) takes similar actions as I would, and (e) shares similar goals as me. Variables were coded on a 7-point scale ranging from "strongly disagree" (1) to "strongly agree" (7).

Mediator – Social Trust. A multiple-item index of social trust served as the mediator. One variable consisted of a three-item trust in management index. Respondents were asked: I trust the U.S. Forest Service knows how to: (a) effectively plan prescribed burns, (b) use mechanical thinning effectively, and (c) respond to forest fires. A second indicator of social trust was based on four-item index concerned with trust in U.S. Forest Service information. With respect to forest fire management, I trust the U.S. Forest Service to provide: (a) the best available information on forest fire issues, (b) enough information to decide what actions I should take regarding forest fire, (c) truthful information about safety issues related to forest fire, and (d) timely information regarding forest fire issues. Survey items in both the "trust management" and "trust information" indices were measured on a 7-point scale from "strongly disagree" (1) to "strongly agree" (7). The third social trust variable, agency performance, was a single-item indicator. Respondents were asked to assign a letter grade to the U.S. Forest Service based on their opinion of the job that the agency has done managing wildland fires. Response categories were based on an "A" (4) to "F" (0) scale that included intermediate grades (e.g., A- = 3.75, B+ = 3.50).

Criterion variables. Attitudes toward prescribed burns and mechanical thinning were each measured with three survey items. Respondents were asked: (a) "How effective are prescribed burns (and mechanical thinning) in preventing subsequent fires from getting out of control?" [measured on a 9-point scale ranging from "not at all effective" (1) to "extremely effective" (9)]; (b) "Do you approve or disapprove of the use of prescribed burns (and mechanical thinning) in forests" [measured on a 9-point scale ranging from "strongly disapprove" (1) to "strongly approve" (9)]; and (c) "Do prescribed burns (and mechanical thinning) make the forest look better or worse" [measured on a 9-point scale ranging from "extremely worse" (1) to "extremely better" (9)].

2.3 Analysis Strategy

The internal consistency of the SVS, social trust, and attitude latent concepts were examined using Cronbach's alpha and confirmatory factor analysis. A structural equation path analysis was used to assess the mediation role of social trust. Two separate models were fitted in AMOS 5 using the variance and covariance matrices. In the partial mediation model, the predictor (SVS) influenced the criterion constructs (attitudes toward prescribed burns and mechanical thinning) directly and indirectly through its effect on the mediator (social trust). In the full mediation model, the predictor (SVS) influenced the criterion constructs (attitudes) only indirectly through its effect on the mediator (social trust).

3.0 RESULTS

With respect to forest fire management, the residents believed that they shared the same values (M = 4.86, SD = 1.53), opinions (M = 4.64, SD = 1.54), thoughts (M = 4.51, SD = 1.57), and goals (M = 4.70, SD = 1.57) as U.S. Forest Service managers (Table 1). Respondents also believed that they would act (M = 4.48, SD = 1.62) in a similar way to the Forest Service managers. The reliability coefficient for these five survey items was .96. Deleting any of the items did not improve the scale's overall reliability.

Social trust was measured using three sets of variables (i.e., a trust in management index, a trust in information index, a single-item indicator of the agency's performance grade). In general, respondents trusted Forest Service management to effectively plan prescribed burns (M = 4.80, SD = 1.71), use mechanical thinning effectively (M = 5.17, SD = 1.60), and respond to forest fires appropriately (M = 5.68, SD = 1.36). The reliability coefficient for these three items was .77. The mean for the index was 5.22 with a standard deviation of 1.28. Similar evaluations were given for the trust-in-Forest Service-information variables (e.g., provide the best available information on forest fire issues). The means for the four trust-in-information items ranged from 5.52

Table 1.—Reliability analyses of salient value similarity (SVS), social trust and attitudes toward wildland fire management strategies

	Mean	Standard Deviation	Cronbach Alpha if Item Deleted	Cronbach Alpha
SVS				
With respect to forest fire management, I feel that the US Forest Service [1]				.96
Shares similar values as me.	4.86	1.53	.94	
Shares similar opinions as me.	4.64	1.54	.94	
Thinks in a similar way as me.	4.51	1.57	.94	
Takes similar actions as I would.	4.48	1.62	.95	
Shares similar goals as me.	4.70	1.57	.95	
Social trust				
Trust in U.S. Forest Service management [1]				.77
I trust that the U.S. Forest Service knows how to:				
effectively plan prescribed burns	4.80	1.71	.63	
use mechanical thinning effectively	5.17	1.60	.62	
respond to forest fires	5.68	1.36	.74	
Trust Management index	5.22	1.28		
Trust in U.S. Forest Service information [1]				
With respect to forest fire management, I trust the U.S. Forest Service to provide:				.93
the best available information on forest fire issues	5.59	1.40	.92	
me with enough information to decide what actions I should take regarding forest fire	5.69	1.33	.91	
truthful information about safety issues related to fire	5.77	1.31	.91	
timely information regarding forest fire issues	5.52	1.50	.92	
Trust Information index	5.64	1.27		
Agency Performance Grade [2]				
Taking everything into consideration, how would you grade the U.S. Forest Service for handling forest fire in Colorado?	3.23	0.79		
Overall Social Trust [3]	4.69	0.92		.77
Attitude toward:				
Prescribed burns				.83
How effective are prescribed burns in preventing subsequent fires from getting out of control [4]	6.74	1.44	.77	
Do you approve or disapprove of the use of prescribed burns in forests [5]	6.85	1.87	.65	
Do prescribed burns make the forest look better or worse [6]	5.65	2.04	.81	
Mechanical thinning				.81
How effective is mechanical thinning in preventing subsequent fires from getting out of control [4]	6.84	1.56	.81	
Do you approve or disapprove of the use of mechanical thinning in forests [5]	7.04	1.89	.64	
Does mechanical thinning make the forest look better or worse [6]	6.31	1.98	.72	

[1] Variables coded on 7-point scale: (1) Strongly disagree, (2) Moderately disagree, (3) Slightly disagree (4) Neutral, (5) Slightly agree, (6) Moderately agree, (7) Strongly agree.
[2] Variable coded on a 10-point scale: (4.00) A, (3.75) A-, (3.50) B+, (3.00) B, (2.75) B-, (2.50) C+, (2.00) C, (1.75) C-, (1.00) D, (0.00) F.
[3] The "overall social trust" variable includes "trust management index", "trust information index" and "agency performance grade."
[4] Variable coded on 9-point scale: (1 and 2) Not at all effective, (3 and 4) Slightly effective, (5, 6, and 7) Moderately effective, (8 and 9) Extremely effective.
[5] Variable coded on 9-point scale: (1 and 2) Strongly disapprove, (3 and 4) Slightly disapprove, (5) Neutral, (6, and 7) Slightly approve, (8 and 9) Strongly approve.
[6] Variable coded on 9-point scale: (1 and 2) Extremely worse, (3 and 4) Slightly worse, (5) Neither, (6, and 7) Slightly better, (8 and 9) Extremely better.

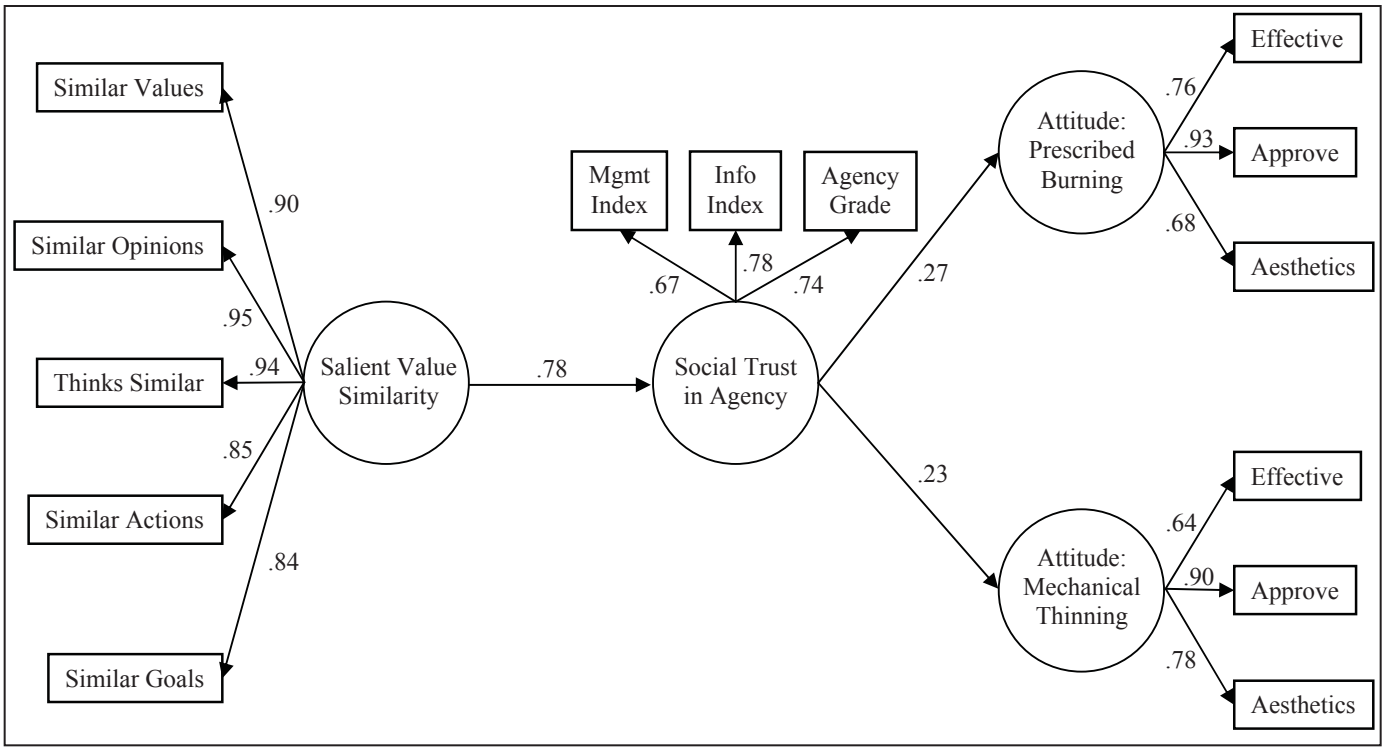

Figure 1.—Confirmatory factor analyses and full mediation structural equation model. Path coefficients are standardized regression coefficients. All coefficients are statistically significant ($p < .001$)

(provide timely information) to 5.77 (provide truthful information about safety issues related to forest fire) and the overall Cronbach's alpha was .93. The final variable representing the social trust concept, overall agency performance grade with respect to handling forest fires in Colorado, had an average score of 3.23 (a letter grade of B) and a standard deviation of 0.79. Taken together, the trust in management index, trust in information index, and overall agency grade had a reliability coefficient of 0.77.

Attitude toward prescribed burns was measured using three survey items that addressed effectiveness (M = 6.74, SD = 1.44), approval (M = 6.85, SD = 1.87), and aesthetic impact (M = 5.65, SD = 2.04). The overall Cronbach's alpha for these three items was .83 (Table 1). Attitude toward mechanical thinning was measured using an identical set of three variables. Results were similar to attitude toward prescribed burns. The means for mechanical thinning items ranged from 6.31 (aesthetic impact) to 7.04 (approval), with a reliability coefficient of .81.

3.1 Mediation Models

Having demonstrated the reliability of the constructs separately, confirmatory factor analysis was used to examine the relationship between each of the observed variables and the four latent constructs (Figure 1). The standardized factor loadings were consistently greater than .64 ($p < .001$). Modification indices indicated that the model fit could not be improved by allowing any of the observed variables to load on a different latent construct.

Hypothesis 1 was tested using two structural equation models. Consistent with prior SVS literature (Siegrist et al. 2000), social trust was predicted to fully mediate the relationship between SVS and attitudes toward prescribed burns and mechanical thinning. Support for this hypothesis was evident by comparing the full and partial mediation models. The partial mediation model (χ^2 = 438.19, df = 72, p < .001) was statistically equivalent to the full mediation model (χ^2 = 440.94, df = 74, p < .001); and the change in chi-square statistic was not significant ($\Delta\chi^2$ = 2.75, df = 2, n.s.). The χ^2 /

df (5.96), NFI (.917), CFI (.930), and RMSEA (.097) were acceptable for the full mediation model. The full mediation model was used to describe the data.

As predicted by hypothesis 2, as SVS increased, social trust in the agency increased ($\beta = .78$, $p < .001$, Figure 2). Similarly, as social trust increased, approval of prescribed burns ($\beta = .27$, $p < .001$) and mechanical thinning ($\beta = .23$, $p < .001$) increased. These findings support hypotheses 3 and 4.

4.0 DISCUSSION

This paper used a salient value similarity model to explain the relationships among: (a) SVS, (b) social trust in the U.S. Forest Service, and (c) attitudes toward wildland fire management strategies. The findings highlighted both applied and theoretical implications for understanding attitudes toward wildland fire management strategies.

4.1 Management Implications

From an applied perspective, results showed relatively weak but statistically significant relationships between social trust in the agency and attitudes toward prescribed burns and mechanical thinning. Studies of other issues such as nuclear power have shown a much stronger relationship between trust and related attitudinal constructs such as perceived risk (Siegrist et al. 2000). Nuclear power, however, is a technology created and controlled by humans, whereas wildfires can occur naturally and are perhaps viewed as a force of nature. Homeowners may trust the managing agency, but feel that wildfires, even prescribed burns, are beyond agency control. Agencies may need to do more to inform and educate individuals about agency strategies for managing wildfires and their expectations, capabilities, or objectives in fighting them.

Findings also revealed that, on average, homeowners agreed that they shared similar views as the Forest Service and trusted the agency to manage wildfires appropriately. This result is important for several reasons. First, SVS and trust can influence support of agency goals, objectives, and management (Earle 2004). For example, individuals in our study who shared similar values as the Forest Service reported more trust in the agency; those that trusted the agency were more likely to support prescribed burns and mechanical thinning. Second, persuasion models (e.g., elaboration likelihood, heuristic systematic) suggest that similarity and trust are important determinants of effective communication and persuasion (Petty & Cacioppo 1986). The full mediation model found here suggests that individuals who trust an agency may be more motivated to attend information campaigns. Third, agencies should strive to understand constituents' opinions, values, and goals. To preserve trust and a strong constituent base, management should be tailored to reflect local views whenever feasible. If constituents' views are not reflected in management, reasons for inconsistencies should be shared so they can be weighed in relation to considerations of trust (Cvetkovich & Winter 2003).

4.2 Theoretical Implications

Finding a strong positive relationship between SVS and trust is consistent with past research (Siegrist et al. 2000, Winter et al. 2004). Researchers should continue to examine measures of perceived similarity, as they seem to be important determinants of social trust. Given the factor loadings and reliabilities, variables used here and in other studies appear to be appropriate for measuring SVS. The association between social trust and attitude is less clear. Some studies have reported strong relationships between related concepts (e.g., trust and perceived risk) (Siegrist et al. 2000). Findings here, however, were consistent with research reporting relatively weak relationships (e.g., Sjöberg 2000b, 2001; Needham & Vaske, in press). Given that most of the variance in these concepts remains unexplained by trust, it is possible that other attributes such as knowledge, control, and newness may also contribute to respondents' perceptions (e.g., Fischhoff et al. 1978, Sjöberg 2000a).

There is inconsistency in the conceptualization and measurement of trust. Some researchers contend that trust is multidimensional and consists of dimensions such as caring, responsibility, competence, fairness, and confidence (Poortinga & Pidgeon 2003). Factor loadings and reliabilities reported here, however, support the unidimensional interpretation of social trust (Winter, Palucki et al. 1999, Siegrist et al. 2001).

4.3 Future Research

To increase the generalizability of these findings, the following research considerations are offered. First, this article examined homeowners' attitudes toward prescribed burns; it did not examine the potential risks associated with prescribed burns that may influence individuals' views. People tend to believe that they are at less risk than others (i.e., risk denial) (Sjöberg 2000a). Research is needed to assess how individuals assign judgments of risk.

Second, this article investigated WUI residents' perceptions of similarity, trust, and attitude. Research has shown that experts, constituent/interest groups, and the public can differ in their perceptions. Experts, for example, tend to judge risks differently and as less severe compared to others (Sjöberg 1999). Researchers should be sensitive to, and explore possible differences in, risk judgments among stakeholder groups.

Third, most studies investigating relationships among SVS and social trust have focused on the limited number of agencies that are usually responsible for managing a natural resource. This scope, however, may be too narrow. Perceptions may be influenced by additional sources such as interest groups, media, friends, and family, as well as the specific management agency (i.e., federal, state, local) (Don Carlos et al. 2006). This may partially explain the mixed results in studies examining relationships between trust and attitudinal concepts such as benefits and risks (e.g., Walls et al. 2004). Effects of other diverse information sources on judgments of risk related to other natural resource issues warrant research consideration.

Fourth, Colorado residents' attitudes were only partially influenced by trust in the agency. Researchers have identified other determinants of attitudes and perceived risk including dread, knowledge, control, and newness (e.g., Fischhoff et al. 1978, Sjöberg 2002, Slovic 1987). Research is required to explore the dimensionality and impact of perceived attitudes and risk. Understanding wildland fires within the context of a psychometric model may facilitate risk analysis and policy development.

Fifth, our operationalization of SVS in this paper was identical to prior theorizing and empirical work based on the SVS model (e.g., Siegrist et al. 2000). We have, however, also developed scales for measuring value orientations (i.e., patterns of basic beliefs) about wildfire management (e.g., Absher et al. 2003, Bright et al. 2005) based on the theoretical work of Rokeach (1973). These basic beliefs include dimensions such as biocentrism, anthropocentrism, responsibility, and freedom. Identification of these value orientations / basic beliefs has proven useful for predicting attitudes toward fire policies, norms for agency reactions to wildfire, and fire-related homeowner behaviors such as creating defensible space (Absher & Vaske, in press). Research that directly compares SVS measures of value similarity against the Rokeach-based value orientations may further facilitate understanding the foundations of individuals' attitudes, norms, and behaviors associated with wildland fire management.

Sixth, identical to most previous research on SVS and social trust, this article is quantitative and cross-sectional in nature. It is likely, however, that these concepts are dynamic, not static. Longitudinal or panel design studies are needed to obtain time-series data. Studies have found utility in applying qualitative methods to examine these concepts (e.g., Cvetkovich & Winter 2003, Earle 2004, Winter et al. 1999). These approaches may be useful for providing depth and detail necessary for delineating underlying influences and dimensions of perceived similarity and trust.

Finally, the concepts of SVS and social trust have generated considerable interest in the risk literature, but have received little attention in natural resource fields. Given the controversial nature of many natural resource issues, drawing on the risk literature may facilitate a better understanding of stakeholders and, consequently, the challenges faced by resource managers. This study should be viewed as a starting point in that direction. Researchers are encouraged to address research needs identified here to further understand the human dimensions of wildfire management.

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URBAN ENCROACHMENT BRINGS DEVIANT BEHAVIOR TO RESOURCE RECREATION AREAS

Christopher J. Wynveen
Texas A&M University
2261 TAMU
College Station, TX 77843-2261
email: wynveen@tamu.edu

Robert D. Bixler
Clemson University

William E. Hammitt
Clemson University

Abstract.—The encroachment of urban areas on resource recreation areas has added several challenges to resource and recreation managers. Unfortunately, Chavez and Tynon (2000) indicated one of the impacts of urban encroachment on natural resource areas is an increase in crime. Given that with urban encroachment comes a heightened perception of crime (Chavez & Tynon 2000, Wynveen et al. 2005), this study's purpose was to identify specific crimes which were perceived by park rangers to occur with a varying frequency depending on the proximity of the respondent's park to an urban area. Study results indicated that urban encroachment is correlated with the perceptions of crime in a resource area. Burglary, arson, motor vehicle theft, homicide, and vandalism are crimes perceived to occur more frequently in parks closer to urban areas. In contrast, wildlife poaching and artifact theft were significant crimes perceived to occur more often in parks farther from urban centers.

1.0 INTRODUCTION

Land agencies are continually adapting to changes in visitor use patterns and behaviors. These changes in visitors, along with recent political developments, have placed federal, state, and local land agencies in a precarious position. The encroachment of urban areas on natural resource recreation areas has added several challenges to resource and recreation managers. Unfortunately, Chavez and Tynon (2000) indicted one of the impacts of urban encroachment on natural resource areas is an increase in crime.

It is widely accepted that criminal activity negatively impacts visitors' recreation experience in the nation's parks and forests (Fletcher 1983). "Much of the undesirable behavior which managers must deal with in the wilderness is behavior that disrupts the natural order or the ability of others to experience nature" (Wallace 1990, p. G4).

Given that with urban encroachment comes a heightened perception of crime (Chavez & Tynon 2000, Wynveen et al. 2005), the purpose of this study was to identify specific crimes which were perceived by National Park Service (NPS) rangers to occur with a different frequency depending on the proximity of the respondent's park to an urban area (a metropolitan area with population of 75,000 or more). Based on the literature, it was hypothesized that urban encroachment would be correlated with perceptions of crime in a natural resource area. Specifically, it was hypothesized that universal crimes (crimes that did not involve the resource) would be perceived to occur more frequently the closer the park was to an urban area. Also, intentional resource violations (crimes purposely damaging the resource) would be perceived to occur more frequently in parks farther away from metropolitan areas.

2.0 RELATED RESEARCH

2.1 Recreation and Crime

It could be assumed that crime and recreation are not strongly related in any manner. However, Pendleton (2000) writes that "the meaning of crime and the meaning of leisure are determined by interactions between people and between people and the settings in which they find themselves" (p. 113). The interaction between people and crime is the basis of a few studies on visitor perceptions of safety and how those perceptions change visitors' behavior. Fletcher (1983) found that crime impacts an individual's recreation in the following ways: "(1) ...actual and perceived safety and security problems appeared to affect negatively the use and enjoyment of parks; ... (2) safety and security concerns were reasons for reduced use and enjoyment of the parks by a minority of those users interviewed..." (p. 34).

The mechanisms involved in creating the negative impact of crime on recreation are many. The literature cites two main constructs linking crime and the recreation experience: constraints and Csikszentimihalyi's flow experience. Crawford and Godbey (1987), Crawford et al. (1991), and Mannell and Kleiber (1997) have all indicated that fear can be a constraint to leisure participation. Hence, fear for personal safety and of crime may prevent an individual from enjoying or even participating in recreation on protected lands. The flow experience, which matches skill level and challenge of experience over time to create satisfaction, may also be affected by perceptions of crime and safety. For example, if visitors perceive crime to be a problem to be overcome during their recreation experience they may question their ability to negotiate the perceived dangers inherent to crime (Coble et al. 2003). Thus, if participants perceive that they are not overcoming the challenges involved in their experience, they will fall below the optimal flow zone, hence having a diminished and unsatisfactory leisure experience. Clearly, theories of recreation constraints and flow experience describe how crime can have a negative impact on the leisure experience.

Although crime has direct and indirect negative impacts on recreation, the techniques used to deter criminal behavior may also have an indirect impact on recreation. For example, rules and regulations designed to encourage appropriate visitor behavior also confine the recreational experience. "On the one hand is the need to maintain law and order in the park. On the other is the need to recognize law enforcement practices may negatively and unfairly impact the average visitor" (Philley & McCool 1981, p. 367). In 1982, Lucas postulated that rules and recreation are opposed to each other when freedom of choice is considered. Perceived freedom is a main tenet of recreation, yet regulations limit that freedom. Hence, although the rules and regulations are developed for the good of the resource and the visitor and to limit the negative impacts of inappropriate behavior of a few, they create a burden on the recreational experience of the law-abiding visitor. Furthermore, Hammitt and Cole (1998, p. 222) posit: "Regulations are particularly undesirable toward the primitive end of the recreational opportunity spectrum, where regimentation is supposed to be low." Clearly, both criminal behavior and management techniques designed to limit these behaviors constrain visitors. Thus, it is important for rangers to choose enforcement techniques carefully. However, in order for law enforcement officers to make wise decisions, further research is needed on the enforcement techniques currently advocated by rangers.

2.2 Perceptions of Crime in Protected Areas

Although criminal activity occurs in protected areas, it is unclear if the amount of crime occurring is perceived accurately. Chavez and Tynon (2000) indicated there is a lack of public awareness of crime on U.S. National forests. Dunham and Alpert (1997) indicated the public believes crime, in general, is progressively getting worse even though it is not. Moreover, they found that citizens do not understand the forces underlying the crime rate. "Crime rates are affected by vast social, economic, and political forces" (Dunham & Alpert 1997, p. 240).

Where do these perceptions originate? This question has yet to be fully answered. Philley and McCool (1981) indicate sources such as gossip, hearsay, and (un)educated guessing. Among law enforcement rangers, they posit that perceptions may be influenced by background, law enforcement experience, and length of tenure dealing with crime.

Regardless of the basis for crime perceptions, they exist and are correlated with a number of factors. Philley and McCool (1981) found, among NPS managers, perception of the amount of serious crime was positively correlated with the number of acts of vandalism reported in the park. Furthermore, they indicated that managers' perceptions were affected more by the total number of criminal acts rather than the crime rate (acts per 100,000 visitors). To understand the perceptions of visitors and protected area employees, there is a need for more research on the differing perceptions of crime and law enforcement.

2.3 Type of Crimes

Another topic in the literature concerning protected areas and crime are typologies of the crimes that take place. Hendee et al. (1990) (as cited in Lukas 1999) indicate there are five different types of violations against

protected areas beyond intentional violations such as tree theft and poaching. The first type Hendee et al. describe is that of *illegal uninformed actions.* These are criminal actions taken by individuals who are unaware of laws and regulations or are unaware that they are in a protected area. Examples of illegal uniformed actions might be off-highway vehicle use, theft of artifacts, or camping in a restricted area. *Thoughtless violations* are acts committed by an individual who does not think about the consequences of his actions or does not understand the effects of an action. Unintentional littering or failure to comply with boating safety regulations can be examples of thoughtless violations. The third type of violation that Hendee et al. describe is *unskilled actions*, which are actions taken by an individual to solve a problem because that individual does not have the skills to handle the problem appropriately. Such actions might be the ditching of a tent or using damaging equipment while rock climbing. *Uninformed behavior* are actions taken by individuals who were never informed of actions that impact the protected areas. Uninformed behavior takes place when changes in regulations and laws are not adequately publicized or when agency staff does not take the necessary steps to provide users with the appropriate information. The last type of violation that Hendee et al. recognizes is *unavoidable minimum impact.* These are violations due primarily to the presence of human beings in an area. Unavoidable minimum impacts are characterized by such impacts as compaction of vegetation and soils from hikers who have strayed off the trail. The above actions combined with the following distinctions complete the typology of behaviors that can occur in protected areas: *intentional resource violations* and *universal crime*. Intentional resource violations are crimes that obviously impact the resource in a destructive way, such as poaching and artifact theft. Universal crimes are crimes that can occur in any setting.

3.0 METHODS

3.1 Study Area, Population, and Response Rate

The data were collected via a Web-based survey in early March 2005, with 3,023 full-time NPS rangers and superintendents contacted via email to participate in the study. Completed surveys were returned by 527 respondents and 94 of the email addresses were determined to be invalid (effective N=2,933). Thus, a response rate of 18.0% was achieved.

3.2 Survey Instrument

The instrument used to survey the NPS employees was a Web-based questionnaire. A Web survey was chosen because it was determined to be the most appropriate way of contacting individuals across all states and territories of the United States. Furthermore, Dillman (2000) indicated that response rates and response validity are similar or better than a paper mail survey when dealing with a population that has complete email and World-Wide Web access as does the population in this study. The research team designed the instrument based on the relevant literature and conversations held with personnel in the Law Enforcement and Emergency Services Office of the NPS. The instrument was reviewed by an expert panel of law enforcement officers. After the individual items of the instrument were compiled, the instrument was then formatted to be used with *Web OnQ* (Witte 2004).

4.0 ANALYSIS AND RESULTS

The sample consisted of 527 usable surveys returned electronically through the World-Wide Web. About two-thirds of the respondents were male (n=342, 68.4%). The mean age was 44.3 (sd=9.2) with a range of 23 to 65 years of age. The length of employment with the NPS ranged from less than one year to over 40 years, with a mean of 18.2 years (sd=8.9). Almost three-fourths of respondents (n=372, 71.7%) had full-time law enforcement experience within the NPS. Over three-fourths (n=404, 76.66%) of the rangers surveyed currently worked in parks within a hundred miles of a metropolitan area of 75,000 persons or more. In summary, the respondents were predominantly male, in the middle of their NPS careers, and worked in park units within a couple hours of an urban area. Many have had law enforcement experience.

4.1 Crime and Urban Proximity

The analysis of the relationship between proximity of a national park and NPS rangers' perceptions of the frequency of crime occurrence indicate that certain crimes are perceived to occur at different frequencies at different distances from urban areas (Table 1). Burglary,

Table 1.—Differences among proximity to wildland-urban interface concerning perceived frequency of crime type (n= 515)

			Distance in miles of park from urban area (n)		
Criminal behavior	F	p	Less than 50 (281)	50 - 199 (180)	200 or greater (54)
Burglary	4.07	0.02	1.49[a]	1.23[a,b]	1.02[b]
Theft	1.60	0.20	2.18	1.96	1.98
Arson	4.02	0.02	0.80[a]	0.71[a]	0.38[b]
Motor Vehicle Theft	7.89	0.01	1.04[a]	0.65[b]	0.62[b]
Homicide	3.63	0.03	0.54[a]	0.41[a,b]	0.28[b]
Rape	0.28	0.76	0.61	0.58	0.52
Robbery	6.20	0.01	0.88[a]	0.71[a]	0.35[b]
Aggravated Assault	1.12	0.33	1.17	1.26	0.96
Assault	0.49	0.61	1.33	1.46	1.36
Liquor violations	0.13	0.88	2.94	2.87	2.83
Drug violations	0.70	0.50	2.89	2.80	2.60
Wildlife poaching	3.56	0.03	1.97[a]	2.38[b]	2.06[a,b]
Plant/Tree theft	1.07	0.34	1.38	1.55	1.26
Artifact theft	8.75	0.01	1.46[a]	2.04[b]	1.85[a,b]
Vandalism	6.85	0.01	2.94[a]	2.84[a]	2.11[b]
Other resource damage	0.28	0.76	2.76	2.86	2.71
Traffic violations	2.12	0.12	3.29	3.11	2.76

[a,b] Means with different superscripts indicate statistically significant difference at the 0.05 level
Means based on a 5-point frequency rating scale (0=no occurrence; 3=moderate occurrences; and 5=heavy occurrences)

arson, motor vehicle theft, homicide, robbery, and vandalism are perceived to occur significantly more frequently in parks closer to urban areas. For instance, on a six-point rating scale (0=no occurrences, 3=moderate occurrence, and 5=heavy occurrence) respondents indicated that motor vehicle theft occurred more frequently at parks within 50 miles of an urban area ($\bar{x}$=1.04) than at parks 50 or more miles from an urban area ($\bar{x}$=0.65). Motor vehicle theft is the only crime that is significantly different between the two lowest distance categories. Burglary, arson, homicide, robbery, and vandalism are all significantly different at parks over 200 miles from an urban area and those within 200 miles of an urban center. Hence, the results indicate that although proximity to urban areas does affect the perception of the frequency of these crimes, the perceptions do not change at each distance interval.

The opposite relationship was found concerning wildlife poaching and artifact theft. These crimes are perceived to occur significantly more at parks more distant from urban areas. For instance, wildlife poaching occurs more frequently at parks between 50 and 199 miles from an urban center ($\bar{x}$=2.38) than at parks within 50 miles of an urban area ($\bar{x}$=1.97). It is interesting to note that there is no significant difference between the farthest distant category and the closest category in regards to the perceived occurrences of either wildlife poaching or artifact theft. The mean value for perception of occurrence of wildlife poaching ($\bar{x}$=2.06) and artifact theft ($\bar{x}$=1.85) at distances over 200 miles from an urban area differed only from the 50-199 mile category, but not from the less than 50 miles from an urban area category (poaching $\bar{x}$=1.97; artifact theft $\bar{x}$=1.46).

After considering the rangers as a whole, analysis was conducted on the two-subgroups represented in the sample: sworn law enforcement officers and rangers who were not law enforcement officers. These data indicated that the trends identified above hold true for both subgroups analyzed individually. Universal crimes, such as motor vehicle theft, are perceived to occur more frequently at parks more proximal to the wildland-urban interface, whereas resource-dependent crimes, such as poaching, were perceived to occur more frequently at distant park units. This analysis also suggested that

although similar trends hold for each subgroup, non-sworn law enforcement rangers perceive crime occurrence less than sworn law enforcement officers. In turn, non-sworn law enforcement rangers do not perceive the difference between distance categories as great as sworn rangers.

5.0 DISCUSSION

The purpose of the present study was to understand the perceptions of NPS rangers concerning the frequency and type of crimes that occur across park units at different distances from the wildland-urban interface. While the limited research on this topic has focused on impacts of crime on the visitor experience or on protected area managers, the present study is important in that its focus was the relationship between the wildland-urban interface and park rangers' perceptions.

Urban encroachment was found to differentiate the rangers' perceptions of type and frequency of crime. These data support the first hypothesis that was tested. That is, crimes that can occur anywhere (major city, small town, or national park unit) occur in park units closer to urban areas. This finding suggests that the encroachment of the urban world on resource recreation areas influences the type of crimes and the perceptions of the frequency of those crimes. Non-resource dependent (*universal crimes*), such as burglary, motor vehicle theft, vandalism, etc., are perceived to occur more frequently at parks within 200 miles of a metropolitan area of over 75,000 people. These perceptions may be a result of increased visitation, greater infrastructure promoting accessibility of the parks to all users (law abiding and deviant), increased awareness on the part of the rangers, or a combination of these factors. This finding supports previous work done by Chavez and Tynon (2000), who documented the effects of urban encroachment on U.S. Forest Service land. Chaves and Tynon described the problems of "urban" crime on forest land in the west. They cited crimes such as drug manufacture, assault, and vandalism as occurring frequently in their case studies. Also, previous work by Wynveen et al. (2005) suggested that NPS rangers working closer to urban areas used more heavy-handed enforcement techniques than those at urban distant parks, who used more educational approaches. The perceptions of crime identified in this study may help understand why rangers closer to urban areas felt it necessary to use harsher enforcement techniques. Clearly, there is more room for research in this area.

These data also supported the second hypothesis. *Intentional resource violations* such as wildlife poaching and artifact theft were perceived to occur more frequently at parks more distant from the wildland-urban interface. Again, the reasons for this relationship need further study, but the user base and the size of the more remote park units may play a role. Successful poaching requires a person who is knowledgeable about flora and fauna. These crimes may occur more frequently at parks whose local populations have a better understanding of these concepts, which are typically not urban dwellers. Furthermore, many resource violations are committed because violators are using the resource for subsistence purposes. Those who live near more distant parks may have a greater need to use the resources around them for subsistence purposes. Research needs to be conducted to ascertain the truth concerning the antecedents of deviant behavior in natural settings.

One question regarding this research is that it does not address the reality of the crime rates for the crimes examined or the reality of these crimes at parks at varying distances from metropolitan areas. Admittedly, this is a legitimate concern. However, at this time, there is no reliable or valid way to test the reality of these relationships because data on actual crime rates are problematic. In the NPS or any federal and many state land management agencies there is not a standard way to report crime statistics. This is often a case of jurisdiction. Many resource recreation areas are large and crimes are handled not only by the land management agency personnel but also by local law enforcement agencies. Hence, when a person is charged with a crime there is not a central database that records criminal activity across the NPS or even at most national park units. Without uniform reporting the validity of any comparison is suspect. In a study done by the International Association of Chief's of Police (IACP 2000), however, an attempt to list crime by park was made. Without statistical evidence, it appeared that the relationships described in this study hold true for the data obtained from the IACP from 1995-1999. Moreover, law enforcement literature

suggests that the actually crime rate is not as important a factor concerning people's responses to crime as is the perception of crime. Dunham and Alpert (1997) indicate that it is common for people to perceive an increase in crime even when actual crime rates are being maintained or are dropping. These perceptions are what the public and thus law enforcement then base their behaviors on. Hence, the reality of crime at a park is not as directly related to individuals' recreation experience as their perception of crime might be. Thus, with the limitations of actual crime data and the important influence of perceptions on behavior, this line of research into the perceptions of crime is well founded.

Lastly, these data suggested that there are two categories of crimes that were perceived differently by rangers depending on the distance the park unit was from the wildland-urban interface. Arson, burglary, motor vehicle theft, vandalism, homicide, and robbery are all universal crimes. They can occur in any setting without major modification in how the behavior is exhibited. In contrast, artifact theft and wildlife poaching are behaviors that are dependent on the resource. Furthermore, violators are aware that by exhibiting these behaviors, they are affecting the resource in some way. Since these behaviors have a negative impact on the resource and they cannot be committed in other settings (e.g., urban street corner) without major modification, these behaviors can be labeled an *intentional resource violation*. Adding the two categories of *universal crime* and *international resource violoation* to Hendee et al.'s (1990) labeling of deviant behavior in natural resource areas would complete the typology. The typology would then describe the full spectrum of unacceptable behaviors that occur in a resource recreation area. Everything from unintentional behaviors that offend social norms to crimes that have been codified by the legislature would then be represented in their typology. Obviously, research confirming the conclusion of this study is needed to support this proposed addition to the typology, yet this study does point in the direction of a larger typology of deviant behavior.

5.1 Implications

The implications for this study are twofold. First, the results indicate that different crimes occur at different parks. This finding suggests that management techniques should adapt to these changes. Targeted patrols for certain crimes may be needed. For example, resource recreation areas closer to the wildland-urban interface may increase targeted patrols of areas that are often vandalized, whereas more distant parks may increase patrols around areas that contain important artifacts. Furthermore, crime prevention through environmental design may be utilized to deter crime. Urban proximal parks may design front-country areas with landscaping, lighting, and architecture that limit the desirability or opportunity for a person to commit robbery or vandalism. Lastly, educational and awareness materials could be provided to all park visitors. At more remote parks, materials could be provided that inform the visitor as to the problems of artifact theft and what to be suspicious of if they see another visitor stealing artifacts. Engaging the public as eyes and ears working for law enforcement has often led to decreased crime in community settings (Alpert & Piquero 1998). The same may hold true in park settings.

The second implication of this study involves the need for future research. This research represents one of only a few attempts to link crime in resource recreation areas with other outside variables. Research is needed to confirm the conclusions of this study across management agencies and across resource settings. Beyond replicating this study, research needs to be conducted with visitors as the unit of analysis. Visitor perceptions are important to understanding how deviant behavior affects the recreation experience. Finally, once management suggestions based on these proposed research topics are implemented, studies on the effectiveness of the management techniques implemented need to be conducted. Clearly, there is a need to complete more work in this line of research.

5.2 Limitations

As with all research, this data set has its limitations. The generalizability of these findings is limited by the low response rate achieved, less than 20%. However, the sample for this study was the true population. Hence, the sample represents about 500 individuals of the true population of approximately 3000 rangers. Furthermore, with the exception that law enforcement

rangers were over-sampled, the demographics of the sample are representative of the population. The other major limitation of this study is that it only considered NPS rangers and not rangers of other land management agencies. Perceptions may differ across agencies due to numerous factors. Hence, future research on this topic should be conducted to confirm these findings and generalize the conclusions to other agencies and across other populations.

6.0 CONCLUSION

Deviant behavior and crime in resource recreation areas has become an important concern for land managers. In an effort to better understand the relationships between crime and the urban-wildland interface this study examined National Park Service ranger perceptions of the frequency of certain crimes in park units. It is necessary to better understand how these topics relate to each other and the visitor experience. A thorough understanding of deviant behavior, crime, law enforcement, and the affect of these factors on the recreation experience will contribute to the existing literature on this topic and provide a basis for further research.

This study provided information to both researchers in the field of recreation resource management and to the managers who make decisions within resource recreation areas. Results indicated that urban encroachment was found to differentiate the rangers' perceptions of type and frequency of crime. Specifically, certain *universal crimes* occur more frequently in parks closer to urban areas. Also, *intentional resource violations* occur more often in NPS units distant from the urban-wildland interface.

Lastly, the results indicate a need to include *universal crimes* and *intentional resource violations* in future typologies of deviant behavior occurring in natural resource areas.

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INTEGRATIVE COMPLEXITY OF WILDFIRE MANAGEMENT: DEVELOPMENT OF A SCALE

Joshua Carroll
University of New Hampshire
Department of Recreation Management and Policy
195 Hewitt Hall
Durham, NH 03824
josh.carroll@unh.edu

Alan Bright
Colorado State University

Abstract.—Wildfire in the West has become a controversial natural resource issue that has divided the public's perceptions regarding its management, and forest managers are now faced with the difficult task of making sound decisions while balancing these varying concerns. Two widely used wildfire management practices are prescribed fire and mechanical thinning. In order to better understand the public's position regarding these two techniques, we have drawn upon the concept of integrative complexity, which is defined as a protocol for measuring the complex way that people think about issues. This paper presents the psychometric process by which a combination open-ended and fixed-item scale was developed to measure complexity of thought that is consistent with integrative complexity. The resulting scale is designed for use in large surveys across any number of natural resource issues, thus allowing the information generated to be generalizeable to broader populations, which is often impractical with this originally qualitative research method.

1.0 INTRODUCTION

Fire is both natural and needed by forest ecosystems. It provides essential functions such as regeneration of vegetation, elimination of disease and insect threats, proper forest reproduction, wildlife habitat improvement, and the reduction of fuels. Though these benefits are noteworthy, there are also costs associated with wildland fire. These include threats to private property, natural resource harvests, air quality, and scenic beauty. It is this trade-off between wildland fire benefits and costs that complicates the issue and causes differences in public beliefs toward fire management.

1.1 Current Wildfire Management

Due to nearly 100 years of fire suppression by federal land management agencies, many forests in the U.S. are now loaded with fuels and, as a result, severe wildfire conditions exist (Pyne 2001). Response to the historical strategy of strict fire suppression has included two common management actions designed to reduce fuels in the forest: prescribed burning and mechanical thinning. Prescribed burning is defined as fire applied to a specific land area under selected weather conditions to accomplish predetermined, well-defined management objectives. Mechanical thinning reduces the amount of vegetation in the forest by physically removing selected trees and plants with the intention of decreasing the likelihood of large, uncontrollable fires. It often involves heavy equipment (e.g., bulldozers) and/or light equipment (e.g., chainsaws) entering the forest for the cutting of trees based upon a predetermined spacing or pattern technique. It has become a viable option along with prescribed fire for removing fuel and reducing wildfire potential.

1.2 Identifying Public Perceptions of Wildland Fire Management

The policy of government land management agencies has only recently emphasized more proactive approaches to reducing wildfire risk through the use of prescribed burning and mechanical thinning. This shift has troubled some communities and groups with interests in forested areas because of the dangers associated with prescribed fires going awry and the impacts of heavy machinery and road building that accompanies mechanical thinning (Kneeshaw et al. 2004). The public has expressed much concern related to these issues, and as a result, public perceptions of fire management have become an important consideration for agencies charged with managing areas susceptible to wildland fires. Understanding the public's perceptions of wildfire management can (a) help agencies recognize when policies might be supported by the public, (b) alert agencies when policies may run into public opposition, and (c) help agencies develop information to garner

support for potentially controversial strategies. With public support, the agency can manage more efficiently, spending time and money on the resource, as opposed to legal battles and policy adjustments. Research on public perceptions of fire management has been occurring for 20 years. For example, studies examining the acceptance of fire management strategies (e.g., Stankey 1976; Cortner et al. 1984), have suggested that education can influence public acceptance (e.g., Taylor & Daniel 1984). Shelby & Speaker (1990) found that among other factors, the success of prescribed burning campaigns aided in the public's acceptance of prescribed burning, though there was difficulty in fully accepting this management practice due to past messages of the risks and impacts of fire. Manfredo et al. (1990) concluded that influencing the public's beliefs about fire will likely alter their attitudes toward fire, and ultimately their acceptance of management practices regarding this issue. In this way, it becomes apparent that citizens' beliefs are a key element to understanding and perhaps influencing its acceptance of fire management strategies. In a panel research study, Shindler and Toman (2003) used specific belief measures (e.g., "the use of fuel treatments in the Blue Mountains is unnecessary and should not be utilized") to examine support for prescribed burning and mechanical thinning. They found that over the four-year period between 1996 and 2000, support for these activities in the Blue Mountains remained relatively constant. Identifying specific beliefs and attitudes toward fire management strategies provides important information for managers, but this information is often limited to a "laundry list" of what people believe about fire management.

1.3 Limitations of Current Attitude and Belief Research Regarding Fire Management

Burtz (2002, unpublished dissertation) suggested that it is insufficient to simply understand what people think about wildfire and its management; it is necessary to understand *how* people think about the issue. People often have many thoughts about issues such as wildland fire management, many of which (a) may not be consistent, (b) are based on emotions, experience, or neither, and (c) may or may not be based on values, which have been shown to be linked to attitudes (e.g., Fulton et al. 1996). This variety of information regarding people's thoughts about wildfire management is an important aspect of the complexity toward which they think about the issue. This level of complexity describes how individuals think about an issue, that is, the structure of their beliefs. One concept that is based on this structure of beliefs is integrative complexity (Tetlock 1989). Its use in research can provide additional information on how people think about an issue such as wildfire management. Traditionally it is a qualitative measure. This paper describes the process by which a fixed-item scale to measure the concept of integrative complexity was developed.

1.4 Conceptual Framework: Integrative Complexity

Integrative complexity is a protocol for measuring a way of thinking. It can be used to describe the structure of the thoughts people have about an issue such as wildland fire management, over and above the content, and is based on the number of aspects of a problem people consider (Tetlock 1989). Two factors that are measured within the context of integrative complexity are differentiation and integration. Differentiation focuses on whether a person acknowledges that there is more than one side or dimension to an issue or problem (Baker-Brown et al. 1992). Someone who sees an issue as black or white (e.g., prescribed burning is dangerous and bad) is exhibiting low differentiation on that subject, whereas one who sees two dimensions to an issue (e.g., prescribed burning is sometimes beneficial to the forest ecosystem but also entails some potential dangers to humans) shows somewhat higher differentiation, and someone who sees several dimensions exhibits even higher differentiation (Bright & Barro 2000). The second factor that is important for integrative complexity is integration, which refers to the development of complex connections among the differentiated characteristics and is related to the relative importance of perceived arguments for and against an issue (Baker-Brown et al. 1992). It is the recognition of interrelations among the different perspectives or dimensions that were acknowledged in the differentiation stage of measurement (Wallbaum 1993). Therefore, the presence of integration regarding an issue requires that the individual has first exhibited an adequate amount of differentiation (Tetlock 1989).

1.5 Uses of Integrative Complexity

Integrative complexity was originally studied for pre-existing political speeches. For example, Tetlock (1981, 1989) examined the integrative complexity of United States congresspersons to see if conservatives differed in integrative complexity on political issues from their liberal counterparts. Tetlock (1984) also analyzed reasoning of members of the British House of Commons, and American versus Soviet foreign policy-makers (Tetlock 1985, 1988). Wallace and Suedfeld (1988) measured integrative complexity of 16 leaders before, during, and after seven international crises. Tetlock et al. (1994) examined debates over slavery in antebellum America. There have also been integrative complexity analyses of public issues outside of the political arena. Kristiansen & Matheson (1990) analyzed integrative complexity of public attitudes toward nuclear weapons, while Dillon (1993) compared integrative complexity of arguments on abortion between statements made by "pro-choice" and "pro-life" advocates. In a natural resources context, integrative complexity has been utilized to look at how coursework in environmental education affected college students' level of integrative complexity regarding endangered species (Bright & Wyche 1998), and attitudes toward plant and wildlife protection (Bright & Barro 2000). Finally, integrative complexity has been used to assess public attitudes toward wildfire (Burtz 2002, unpublished dissertation). In addition to understanding how people think about an issue, integrative complexity may also play a role in steering management decisions on topics that produce strong, polarized positions among stakeholders. When managers consider the level of integrative complexity that a particular group has about an issue, they can guide their own delivery and enforcement of their management practices, as well as develop information appropriate to different levels of complex thinking. For example, managers dealing with wildfire are in a particularly difficult position with regard to messages of the past (e.g., fire suppression, fire is evil) and the current understanding that prescribed fire is needed. Many land management agencies make references to the importance of gaining public support (Clute 2000), and that this "is not an easy task for there are many barriers to such an endeavor-not the least of which is the attitude of the American public" (Clute 2000, p. 59). Clute (2000, p. 61) goes on to suggest that there is a need for a method to "better communicate wildland fire messages in such a manner as to meet societal needs, address community needs/concerns, gain public support, and comply with organizational mandates, all while utilizing the best science and technology available" (Clute 2000, p. 61). The utility of integrative complexity may be found in its implications for messaging and framing messages in appropriate contexts and levels of complexity. It is recognized that individuals will best respond to information (e.g., a forest management campaign) that is set at the level of knowledge and complexity at which they function (Hunsberger et al. 1992).

1.6 Measuring Integrative Complexity

Traditional methods for measuring the public's integrative complexity use the paragraph completion test (Schroder et al. 1967). This involves respondents writing an essay about an issue and describing their attitudes and beliefs toward an issue. Each respondent's essay is analyzed by several raters for differentiation and integration. Scoring for integrative complexity ranges from 1 to 7, where 1 represents the lowest integrative complexity score and 7 represents the highest. Specific descriptions of scores along the integrative complexity continuum are described below (Bright & Barro 2000, Wallbaum 1993).

1: no differentiation, individual sees the issue in only black or white terms

3: individual acknowledges at least two viewpoints and there may be positive and negative aspects of each

5: individual acknowledges not only multiple viewpoints, but that there is a moderate level of interactions and tradeoffs among the alternatives

7: suggests the individual also has deeply held basic values between the alternative issues

Intermediate scores of 2, 4, and 6 can be assigned if raters have difficulty deciding on a score of 1, 3, 5, or 7. Table 1 provides examples of passages and their coding score for integrative complexity (Bright & Barro 2000). For a complete list of all the criteria that determine integrative complexity scoring, see Baker-Brown et al., 1992.

Table 1.—Examples of passages about species protection, their overall integrative complexity (IC) score, and individual coder scores

IC Score	Passage
1; both coders = 1	I feel that we should try to leave what life and animals that are in their own habitats alone and try our best to protect them and the environment around them.
2; both coders = 2	Yes but with some restraint. In my opinion the quality of human life comes before the protection of diverse life forms. I would place preservation ahead of pure economic gain.
3; coder 1 = 4, coder 2 = 3	I feel we have to find a balance between the environment and population. It's important to maintain the wildlife and plant life of the wilderness, but people also need jobs. I feel that animals will move to other habitat if man interferes with their areas.
4; both coders = 4	I believe in protecting the diversity as long as it is done with a reasonable budget and fiscally responsible management. The problem with programs like this is that they take on a life of their own. If an endeavor such as this can be done without being over done, than I am for it. But experience tells me otherwise.
5; coder 1 = 4, coder 2 = 5	To a degree yes we must monitor the ecology. However, the government simply seems to go overboard sometimes, as it does in every area it touches. Too many administrative programs exist; some conflict; all are expensive. The idea is a good one but it seems we go about things in an all or nothing fashion. We have evolved to the place where we can determine the degree that a species or animal affects the other living things it interacts with. We need to curb the human problems worldwide—especially overpopulation or this question will one day be moot.

Note 1: there were no scores of either 6 or 7 in the study these data were drawn from
Note 2: results presented here were adapted from Bright and Barro (2000)
Note 3: grammatical errors were left in passages to depict responses verbatim

1.7 Drawbacks of Traditional Measurement of Integrative Complexity

While the use of integrative complexity allows researchers to more deeply investigate an individual's beliefs, the measurement process can be time-consuming and requires significant effort from both researchers and respondents. For example, respondents are asked to complete written or typed essays, and as a result response rates to mail surveys can suffer. Bright and Barro (2000) point out that one main reason for low response rates to mail surveys using a traditional method of measuring integrative complexity is that many respondents found that writing an essay was either too difficult or time-consuming. Another important factor in the measurement of the construct is how well respondents understand the instructions for completing the survey. In the case of using essays to generate integrative complexity scores, instructions must make clear to the subjects that the composition should reflect opinions, valuations, or judgments, and should not be merely a descriptive account, which would not be a scorable response for complexity (Baker-Brown et al. 1992). There are also several concerns for scientists who engage in traditional integrative complexity research. Scoring the essays is quite time-consuming and requires several researchers working cooperatively to come to agreement on appropriate scores. As noted above, the paragraph completion test requires at least two researchers (often three or more are used) to score every essay for every respondent, and then discuss scores and their reasoning. This is a difficult and lengthy process. Finally, the qualitative nature of integrative complexity data makes it unfeasible to be used on a large-scale application, and restricts its generalizability from a small sample to broad populations. This impedes its use in many potentially valuable studies, and has limited the measurement of integrative complexity in large survey research.

2.0 GOALS OF THE STUDY

The goal of this study was to develop an alternative and functional method for measuring integrative complexity. We apply it to public perceptions of prescribed burning and mechanical thinning. A scalar measure would overcome the limitations of essay completion methods of integrative complexity and has additional benefits. First, a fixed-item scale is easier to complete for respondents. The scale measure does away with the essay, and replaces it with fill-in spaces and circling of a number. Since it has been pointed out that respondents are reluctant to write an essay about a topic (Bright & Barro 2000), this fill-in approach should yield a higher response rate. Second, increased simplicity of completing a scale enables the

concept to be used in more broad social science studies, allowing a larger sample to be obtained. Third, the use of a larger sample allows integrative complexity to be used in studies where an important objective is to obtain results generalizable to a population. Fourth, the scale makes the scoring more quantifiable and overcomes the challenges associated with translating qualitative data into quantifiable measurement. Lastly, the systematic and quantifiable measure of the integrative complexity scale allows for the concept's use in theoretical models of attitudes and behavior. To accomplish the goal of the study, four specific objectives were identified.

Objective 1: To create a fixed-item scale which will yield integrative complexity scores.

Objective 2: To measure integrative complexity of thought regarding two wildfire management techniques (i.e., prescribed burning and mechanical thinning) using the traditional essay completion method.

Objective 3: To measure integrative complexity of two wildfire management techniques (i.e., prescribed burning and mechanical thinning) with the newly developed scale, using the same sample of respondents as the traditional methods test.

Objective 4: To determine the extent to which the two measures of integrative complexity are correlated.

3.0 METHODS

3.1 Development of the Fixed-Item Scale

The scale was designed to measure the two primary components of integrative complexity: differentiation and integration. Differentiation is conceptualized as the extent to which a respondent recognizes alternate sides of the issue of wildfire. It is traditionally measured by counting the number of positive and negative statements about an issue in an essay. High differentiation is indicated by an equal, or near equal number of arguments on both sides of an issue. We designed our scale to be consistent with the traditional method of measuring differentiation. In order to do this, we asked respondents to first list potential "arguments for" and "arguments against" each wildfire management technique. This provided an indication of the number of positive and negative aspects that they were considering, much like the traditional methods of seeking these out from within an essay. Integration is conceptualized as how the respondent recognized interrelationships between the different sides to the issue and is linked to the relative strengths of the perceived arguments on both sides. Traditionally, a researcher subjectively infers the level of integration from the respondents' writing and their apparent level of involvement with the topic. In the scale, we measured integration by asking respondents to indicate the strength of each argument they had listed. For example, if an individual gave a "for" argument the same value or strength as an "against" argument, this suggests the respondent redcognizes similar or equal value to both sides of the argument, an attribute of a more highly integrated individual.

3.2 Scoring Differentiation, Integration, and Integrative Complexity

Differentiation was measured as a value between zero and one, based on the ratio of arguments for and against the issue. The lesser of the total arguments "for" or "against" was divided by the greater of the two to arrive at the differentiation value. A value of zero reflected no differentiation, while a value of 1 reflected the highest differentiation. For example, an individual who listed three arguments for and two arguments against prescribed burns would obtain a ratio of 2 to 3, or a differentiation score of 0.67. A ratio of 3 to 4 would result if an individual listed 3 arguments for and 4 arguments against prescribed burns for a differentiation score of 0.75. Therefore, higher differentiation is also reflected somewhat in a higher total number of arguments, beyond the relatively balanced number of arguments on both sides of the issue.

3.3 Scoring Integration

A ratio, resulting in a score between zero and one, was calculated for integration. The means of the strengths of the arguments "for" and the arguments "against" the issue, respectively, were calculated. The smaller mean was divided by the larger to yield the integration score. By continuing the previous example where an individual listed three arguments for and two arguments against prescribed burns we can illustrate the scoring of integration. If the three arguments for prescribed burns were considered to be strong arguments (e.g.,

6, 6, 7), the mean for the strengths of the arguments for prescribed burning would be (6 + 6 + 7)/3, or 6.3. If the two arguments against prescribed burning were perceived to be weak arguments (e.g., 2, 3), the mean of the arguments against prescribed burning would be (2 + 3)/2, or 2.5. Therefore, the integration score for this respondent would be the lesser value divided by the larger, or 2.5 / 6.3, yielding an integration score of 0.4. Again, an integration score of zero indicates no integration, while an integration score of one indicates high integration.

3.4 Generating Integrative Complexity

Integrative complexity was measured as the product of the differentiation and the integration scores. This calculation would again yield a value between zero and one. Taking the example from above to completion, a differentiation score of 0.67 and an integration score of 0.4 would yield an integrative complexity score of 0.67 x 0.4, or 0.27.

3.5 Test of the Integrative Complexity Scale

The following procedures were conducted to test the integrative complexity scale. Subjects consisted of 72 undergraduate students from two different natural resources and recreation classes at Colorado State University. There were a total of 63 usable essay and scale pairs for the two issues (i.e., prescribed burning and mechanical thinning) that were tested. The final analysis was done with 63 essay and scale pairs, 33 for prescribed burning, and 30 for mechanical thinning.

Step 1 Respondents were divided at random and placed into one of two groups: a prescribed burning group and a mechanical thinning group, representing the issue they would be writing about.

Step 2 For each group, one half of the respondents began by writing an essay about their assigned topic, while the other half completed the scale first.

Step 3 After finishing, those who had written an essay worked on the scale, while those who had completed the scale worked on an essay.

The following analyses were conducted:

1. An independent samples t-test was conducted to determine if there was a significant difference in the traditional integrative complexity score for those who had completed the essay first and those who had completed it last.
2. An independent samples t-test was conducted to determine if their was a significant difference in the scale-generated integrative complexity score for those who had completed the scale first and those who had completed it last.
3. Pearson's correlation was obtained between the traditional essay score and the scale score for both prescribed burns and mechanical thinning. It is presumed that a higher correlation between the two methods indicates a better fixed-item measure of the construct.

4.0 RESULTS

4.1 Test for Response Bias

The test for bias on the order of completion of the essay and scale showed no significant differences in integrative complexity score. For the essay method, those who had completed the essay first had a mean integrative complexity score of 3.17, while those who had completed it second had a mean score of 2.91, ($n = 33$, $t = .731$, $p = .467$). For the scale method, those who had completed the scale first had a mean integrative complexity score of .592, while those who had completed it second had a mean of 0.482, ($n = 30$, $t = 1.78$, $p = .078$).

4.2 Test of Scale

The Pearson correlation between the integrative complexity scores for the two measurement methods for prescribed burning was $r = .81$, $p<.01$, $n = 33$, indicating a strong effect size. For the mechanical thinning issue, the correlation of the integrative complexity scores between the essay and the scale was $r = .77$, $p<.01$, $n = 30$, also indicating a strong effect size.

5.0 DISCUSSION

5.1 Summary of Integrative Complexity Scale Construction

The pretest of the integrative complexity scale yielded a strong correlation between the scale and essay results for both prescribed burning and mechanical thinning. Psychometrically, the scale defines the attributes of differentiation and integration and uses a straightforward approach to their measurement. Based on the high correlation with the traditional measurement of integrative complexity, the developed scale appears to be a functional substitute for use on larger and more broad attitude surveys.

5.2 Agreement of Measures

It is difficult to capture a truly qualitative component of human cognition with any measure, let alone a quantitative one. While the correlation between the scale and the essay method was strong, it was not 1.0. Therefore, it is concluded that the scale created was not an exact measure of integrative complexity, but rather a measure that seems to reflect and correlate well with the results obtained from traditional integrative complexity methods, suggesting that the scale captures a cognitive component of complex thinking. An appropriate question would be whether subsequent uses of the scale would generate the same or similar results. Complex thinking about two distinct wildfire management strategies was tested, and results of both correlated well with traditional methods. This supports the scale's potential use and adaptability to other natural resource issues.

5.3 Strengths in Integrative Complexity Scale

There are a number of benefits to the fixed-item scale for measuring integrative complexity. First, the scale is easier to use than the traditional methods of essay writing and essay scoring, which taxes respondents and researchers alike. It is simple to fill out, and less time-consuming to score. Second, the scale has power in terms of its open-ended format as opposed to other closed-item scale construction methods. By being open-ended, it avoids the potential short-falls of other scales. Fixed-item scales may lose relevance over time as important aspects of specific issues change. The open-ended format overcomes this issue of lack of pertinence. For example, fixed-item scales often represent researcher-generated items. This scale always yields respondent-generated items, improving the relevance of the items. With regard to the open-ended nature of the scale, it can be used on any number of topics with little alteration. Lastly, the quantifiable nature of the scale, combined with the previous benefits, can enhance its use in the construction of broader social psychological models of value, attitude, and behavior.

5.4 Application of Results of the Integrative Complexity Scale

Information about the integrative complexity with which a public views an issue can be used to inform managers about how people think about natural resource issues, in this case wildfire management. The results will help managers understand how their actions will be received by the public. One very difficult challenge that managers face is the balance between resource decisions (i.e., those decisions that are made based on ecological integrity of the resource) and public preferences (which may not consider ecosystem health). Beyond this is the imminent and binding threat of litigation, which can waste much of managers' time, money, energy, and concern. The results of this study aim to provide information about the public constituency which can be used by managers to make more informed decisions. For example, if over 90 percent of the respondents differentiate between the advantages and disadvantages of prescribed fire and mechanical thinning, and also identify integrative relationships, then managers would be urged to acknowledge this in their management plan and delivery of information to their stakeholders. However, if it is identified that respondents' hold low levels of differentiation and integration about a topic, then managers may find that management plans will be more widely accepted if they consider these lower levels of integrative complexity while enforcing their policy and sharing information. Beyond this, integrative complexity may be used as a tool to analyze how policy decision-makers (or agency managers) make decisions, similar to traditional uses. In that application, it is used essentially to investigate at what levels of integrative complexity our policy makers are functioning. This would shed light on how much consideration policy makers are giving to multiple sides of controversial issues such as natural resource management.

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Attribute Evaluation and Preference

CAMPER CHOICE BEHAVIOR FOR THREE PROXIMAL SITES

William E. Hammitt
Department of Parks, Recreation and Tourism Management
Clemson University
269 Lehotsky Hall, PO Box 340735
Clemson, SC 29634-0735

Gerard T. Kyle
Texas A&M University

James Absher
USDA Forest Service

Abstract.—This study investigated the degree of distinctiveness in camper choice behaviors among developed, walk-in, and wilderness camp settings, all located with a 3-mile radius of each other. Objectives of the study were to determine if there were differences in the personal characteristics, experience use history (EUH), and alternate site use (substitution) for campers of U.S. Forest Service developed, walk-in, and designated Wilderness camp areas. On-site and mail surveys (n=424, 83.7% response rate) were used to collect data at the three camping areas in the Sumter National Forest in South Carolina during 2003. Results indicated that the three site choices were serving rather distinct groups of campers, with six of eight user characteristics differing significantly (p¼.05). EUH did not vary significantly among the three sites. Although the three camping choices were all located within a 3-mile radius (10-15 minutes) and along the same road system, campers did not substitute freely among the alternate areas.

1.0 INTRODUCTION

Camping is a traditional and popular outdoor recreation activity. Some 83.1 million Americans participated in camping in 1999, representing over one-fourth of the U.S. population (U.S. Forest Service 2000). However, there is considerable diversity among the many types of campers, types of camp settings and site features, and use patterns-activities of campers, leading Shafer (1969) to publish the classic paper, "The Average Camper Who Doesn't Exist." In his study, Shafer surveyed campers across five developed New York State campgrounds, and found considerable diversity among campers by location, features of the campgrounds, and month of camping. Shafer concluded that "in survey studies of campers, you can no more lump together data for different campgrounds than you can mate widgeons and wombats (p.1)."

Our study differs from Shafer's in that diversity among campers is examined for three different types of Forest Service camping opportunities, all located within a 3-mile radius of each other, and along the same travel corridor. The three campground opportunities and choices—developed, walk-in, and Wilderness—provide a spectrum of recreation opportunities to campers, all within a readily accessible travel distance (Driver et al. 1987, Manning 1999). The purpose of our study was to examine for differences in camper characteristics, experience use history (EUH), and substitution-alternate use behavior, among the three proximal site choices. Relative to Shafer's research, we were asking the basic question, "Does an average camper exist at the three proximal sites or are campers distinctly different at the sites?"

1.1 The Site Choices and Research Questions

The three diverse camping opportunities, all located within a 3-mile radius of each other, provide a unique site situation for researching recreation choice behavior. Campers have a choice to easy-access, vehicle camp in the Cherry Hill developed campground, to walk in 350 yards to camp in the pioneer Burrell's Ford campground, or to backpack camp in the Ellicott Rock Wilderness.

The Cherry Hill (CH) choice is a developed, fee-based ($10 per site), drive-in campground with modern bathroom and showers, potable water, and RV camping-pads with tables and fire rings. Access is by way of a paved road. Burrell's Ford (BF) walk-in campground is a more primitive, less developed setting that requires campers to park vehicles in a gravel area and walk 350 yards to an informal camping area with non-designated campsites. The only amenities offered to campers are a vault toilet, lantern holders, and several scattered picnic tables. Potable water is not available. However, the setting is located adjacent to the Chattooga River, a trout fishing resource. The third area, Ellicott Rock Wilderness (ER),

is an 8,274-acre designated federal Wilderness. The major entry point to the Wilderness is from the BF walk-in parking area, located only one-third of a mile from the nearest Wilderness boundary. Thus, access is easy and most backpackers camp adjacent to the Chattooga River. No camping fee is charged at either of the latter two sites, nor are permits required.

Based on the field situation of having three diverse camping opportunities, all conveniently located without distant travel barriers, the following research questions were identified for study.

(1) Are campers of the developed, walk-in, and Wilderness settings … (a) distinct campers of one of these settings? (b) loyal to a particular setting choice? (c) different in their personal characteristics? (2) Do the campers of the three settings differ in terms of EUH; in length and frequency of use of each camping choice? (3) Do campers substitute (alternate use) among the three proximal site choices? (a) Are they aware of the alternative site choices? (b) Have they used the alternate sites? (c) Would they be willing (future use) to use the alternate sites?

2.0 METHODS

2.1 Study Area

The research was conducted on the Andrew Pickens District of the Sumter National Forest in northwest South Carolina from May through October 2003. The Andrew Pickens District has several outstanding opportunities for outdoor recreation, including the Chattooga National Wild and Scenic River (CNWSR) and the adjacent Ellicott Rock Wilderness. Several opportunities for camping also occur, including the three sites of this study.

2.2 Sample and Data Collection

All campers encountered in each of the three settings were requested to participate, comprising a convenience sample. Sampling occurred on weekends (including Friday evenings) between 8:00 am and 8:00 pm for a total of 60 sampling days. A total of 424 campers completed questionnaires; 307 on-site and 117 mail-back (83.7% response rate). Sample sizes for the three study sites were: 188 for CH, 124 for BF, and 112 for ER.

Cherry Hill and BF campers were sampled at campsites. Researchers either waited for respondents to complete the survey, or came by the campsite later to collect completed questionnaires. While no one refused to participate, 12 questionnaires were returned blank. This data collection procedure yielded 312 completed surveys (96% response rate). Given the difficulty of completing on-site surveys with backpackers in Wilderness area (e.g., visitor desire for solitude and researcher desire to be as unobtrusive as possible), participants were provided the questionnaire and a postage-paid, business reply envelope enclosed within a plastic resealable bag. When contacted at the trailhead or along trails, campers were requested to provide their name and address in order to be sent follow-up reminders and another copy of the questionnaire should they lose or damage the survey provided on-site (Dillman 2000). One hundred and eighty-seven (187) questionnaires were distributed; there were no refusals. One hundred and twelve (112) completed surveys were returned (60% return rate).

2.3 Variables and Operational Definitions

Personal characteristics were measured through the use of eight socio-economic and use-variables; age, education, gender, income, group size, group composition, length of stay, and primary activities while camping. EUH was operationalized by measuring total years and number of times last year of camping at the site where sampled, and total years camping at other local areas (Hammitt et al. 2004). Campsite alternative use was operationally defined with three questions to determine respondent awareness of the two other adjacent camp settings, their past use of the two alternatives, and their willingness to use the two alternatives in the future. Specific questions were: "Did you know that camping is available at _____?" (other two sites). "If YES, have you ever camped there?" Number of years ___? Times per year ___? "How willing would you be to camp at the other two sites if you could not camp at _____(sampled site)?" A 5-point response scale was offered, where 1 = not at all, 2 = moderately unwilling, 3 = neutral, 4 = somewhat willing, and 5 = very willing.

Table 1.—Experience use history (EUH) of campers at the three types of camping area opportunities

	Cherry Hill		Burrell's Ford		Ellicott Rock			
EUH Variables	M	SD	M	SD	M	SD	F	P
Years camping at site	6.73	9.42	6.89	9.25	5.68	7.46	0.04	0.527
Times camped at site last year	1.50	2.86	0.93	1.43	1.67	3.19	2.70	0.068
Total times camped at site	12.84	26.47	8.40	15.79	10.31	17.03	1.59	0.204
Years camping at other local areas	9.75	11.52	9.31	10.89	9.27	10.12	0.09	0.919
Times camped at other local areas last year	2.64	4.92	1.69	2.45	2.97	4.47	2.94	0.054
How many other local areas camped at last year	1.61	2.94	1.68	3.11	2.30	3.49	1.71	0.068

3.0 RESULTS

3.1 Comparisons across the three study sites revealed that the respective campers differed significantly in age, group composition, and primary activity at the p < 0.001 level, and in gender, education, and group size at p < 0.05.

Cherry Hill Profile. Campers at CH were older than the other two sites (M = 43 years) and consisted of more family units (45.9%). However, the size of camping group was smaller (M = 4.1 individuals) than for the walk-in (M = 5.0) and the Wilderness areas (M = 5.8). The majority of CH campers were males; but more females (35.2%) were represented in the developed campground than in the other sites. The education level of CH campers was somewhat lower than at the other two sites, with a business/trade or some college training most prevalent (29.7%). Most campers participated in hiking/walking, camping, and fishing, with their primary activity considered camping (56.2%).

Burrell's Ford Profile. The walk-in campers were the youngest (M = 34.5) and about equally represented by family, and friend groups (37.4 & 34.1%, respectively). A few more males (about 4%) were represented than at CH. Over one-half (53%) of BF campers had at least a college degree, with 23.5 percent having a graduate school degree. Large numbers of BF campers participated in hiking/walking, camping, viewing scenery, and fishing, with the primary activities being camping and trout fishing (fishing was more common at BF than at the other two sites).

Ellicott Rock Profile. The Wilderness campers averaged 38.8 years of age and consisted more of friend-groups (45.9%), with the camping parties being more male dominated (nearly 80%) than groups at the other two sites. Contrary to other wilderness research (Hendee et al. 1990), which shows party size to be smaller in wilderness, ER had the largest camping groups. Consistent with previous wilderness research, the ER campers were the most educated, with nearly 60 percent having at least a college degree. Camping and backpacking were the dominant activities; fishing was least represented among the three sites (27.9%).

3.2 Experience Use History

There were no significant differences (p < 0.05) in EUH variables among the three camping opportunities (Table 1). Camping at each of the three respective sites averaged about 7 years, 1 to 1.5 times during the last year, and a total of about 10 times for campers at the sampled site. Camping at other local areas was somewhat greater than for the study sites. Campers averaged about 9 years and 2 to 2.5 times per year (last year) at other local areas. Although not significant, ER users camped at more local areas (M = 2.3) in the last years than did the CH (M = 1.6) and BF (M = 1.7) campers.

3.3 Alternative Site Use/Potential Use

Although campers at the three sites differed somewhat in awareness and past use of some of the sites, they were consistently neutral in their willingness to substitute the sites in the future (Table 2). Concerning awareness of the sites, BF was the most well known among campers of the sites, CH was second, and ER was the least known camping opportunity. For example, at CH, 77.5 percent knew of BF; at ER, 68 percent knew of BF (Table 2). Campers at BF were the least likely to know about the other two sites (i.e., CH, 45%; ER, 31.9%). Consistent

Table 2.—Substitution behavior of campers among three types of camping area opportunities

	Cherry Hill[1]		Burrell's Ford[2]		Ellicott Rock[3]			
	N	%	N	%	N	%	χ^2	p
Campers aware of camping at Site 1	138	77.53	54	45.03	73	68.02	34.03	<0.001
Campers who have camped at Site 1	51	27.10	14	11.30	34	30.40	8.06	0.018
Campers aware of camping at Site 2	63	35.60	38	31.90	37	34.30	0.43	0.809
Campers who have camped at Site 2	13	6.90	11	8.90	6	5.43	1.88	0.390
	Cherry Hill		Burrell's Ford		Ellicott Rock			
	M[4]	SD	M	SD	M	SD	F	*p*
Willingness to substitute [5] to Site 1	3.00	1.47	3.17	1.26	3.29	1.29	0.75	0.475
Willingness to substitute to Site 2	3.11	1.38	3.53	1.11	2.96	1.28	2.59	0.079

[1] For Cherry Hill campers, site 1 = Burrell's Ford, site 2 = Ellicott Rock
[2] For Burrell's Ford campers, site 1 = Cherry Hill, site 2 = Ellicott Rock
[3] For Ellicott Rock campers, site 1 = Burrell's Ford, site 2 = Cherry Hill
[4] Means based on a 5-point scale, where 1 = not at all willing to 5 = very willing
[5] Only campers who were aware of camping opportunities at the other sites were included in the willingness to substitute analysis

with the neutrality to use the alternate sites in the future, relatively few respondents had camped at the alternate sites in the past. Concerning CH campers, 27.1 percent had camped at BF and 6.9 percent at ER; for BF campers, it was 11.3 percent at CH and 8.9 percent at ER; and for ER campers, it was 30.4 percent at BF and 5.4 percent at CH. Thus, even though the three camping alternatives are relatively close to each other (3-mile radius, 10-15 minutes) and fairly well known among campers, the campers appear to be rather loyal and distinct in their choice of camping areas-opportunities.

4.0 DISCUSSION AND IMPLICATIONS

The ultimate purpose of this research was to examine the distinctiveness of campers of three diverse camping opportunities, all located within accessible distance of each other, in terms of camper characteristics, EUH, and alternative site use behavior with respect to the three settings. The study area was somewhat unusual in that three rather diverse opportunities for camping were readily available within a 3-mile radius of each other. In addition, the majority of campers had to drive by the developed campground to reach the parking area that served both the walk-in and Wilderness sites. The basic research question that was investigated and needs to be discussed is: Is there an "average camper" that is using all three settings, and are the three camp setting opportunities justified, being so readily available, based on the characteristics, use history, and alternative use/potential use, for the three specific settings?

The data indicated that the three camp settings serve fairly distinct groups of users, based on significant differences among user characteristics. Of eight user characteristics tested, six varied significantly among the settings. Thus, the three camp settings seem to be serving different profiles of users, a reason for having a spectrum of recreation opportunities available. Most of the patterns of differences among sites demonstrated face validity, with the most primitive setting (ER Wilderness) serving a different user profile than the most developed (CH setting). The one exception to expected findings was that the largest group or party size camped in the Wilderness area, averaging nearly six people per group. Most wilderness research shows party size to average between 2 and 3 individuals per camping party (Hendee et al. 1990, Manning 1999, Roggenbuck & Lucas 1987). The larger group size for Ellicott Rock Wilderness may be explained

by the small size of the area, easy access, and use by fishing and organized groups (scouts, education). Most groups camp near the Chattooga River, characterized by level hiking and within five miles of entry trailheads.

On the other hand, EUH did not vary for the three sites. The ER was designated Wilderness in 1975, BF has been in existence since the 1960s, and CH was developed in the 1950's. Yet, the average number of years of camping at the respective sites ranged only from 5.7 to 6.9 years. While there was considerable variation (e.g., standard deviation) in the response of individual campers, none of the six indicators of past use history examined was distinct for any of the three camp settings.

Campers at the respective settings were, however, fairly distinctive in that they used primarily one of the camp opportunities, and did not alternate use freely among the three areas. Although two-thirds of ER campers and three-quarters of CH campers were aware of the BF camping opportunity, less than a third of them had ever camped at the walk-in area. It was even lower for ER and CH campers having ever used each other's setting, averaging only about 5% of users. Even when presented with the situation that "if you could not camp at the sampled site, how willing would you be to camp at the two alternate sites," most campers were neutral or undecided about camping at one of the alternate camping opportunities.

In conclusion, the data indicated that there was not an "average" camper at the three proximal camping opportunities, nor will there likely be in the future. Even when camping opportunities are located in the same geographical area, with no distance travel barriers, a spectrum of diverse camping opportunities is still necessary to meet the camping choices behavior of campers.

5.0 ACKNOWLEDGMENTS

This paper is based on the Master of Science theses of Drew and Jenny Cavin (currently doctoral students at Texas A&M University), formerly of Clemson University. Dr. James Absher of the U.S. Forest Service provided partial funding for the study.

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COMPARATIVE ANALYSIS OF THE ATTITUDES AND PERCEPTIONS OF THREE TYPES OF LAKE GEORGE BOATERS

Nancy A. Connelly
Human Dimensions Research Unit
Cornell University
126 Fernow Hall
Ithaca, NY 14853

Tommy L. Brown
Cornell University

Timothy Holmes
Holmes & Associates

Michael White
Lake George Park Commission

Abstract.—The experiences and concerns of three types of Lake George recreational boaters were assessed to see if different levels of investment and experience with the lake lead to potentially different perceptions and concerns regarding congestion, overcrowding, and safety hazards on the lake. Mail questionnaires were sent out in the summer/fall of 2005 to the three types of users: (1) residential dock owners; (2) annual boat permit holders; and (3) temporary boat permit holders. Results highlight the similarities between residential dock owners and annual boat permit holders, and the differences between these two groups and temporary boat permit holders. Residential dock owners and annual boat permit holders have a longer history of involvement with Lake George, spend more time on the Lake, and are more likely to be concerned about crowding-related and safety issues than temporary boat permit holders. Recreation planners can use the results of this analysis to inform planning and communication with stakeholders on Lake George issues and perhaps other areas with similar types of recreational boaters.

1.0 INTRODUCTION

A large study was undertaken to provide the Lake George Park Commission (LGPC) with planning information to assist it in fulfilling its legislative mission of providing reasonable public access to Lake George without congestion, overcrowding, or safety hazards. As part of the study, the experiences and concerns of three types of Lake George recreational boaters were assessed. Each of these types of recreational boaters may have different levels of investment and experience with the lake, which may lead to potentially different perceptions and concerns regarding congestion, overcrowding, and safety hazards on the lake. By understanding the potential differences between users, the LGPC can better develop a management plan for the Lake.

2.0 METHODS

Three types of Lake George recreational boaters were surveyed by mail for this study. The first group, residential dock owners, represents residential landowners with lakeshore property and recreational boats. Any residential landowner with a dock on the Lake must obtain a permit from the LGPC. We drew a systematic sample of 600 names from the 2005 permit list of 2,380 for our survey sample. The second group, annual boat permit holders (n=10,713), purchased a permit from the LGPC allowing them to use motorboats (10 hp. or more) or larger sailboats (18 ft. or more) on Lake George during the 2005 season. In drawing our sample of 600 names from this list, we excluded residential dock owners. Thus, this group represents annual users who do not own land along the Lake. The third group, temporary boat permit holders, purchased a permit from the LGPC allowing them to use motorboats (10 hp. or more) or larger sailboats (18 ft. or more) on Lake George for a day or a week during the 2005 season. We drew a systematic sample of 599 names from the 2005 list of 5,732 permit holders.

Mail questionnaires were developed based on a review of the literature (e.g., Dawson et al. 2005a, Graefe et al. 2005), and input from stakeholders. Questionnaires were reviewed by the LGPC staff and given final approval by the LGPC. The questionnaire asked about use of the Lake for recreation, satisfaction with the experience, and perceptions of potential water-based recreation issues or problems.

The temporary boat permit holders' surveys were mailed out over the course of the summer of 2005 as names became available. This strategy allowed for better recall of the trip experience than would have been obtained if we

Table 1.—Socio-demographic characteristics of survey respondents, by lake user group

User Characteristics	Residential Dock Owners	Annual Boat Permit Holders	Temporary Boat Permit Holders
		Percent	
Gender*			
Male	66.5	81.8	88.1
Female	33.5	18.2	11.9
Permanent Residence Community Type*			
Rural	19.6	19.5	28.2
Community with <5,000 people	15.4	19.2	9.1
Community with 5,000-24,999 people	34.9	40.8	40.7
Community with 25,000-1000,000 people	18.4	14.2	14.9
Community with >100,000 people	11.7	6.3	7.1
Mean Age	62.6	55.1	48.0

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

waited until the end of the season. We anticipated that the other groups would use Lake George over the entire summer season, so mailings went out to them right after Labor Day. Up to three reminder letters were sent to nonrespondents over the course of the month following the first mailing to try to encourage their participation in the study, as advocated by Dillman (2000).

Data were entered on the computer and analyzed using the SPSS statistical package. Statistical comparisons between user groups were made using chi-square tests. Reliability and factor analysis (principal components with Varimax rotation) were used to analyze the questions on the satisfaction with the features of the 2005 recreation experience.

3.0 RESULTS AND DISCUSSION

3.1 Survey Response Rates and User Characteristics

The response rate, adjusted for undeliverable surveys, ranged from 42 percent to 60 percent. Residential dock owners had the highest response rate—60 percent with 355 usable surveys, followed by annual boat permit holders—55 percent with 329 usable surveys, and temporary boat permit holders—42 percent with 246 usable surveys.

Several variables can be used to characterize Lake George recreational boaters and distinguish between user groups. First is gender, with most responding boaters being male (Table 1). Second, the average age of survey respondents was over 45 years for all groups, but residential dock owners were by far the oldest with an average age of 63 years. The third variable we can use to characterize users is the size of the community where they live year-round. The majority of users live in rural to small communities of less than 25,000 people.

Most Lake George users do not live in the area year-round (Table 2). Residential dock owners and annual boat permit holders were most likely to be seasonal residents, with a second home or condo in the area. As expected, temporary boat permit holders considered themselves to be visitors or day-users.

Most respondents, especially residential dock owners and annual boat permit holders, have had a long association with the Lake George area—on average in the 30 to 40 year range (Table 2). Temporary boat permit holders have had on average a shorter association. Users were willing to travel substantial distances from their permanent residences to visit Lake George. The average distance traveled ranged up to nearly 300 miles, and a number of respondents traveled 2,000 to 3,000 miles.

Residential dock owners owned on average one to two motorized boats and the same number of non-motorized boats (Table 3). Annual and temporary boat permit holders were more likely to own one or more motor boats, but very few non-motorized boats. Few

Table 2.—Survey respondents' relationship and experience with Lake George, by lake user group

Users' Relationships with Lake George	Residential Dock Owners	Annual Boat Permit Holders	Temporary Boat Permit Holders
		Percent	
Residence*			
Year-round	22.3	20.1	1.2
Seasonal	77.1	57.6	28.1
Visitor/Day-user	0.6	22.3	70.7
Mean # years visited or lived in Lake George area	40.3	32.8	18.3
Mean distance (miles) from Lake George to year-round residence	299	169	220

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

Table 3.—Boat ownership characteristics of survey respondents, by lake user group

Boat Ownership	Residential Dock Owners	Annual Boat Permit Holders	Temporary Boat Permit Holders
Mean # motorized boats	1.4	1.3	1.1
Mean # non-motorized boats	1.5	0.7	0.2
% Owning a PWC	12.4	12.5	15.6

respondents from any user group indicated that they owned a personal watercraft (PWC). Therefore, the majority of motor boats on the Lake were larger.

Boaters enjoyed a variety of activities while boating; primary among them were cruising, swimming, water skiing, and fishing. Cruising was enjoyed by more residential dock owners than other groups (87% vs. 75-80%). Swimming and fishing from the boat were enjoyed by more annual and temporary boat permit holders than residential dock owners (swimming—65-69% vs. 46%, fishing—46-51% vs. 30%).

Estimates of days boated on Lake George differed by user group. As an illustration, Figure 1 shows motorboat use (other than PWCs) for the three groups. Annual boat permit holders accounted for the largest percentage of use in all months and had especially high use in July and August. Residential dock owners used the lake in all months at a more steady rate. Temporary boat permit holders, who made up the smallest proportion of total use, were present on the lake mostly in July and August. The pattern of use among groups was the same for the other types of boats.

3.2 Satisfaction with the Recreation Experience

A list of 13 features of the Lake George recreational experience, such as "scenic beauty" and "enjoying my favorite water sports," was developed based on previous research identifying the likely range of important items (Connelly 1987, Dawson et al. 2005b) and discussions with LGPC staff. Respondents were asked to rate on a 5-point Likert-type scale their satisfaction with each feature over the course of their Lake George recreation experience in 2005. Using the results of reliability and factor analysis (63% of total variance explained), we have grouped the features into three factors for ease of discussion, and present them here in order based on the percent of variability explained by the factor.

Respondents were generally satisfied with each of the features during the 2005 season (Table 4). Most people were satisfied with the features that made up the first factor—"nature appreciation and social bonding." Very few people were dissatisfied with any of these features. This was not the case with the "high-quality environment" factor, in which up to 25 percent of respondents in some groups were dissatisfied with

Table 4.—Satisfaction with features during 2005 season on Lake George, by lake user group

Features	Residential Dock Owners	Annual Boat Permit Holders	Temporary Boat Permit Holders
		Percent	
NATURE APPRECIATION AND SOCIAL BONDING			
Scenic Beauty			
Satisfied	96.7	96.2	99.1
Neutral	1.2	1.2	0.9
Dissatisfied	2.1	2.1	0.0
Sharing the experience with my family			
Satisfied	94.5	95.7	94.9
Neutral	5.2	3.5	4.6
Dissatisfied	0.3	0.8	0.5
Enjoying the natural world			
Satisfied	88.7	89.7	94.1
Neutral	8.1	8.1	5.9
Dissatisfied	3.2	2.2	0.0
Feeling of relaxation			
Satisfied	88.1	89.4	91.9
Neutral	8.8	5.3	6.3
Dissatisfied	3.1	5.3	1.8
*Feeling of camaraderie within my group**			
Satisfied	77.2	78.1	87.0
Neutral	21.8	21.1	12.1
Dissatisfied	1.0	0.8	0.9
HIGH-QUALITY ENVIRONMENT			
Clear, clean water**			
Satisfied	70.9	83.6	94.6
Neutral	12.0	9.1	3.6
Dissatisfied	17.1	7.3	1.8
*Feeling of peace and quiet***			
Satisfied	67.9	70.4	82.3
Neutral	17.5	14.1	13.0
Dissatisfied	14.6	15.5	4.7
*Feeling safe while boating***			
Satisfied	67.8	71.5	86.3
Neutral	16.1	12.8	7.8
Dissatisfied	16.1	15.7	5.9
*Not feeling crowded by other boaters***			
Satisfied	54.2	52.7	74.2
Neutral	21.1	20.8	17.2
Dissatisfied	24.7	26.5	8.6
WATER ACTIVITIES			
*Enjoying my favorite water sports***			
Satisfied	74.3	72.0	86.2
Neutral	23.0	26.2	11.5
Dissatisfied	2.7	1.8	2.3
Opportunity for physical exercise			
Satisfied	71.7	66.4	66.0
Neutral	26.9	32.5	33.0
Dissatisfied	1.4	1.1	1.0
*Challenging my boating skills***			
Satisfied	38.1	39.3	53.8
Neutral	60.4	59.3	43.4
Dissatisfied	1.5	1.4	2.8
*The thrill of a speed boat ride***			
Satisfied	41.8	34.9	48.1
Neutral	55.2	60.2	49.9
Dissatisfied	3.0	4.9	2.0

*To increase sample sizes in each cell, we collapsed "dissatisfied" and "neutral" into one category, then found a statistically significant difference between lake user groups using Chi-square test at P = 0.05.
**Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

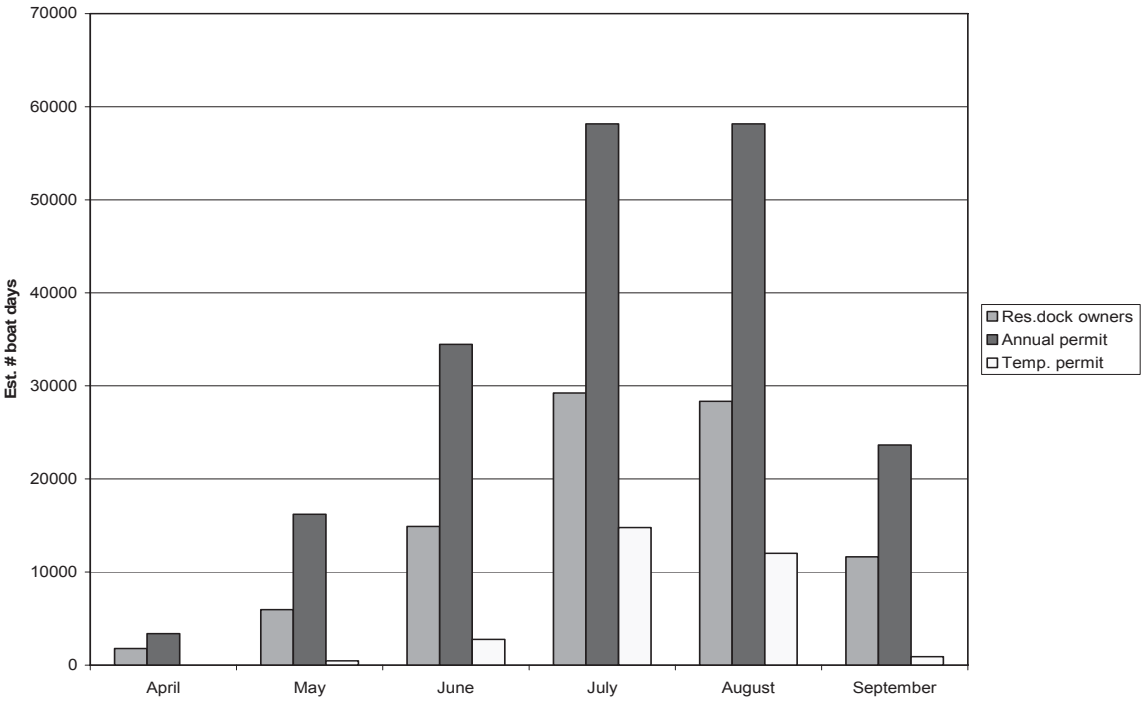

Figure 1.—Estimated number of boat days on Lake George in 2005 by month and boater type, based on respondents' recall of use listed in the mail questionnaire.

specific components. Dissatisfaction was highest among residential dock owners and annual boat permit holders on the issue of crowding and to a lesser extent feeling safe while boating. For the third factor, "water activities," respondents were generally satisfied or neutral. Very few respondents were dissatisfied with features grouped into the third factor. Generally, more temporary boat permit holders were satisfied with these features than other groups. Overall satisfaction with the 2005 Lake George experience was high, with over 90 percent of respondents indicating some level of satisfaction. Less than 5 percent of respondents were dissatisfied, and there were no significant differences between groups in terms of overall satisfaction.

The aspects that contributed most to respondents' dissatisfaction with their 2005 Lake George experience centered around feeling crowded on the water (Table 5). There were too many boaters, making too much noise, not following the rules, creating boat wakes and speeding. A number of respondents said PWCs were a problem, but did not specify why. Others indicated the problem with PWCs was that they were too noisy, running too close to shore, or going too fast. Others indicated a type of problem—noise or speed for example—but did not specify the type of boat causing the problem. Noise and PWCs were sources of dissatisfaction for more residential dock owners than for other users.

3.3 Concerns Related to Congestion and Overcrowding

Crowding at anchorages, swimming areas, and campgrounds along with related issues such as noise and rowdy behavior were seen as the biggest problems on Lake George by 27 percent of respondents. Other issues written in by respondents as being the biggest problem included conflicts between different types of boaters and too many boats on the lake. Noise from personal watercraft was considered a major problem by one-third of annual boat permit holders and residential dock owners; another third thought it was a minor problem (Table 6). Two-thirds or more of the temporary boat permit holders did not think noise was a problem from personal watercraft or other boats. This same pattern was seen for other issues associated with congestion such as rowdy behavior, where residential dock owners

Table 5.—Most common written descriptions of things that contributed most to respondents' dissatisfaction with their 2005 Lake George recreation experience, by lake user group

Things That Contributed Most to Dissatisfaction	Residential Dock Owners	Annual Boat Permit Holders	Temporary Boat Permit Holders
	Percent of respondents who wrote down something		
Overcrowding, too many boaters	26.7	33.3	26.9
Motorized noise—too much or too loud	28.1	13.0	4.8
Decline of water quality	11.1	12.5	5.8
Problems with other boaters—too rowdy, not following rules	7.4	8.9	11.5
PWCs (type of problem not specified)	13.4	7.8	2.9
Speeding by other boaters, feeling unsafe	6.0	5.2	6.7
Too expensive	3.2	3.1	8.7
Limited public access to the water	0.5	3.6	4.8
Boat wakes	4.6	3.1	3.8
Too much upland development, concerned about stormwater runoff	6.0	2.6	2.9

and annual boat permit holders were more likely than temporary boat permit holders to think there was a problem.

3.4 Concerns Related to Safety

Unsafe operation of boats, unmarked boating hazards, and the number of boating accidents or "near-misses" were seen as the biggest problems on Lake George by 16% of respondents. Two-thirds of residential dock owners and annual boat permit holders thought unsafe operation of boats was a problem on Lake George, compared with only one-third of temporary boat permit holders (Table 6). Unmarked boating hazards and the number of boating accidents or "near-misses" were not problems for most boaters.

Some respondents wrote in that they were concerned that other boaters were not aware of the rules for boating on Lake George and this lack of awareness contributed to unsafe conditions. However, when boaters were asked about their awareness of the special rules and regulations on Lake George, almost all indicated some level of awareness (Table 7). Temporary boat permit holders were the least likely to be aware of the special regulations. Some would argue that too many rules can detract from a person's enjoyment of a recreation experience, but most boaters on Lake George did not indicate that this was the situation for them. Over half of the residential dock owners and annual boat permit holders indicated that the rules added to their enjoyment of the Lake. Temporary boat permit holders were more likely to be neutral regarding the rules' effects on their enjoyment.

4.0 CONCLUSIONS

Results of this analysis appear to highlight the similarities between residential dock owners and annual boat permit holders, and the differences between these two groups and temporary boat permit holders. For almost every characteristic, perception, or concern examined, these similarities and differences existed. Residential dock owners and annual boat permit holders have a longer history of involvement with Lake George, spend more time on the Lake, and are more likely to be concerned about crowding-related and safety issues than temporary boat permit holders. Recreation planners can use the results of this analysis to inform planning and communication with stakeholders on Lake George issues and perhaps other areas with similar types of recreational boaters.

5.0 ACKNOWLEDGMENTS

Funding for this research was provided by the Lake George Park Commission.

Table 6.—The extent to which respondents found potential recreation-related issues to be a problem on Lake George in 2005, by lake user group

Recreation-related Issues	Residential Dock Owners	Annual Boat Permit Holders	Temporary Boat Permit Holders
		Percent	
*Noise from personal watercraft**			
Not a problem	27.2	34.6	68.4
A minor problem	36.4	35.0	23.6
A major problem	36.4	30.4	8.0
*Noise from other boats**			
Not a problem	25.4	43.8	77.6
A minor problem	48.2	35.0	18.8
A major problem	26.4	21.2	3.6
*Unsafe operation of other boats**			
Not a problem	32.8	35.1	67.6
A minor problem	49.3	45.9	27.0
A major problem	17.9	19.0	5.4
*Crowding at boat anchorages**			
Not a problem	74.4	54.4	76.3
A minor problem	17.9	29.1	17.2
A major problem	7.7	16.5	6.5
*Rowdy behavior of other boaters**			
Not a problem	47.8	53.6	75.9
A minor problem	39.6	32.5	21.4
A major problem	12.6	13.9	2.7
*Crowding at public boat launching sites**			
Not a problem	87.2	68.6	69.6
A minor problem	9.0	24.4	18.7
A major problem	3.8	7.0	11.7
*Activities on the water disturbing my enjoyment when I am onshore**			
Not a problem	45.3	65.6	88.3
A minor problem	38.8	24.9	9.0
A major problem	15.9	9.5	2.7
*Unmarked boating hazards**			
Not a problem	64.0	63.8	77.5
A minor problem	29.4	28.8	19.8
A major problem	6.6	7.4	2.7
*The number of boating accidents or "near-misses"**			
Not a problem	73.2	69.2	86.0
A minor problem	20.2	23.3	12.2
A major problem	6.6	7.5	1.8

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

Table 7.—Recreational boaters' awareness of and feelings about special rules and regulations in place on Lake George, by lake user group

Awareness of Special Rules and Regulations on Lake George*	Residential Dock Owners	Annual Boat Permit Holders	Temporary Boat Permit Holders
		Percent	
Little awareness	4.3	4.3	15.9
Some awareness	35.8	39.0	49.8
Great deal of awareness	59.9	56.7	34.3
*Rules' effect on enjoyment**			
Adds	72.0	59.8	40.8
Neither adds nor detracts	22.6	31.8	45.7
Detracts	5.4	8.4	13.5

*Statistically significant difference between lake user groups using Chi-square test at P = 0.05.

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EASTERN WILDERNESS USERS: PERCEPTIONS FROM TWO SMALL WILDERNESS AREAS

Nicholas Palso, MPA
Ph.D. Candidate
Department of Recreation, Park, and Tourism Management
The Pennsylvania State University
201 Mateer Building
University Park, PA 16803

Alan Graefe, Ph.D.
The Pennsylvania State University

Abstract.—This study explores perceptions of wilderness recreationists in the eastern United States, with a focus on definitions of wilderness areas and factors that may decrease enjoyment of the wilderness experience. The eventual aim is to compare these data with information collected from wilderness users in the western United States. The few studies performed on this comparison over the past 25 years have produced inconsistent results and indicated a need for more research. This survey was conducted at wilderness areas in the Allegheny National Forest in Pennsylvania.

1.0 INTRODUCTION

Wilderness areas in the eastern United States are generally very different from those in the West. Eastern Wilderness areas tend to be smaller because much of the land in this region is privately owned and thus there is far less government land to designate. Eastern Wilderness areas also have largely been disturbed in the past, such as through farming or timber operations, while many of those in the West still retain their pristine state. Additionally, many eastern Wilderness areas tend to be closer to population centers and are more easily accessible than many western areas, and they usually receive higher numbers of visitors as a result. This leads to more congestion, as the larger visitation rates take place in smaller areas than in the West (Roggenbuck & Watson 1989).

As there are clearly differences between eastern and western Wilderness areas, are there differences in the users of these areas as well? Given the more congested conditions at their local Wilderness areas, would eastern users be more tolerant of encountering other people in the Wilderness? Would western users be more adamant than their eastern counterparts that the Wilderness areas they use be untouched and have no history of disturbance than their eastern counterparts? Some research has examined this topic in the past, particularly in a spurt in the late 1970s and early 1980s, but it was largely inconclusive. Some studies found that there were few differences between users from the East and those from the West (Boteler 1981, Lucas 1980, Roggenbuck 1980). Other researchers, however, found more differences between Eastern and Western Wilderness users (Donnelly et al. 1981). Little if any study has been performed on this topic since the early 1980s, and the lack of a consensus suggested a need for further study.

The goal of this study was to examine the wilderness perceptions of visitors to two small Wilderness Areas in the Allegheny National Forest. These data will provide a baseline for comparison with data collected in the future from Wilderness Areas in the Western U.S. to see if there are differences in the perceptions between the geographic regions.

2.0 METHODS

2.1 Study Area

This study was conducted at the Wilderness areas in the Allegheny National Forest in north-central Pennsylvania. This forest was established in 1923 after most of the area had been denuded of trees, and as a result is composed almost entirely of second-growth forest (Allegheny National Forest 2005). At 513,325 acres, it is the largest tract of federal land in Pennsylvania, and of that acreage, 2 percent is designated as Wilderness. The first Congressionally-designated Wilderness that was surveyed in the Allegheny was Hickory Creek Wilderness. This area was designated in 1984 and comprises 8,633 acres of previously clear-cut land. Its borders are delineated by a paved state-maintained road and a gravel U.S. Forest Service Road. It is adjacent to Heart's Content Scenic Area, which also serves as a trailhead. Heart's Content has proved to be an effective site for studying the Hickory Creek Wilderness (Graefe et al. 2000). The second Wilderness area studied was the Allegheny Islands

Wilderness. Like Hickory Creek, it was established in 1984. This Wilderness area comprises seven islands that stretch along 56 miles of the Allegheny National Wild and Scenic River. Some of these islands were formerly farmland, while others have always been wetlands. The total size of the islands is 368 acres, which makes this area one of the smallest Wilderness reserves in the United States (Allegheny National Forest 2005). To the west of the river lie numerous farms, roads, and towns. U.S. Route 62 parallels the river to the east, and traffic counts conducted as part of the National Visitor Use Monitoring (NVUM) survey indicated that an average of 2,000 vehicles, including many commercial trucks, use this highway each day. These reserves were of special interest in this study because of their small size and former use. They are quite different from the traditional western Wilderness areas that covers tens or hundreds of thousands, or even millions, of acres of relatively pristine landscape, such as the Bob Marshall Wilderness in Montana, Frank Church-River of No Return Wilderness in Idaho, and the Gates of the Arctic Wilderness in Alaska. A glance at a map reveals that these preserves are all several times larger than the entire Allegheny National Forest. There is no spot in the Allegheny Islands Wilderness where a visitor cannot see development on either side of the river or at least hear the traffic on Route 62. Hickory Creek is quieter because of its more secluded location and larger size, but inside, visitors will find the remains of an old World War II-era artillery range and other signs of former use.

2.2 Survey Methods

The survey was performed in conjunction with the 2005 NVUM Survey conducted by the U.S. Forest Service in the Allegheny National Forest. This survey, held every five years in each national forest, is designed to elicit information about visitor demographics as well as what types of activities recreationists are doing in the forest and how long they are staying. The Wilderness surveys were conducted on 20 different days during the summer and early fall of 2005. For Hickory Creek, the survey sites were at Heart's Content trailhead and along Forest Road 119, which borders the Wilderness. Surveys for the Allegheny Islands were performed at canoe pullouts along the Allegheny River. Additional survey days were added to the NVUM survey days assigned to those locations by the Forest Service, which were randomly chosen. Interviewees were self-identified Wilderness users, and were further screened to ensure that they had indeed visited a Wilderness. This second step became necessary when it was noticed very early on, especially at Heart's Content—which unlike the adjacent Wilderness area contains a tract of old-growth trees—that many visitors believed they had been in the Wilderness when in fact they had not. All interviews were conducted as visitors were finished with their recreational experience and preparing to leave the site.

2.3 Survey Design

The first part of the survey contained six statements about Wilderness areas and interviewees were asked to identify on a Likert-type scale of 1 to 5, with 1 being "strongly disagree" to 5 being "strongly agree," how much they agreed with the statements. These statements were devised to reflect ideas codified in the Wilderness Act of 1964 (Wilderness Society 2005), as well as isolate some conditions in Eastern Wilderness areas that may be different from those in the West, such as prior development.

The second part of the survey was designed to determine how encountering certain situations in a Wilderness area might detract from the user's experience. This detriment was measured on a Likert-type scale of 1 to 5, with 1 being "no bother" to 5 being "major annoyance." Again, many of these situations were selected based upon how conditions vary between the East and West, such as congestion along trails (Roggenbuck and Watson 1988) and distances from population centers. Many of these potentially detrimental conditions were also taken from previous studies, such as encountering campfire rings in the wilderness (Roggenbuck and Watson 1993) and hearing noise from passing aircraft while in a wilderness (Fidell et al. 1996, Tarrant et al. 1995).

3.0 RESULTS

This survey produced 49 responses in the Allegheny National Forest Wilderness areas in the summer of 2005. One interviewee from California was not included in this study owing to his Western roots. Most respondents came from over 100 miles away, with the majority coming from western Pennsylvania and eastern Ohio. Some items

Table 1.—Results of Survey in the Allegheny National Forest

	Mean	Standard Dev.
Statements about Wilderness areas		
1=Strongly disagree 3=Neurtral 5=Strongly Agree		
A wilderness area is one that is free of human disturbance	4.69	0.72
A wilderness area is one that has always been free of human disturbance	3.60	1.36
A wilderness area is a place where nature is primarily in control	4.77	0.59
A wilderness area is a place that needs to be specifically designated as such by the government	2.85	1.65
A wilderness area is a difficult place to access	2.94	1.21
A wilderness area is a danger place	2.35	1.16
Detrriment to Wilderness experience		
1=No bother 5=Severe detriment		
Seeing other people	2.75	1.23
Hearing other people	3.31	1.24
Seeing development outside of the wilderness area from within	4.08	1.20
Hearing development outside of the wilderness area from within	4.40	1.03
Seeing trails	1.27	0.74
Seeing fire rings or other signs of previous camping	1.92	1.18
Seeing items left behind by others	4.85	0.55
Seeing aircraft overhead	2.56	1.40
Hearing aircraft overhead	2.81	1.47
Encountering dogs	2.04	1.34
Encountering horses or other pack animals	2.15	1.37

showed a strong consensus among the users, such as distaste at finding items left behind by others, satisfaction in finding trails, and agreement with the statements that Wilderness areas are places free from human development and are areas where nature is primarily in control. There was less agreement about other questions, such as the need for government designation of Wilderness areas, the effects of seeing and hearing aircraft overhead, and the presence of dogs and horses in the Wilderness. Full results are shown in Table 1.

The gathering of data proved more difficult than had been anticipated, as is reflected in the low sample size. One difficulty was that many visitors who believed they had visited a Wilderness area had in fact visited the old-growth forest at Heart's Content, which is not designated as Wilderness. Thus, they were not eligible for the survey even though many wanted to take it. Second, Forest Service personnel stated that the Allegheny seemed to be experiencing lower-than-normal visitation during the summer of 2005. They attributed this to rainy and cold weather that lasted late into the season, as well as the surge in gasoline prices experienced during that summer. Third, there seemed to be low wilderness usage in general. Even during the Memorial, Independence, and Labor Day holidays, which were by far the busiest times of visitation in the Allegheny National Forest, the parking area at Hickory Creek was far from full. Randomly selected weekend days also hinted at low usage. Finally, many of the sites chosen by the Forest Service for the NVUM survey along the Allegheny River proved to be less than ideal for gathering data from Wilderness users. Most river sites selected were public boat and canoe access points run by the Pennsylvania Fish and Boat Commission. However, observations over the summer indicated that the majority of canoeists using the Allegheny River Islands access the river via privately run canoe services. These businesses own property along the river, which canoeists use as their pullouts. As very few survey days were scheduled at these privately owned

canoe pullouts, the number of respondents for both the NVUM and our Wilderness survey along the river were very low. Only six of the 48 Wilderness surveys collected came from the Allegheny Islands.

4.0 CONCLUSION

It appears that few people visited the Wilderness areas of the Allegheny National Forest in 2005. Of those who did, most agreed on some statements about Wilderness areas and situations that could detract from their Wilderness experiences, but disagreed on others. In general, visitors to the Hickory Creek and Allegheny Islands Wildernesses share the traditional view that Wilderness areas are free of development and human disturbance.

In the summer of 2006, it is hoped that this survey can be conducted at Wilderness sites in the Mt. Hood National Forest and Columbia River Gorge National Scenic Area in Oregon, as well as possibly in Alaska. The same questions will be asked, and the data will then be compared with that gathered from the eastern U.S. to determine if any regional trends can be detected.

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FROM LANDSCAPES TO SOUNDSCAPES: UNDERSTANDING AND MANAGING NATURAL QUIET IN THE NATIONAL PARKS

Robert Manning
Rubenstein School of Environment and Natural Resources
University of Vermont
356 Aiken Center
Burlington, VT 05405

William Valliere
University of Vermont

Jeffrey Hallo
University of Vermont

Peter Newman
Colorado State University

Ericka Pilcher
Colorado State University

Michael Savidge
Golden Gate National Recreation Area

Dan Dugan
Nature Sounds Society

Abstract.—Research at Muir Woods Natural Monument suggests that soundscapes are an important component of parks and outdoor recreation, that human-caused noise is a potentially important indicator of quality for park soundscapes, and that visitors have normative standards for the maximum acceptable level of human-caused noise in parks. Formulating indicators and standards of quality may be a useful way of understanding and managing park soundscapes.

1.0 INTRODUCTION

A growing body of research and management experience documents the potential impacts of outdoor recreation in national parks and related areas. For example, visitors can trample fragile vegetation, erode soils, pollute water, and disturb wildlife (Hammitt & Cole 1998). Moreover, there are often aesthetic implications of these impacts that can degrade the quality of the visitor experience (Manning et al., 2004).

Research and management attention is now being extended to include aural impacts of outdoor recreation. "Natural quiet"—the sounds of nature undisturbed by human-caused noise—is now being recognized as an important and endangered resource in parks and related areas. In particular, human-caused noise can mask the sounds of nature and detract from the quality of the visitor experience. The U.S. National Park Service has recently created a Natural Sounds Program to help manage soundscapes in national parks, and has revised its management policies to address the importance of this resource:

> The National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks. Natural soundscapes exist in the absence of human-caused sound. The natural soundscape is the aggregate of all the natural sounds that occur in parks, together with the physical capacity for transmitting sounds. The Service will restore degraded soundscapes to the natural condition whenever possible, and will protect natural soundscapes from degradation due to noise (undesirable human-caused noise). (National Park Service Management Policy 4.9).

One way to understand and manage soundscapes in parks and related areas is to adapt the framework of indicators and standards of quality (Manning 2004). Indicators of quality are measurable, manageable variables that can be used to help define the condition of park resources and the visitor experience. Standards of quality define the minimum acceptable condition of indicator variables. Once indicators and standards of quality have been formulated, indicator variables are monitored and management actions are taken to ensure that standards of quality are maintained. This approach is central to contemporary park and outdoor recreation management frameworks, including Limits of Acceptable Change (Stankey et al. 1985) and Visitor Experience and Resource Protection (National Park Service 1997, Manning 2001). The objective of this study was to help formulate soundscape-related indicators and standards of quality.

2.0 THE STUDY

The study was conducted at Muir Woods National Monument, California. Muir Woods was established as a unit of the national park system in 1908 to preserve an impressive stand of 1,000-year-old coast redwood trees. The park is small by national park standards (just over 500 acres), but is visited very intensively, accommodating over a million visits annually. The park offers six miles of trails, and visitors are required to stay on trails to help protect fragile soils, vegetation, and other resources. The park's main trail network, along Redwood Creek on the floor of the canyon, is hardened with paving or wooden boardwalks.

3.0 PHASE 1 RESEARCH

An initial phase of research was conducted in August 2003. The primary objective of this phase of research was to identify potential indicators of the quality of the visitor experience at Muir Woods. An exit survey of a representative sample of 406 visitors was conducted. A series of open- and close-ended questions was asked, including "What did you enjoy the most about your visit to Muir Woods?" and "What did you enjoy the least about your visit to Muir Woods?" Many respondents reported that soundscape-related issues were important in affecting the quality of their experience. For example, many respondents reported that they enjoyed the "quiet" and "peacefulness" of the park and "hearing the sounds of nature." Many respondents also reported that hearing human-caused noise in the park was the least enjoyable aspect of their experience. These findings suggest that soundscape-related issues are potentially important indicators of quality for Muir Woods.

3.1 Phase 2 Research

A second phase of research was conducted in July 2005. The primary objective of this phase of research was to identify indicators of quality for the soundscape of Muir Woods. A purposive sample of 280 visitors to Muir Woods was asked to participate in a "listening exercise." Visitors were asked to sit at selected locations in the park and, using a checklist provided, record the types of natural and human-caused sounds they heard. For each type of sound heard, respondents were asked to rate on a nine-point scale how pleasing (+4) or annoying (-4) they found these sounds.

Study findings are summarized in Figure 1, which plots the percentage of respondents who heard each type of sound by how pleasing or annoying that sound was evaluated. This figure is analogous to an importance-performance framework (Mengak et al. 1986, Hollenhorst and Stull-Gardner 1992, Hollenhorst et al. 1992, Hollenhorst and Gardner 1994). Sounds heard by large percentages of visitors and that are evaluated as highly annoying are good potential indicators because they can be important in influencing the quality of the visitor experience. Likewise, sounds heard by a large percentage of visitors and that are evaluated as highly pleasing are also good potential indicators. Data from Figure 1 suggest that sounds constituting the former group include visitor-caused noise such as strangers talking, conversations within large groups, and loud children. Sounds constituting the latter group include wind blowing through the trees, water rushing in Redwood Creek, and bird songs.

3.2 Phase 3 Research

A third phase of research was conducted in August 2005. The primary objective of this phase of research was to help identify standards of quality for soundscape-related indicators. Normative theory and related research methods were used for this purpose. Norms are a theoretical construct that have a long tradition and are widely used in sociology and the social sciences more broadly (Vaske and Whittaker 2004).

As the word suggests, norms represent what is considered "normal" or generally accepted within a cultural context (Johnson 2000). If visitors have norms about acceptable conditions in parks and related areas, then such norms can be used to help define standards of quality. Normative research in outdoor recreation has been widely used to study crowding in parks and related areas (Shelby and Heberlein 1986, Whittaker and Shelby 1988, Shelby et al. 1988, Patterson and Hammitt 1990, Williams et al. 1991, Vaske et al. 1996, Manning et al. 1996a, 1996b, Manning 1997, Manning et al. 1998, Jacobi and Manning 1999), and has also been used to study environmental impacts of outdoor recreation (Shelby et al. 1988, Manning et al. 2004), minimum stream flows (Shelby and Whittaker 1995), wildlife management (Zinn et al. 1998, Zinn et al. 2000, Wittmann et al.

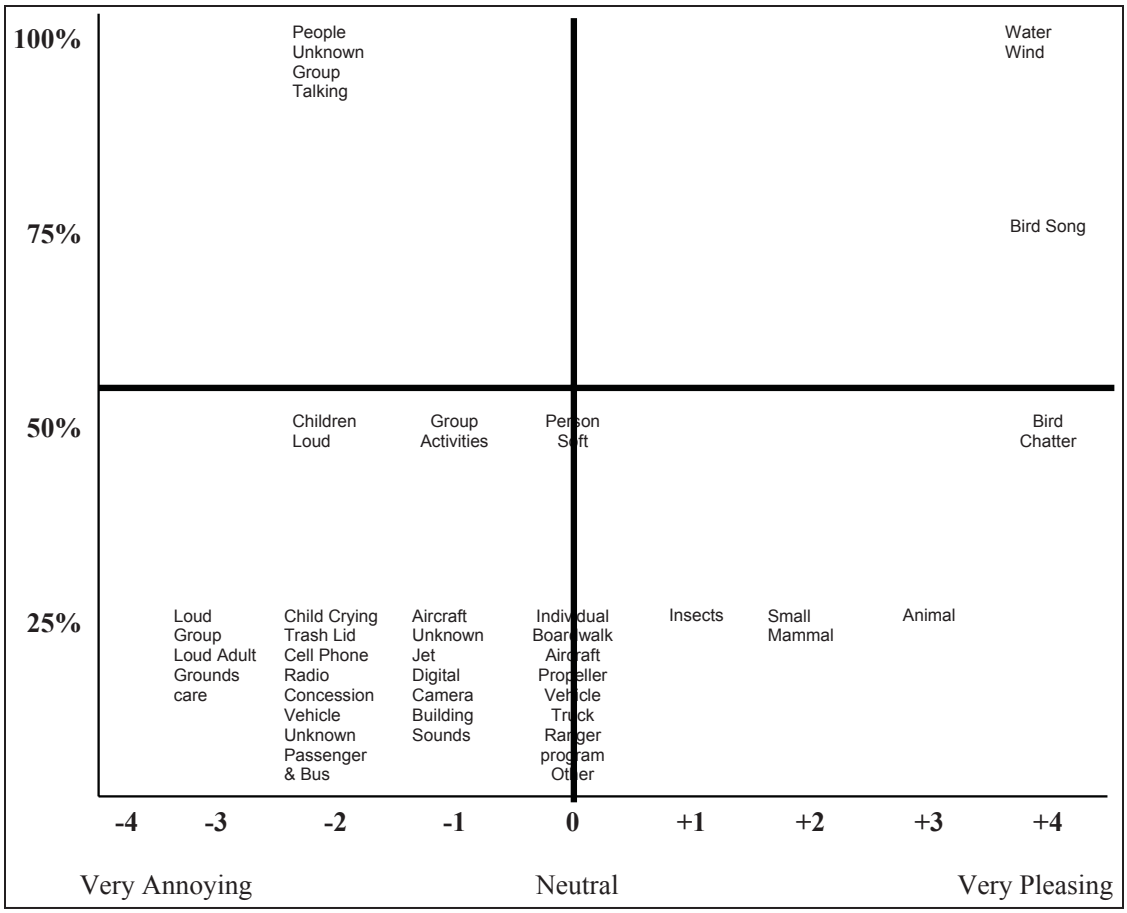

Figure 1.—"Importance-Performance" Analysis of Sounds Heard at Muir Woods.

1998. Whittaker 1997), and fire management policy (Bright et al. 1993, Kneeshaw et al. 2004).

To measure normative standards of quality for the soundscape-related indicators identified in Phase 2 research, a series of five 30-second tape recordings was prepared. These tapes were prepared using recordings of natural and human-caused sounds in the park. The first tape represented the park's natural soundscape of wind, water, and bird songs. The next four tapes overlaid tracks of increasing levels of visitor-caused sounds, including talking and boisterous behavior. These tapes were incorporated into a visitor survey by asking respondents to listen to each tape and evaluate their acceptability using a nine-point response scale anchored at "very unacceptable" and "very acceptable." The survey was administered to a representative sample of 298 visitors as they exited the park.

Resulting data were graphed as shown in Figure 2. This "social norm curve" plots the average acceptability rating for the sample for each of the five study tapes. Average ratings fall out of the acceptable range and into the unacceptable range between tapes 2 and 3, and this point may represent a threshold or minimum standard of quality. Selected sound metrics associated with each study tape are also plotted on the X axis of the graph.

A final question asked respondents to indicate which of the study tapes best represented the soundscape conditions experienced in the park. Findings are shown in Table 1 and suggest that human-caused noise in the park is approaching the threshold of normative acceptability identified in Figure 2.

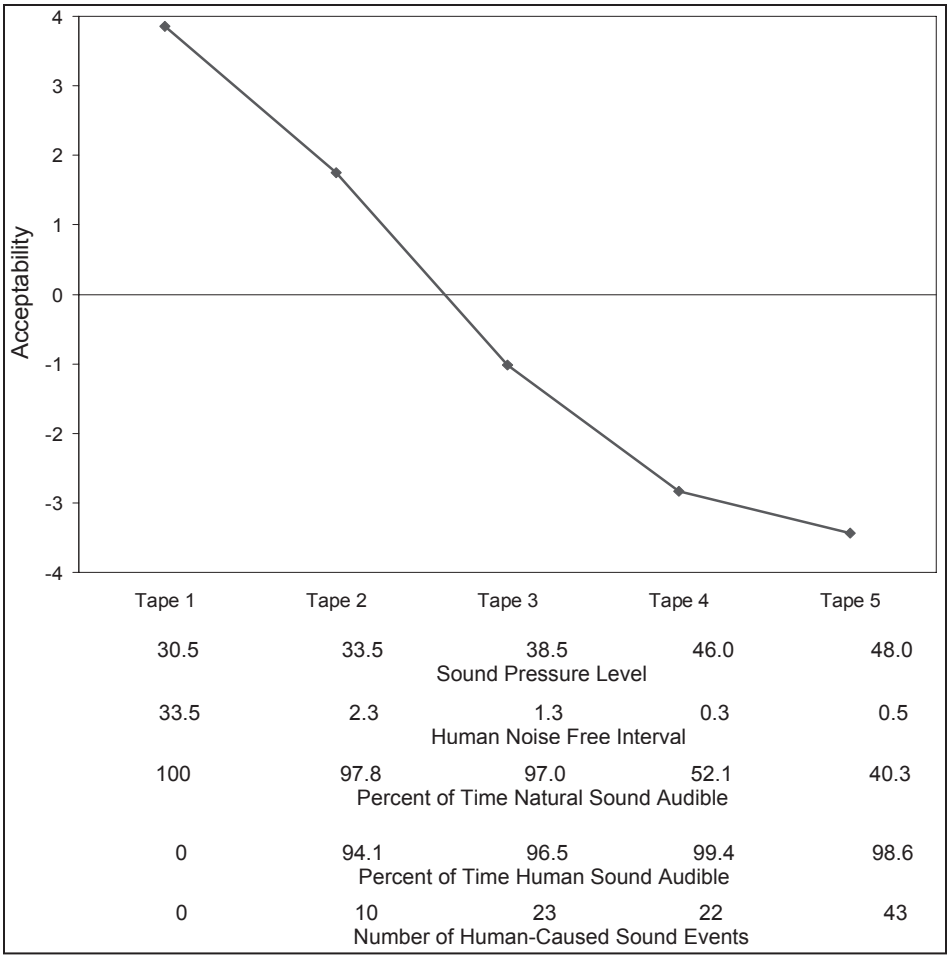

Figure 2.—Social Norm Curve for Sounds at Muir Woods.

4.0 CONCLUSIONS

"Natural quiet" is increasingly being recognized as an important and scarce resource in parks and related areas. Moreover, the ability to hear the sounds of nature without distractions of human-caused noise can affect the quality of the visitor experience.

Thus, soundscapes may be an important component of managing parks and outdoor recreation, and human-caused noise may be an important indicator of quality of park soundscapes. Study findings suggest that visitors have normative standards regarding the maximum acceptable level of human-caused noise in parks and that such measures may be useful in formulating soundscape-related standards of quality. Data from Muir Woods suggest that current levels of human-caused noise are approaching normative standards of acceptability.

Table 1.—Study tape that most closely represents the conditions experienced in the park

	Frequency	Percent
Tape 1	50	17.9
Tape 2	189	67.5
Tape 3	35	12.5
Tape 4	6	2.1
Tape 5	0	0.0

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MOTORIZED RECREATION IN PENNSYLVANIA

Bruce E. Lord
Senior Research Assistant in Forest Resources
The Pennsylvania State University
206 Ferguson Building
University Park, PA

Abstract.—Pennsylvania's Department of Conservation and Natural Resources (DCNR) has been developing management plans to deal with the growing popularity of motorized recreation in the Commonwealth. Two important segments of off-highway vehicle use in Pennsylvania involve all-terrain vehicles and snowmobile riding. A pair of needs studies for these recreationists provides a unique opportunity to compare and contrast their needs and activities. While there are many similarities between the two, snowmobiles have a longer history of activity, which is reflected in the availability of trails. Consequently, snowmobile riders express the greatest needs in terms of trail system maintenance. Conversely, ATV riders have fewer places to ride and identified new trails as their principal need.

1.0 INTRODUCTION

Motorized recreation is growing in popularity in Pennsylvania as well as in the rest of the United States. A pair of studies of the recreation needs of two motorized audiences offers a unique opportunity to compare and contrast two of the principal groups involved in these activities—snowmobile and all-terrain vehicle (ATV) riders.

This paper will examine the differences and similarities in the needs and characteristics of these two audiences. Contrasts will be presented only where they were both statistically significant and substantive.

1.1 Background

Pennsylvania has one of the largest rural populations in the U.S. Motorized recreation is an important activity in the state. Between 1990 and 2003, the number of participants grew by 50 percent from 1 million to 1.5 million people (PA Department of Conservation and Natural Resources 2004). Only wildlife viewing registered a greater increase during this period. Over 600,000 people identified themselves as ATV riders, while 400,000 indicated that they had ridden a snowmobile during 2003.

Act 68 of 2001 amended Chapter 77 of the Pennsylvania Vehicle Code to allow the Department of Conservation and Natural Resources (DCNR) to better regulate the use of ATVs and snowmobiles in Pennsylvania. In conjunction with this amendment, the Snowmobile and ATV Advisory Committee (SAAC) was created to advise DCNR on snowmobile and ATV recreation. Almost 174,000 ATVs and 46 thousand sleds were registered in the Commonwealth in 2003.

2.0 PROCEDURES

The two audiences were surveyed using a modified Dillman protocol (Dillman 1978). A six-page survey accompanied by a pre-addressed, postage-paid return envelope was sent to 3,000 ATV owners using a mailing list provided by DCNR during the first week of October 2003. Non-respondents were contacted two weeks later with a postcard reminder and again, two more weeks later with an additional mailing containing another copy of the survey. A similar procedure was followed for snowmobile owners, with the first mailing going out in September 2005.

3.0 RESULTS

A total of 1,357 usable returns was obtained from ATV owners (Lord et al. 2004). Net of undeliverable addresses, a response rate of 47 percent was obtained. Registered snowmobile riders returned 1,410 surveys for a response rate of 48 percent, net of undeliverables (Lord et al. 2006). In each case, the high response rate was credited to the quality of the mailing lists provided by DCNR and to the direct interest of the survey audience.

3.1 Rider characteristics

The average snowmobile household had 2.5 sleds and 2.8 riders, as compared to 1.6 ATVs and 2.5 riders in ATV households. Snowmobile households were more likely to have family incomes over $50,000 than were ATV households (70% vs. 57%) (Figure 1). Both audiences, however, had a bimodal age distribution with a main peak in the 40 to 49 year age range and a minor peak in

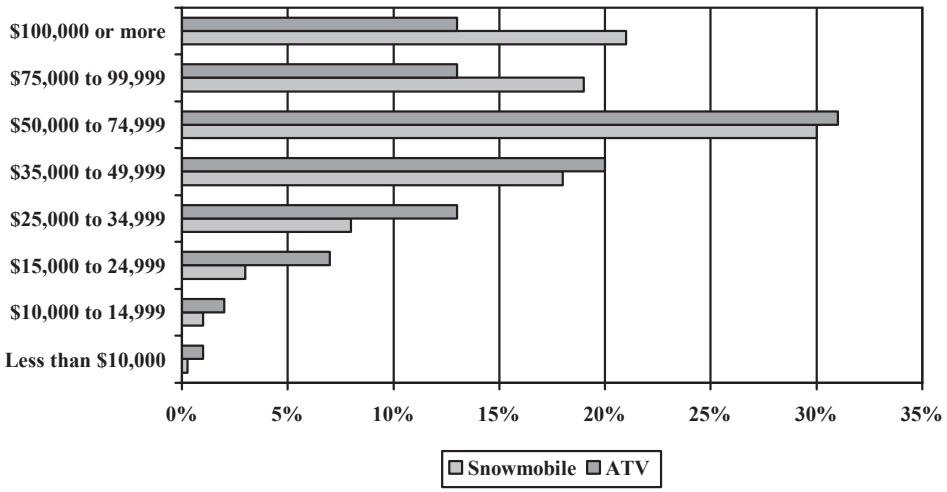

Figure 1.—Family income profiles of ATV and snowmobile households in Pennsylvania.

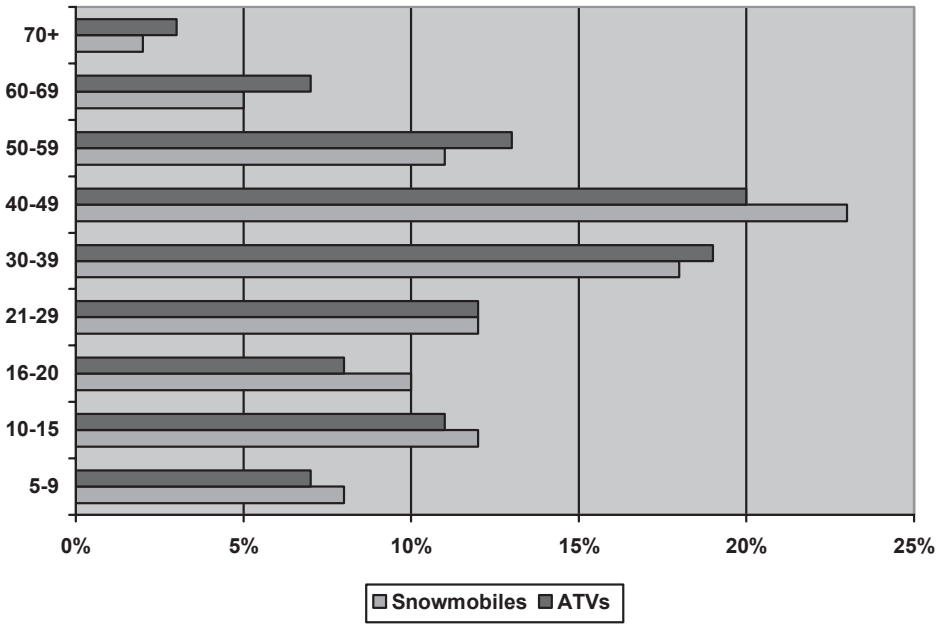

Figure 2.—Age profile of snowmobile and ATV riders in Pennsylvania.

the 10 to 15 year age range (Figure 2). This pattern was interpreted as an indicator of the family orientation of this activity for many users.

Perhaps reflecting the longer time their machines have been available, snowmobile riders had more years of experience. The median was 20 years for snowmobile owners and 9 years for ATV owners. One-quarter of snowmobiling owners had over 30 years of experience, as compared to 16.5 years of experience for ATV owners. At the other end of the spectrum, one-quarter of snowmobile owners had at most 8 years of experience, contrasting with less than four years for ATV owners.

The respondents were asked to identify the activities they participated in using their machines (Figure 3). ATVs were much more likely than snowmobiles to be used for hunting (58% versus 6%) and for utility and work (61% vs. 6%). ATV riders were less likely than snowmobile riders to identify themselves as participating in aggressive trail riding (21% versus 34%) or in sport riding (32% versus 42%).

When asked if they or family members had ever been involved in an accident with their machines, snowmobile riders had much higher incident rates than did ATV riders (Table 1). Respondents who owned snowmobiles

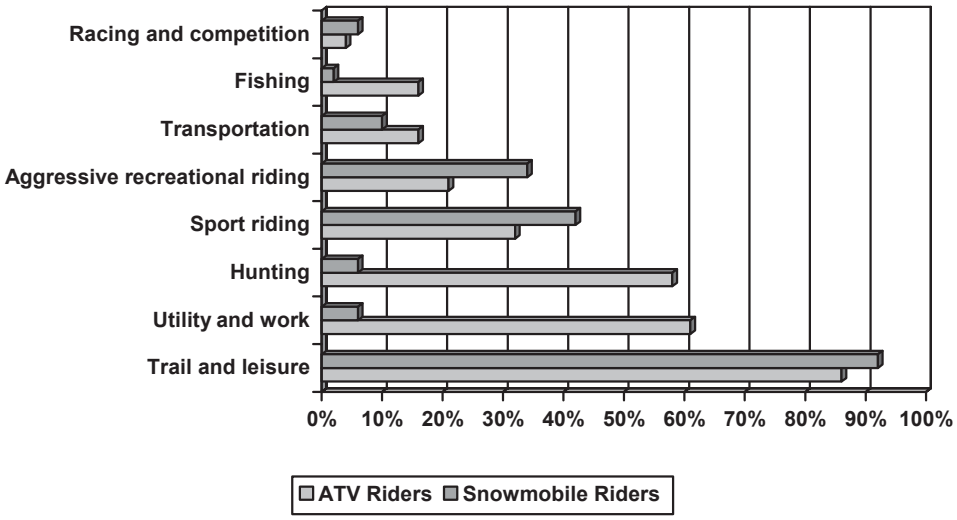

Figure 3.—ATV and snowmobiling activities in Pennsylvania.

Table 1.—Incidents while riding snowmobiles and ATVs in Pennsylvania

	ATV riders		Snowmobile riders	
	Respondent	Household Member	Respondent	Household Member
Overturn	29%	19%	42%	29%
Collision w/obstacle	17%	14%	25%	18%
Collision w/vehicle	3%	3%	6%	4%
Loading/ unloading	2%	2%	3%	2%

reported more overturns (42% vs. 29%), collisions with obstacles (25% vs. 17%), collisions with vehicles (6% vs. 3%), or accidents while unloading (3% vs. 2%). Reported incidents among household members followed a similar pattern, but were noticeably lower than what the respondents reported for themselves. For example, only 19 percent of ATV respondents reported that a member of the household had an overturn (vs. 29% of respondents) and 29 percent of snowmobile household members were reported to have had an overturn (compared to 42% of respondents).[1]

ATV owners were much less likely to be a member of a riding club or organization (8.5% of respondents) than snowmobile owners (45% of respondents), perhaps reflecting the success of snowmobile groups in organizing networks of trails across private lands and the length of time snowmobiles have been around.

3.2 Needs

The two user groups' responses to questions about their recreation needs reveal the current status of trail systems available to each group (Table 2). Of primary importance to ATV owners was the establishment of new trails, with 79 percent ranking it as important or very important on a five-point scale. Maintaining existing trails fell lower, with 73 percent ranking it as important or very important. While snowmobile riders felt that new trails were important (74%), they had greater needs for trail maintenance (90%), grooming (84%), and snow left alongside dual-use roads (78%).

When asked about the length of trails they prefer, both groups attached primary importance to long trails

[1]The author reflects upon his own youth, when he never told his father about any negative incident unless absolutely unavoidable.

Table 2.—ATV and snowmobile needs in Pennsylvania - trail amenities

Snowmobile	ATV
Maintain existing trails – 90%	New trails – 79%
Trail system enhancements – 86%	Trail system enhancements – 75%
Trail grooming – 84%	Access to secondary roads – 74%
Access to secondary roads – 84%	Maintaining existing trails – 73%
Snow along side roads – 78%	Support facilities – 56%
New trail systems – 74%	Increased maps, signage – 56%
Access to pipelines – 74%	Increased trail safety – 50%
Access to services – 73%	Trails with camping areas – 43%
Increase maps/signage – 70%	Camping areas at trailheads – 38%
Increased trail safety – 57%	Access to communities – 35%
Support facilities – 54%	
Increased law enforcement – 27%	

(68% of snowmobile riders and 60% of ATV riders). However, snowmobile riders' responses indicated that they were more used to traveling to ride than were ATV owners. Snowmobile owners did not rate trails close to home as highly as did ATV owners (84% vs. 74% important or very important). Snowmobile owners ranked weekend opportunities higher than day trips (67% vs. 56% important or very important), while ATV owners reversed the order (day trips—60%; weekend opportunities—50%).

3.3 Tourism

Questions about travel habits and expenditures show that snowmobile riders were more likely to travel in search of snow and riding opportunities than were ATV owners. Snowmobile owners average 4.3 day trips and 3.0 overnight trips out-of-state, while ATV owners reported 1.4 day trips and 1.1 overnight trips outside of the Commonwealth. These results then reflected in their annual gasoline purchases. Snowmobile owners reported buying an average of 84 gallons while out-of-state for their sleds and another 118 gallons to transport them while ATV owners indicated an average of 12 gallons purchased out-of-state for their machines and another 36 gallons to transport them.

The average trip out of state for ATV riding cost $500 per household. Snowmobile owners reported expenditures of over $900 per household (Table 3). With the exception of miscellaneous expenses, snowmobile riders had higher trip expenditures in every category. This trend continues with annual equipment purchases, where snowmobile riders spent an average of $4,000 on vehicles, while ATV riders averaged $3,000.

4.0 SUMMARY AND CONCLUSIONS

The two groups, while similar in many ways, displayed some distinct differences. Many of the differences seemed to be related to the length of time their activity had been established and the cost of participating, including the proclivity of snowmobile riders to travel in search of better snow.

Demographically, snowmobile owners tended to have higher incomes and have more experience in their sport. It was speculated that the latter contributed to the higher number of accidents reported by snowmobile riders. They also tended to own more machines than did the ATV owners. Both groups had strong family-related

Table 3.—Average snowmobile and ATV expenditures for out-of-state trips

Expense	Snowmobile	ATV
Gasoline or oil for snowmobile/ATV	$166.13	$45.12
Gasoline or oil for vehicle	$175.31	$124.95
Repairs or maintenance	$64.52	$30.64
Food	$185.99	$112.47
Lodging	$248.27	$161.23
Fees	$76.29	NA
Other	$16.23	$27.54
Total	$932.74	$501.95

demographics. ATV owners were less likely to be a member of an associated organization or club.

The concerns of snowmobile owners were centered around trail maintenance and grooming issues. Many of their trails involve joint use roads, so snowplowing and the amount of snow left on the side of the road are concerns for them. ATV riders, on the other hand, are much more concerned with the number and location of trails available for their use.

Finally, these results demonstrate the need to differentiate between the needs of the various segments of the off-highway vehicle audience. The differences highlighted above show that ATV and snowmobile riders have distinct needs in terms of trail features and amenities. It is important that managers treat each segment of the off-highway vehicle audience as a unique group with their own distinct characteristics.

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Burns, R.; Robinson, K., comps. 2007. **Proceedings of the 2006 Northeastern Recreation Research Symposium.** Gen. Tech. Rep. NRS-P-14. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 613 p.

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Keywords: fish and wildlife, environmental attitudes, leisure, recreation, tourism, wildland-urban interface

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Published by:
USDA FOREST SERVICE
11 CAMPUS BLVD SUITE 200
NEWTOWN SQUARE PA 19073-3294

August 2007

For additional copies:
USDA Forest Service
Publications Distribution
359 Main Road
Delaware, OH 43015-8640
Fax: (740)368-0152

Manuscript received for publication 7 December 2006

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