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*CONSTRAINTS, AGING,
AND LEISURE*

MARKET SEGMENTATION USING PERCEIVED CONSTRAINTS

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Abstract.—We examined the practical utility of segmenting potential visitors to Cleveland Metroparks using their constraint profiles. Our analysis identified three segments based on their scores on the dimensions of constraints: *Other priorities*—visitors who scored the highest on ‘other priorities’ dimension; *Highly Constrained*—visitors who scored relatively high on all dimensions of constraints; and *Least Constrained*—visitors who scored the lowest on all dimensions. We then explored variation among the identified segments by socio-demographics, motivation, involvement and place attachment. Statistically significant variations were observed across the identified segments on most of our indicators. We suggest that managers examine constraint profiles with socio-demographic and attitudinal indicators as a platform for developing marketing strategies to attract prospective recreationists.

1.0 INTRODUCTION

A substantial body of research has demonstrated the role of constraints in decision-making processes. Jackson (1991) noted that “barriers and perceptions of barriers enter, both overtly and covertly, into the decision-making process of individuals at all stages of leisure engagement” (p. 280). In a decision to engage in leisure activity, there is always a trade-off between the expected benefits from the experience and the cost involved to overcome constraints associated

with the decision. With the acknowledged importance of perceived constraints as a variable in explaining people’s decision-making process, the construct has been used as a tool for segmenting recreationists (Jackson, 1993; Kim, Crompton & Botha, 2000; Tian, Crompton & Witt, 1996). Market segmentation has also been a cornerstone of park and recreation agencies’ marketing and promotion strategies. This study extended previous research by demonstrating the practicality of segmenting recreationists with their perceived constraints. We attempted to (1) identify homogeneous groups of recreationists based on their perceived constraints; and (2) profile identified market segments based on their socio-demographic characteristics, motivation, involvement and place attachment.

1.1 Leisure Constraint

Tsai and Coleman (1999) stated that “throughout the process of leisure engagement, people are exposed to various constraints which can affect their leisure preferences, inhibit their desire to undertake new activities, reduce their enjoyment in leisure, and limit their full involvement in leisure” (p. 243). Crawford and Godbey (1987) proposed a tripartite approach to classify constraints: (a) structural—arise from external conditions within the environment (e.g., cost, time, transportation); (b) intrapersonal—psychological condition internal to the individual (e.g., personality, attitudes, moods); and (c) interpersonal—arise out of interpersonal interaction or the relationships with friends, family and others (e.g., lack of companions). While the tripartite approach has been acknowledged as a significant progress in leisure constraint research, the empirical research confirming this approach has documented that constraint items could fall into more than one category (Raymore, 2002; Samdahl, 2005; Shaw & Henderson, 2005). Alternatively, Jackson (2005) put forth that there is a reasonably stable and replicable set of constraints dimensions. They are the cost of participation, time and commitment, availability and quality of facilities, social and geographical isolation, and personal skills and abilities.

1.2 Motivation

Motivation has been widely used to explain leisure behavior (Iso-Ahola, 1999). Our conceptualization of human motivation follows Lawler's (1973) expectancy-value model of motivation which posits that motivation to initiate and maintain a certain action can be understood in light of the human pursuit of specific physical and psycho-social outcomes. Much of the research addressing the motivation of leisure behavior has emanated from the work of Driver and his associates (Driver & Knopf, 1977; Driver & Tocher, 1970). Driver and his colleagues developed their own scale, termed the Recreation Experience Preference (REP) scale, to capture the psychological, social, and perceived physiological reasons people engaged in outdoor recreation. The relationship between motivation and constraints has been assessed in several studies. Carroll and Alexandris (1997) systematically investigated the connection between constraints and motivation to participate in recreational sport activities. They found a negative relationship in which higher levels of motivation were associated with lower levels of perceived constraint. Alexandris et al. (2002) reported similar findings in which there was a significant negative influence of constraint on amotivation and intrinsic motivation. In the study of participants in employee recreation programs, however, Hubbard and Mannell (2001) found no direct relationship between motivation and perceived constraints.

1.3 Leisure Involvement

Involvement has been defined as "an unobservable state of motivation, arousal, or interest toward a recreational activity or associated product. It is evoked by particular stimulus or situation and has drive properties. In other words, leisure involvement refers to how we think about our leisure and recreation, and it affects our behavior" (Havitz & Dimanche, 1997, p. 246, adapted from Rothschild, 1984). It is generally acknowledged that involvement is best viewed as a multidimensional concept (Havitz & Dimanche, 1997; Laurent & Kapferer, 1985; McIntyre & Pigram, 1992). Among several facets suggested, three dimensions—attraction, centrality, and self

expression—have consistently been shown to be reliable and salient within leisure context (Havitz & Dimanche, 1997; McIntyre & Pigram, 1992; Wiley, Shaw & Havitz, 2000). *Attraction* is conceptualized in terms of individuals' perceptions of activity importance and the pleasure or hedonic value derived through the activity. *Centrality* indicates that other aspects of an individual's life are centered on a given leisure activity. Finally, *self expression* refers to the extent to which a leisure activity provides an opportunity to express a desired image of themselves that individuals wish to convey to others. Few studies have systematically studied the role of constraints on leisure involvement (Jun, Kyle, & Mowen, 2005; Kyle & Mowen, 2003). Using data collected from Cleveland Metroparks, Kyle and Mowen (2003) examined the effect of constraints on the development of involvement. Their study showed that the time-related dimension inhibited the development of all dimensions of involvement (i.e., attraction, centrality and self expression) while the dimension related to the condition encountered on site positively affected *centrality*. Furthermore, Jun et al.'s (2005) study documented that the experience of constraints inhibited respondents' ability to become involved with specific leisure activities to the extent experienced by those who are relatively less constrained.

1.4 Place Attachment

The research on place attachment examines the meaning places have for people while the term place attachment refers to an emotional or affective bond between a person and a particular place (Williams & Patterson, 1999). Our conceptualization of place attachment follows the work of Kyle, Mowen, and Tarrant (2004) who suggested that place attachment can be defined in terms of four components: affective, place identity, place dependence, and social bonding. Kyle et al. (2004) used *affective* to refer to a person's emotional bond with a setting. *Place identity* reflects cognitive connection between the self and the setting. *Place dependence* measures "how well a setting serves goal achievement given an existing range of alternatives (how well does this setting compare to others for what I like to do)" (Jorgensen & Stedman,

2001, p. 234). Lastly, *social bonding* indicates individuals' attachment to the place developed through social relationships (Kyle et al., 2004). While little is understood about the relationship between place attachment and constraints, it can be assumed that individuals' developmental trajectories of human-place bonding would not be identical due to the intervention of constraints. Past investigations have shown that recreationists vary in a level of association with a certain place, depending upon their socio-demographic characteristics and frequency and intensity of engagement (Bricker & Kerstetter, 2000; Confer, Graefe, Absher & Thapa, 1999). The difference indicates that personal and social situational factors can intervene to varying degrees to inhibit or facilitate the individual's progression in the development of human-place bonding.

2.0 METHODS

2.1 Sample

Data for our study were collected from subscribers to Cleveland Metroparks' *Emerald Necklace*, a free monthly publication for residents who have registered to receive it. The publication features information about Cleveland Metroparks facilities, services, and special programs that are offered each month. At the time of the survey, the database consisted of approximately 50,000 subscribers. From this subscriber database, 1,500 names and addresses were randomly drawn in the summer of 2002. Survey instruments were distributed using a modified Dillman (2000) procedure which involved the mailing of a survey instrument and cover letter, followed by a reminder/thank you postcard two weeks later, and a final survey instrument to non-respondents one month following the initial mailing. This procedure yielded 860 completed surveys (a 57.3 percent response rate).

2.2 Measures

Respondents' motivations for visiting Cleveland Metroparks were measured using 19 items selected from the battery of Recreation Experience Preferences (REP) scale items. Our decision criteria concerning the inclusion/exclusion of items was based on the agency's prior use of these scales for their own internal

research and program evaluation and reviews of past investigations conducted in similar contexts (Manning, 1999). These 19 items were drawn from six REP scale domains: *Learn* (3 items), *Autonomy* (3 items), *Activity* (3 items), *Social* (3 items), *Nature* (2 items), and *Health* (3 items).

For enduring involvement, we used a modified version of McIntyre and Pigram's (1992) involvement scale designed to capture three dimensions: *Attraction* (5 items), *Centrality* (5 items), and *Self Expression* (4 items). Place attachment was measured using items adapted from Kyle and others' (2004) place attachment scale which reflects four domains: *Place Dependence* (5 items), *Affective Attachment* (4 items), *Place Identity* (3 items), and *Social Bonding* (3 items).

Lastly, our constraint items (17 items) were adapted from the early studies of constraints (Buchanan & Allen, 1982; McGuire, 1984). We conducted exploratory factor analysis (EFA) (principal axis with oblique rotation) to group the constraint items into similar conceptual categories (analysis conducted with SPSS version 11.0). This procedure yield four dimensions of leisure constraints: *Other Priorities* (5 items), *Setting Element* (4 items), *Access* (3 items), and *Social Factors* (4 items). These dimensions are very similar to several of those identified by Jackson (2005). All constructs demonstrated adequate internal consistency (Cronbach's alpha) as determined by Cortina's (1993) .60 minimum.

2.3 Analyses

Confirmatory factor analysis (CFA) was employed to validate the factor structure of involvement, motivation, and place attachment. Cluster analysis was then used to classify respondents into homogeneous groups based on their scores on the dimensions of constraints. Lastly, Chi-square and one-way analysis of variance (ANOVA) with Tukey procedure for multiple comparisons were used to test variation among clusters regarding their (a) socio-demographics characteristics; (b) motivation; (c) involvement; and (d) place attachment.

3.0 RESULTS

3.1 Factor Structure of Constructs: Involvement, Motivation and Place Attachment

Confirmatory factor analysis (LISREL version 8.52) examined the suitability of our hypothesized factor structures for the data. The results of this analysis, depicted in Table 1, provided support for the structure of involvement ($\chi^2 = 417.28$, $df=70$, $RMSEA = .079$,

$NNFI = .98$, $CFI = .98$), motivation ($\chi^2 = 542.13$, $df=97$, $RMSEA = .077$, $NNFI = .97$, $CFI = .98$) and place attachment ($\chi^2 = 588.99$, $df = 103$, $RMSEA = .074$, $NNFI = .95$, $CFI = .93$). Further, the strength of the factor loadings and associated t-values provided evidence in support of the validity of the scale, and the estimates of internal consistency (Cronbach's alpha) provided evidence of the scale's reliability (all $\alpha > .60$; Cortina, 1993).

Table 1.—Item factor loading and means

Scale items	α	λ	t-value	M	SD
Motivation ¹					
<i>Learn</i>	.84				
L1 To learn about the natural history of the area		.81	27.50	3.86	.89
L2 To learn about the countryside		.80	26.54	3.88	.92
L3 To learn about the local history of the area		.85	28.91	3.75	.91
<i>Autonomy</i>	.74				
A1 To be on my own		.65	19.36	3.20	1.19
A2 To think about my personal values		.62	18.19	3.63	1.03
A3 To experience solitude		.84	26.23	3.68	1.08
<i>Activity</i>	.67				
AC1 To take risks		.43	11.50	1.83	1.00
AC2 To show others		.79	22.28	2.10	1.07
AC3 To test my endurance		.70	20.16	2.61	1.26
<i>Social</i>	.67				
S1 To be with members of my group		.50	13.60	3.25	1.16
S2 To meet new people		.64	17.71	2.73	1.19
S3 To share my skill and knowledge with others		.69	19.18	2.53	1.07
<i>Nature</i>	.80				
N1 To enjoy the view		.81	22.69	4.47	.69
N2 To be close to nature		.83	23.30	4.46	.72
<i>Health</i>	.72				
H1 To get exercise		.41	11.94	4.30	.79
H2 To relax physically		.73	22.26	4.17	.79
H3 Help reduce built-up tension		.84	26.07	4.00	.88
Involvement ²					
<i>Attraction</i>	.86				
AT1 _____ is very important to me		.78	26.45	4.12	.80
AT2 _____ offers me relaxation when pressures build up		.70	22.59	4.24	.74
AT3 Participating in _____ is one of the most satisfying things I do		.82	28.16	3.89	.87
AT4 _____ interests me		.66	20.67	4.00	.79
AT5 I really enjoy _____.		.67	21.06	4.32	.68
<i>Centrality</i>	.86				
CE1 I find a lot of my life is organized around _____.		.90	33.02	2.81	1.06
CE2 _____ has a central role in my life		.85	30.35	3.00	1.11
CE3 I enjoy discussing _____ with my friends		.57	17.89	3.08	0.96
CE4 I find a lot of my life is organized around _____.		.86	30.79	2.68	1.02
CE5 Most of my friends are in some way connected with _____.		.51	15.46	3.11	1.14

Table 1.—Item factor loading and means (continued)

Scale items	α	λ	t-value	M	SD
Involvement ² (continued)					
<i>Self expression</i>	.82				
SX1 Participating in _____ says a lot about who I am		.74	25.58	3.68	.91
SX2 You can tell a lot about a person by seeing them participating in _____.		.60	20.06	3.41	.83
SX3 When I participate in _____ I can really be myself		.77	25.05	3.71	.90
SX4 When I participate in _____ others see me the way they want to see me		.70	22.33	3.06	.93
Place Attachment ³					
<i>Place dependence</i>	.90				
PD1 For the recreation activities I enjoy most, the settings and facilities provided by Cleveland Metroparks are the best		.78	25.74	3.98	.84
PD2 I prefer Cleveland Metroparks over other settings/facilities for the recreation activities that I enjoy most		.82	28.51	3.88	.86
PD3 For what I like to do, I couldn't imagine anything better than the settings and facilities provided by Cleveland Metroparks		.85	30.25	3.79	.92
PD4 I enjoy visiting Cleveland Metroparks more than any other sites		.83	29.13	3.74	.89
PD5 I get more satisfaction out of visiting Cleveland Metroparks than from visiting any other sites		.75	24.94	3.43	.91
<i>Affective attachment</i>	.82				
AF1 I enjoy discussing Cleveland Metroparks with other people		.54	16.08	3.71	.79
AF2 Cleveland Metroparks means a lot to me		.69	21.95	4.34	.68
AF3 I am very attached to Cleveland Metroparks		.80	27.41	4.03	.83
AF4 I feel a strong sense of belonging to Cleveland Metroparks and its settings/facilities		.82	27.98	3.90	.83
AF5 I feel as though Cleveland Metroparks' problems are my own		.64	19.95	3.17	.88
<i>Place identity</i>	.81				
ID1 I feel Cleveland Metroparks is a part of me		.86	30.34	3.55	.88
ID2 I identify strongly with Cleveland Metroparks		.88	31.28	3.62	.84
ID3 Visiting Cleveland Metroparks says a lot about who I am		.60	18.43	3.44	.84
<i>Social bonding</i>	.63				
NC1 My friends/family would be disappointed if I were to start visiting other setting and facilities		.57	16.28	2.47	.85
NC2 If I were to stop visiting Cleveland Metroparks sites, I would lose contact with a number of friends		.43	11.68	2.22	.95
NC3 Most of my friends/family would agree that Cleveland Metroparks settings and facilities are the best for what we like to do		.74	21.46	3.65	.79

¹Respondents were asked to indicate the importance of the items in terms of their visits to Cleveland Metroparks. Measured along a scale where 1 = not all important through 5 = extremely important. Goodness-of-fit indices: $\chi^2 = 542.13$, $df = 97$, $RMSEA = .077$, $NNFI = .97$, $CFI = .98$

²From an extensive list of activities that could be enjoyed on Cleveland Metroparks facilities, respondents were requested to select their primary activity. Their primary activity was then inserted as the attitude object for the involvement items. These items were measured along a Likert-type scale where 1 = "Strongly Disagree" through 5 = "Strongly Agree." Goodness-of-fit indices: $\chi^2 = 417.28$, $df = 70$, $RMSEA = .079$, $NNFI = .98$, $CFI = .98$

³Measured along a Likert-type scale where 1 = "Strongly Disagree" through 5 = "Strongly Agree." Goodness-of-fit indices: $\chi^2 = 588.99$, $df = 103$, $RMSEA = .074$, $NNFI = .95$, $CFI = .93$

3.2 Perceived Constraint Segmentation

In this investigation, we used a K-Mean cluster procedure to cluster respondents based on their scores on four constraint dimensions. The analysis revealed that a three-group solution provided the most meaningful and distinct result. The analysis of variance procedure was used to test differences among three clusters regarding the scores on all dimensions of perceived constraints (see Table 2). While the cluster procedure maximizes mean distance among the groups, the size of the F-values indicated substantial variation among the three clusters. Cluster I, *Other Priorities*, represented 40 percent ($n = 340$) of the sample and scored the highest on ‘other priorities’ dimension. Cluster II, *Highly Constrained*, accounted for 9 percent ($n = 74$) of the respondents and scored relatively high on all dimensions of constraints. Cluster III, *Least Constrained*, consisted of 52 percent ($n = 446$) of the respondents, scoring the lowest on all dimensions.

3.3. Socio-Demographic Variables

With the exception of ‘gender,’ all the selected socio-demographics indicators (i.e., age, education, income, and race) significantly varied among each of the constraint segments (see Table 3). Respondents of *Other Priorities* cluster were younger than the other clusters ($F_{(2, 857)} = 40.92, p = .000$). For education, *Other Priorities* group had the largest proportion of respondents who graduated college graduate or attended grad school (60 percent), followed by *Highly Constrained* (42 percent) and then *Least Constrained*

(48 percent) ($\chi^2 = 24.49, df = 8, p = .002$). *Highly Constrained* segment had the largest proportion of respondents who earned less than \$40,000 annually (46 percent) compared to *Least Constrained* (36 percent) and *Other Priorities* (18 percent) ($\chi^2 = 56.22, df = 14, p = .000$). For race, *Least Constrained* had the largest White group (86 percent), followed by *Other Priorities* (83 percent), and then *Highly Constrained* (77 percent) ($\chi^2 = 21.04, df = 8, p = .007$).

3.4 Motivation

Significant variation between segments was observed on three of the six dimensions: *learn*, *activity*, and *social* (Table 4). *Highly Constrained* segment scored the highest on *learn* dimension followed by *Least Constrained* and then *Other Priorities* ($F_{(2, 857)} = 12.02, p = .000$). *Highly Constrained* placed more importance on activity dimension than Other Priorities group ($F_{(2, 857)} = 5.62, p < .01$). *Other Priorities* was less inclined than the other segments to report social dimension as being important ($F_{(2, 857)} = 9.68, p = .000$).

3.5 Involvement

Of the three dimensions of involvement tested in Table 4, significant variation among segments was observed only on the *centrality* dimension ($F_{(2, 857)} = 10.60, p = .000$). *Least Constrained* group was more inclined than *Other Priorities* group to indicate the *centrality* dimension as being important. Regardless of their membership of group, all respondents scored high on the *attraction* dimension.

Table 2.—Segments’ perceived constraints

Scale items	Other priorities		Highly constrained		Least constrained		F-value
	M	SD	M	SD	M	SD	
Constraints							
Other priorities	3.82 ^a	.55	3.16 ^b	.79	1.87 ^c	.55	1133.27***
Setting element	1.21 ^a	.34	1.98 ^b	.86	1.05 ^c	.17	218.78***
Access	1.12 ^a	.27	2.18 ^b	.99	1.06 ^c	.237	287.61***
Social factors	1.55 ^a	.52	2.46 ^b	.76	1.21 ^c	.44	204.71***

*** $p = .000$, ** $p < .01$, * $p < .05$

Note: Different superscripts indicate significant difference.

Table 3.—Socio-demographic profile of market segmentation

Socio-demographic variables	Market Segment			
	Other priorities	Highly constrained	Least constrained	
Age				
Mean (SD)	47.81 (12.10) ^a	53.38 (17.57) ^b	57.14 (15.27) ^b	F = 40.92 df = 2 p = .000
Gender	N (%)	N (%)	N (%)	$\chi^2 = .356$ df = 2
Male	110 (32.4)	22 (29.7)	148 (33.2)	p = .837
Female	230 (67.6)	52 (70.3)	298 (66.8)	
Education	N (%)	N (%)	N (%)	$\chi^2 = 24.49$ df = 8
Less than high school graduate	3 (.9)	2 (2.7)	9 (2.0)	p = .002
High school graduate	42 (12.4)	20 (27.0)	106 (23.8)	
Attended college	92 (27.1)	21 (28.4)	116 (26.0)	
College graduate	105 (30.9)	14 (18.9)	113 (25.3)	
Grad school	98 (28.8)	17 (23.0)	102 (22.9)	
Income	N (%)	N (%)	N (%)	$\chi^2 = 56.22$ df = 14
Less than \$19,999	9 (2.6)	7 (9.5)	33 (7.4)	p = .000
\$20,000 - \$39,999	51 (15.0)	27 (36.5)	128 (28.7)	
\$40,000 - \$59,999	100 (29.4)	20 (27.0)	129 (28.9)	
\$60,000 - \$79,999	75 (22.1)	11 (14.9)	78 (17.5)	
\$80,000 - \$99,999	48 (14.1)	5 (6.8)	28 (6.3)	
\$100,000 - \$119,999	28 (8.2)	2 (2.7)	20 (4.5)	
\$120,000 - \$139,999	13 (3.8)	0 (0.0)	15 (3.4)	
\$140,000 or more	16 (4.7)	2 (2.7)	15 (3.4)	
Race	N (%)	N (%)	N (%)	$\chi^2 = 21.04$ df = 8
African American	13 (3.8)	9 (12.2)	9 (2.0)	p = .007
Asian or Pacific Islander	42 (12.4)	8 (10.8)	51 (11.5)	
White	280 (82.8)	57 (77.0)	383 (86.1)	
Hispanic	2 (.6)	0 (0.0)	2 (.4)	
Native American	1 (.3)	0 (0.0)	0 (0.0)	

Note: Different superscripts indicate significant difference.

Table 4.—Analysis of variance for three market segment clusters

Scale Items	Other priorities		Highly constrained		Least constrained		F-value
	M	SD	M	SD	M	SD	
Involvement							
Attraction	4.11	.54	3.98	.64	4.13	.67	1.81
Centrality	2.72 ^a	.82	2.76	.86	2.98 ^b	.79	10.60***
Self-expression	3.45	.70	3.33	.77	3.50	.72	1.68
Motivation							
Learn	3.71 ^a	.82	4.18 ^b	.58	3.87 ^c	.77	12.02***
Autonomy	3.51	.88	3.59	.76	3.49	.93	.41
Activity	2.08 ^a	.81	2.42 ^b	.89	2.22	.90	5.62**
Social	2.68 ^a	.86	3.05 ^b	.78	2.92 ^b	.90	9.68***
Nature	4.49	.58	4.49	.64	4.45	.69	.32
Health	4.20	.62	4.18	.59	4.13	.70	1.08
Place Attachment							
Place dependence	3.77 ^a	.73	3.78	.86	3.91 ^b	.78	4.54*
Affective attachment	4.01 ^a	.66	3.98	.69	4.12 ^b	.66	3.81*
Place identity	3.46 ^a	.72	3.49	.70	3.61 ^b	.73	4.24*
Social bonding	2.64	.61	2.73	.60	2.75	.70	2.67

***p = .000, **p < .01, *p < .05

Note: Different superscripts indicate significant difference.

3.6 Place Attachment

Significant variation between segments was observed on three of the four place attachment dimensions: *place dependence*, *affective attachment*, and *place identity* (Table 4). In comparison to *Other Priorities*, *Least Constrained* scored higher on *place dependence* ($F_{(2, 857)} = 4.54, p < .05$), *affective attachment* ($F_{(2, 857)} = 3.81, p < .05$), and *place identity* ($F_{(2, 857)} = 4.24, p < .05$).

4.0 DISCUSSION AND CONCLUSIONS

Based on the observed differences, we would recommend focusing management efforts on facilitating visitation and use of *Highly Constrained* segment. While this group has the fewest resources available to enjoy Metroparks' amenities and services, *Highly Constrained* individuals appreciate benefits from all attributes of the place. Given their strong motivation, *Highly Constrained* is the most likely to be responsive to agencies' efforts such as fee waivers or subsidies and transportation assistance, which will alleviate the conditions that inhibit full involvement. Managers should also focus on providing experiences that offer opportunities for learning, leisure experience and family interaction. To deliver the marketing efforts, we suggest implementing population specific media strategies directed at racial minority groups who have lower levels of income and education. *Least Constrained* segment appears to be the easiest of the three for Metroparks managers to attract. Given its low intensity of perceived constraints and strong bond to the place, it is likely that the Metroparks will continue to attract this segment unless there is a serious decline in the quality of services or facilities in the area. The results suggest that *Other Priorities* may be the least viable market segment to attract to the area. Given their low motivation and place attachment, *Other Priorities* is least likely to be responsive to management and marketing action in terms of visitation, feedback, and stewardship. With limited financial and personal resources available to the agencies, it would better to address needs and preferences of those groups more interested in using the Metroparks.

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ANTICIPATED EDUCATIONAL OUTCOMES: A CASE STUDY OF THE OUTDOOR RECREATION CONSORTIUM EXPERIENCE

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Abstract.—This paper reports on a case study of an outdoor experiential learning program and examines its meaning for program participants. The research was conducted with 56 university students who participated in the Outdoor Recreation Consortium held at the Great Smoky Mountain Institute in Tremont, TN. A mixed-method comparative research approach, using both quantitative and qualitative data collection, was adopted. This research demonstrates that qualitative data not only support the findings from quantitative data but also provide additional insight into participants' learning experiences and emphasize the value of adventure programs to individuals. Additionally, the results indicate that outdoor education programs offering more practical hands-on experiences are highly desired.

1.0 INTRODUCTION

Outdoor experiential education programs have been widely adopted and implemented in North America as a method of facilitating students' involvement with their local community, applying course content in the real world, and improving the link between the campus and the broader community (Astin, 1996; Giles & Eyler, 1994). In the past decades, a number of researchers have attempted to identify the outcomes of outdoor experiential education programs. Those studies on the programs' outcomes have focused on

personal growth obtained from direct experiences (Burnard, 1991; Dewey, 1938; Gass, 1993; Rogers, 1961), interpersonal development (Hopkins & Putnam, 1993; Richards, 1994; Schoel, Prouty, & Radcliffe, 1988), and change at both individual and group levels from various backgrounds and environmental settings (Cason & Gillis, 1994; Hans, 2000; Hattie, Marsh, Neill, & Richards, 1997).

To justify prescribed outcomes of experiential education programs, quantitative course evaluation has been frequently adopted in the previous research on experiential learning (Cason & Gillis, 1994; Hattie, Marsh, Neill, & Richards, 1997). However, such overemphasis on quantifiable educational outcomes overlooks the subjective nature of the learning experience and limits the range of educational outcomes considered (Greenaway, 1995; McKenzie, 2003). Due to the subjective nature of participants' experiences, more qualitative approaches should be adopted to understand the complex processes involved in experiential education (Allison & Pomeroy, 2000). This study aims to explore the meaning of outdoor experiential learning programs from the program participants' perspective by utilizing a case study approach.

2.0 THEORETICAL BACKGROUND

Experiential education programs have been widely developed and implemented in modern society. The philosophical principle that serves as a foundation for developing and implementing these programs is Dewey's theory of experiential learning (Dewey, 1938). Dewey's theory is built upon the belief that people understand and interpret educational experiences based on their own narratives (life experiences) and perceptions, which differ from person to person. Therefore, the role of an educator is not to fill students with knowledge but to help learners gain access to a learning environment and assist them in exploring, contemplating, and solving

problems to achieve personal growth and interpersonal development. In other words, Dewey's experiential learning theory emphasizes the importance of learners' personal background and the complexity of learners' perceptions of educational outcomes.

Dewey also theorizes that learning outcomes are mainly impacted by two constructs: the current knowledge of the learner, and the educator's presentation of the content and experience (Dewey, 1938). The learner's current knowledge serves as the beginning of the experiential learning process and refers to what learners know from their previous experiences. Different previous experiences result in a discrepancy in the level of current knowledge which in turn affects the learner's perception and interpretation of learning outcomes. Teachers' presentations of content and experience include traditional classroom presentations and nontraditional procedures, such as outdoor experiential education programs. However, unlike didactic education that sees the learner as a passive object that is filled with knowledge presented by the teacher, experiential education regards the learner as an active subject who is assisted by a teacher in exploring knowledge. Therefore, learners are a significant actor in the experiential learning process and their initiative plays an important role in the materialization of learning outcomes.

From the above illustration of factors affecting learning outcomes and characteristics of experiential education, we can see how varied the learners' understanding of learning outcomes is and how research is necessary to examine the meaning of learning experience from the learners' perspective. However, in the past research on experiential education, researchers have focused on examining whether experiential education works. For instance, Hattie, Marsh, Nerill, and Richards (1997) and Neill and Richards (1998) attempted to identify whether outdoor education really works by utilizing meta-analysis. Such research is not unimportant, but the experience of participants in experiential education programs is ignored. In particular, such research cannot answer some critical questions, such as, how can a person judge that a program works, and who

can make such a judgment? What if participants' perceptions of positive education outcomes do not match the criteria for the success of program? Does this mean that the program is not successful?

It has been argued that research merely focusing on whether the program works is more damaging to the field of experiential learning than it is helpful (Allison & Pomeroy, 2000), because such research ignores the complexity and subtlety of the experiential studies. Ironically, if the experiential education field aims at assisting learners in understanding the world around them in their own way, how can we verify, in the traditional way, that this is taking place? Therefore, there is a need to "shift the focus of the questions asked (epistemological shift)" in order "to understand reality in a different way (ontological shift)" (Allison & Pomeroy, 2000, p. 96). In other words, there is a need to recognize the subjective nature of participants' experiences and utilize more qualitative approaches to understanding the complex processes involved in experiential education.

This study explores the meaning of outdoor experiential learning programs from the program participants' perspective by utilizing a case study approach. Several key research questions are addressed: (1) is there any significant difference in education outcomes between a pretest and post-test of outdoor education programs?; (2) do the education outcomes differ among participants based on their socio-demographic characteristics?; (3) how do participants perceive their outdoor experiential education program and its outcomes?

3.0 METHODS

The study involves 56 college students from five U.S. institutes participating in the Outdoor Recreation Consortium held at the Great Smoky Mountain Institute in Tremont, TN between March 19 and March 25, 2006. A mixed-method comparative research approach, using both quantitative and qualitative data collection, was used. Data collection involved the administration of a questionnaire by the institute staff on the first and the last day of the consortium. The

pretest questionnaire was composed of 11 experiential learning benefits statements with a 5-point scale (1=strongly disagree, 5=strongly agree) and participants' socio-demographic information, as well as two open-ended questions focusing on participants' purpose for participating in the consortium. The post-test questionnaire consisted of the same 11 benefits statements and open-ended questions about participants' perceptions of their consortium experiences.

4.0 FINDINGS AND DISCUSSION

Fifty-six usable pretest questionnaires were returned for a response rate of 100 percent. Among the participants who returned the survey, 44.6 percent are females and 55.4 percent are males. Almost all the participants are Caucasians (96.4 percent), the rest are Hispanics (3.6 percent). About three-fourths of participants are undergraduate college juniors (23.2 percent) and seniors (48.2 percent), with about 20 percent graduate students and a few sophomores (5.4 percent) and freshmen (1.8 percent). The majority of participants are majoring in a field related to leisure and recreation (87.5 percent), with other majors including law (1.8 percent), forest biology (1.8 percent), geography (1.8 percent), landscape architecture (3.6 percent), political science (1.8 percent), and rural sociology (1.8 percent). The most popular special interest tracks selected by participants included backcountry management (37.5 percent) and wildlife management (35.7 percent), followed by ecological restoration (14.3 percent) and historical/cultural interpretation (12.5 percent). Lastly, 80.4 percent of participants claimed that they have taken outdoor recreation courses before (see Table 1).

The use of parametric statistics (paired-sample t-test, independent t-test, and one-way ANOVA) to test whether there were significant differences in the mean values of benefits statements between the pretest and the post-test and between anticipated and perceived benefits from the consortium based on various socio-demographic variables is based on the assumption that the data were a sample from a normal distribution. This assumption was tested with Shapiro-Wilk's

Table 1.—Characteristics of respondents

Variable	%
Gender (n=56)	
Female	44.6
Male	55.4
Ethnicity (n=56)	
Caucasian	96.4
Hispanic	3.6
The year at school (n=56)	
Freshmen	1.8
Sophomore	5.4
Junior	23.2
Senior	48.2
1st year graduate student	8.9
2nd year graduate student	7.1
3rd year graduate student	0.0
4th year graduate student	5.4
Major of study (n=56)	
Crime law justice	1.8
Forest biology	1.8
Geography	1.8
Landscape architecture	3.6
Political science	1.8
Rural sociology	1.8
Leisure and recreation	87.5
Interest track (n=56)	
Backcountry management	37.5
Ecological restoration	14.3
Historical/cultural	12.5
Wildlife management	35.7
Outdoor recreation course (n=56)	
Yes	80.4
No	19.6

and K-S Lilliefors tests. However, the test results indicated that the data were not normally distributed. Therefore, nonparametric techniques, including the Wilcoxon paired signed rank test, Mann-Whitney U test and Kruskal-Wallis test, were used. As indicated in Table 2, the Wilcoxon paired signed rank test results demonstrated that the paired differences of statements 1, 2, 4, 7, 8, and 11 were significant. Additionally, the paired differences of statements 2, 8, and 11 were positive, while the paired differences of statements 1, 4, and 7 were negative.

The results of the analysis show that participants perceived that they benefited from consortium experience more than they expected with regards to confirming their choice of study, providing

Table 2.—Wilcoxon signed rank test results for paired differences of benefits statements

Statements	N	Mean rank	Sum of ranks	P
1. Helping in gaining practical hands-on experience related to a field of interest.	48			.006
Pre-test < Post-test: Negative Ranks	16	10.75	172.00	
Pre-test > Post-test: Positive Ranks	4	9.50	38.00	
Pre-test = Post-test: Ties	28			
2. Assisting in confirming my choice of study or in choosing my major.	9			.021
Pretest < Post-test: Negative Ranks	11	13.50	148.50	
Pretest > Post-test: Positive Ranks	21	18.07	379.50	
Pretest = Post-test: Ties	17			
3. Helping define long-term career goals.	49			.229
Pretest < Post-test: Negative Ranks	14	14.57	204.00	
Pretest > Post-test: Positive Ranks	18	18.00	324.00	
Pretest = Post-test: Ties	17			
4. Offering rewarding and skill-building opportunities.	49			.000
Pretest < Post-test: Negative Ranks	24	15.08	362.00	
Pretest > Post-test: Positive Ranks	4	11.00	44.00	
Pretest = Post-test: Ties	21			
5. Providing a cross-functional educational approach with school and actual work sites.	49			.320
Pretest < Post-test: Negative Ranks	14	13.07	183.00	
Pretest > Post-test: Positive Ranks	10	11.70	117.00	
Pretest = Post-test: Ties	25			
6. Assisting me by using personal assessment to identify interests, aptitudes, values, & strength to recognize a potential career field of interest.	48			.916
Pretest < Post-test: Negative Ranks	13	13.19	171.50	
Pretest > Post-test: Positive Ranks	13	13.81	179.50	
Pretest = Post-test: Ties	22			
7. Building transferable skills that are valuable in any job opportunity.	48			.000
Pretest < Post-test: Negative Ranks	23	15.26	351.00	
Pretest > Post-test: Positive Ranks	5	11.00	55.00	
Pretest = Post-test: Ties	20			
8. Providing opportunities to discuss work scenarios in the classroom for discussion.	48			.044
Pretest < Post-test: Negative Ranks	8	17.44	139.50	
Pretest > Post-test: Positive Ranks	22	14.80	320.50	
Pretest = Post-test: Ties	18			
9. Providing a chance to speak to and network with professionals in the world of work.	48			.212
Pretest < Post-test: Negative Ranks	21	16.52	347.00	
Pretest > Post-test: Positive Ranks	12	17.83	214.00	
Pretest = Post-test: Ties	15			
10. Learning about occupations and career paths.	48			.134
Pretest < Post-test: Negative Ranks	10	10.85	108.50	
Pretest > Post-test: Positive Ranks	15	14.43	216.50	
Pretest = Post-test: Ties	23			
11. Confirming personal values for attributes of work – how salary, prestige, autonomy, & social aspects will factor into future employment decisions.	48			.045
Pretest < Post-test: Negative Ranks	10	17.30	173.00	
Pretest > Post-test: Positive Ranks	23	16.87	388.00	
Pretest = Post-test: Ties	15			

opportunities to discuss work scenarios in the classroom, and confirming personal values for attributes related to work. Contrarily, participants deemed the consortium experience was less beneficial than they expected with regards to gaining practical hands-on experience related to a field of interest, offering rewarding and skill-building opportunities, and building transferable skills that are valuable in any job opportunity.

Such results indicate that participants have relatively high levels of expectation about earning practical experiences by participating in consortium; therefore, it might be possible to improve participants' consortium outcomes by arranging more practical programs for participants. At the same time, participants recognized the significant benefits of the consortium in helping them make a link between their college studies and the real world. These findings are consistent with the results reported in the previous research in this field (Cason & Gillis, 1994; Hans, 2000; Martin & Legg, 2002).

After examining the significance of paired differences in benefit statements between the pretest and the post-test, we also examined the differences between anticipated and perceived benefits from the consortium based on various socio-demographic variables. In this research the socio-demographic variables included gender, ethnicity, outdoor recreation course, the year at school, major, and interest track. With regard to ethnicity, there were not enough cases for testing the differences in perceptions of benefits obtained from consortium.

In order to find whether there were significant differences in perceptions of consortium benefits between undergraduate students and graduate students, as well as between the participants with leisure related majors and those with other majors, 'year at school' data were recoded with "0" representing undergraduate students and "1" representing graduate students, and the data on participants' major were recoded with "0" representing other majors and "1" representing leisure and recreation-related majors.

First, the Mann-Whitney U test was run to examine the differences of benefit statements among dichotomous variables including gender, outdoor recreation course, the year at school, and major. The test results indicated that there were no significant differences in paired benefit statements between males and females, between the participants having taken outdoor recreation courses and those not having taken such courses, and between the participants with other majors and those with leisure related majors. Nevertheless, as shown in Table 3, there were significant differences in benefit statements between undergraduate students and graduate students. Those benefits include offering rewarding and skill-building opportunities and building transferable skills that are valuable in any job opportunity.

Such results indicated that within these two perspectives of benefits, the differences between anticipated benefits and benefits obtained from the consortium were more substantial for graduate students than they were for undergraduate students. In other words, graduate students appeared to be more aware of gaining these benefits than undergraduate students. This finding suggests that consortium instructors should pay more attention to designing programs with different emphases for graduate students and undergraduate students in the future development of the consortium.

Next a Kruskal-Wallis test was run to identify whether there were significant differences in the benefits statements based upon the participants' interest tracks. As shown in Table 4, the test results indicated that participants in the ecological restoration track had a higher paired difference value than participants in the historical/cultural track for the benefit statement about rewarding and skill-building opportunities. This result revealed that participants in the ecological restoration track were more aware of gaining this benefit than the participants in the historical/cultural track.

Besides socio-demographic variables and benefits statements, some open-ended questions were also included in both the pretest and post-test surveys.

Table 3.—Mann-Whitney test results for paired differences of benefits statements between undergraduate students and graduate students

Statements	Student status					
	Undergraduate			Graduate		
	N	Mean rank	Sum of ranks	N	Mean rank	Sum of ranks
Helping in gaining practical hands-on experience related to a field of interest	38	23.11	878.00	10	29.80	298.00
Assisting in confirming my choice of study or in choosing my major	38	24.79	942.00	11	25.73	283.00
Helping define long-term career goals	38	26.49	1006.50	11	19.86	218.50
Offering rewarding and skill-building opportunities	38	22.63*	860.00*	11	33.18*	365.00*
Providing a cross-functional educational approach with school and actual work sites	38	23.39	889.00	11	30.55	336.00
Assisting me by using personal assessment to identify interests, aptitudes, values, & strength to recognize a potential career field of interest	38	25.04	951.50	10	22.45	224.50
Building transferable skills that are valuable in any job opportunity	38	21.97*	835.00*	10	34.10*	341.00*
Providing opportunities to discuss work scenarios in the classroom for discussion	38	23.29	885.00	10	29.10	291.00
Providing a chance to speak to and network with professionals in the world of work	38	24.55	933.00	10	24.30	243.00
Learning about occupations and career paths	38	25.03	951.00	10	22.50	225.00
Confirming personal values for attributes of work—how salary, prestige, autonomy, and social aspects with factor into future employment decisions	38	23.45	891.00	10	28.50	285.00

*p < 0.05

There were two open-ended questions in the pretest survey dealing with participants' reasons for participating in the consortium. After analyzing the replies, three major themes were identified. The first theme was to experience fun and enjoyment. For example, some respondents wrote "To have fun, and see the outdoors." The second theme was to learn and get more familiar with outdoor recreation. For instance, one person wrote about "the basic understanding of the implementation of plans for parks." The last theme was pragmatism, reflecting purposes for participating in the consortium that were not directly related to outdoor recreation. For example, some respondents participated in the consortium to obtain two course credits or because they were "helping to drive the van."

The open-ended questions in the post-test survey focused on participants' perceptions of educational

outcomes. Participants' replies indicated that they recognized benefits of the consortium such as becoming familiar with a future career ("It has helped to show me some career information about the NPS"), establishing social networks ("Meeting new people"), enriching knowledge related to outdoor and recreation ("Increase in knowledge of outdoor issues, such as leave no trace and erosion"), and improving personal well-being ("The waterfall made me more humane. I made a poem for it, and felt wonderful to be able to share my final thoughts with everyone who contributed to them"). Such replies support the notion that experiential education leads to personal growth (Hopkins & Putnam, 1993; Martin & Legg, 2002).

Participants also pointed out some anticipated outcomes that were not achieved through participating in the consortium. For example, some hoped to obtain more hands-on experience and have more contacts

Table 4.—Kruskal-Wallis test results for paired differences of benefits statements among participants in different interest tracks

Statements	Interest tracks							
	Backcountry management		Historical/cultural		Ecological restoration		Wildlife management	
	N	Mean rank	N	Mean rank	N	Mean rank	N	Mean rank
Helping in gaining practical hands-on experience related to a field of interest	18	27.39	7	21.50	8	25.38	15	21.97
Assisting in confirming my choice of study or in choosing my major	19	25.32	7	23.43	8	26.00	15	24.80
Helping define long-term career goals	19	29.18	7	17.29	8	22.81	15	24.47
Offering rewarding and skill-building opportunities	19	24.32	7	17.71*	8	36.13*	15	23.33
Providing a cross-functional educational approach with school and actual work sites	19	25.29	7	25.50	8	29.13	15	22.20
Assisting me by using personal assessment to identify interests, aptitudes, values, & strength to recognize a potential career field of interest	18	24.69	7	20.21	8	21.88	15	27.67
Building transferable skills that are valuable in any job opportunity	18	29.53	7	18.07	8	22.69	15	22.43
Providing opportunities to discuss work scenarios in the classroom for discussion	18	28.61	7	20.00	8	17.88	15	25.20
Providing a chance to speak to and network with professionals in the world of work	18	26.00	7	26.36	8	18.44	15	25.07
Learning about occupations and career paths	18	28.72	7	20.43	8	17.31	15	25.17
Confirming personal values for attributes of work—how salary, prestige, autonomy, and social aspects with factor into future employment decisions	18	22.61	7	22.64	8	26.50	15	26.57

*p < 0.05

with professionals (“More insight into field”) and more social interactions with other participants (“Getting close with classmates”). Such participants’ comments highlighted the roles of instructors and peers in the learning process, and also resonated the findings in the previous research supporting these important outcomes (e.g. Hattie et al., 1997; Luckner and Nadler, 1997; Martin and Legg, 2002; Phipps and Claxton, 1997).

5.0 CONCLUSIONS

As identified in the previous research based on quantitative data, the outdoor experiential education program examined in this research helps participants achieve personal growth, although some prescribed outcomes were not fully achieved as much as participants had expected. Furthermore, in this study,

qualitative data not only supported the findings from the quantitative analysis but also provided additional insight into participants’ learning experiences, which go beyond the analysis of educational outcomes at the quantitative level and emphasize the value of adventure programs to individuals. Additionally, the results of this research indicate that consortium organizers should consider improving their program by helping participants gain practical skills. In particular, they should try to offer new opportunities to graduate students and those with outdoor education experience. Concerning the limitation of this research in terms of the number of participants, further research with a larger study group would be desirable to support these conclusions.

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AN AGING POPULATION: RELATIONSHIPS BETWEEN SOCIO-DEMOGRAPHICS, MOTIVATIONS AND PARTICIPATION

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Abstract.—The purpose of this study was to examine the outdoor recreation behavior of Oregon's aging population, including developing a socio-demographic profile and examining the importance of their current motivations with the importance of their expected motivations 10 years from now. A stratified random sample was drawn of Oregon residents, and a mail-back questionnaire was chosen to sample those individuals. This study shows that Oregon's aging population shares many characteristics with older people described in previous recreation literature. However, this study contradicts the notion that this cohort will pursue more adventurous activities than past generations.

1.0 INTRODUCTION

Recreation is often a vital part of one's quality of life. People living in today's society often work longer hours and have more constraints on their time. For recreational professionals, it has always been a challenge to provide those opportunities that the general population demands. This includes making sure that recreationists have a quality experience and leave satisfied.

Today, recreation managers and researchers are faced with influential shifts in recreation sectors. These include the population increase in ethnic groups (U.S. Census, 2004), and the decrease in outdoor recreation participation as individuals age, particularly with regard to physical demanding activities (Kelly, 1980). This paper focuses on the aging population, and specifically the baby boomer cohort. Baby boomers have been described as very individualistic, competitive free agents with a high interest in self-fulfillment through personal growth (Parker & Chusmir, 1990), as well as confident, ambitious, and progressive in attitude (Cleaver & Muller, 2002). In addition, this cohort also has been depicted as recognizing their time as a precious commodity, are known to work hard, play hard and spend hard (Ziegler, 2002), and are living longer, having lower rates of disability, and achieving higher levels of education (U. S. Census, 2006) than previous generations.

As of 2005, the baby boomer cohort comprised 78.2 million people or approximately 26 percent of the U.S. population (U.S. Census, 2006). About half of the baby boomers are women. In 2006, the oldest of the baby boomer cohort celebrated 60th birthdays. Because this cohort makes up such a substantial proportion of the U.S. population, recreation managers and researchers turned their focus toward this now-aging population. Furthermore, with the influence that this cohort has had on our nation previously, agency managers are deliberating on how they will influence recreational facilities and services in the future.

The Oregon Parks and Recreation Department (OPRD) is presently planning efforts to provide pertinent, useable research findings to apply to their 2008-2014 Statewide Comprehensive Outdoor Recreation Plan (SCORP) (<http://egov.oregon.gov/OPRD/PLANS/SCORP.shtml>). Results from the 2003-2007 Oregon SCORP and the 2005-2014 Oregon Non-motorized Trail Plan identified influential demographic shifts,

such as an increasingly diverse population, decline in youth learning outdoor skills, an increase in levels of physical inactivity, and an aging population. These findings brought to light crucial information that is needed for outdoor recreation agencies to examine and address how this changing population may influence outdoor recreation facilities and services in Oregon.

In 2005, the OPRD initiated a partnership between the OPRD, U.S. Forest Service, Pacific Northwest Region, Oregon Tourism Commission, Oregon Economic and Community Development Department and a host of university researchers to design a study to allow Oregon state recreation agencies to provide proactive measures and to plan accordingly for the aging population to retain their relevance to these important demographic groups.

1.1 Objectives of the Study

This paper focuses on the socio-demographic profile and the examination of the importance of the aging population's current motivations in comparison with their expected motivations 10 years from now. This study is part of a larger effort that also examined the increase in ethnic populations, a decrease in youth experiencing the outdoors, and health related factors of outdoor recreation participation. Because of changes that may occur in an individual's situation, health, environment, or life circumstances over time, the information about expected outdoor recreation motivations in 10 years should be considered speculative.

2.0 METHODOLOGY

Oregon residents were given the opportunity to provide input to the Oregon SCORP assessment through a mail survey. A stratified random sample of respondents was drawn from a database provided by the Oregon DMV. A mail-back questionnaire was chosen to sample those individuals who were between 42 and 60 years of age resulting in a sample size of 538.

Data gathered from this study will allow agency managers to strategically plan for this cohort's onset

of retirement and better understand how they may influence the demand for outdoor recreation in order to remain relevant to this population. These findings will also verify the characteristics of the aging population found in the literature regarding health, activity type, financial capability, education level, and distinctiveness.

3.0 RESULTS

3.1 Socio-demographic Profile

Through this study, a socio-demographic profile was created to advance an awareness of the aging population and how their socio-demographic makeup relates to their outdoor recreation behavior. The overarching goal of profile development was to provide researchers with a greater understanding of this population that would afford resource managers with the ability to manage appropriately for this unique population. The respondents in this sample were asked to report their socio-demographic characteristics, such as age, how old they perceive themselves, gender, education, retirement status, number of members in their household, ethnicity, annual income, current health, expected health in the future, and disability. This paper focuses on seven of these demographic variables to describe the aging population: age, gender, education, retirement status, annual income, current health, and disability (Table 1).

A majority of the survey population was female (55.0 percent). Just under one-third of the respondents (32.7 percent) were in the age category of 56 to 60 years of age, while a substantial proportion (30.1 percent) of the respondents was between 51 and 55 years. Similarly, those respondents in the category of 50 years old or younger comprised just over one-third (37.2 percent) of the sample. The mean age of the respondents included in this analysis was 52 years. When respondents were asked if they were currently retired, 80.6 percent reported that they were not yet retired. Just under one-fifth (19.4 percent) stated that they were already retired.

Respondents were asked to report the highest level of education that they have received, and the response

Table 1.—Socio-demographic profile of respondents

	Frequency	Percent
Gender		
Male	242	45.0
Female	296	55.0
Total	538	100.0
Age		
42 to 45	91	16.9
46 to 50	109	20.3
51 to 55	162	30.1
56 to 60	176	32.7
Total	538	100.0
Mean	52	
Currently Retired		
Yes	103	19.4
No	428	80.6
Total	531	100.0
Education		
High school or less	94	17.6
Some college, but no degree	166	31.1
Associate or bachelor degree	196	36.7
Graduate degree	78	14.6
Total	534	100.0

categories ranged from high school or less to having a graduate degree. Just under one-third (31 percent) stated that they had attended college, but did not receive a degree, while a third (36.7 percent) of the respondents reported having an associate's degree or bachelor's degree. Almost one-fifth (17.6 percent) of the respondents reported having an education level of high school or less and 15 percent have earned a graduate degree.

The respondents were asked to report their annual household income before taxes as well as income from all household members including: pensions, interest, dividends, and any other source of income. The results showed that their annual income ranged between less than \$10,000 to more than \$150,000. About one-fifth of the respondents (22 percent) reported their total annual household income as \$34,999 or under, while another 22 percent reported their annual income in the range between \$35,000 and \$49,999. Just under one-quarter of the respondents (24.7 percent) reported their income to be in the range of \$50,000 to \$74,999, and the greatest proportion of the respondents (31.6 percent) stated that their annual income was \$75,000 or more.

The last two remaining socio-demographic characteristics this thesis focused on were the respondents' current health and whether or not they or someone in their household had a disability. The vast majority of the respondents (89.9 percent) felt that their current health was good (32.6 percent), very good (36.4 percent), or excellent (20.9 percent). Only 10.0 percent of the respondents perceived their current health to be fair or poor. Almost three-fourths (74.5 percent) of the respondents reported that no one in the household, including themselves, had a disability. A sizable proportion (12.5 percent) of the respondents reported that they did not have a disability, but someone else in their household did have a disability. Correspondingly, 13.1 percent reported that they personally had a disability.

3.2 Comparison of Current and Expected Motivations

A paired t-test was utilized to examine if there were any differences in respondents' motivations when comparing their current motivations with their expected motivations ten years from now. Although many changes may take place within a person's life in ten years, these results will provide a basis for what the aging population is projecting as their motivations at this time. A 5-point Likert scale was used where 1 = not at all important to 5 = very important. Respondents were then asked to rate their level of importance on the same motivation items for their expected motivations in ten years, using the same 5-point Likert scale (Table 2).

Of the 16 motivation item pairs, 11 pairs revealed significance differences in the mean scores of respondents' importance ratings between current and expected motivations. Those items included *to keep fit and healthy* ($t = -10.780$), *to meet new people* ($t = -9.722$), *to be with family and friends* ($t = -4.326$), *to do something your children or grandchildren enjoy* ($t = -7.673$), *to learn something new* ($t = -5.601$), *to expose your children or grandchildren to something new* ($t = -6.129$), *to feel safe and secure* ($t = -3.819$), *to achieve spiritual fulfillment* ($t = -3.191$), *to feel harmony with nature* ($t = -2.341$), *to reduce tension* ($t = 3.744$) and *to escape the daily routine* ($t = 4.634$).

Table 2. Comparison of current and expected future motivations

	Current Motivations	Expected Motivations	n	t	p
	Mean				
To relax	4.30	4.31	515	-.321	.748
To keep fit and healthy	4.12	4.42	512	-10.780	.000***
To experience challenge and excitement	3.16	3.17	513	-.464	.643
To have fun	4.51	4.53	513	-.962	.336
To meet new people	2.51	2.81	511	-9.722	.000***
To be with family and friends	4.09	4.20	512	-4.326	.000***
To do something your children or grandchildren enjoy	3.73	4.01	489	-7.673	.000***
To reduce tension	3.99	3.85	516	3.774	.000***
To learn something new	3.24	3.43	506	-5.601	.000***
To expose your children or grandchildren to something new	3.45	3.70	486	-6.129	.000***
To escape the daily routine	4.00	3.81	511	4.634	.000***
To get away from crowded situations	4.02	4.02	515	.142	.887
To be in the outdoors	4.47	4.47	517	-.200	.842
To feel harmony with nature	3.78	3.83	512	-2.341	.020*
To achieve spiritual fulfillment	3.17	3.23	509	-3.191	.002*
To feel safe and secure	3.25	3.35	510	-3.819	.000***

Note. Response scale is 1 = not at all important to 5 = very important
 *p < .05 ***p < .001

Of those motivation items that illustrate significance between current and expected importance, mean scores were higher for expected motivations than current motivations, except for two: to reduce tension and to escape the daily routine. This finding provides insight as to how respondents' motivations may be affected by their retirement.

4.0 DISCUSSION

The purpose of this paper was to examine if there were any significant differences between respondents' current motivations for engaging in outdoor recreation and their expected motivations in 10 years. Through a better understanding of why the aging population participates in outdoor recreation, natural resource managers will be better prepared for the onset of the aging population's retirement. This information will also allow for natural resource agencies to be more aligned with demands of the cohort's preferences and needs of outdoor recreation.

Several studies have reported characteristics and provided forecasts of older peoples' outdoor recreation behavior as they near retirement as well as into their

retirement years. Ziegler (2002) suggested that the aging population is known to work hard, play hard, and spend hard. The present study revealed that a sizable portion of the aging population earn \$50,000 or more annually, have no disabilities, and perceive their health as being in good or excellent condition. The aging population has been depicted as living longer, having lower rates of disability, and achieving higher levels of education, (U. S. Census, 2006), and this study's findings provide further evidence for these trends. Findings from this study revealed that the greater proportion of the respondents earned a bachelor's or graduate degree.

This study finds that the respondents are a bellwether for the aging population in Oregon. The respondents do participate in and plan to continue participating in recreation activities at a high rate. The survey participants want to have fun, be amongst family and friends, mainly in an outdoor recreation setting. This population has already developed their circles of friends; their recreation participation pattern has been developed and their activities have been selected.

In 1988, Shelby, Bregenzer and Johnson conducted a study regarding displacement and product shift due to increasing use levels on Oregon and Illinois rivers. The authors noted that there was evidence suggesting backcountry use has declined, yet suggested it may be temporary. The authors further suggested that the baby boom generation that lead the backcountry use trend in the 60s and 70s may return to this experience once their children are older. This study counters this claim, and suggests that older people will seek less adventurous activities in more local settings.

More recently, preliminary results of the National Visitor Use Monitoring study (<http://www.fs.fed.us/recreation/programs/nvum/>) show a decline in recreation use nationally, as well as in the Pacific Northwest, over the past 5 years. The Gifford Pinchot National Forest reported a drop in visitor use estimates of approximately one-third, while the Siuslaw National Forest reported a 50 percent decline in visitor use estimates. The Mt. Hood National Forest, located near Portland, OR, reported a decline of more than 50 percent. Interestingly, the Columbia River Gorge National Scenic Area (CRGNSA), also located near Portland, between the Gifford Pinchot and Mt. Hood National Forests, reported a slight increase in visitor use estimates. This finding suggests that visitors are not making the long treks to the backcountry for recreation, but are choosing areas that have easy access and are close to home. This overall finding of a decline in recreation use at back-country national forests, and a slight increase in an “urban” forest parallels the finding in this thesis that older people are seeking recreation opportunities that are perhaps more often provided by state and local recreation agencies.

The crux of this change in recreation use is that outdoor recreation, particularly those activities and services historically provided by local and state recreation providers, are highly important to resource managers. People who are healthy now want to utilize recreation facilities and services to remain healthy. People who are not healthy and persons impacted by disabilities also want to make use of outdoor recreation facilities to make their lives better. Although the findings of this study speak to gender differences

(women desire more walking opportunities, men desire golfing opportunities), level of education is more important in the type of activity one chooses.

4.1 Management Implications

These findings have some important management implications. One of the primary jobs of natural resource managers is to plan for future recreation use. Often, it takes an extended period of time to implement strategic plans, which means that managers have a real need to understand what recreation opportunities will be sought by older people in the future. Although we can not definitively predict future preferences and outdoor recreation behavior, the analyses of respondents’ current and expected motivations provides resource managers with baseline data about an important segment of our society so that they can take necessary actions to address the needs of this group. With continuous budget constraints and reductions for recreation facilities and services, managers must be prepared to make hard decisions about what facilities and services should be reduced in concert with future non-use. This information has the ability to facilitate strategic planning, thus enabling managers to remain relevant to the aging population in the future.

4.2 Recommendations for Future Research

Previous literature characterizes the aging population as unique in their outdoor recreation behavior and lifestyle. Further research is needed at a national level in order to serve the aging population and identify outdoor recreation trends. This study focused on the aging population in Oregon; however, it is just as important to identify differences throughout the nation for a more informed understanding of how this population will differ from past cohorts.

Motivations for outdoor recreation can provide a deeper understanding of one’s outdoor recreation behavior and preferences. In examining motivations of the aging population, there needs to be further consideration of the motivation items that are utilized. These motivation items should come from empirical

findings and reflect characteristics of this population. In addition, satisfaction should also be addressed in future studies in order to better understand if the aging population is satisfied with their experience and attainment of benefits.

Further research into how this unique cohort will influence facilities and services is needed so that outdoor recreation managers will have appropriate information as to how planning efforts should be prioritized. Longitudinal studies would be beneficial in uncovering trends of this cohort. The present study is beneficial in that it provides a starting point for what managers can expect, especially for those baby boomers that are on the verge of retirement at this time. However, longitudinal studies could examine the youngest of the cohort to better identify trends and monitor their outdoor recreation behavior.

More information is needed to understand the type of facilities and services preferred by older recreationists, how facilities and services affect a person's outdoor recreation participation, and how managers should plan for future recreation by older people. For example, this study showed that walking is a popular activity and that older people prefer to have access to trails and parks close to home. Are there differences between different geographical locations (rural, suburban and urban) regarding the type of facilities desired? Managers may also be able to gain insight into this cohort's outdoor recreation behavior through looking into memberships they hold and knowing which state and local parks and recreation departments they use. This information could be used to develop valuable partnerships and provide information in addition to research findings. These partnerships could foster quality recreation experiences as well as providing outlets and opportunities to engage users who may be otherwise constrained.

This study, as well as the larger study from which it was derived, has the potential to be an opportunistic tool for outdoor recreation managers as they inventory their recreation areas and known visitor information. With the demographic shifts that are taking place in today's society, it is important that managers not

only understand the differences between different demographic groups (i.e. aging population vs. youth vs. ethnicity), but be able to apply that information to their planning efforts in order to connect users with the resources they prefer

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TIME ALLOCATION & CULTURAL COMPLEXITY: LEISURE TIME USE ACROSS TWELVE CULTURES

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Abstract.—This study is part of an effort to understand the effect of cultural evolution on leisure time through comparing time use across 12 cultures. We used an existing dataset initially collected by researchers affiliated with the UCLA Time Allocation Project (1987-1997), which contains behavioral data coded with standard methods from twelve native lowland Amazonian communities. We checked intraclass correlation for interdependence within cultures then used Poisson regression modeling to analyze the time spent on recreational activities as a function of cultural complexity, sex, and age. Our findings suggest that children and youths, as expected, played more than adults and males appeared to enjoy more free time than females. Most importantly, we found a curvilinear relationship between free time availability and cultural complexity, suggesting a dynamic change of leisure time along the evolution of culture from a lower level to a higher one. The results and implications for future research are discussed in depth.

1.0 INTRODUCTION

A question that has been repeatedly asked by people in modern societies is: Do we always benefit from societal development and technological advancement? With respect to leisure, do we really enjoy more free time as a result of societal development? Similar questions have been debated in academic terms and

the relationship between free time, cultural complexity, and the evolution of culture has interested both anthropologists and leisure researchers for many years (see Chick, 1986 for a review). Mixed views exist in this respect. For instance, the surplus theory of cultural evolution (e.g. Boas, 1940, in Chick, 1995) argues that cultural development results from a surplus of food and population. These surpluses then result in increased free time, a form of surplus time after survival-related work. Naturally following from such an argument is the proposition that people living in highly developed societies should have more free time than people living in less developed societies. While it seems to make intuitive sense, this notion, however, was not supported by empirical evidence reported during 1950s by field researchers who found that hunter-gathers living in Africa and Australia spent less time on work than members of technologically advanced societies (Chick, 1995). Instead of assuming a straightforward linear relationship between free time and cultural complexity, Chick (1986) proposed that free time availability followed a curvilinear pattern along the course of cultural evolution. This hypothesis was modestly supported by the cross-cultural ethnographic data from Human Relations Area Files (HRAF) (Chick, 1993).

We concur with Chick (1986, 1993) on a more sophisticated view of how free time relates to cultural complexity. We hypothesize that the two variables follow a curvilinear relationship. In this research, we test this hypothesis and further explore the nature of the hypothesized curvilinear relationship between free time and cultural complexity by comparing time allocation across societies of different levels of cultural complexity.

2.0 METHODS

2.1 Data Collection and Study Sample

This study used existing data collected by anthropologists affiliated with the UCLA Time Allocation Project (1987-1997) and published by

HRAF. The data set contains independently collected quantitative behavioral data from 14 native lowland Amazonian communities, each representing a distinct Native American culture. The behavioral data were collected using a spot-check method, during the daytime¹ over a 1-2 year period. Researchers randomly picked a time and household for visiting, and then recorded the types of activities of all individuals on the scene at the instant of researchers' arrival. Standard coding methods were used by all research groups as an initial means to ensure data comparability. A preliminary data screening yielded 12 usable data sets², which were further processed in preparation for ensuing statistical analyses, such as trimming each data set according to a common daytime framework to avoid systematic bias due to different observation daytime ranges across samples. We also translated nominal information into frequency information that could be readily used by a wider range of statistical analysis techniques.

Table 1 gives the descriptive characteristics of the study sample by culture. Note that the 12 cultural

¹The range of daytime period covered by different groups of anthropologists varied, e.g., some made observations from 6:00 a.m. to 6:00 p.m.; others observed from 7:00 a.m. to 7:00 p.m.

²Two data sets were excluded from this research for one of the following reasons: (a) data were recorded in a misspecified format thus could not be properly read; (b) the data set did not include critical information of interest to this study.

groups included in this research are distributed unevenly in terms of population density, which ranged from .01 to 1090 persons per square kilometer (km²) with half having a population density below 2 persons/km² and three-quarters below 266 persons/km².

2.2 Operational Definitions

Free time and cultural complexity are the two primary variables in this study. We measured free time in terms of the total number of observations of a subject engaged in one of the following four types of activities: (1) idleness (doing nothing and diurnal sleeping); (2) recreational activities (e.g., telling stories, dancing); (3) education/acquiring information; and (4) religious activities. This operation included observations of all activities after work with nocturnal sleep and maintenance activities excluded and is consistent with Chick's (1986, 1995) definition of free time.

By comparison, cultural complexity is a much more abstract concept and is usually measured largely in terms of technological sophistication and social organizational variables (e.g., Chick, 1986). However, it is very hard to develop a direct, comprehensive measure of cultural complexity using secondary data which typically do not contain the necessary information. As an alternative, some researchers

Table 1.—Descriptive characteristics of the study sample

Cultural group	Population density (persons/km ²)	Sample size (n)	Sex (%)		Age group ^a (%)			
			female	male	Infant	Toddler	Youth	Adult
1	.3	108	60.2	39.8	8.3	15.7	24.1	51.9
2	.1	81	49.4	50.6	7.4	22.2	30.9	39.5
3	.2	338	43.5	56.5	7.7	11.8	18.3	62.1
4	1090.0	117	50.4	49.6	.9	19.7	20.5	59.0
5	301	149	47.7	52.3	2.0	7.4	24.2	66.4
6	2.7	39	46.2	53.8	7.7	12.8	17.9	61.5
7	1.27	43	62.8	37.2	0	0	0	100.0
8	542.0	92	57.6	42.4	0	26.1	26.1	47.8
9	107.0	102	58.8	41.2	0	23.5	23.5	52.9
10	.3	295	50.5	49.5	9.5	14.2	34.2	42.0
11	162.0	109	54.1	45.9	0	22.0	22.0	56.0
12	.01	293	52.9	47.1	0	31.1	20.5	48.5
Total	-	1766	51.1	48.9	4.3	18.1	23.4	54.2

^aAge categories: Infant = younger than 2 years; Toddler = 2-6 years; Youth = 6-14 years; Adult = 15 years and older. These were determined by field researchers according to the convention of those cultures in which data were collected.

(e.g., Chick, 1997) have suggested that population density can be used as a reliable indicator of cultural complexity. In this research, we followed this proposition and used global population density, defined as the total population of the cultural group divided by the area occupied by the group, as a measure of cultural complexity.

2.3 Data Analysis

Data Analysis included three steps:

Step 1. Conducting basic descriptive analysis to provide a general picture of the average amount of free time and how it was used by subjects in our study population, i.e., people living in small-scale subsistence economies. The amount of free time was estimated using the method recommended by field researchers. For a given age-sex category of subjects, the average amount of free time (T) spent on a given category of activity in a day was calculated using equation (1):

$$T = \frac{t * n}{N} \quad (1)$$

In this equation, t represents length of day that was determined by the common time framework used to screen data, that is, 7 a.m. to 6 p.m., so t=11 hours; n is the number of observations of a subject engaged in a given category of free-time activities; N stands for the total number of observations of the same subject engaged in free-time activities. Free time was calculated for two age groups: youths and adults.

Step 2. Calculating the Intraclass Correlation Coefficient (ICC) to check the interdependence of data within cultures and inform the choice of statistical techniques for the ensuing data analysis. Due to shared experiences within cultures, there was a possibility that observations included in each data set were interdependent. This should be taken into account when choosing the appropriate technique for hypothesis testing because many methods (e.g., ordinary regression and other non-hierarchical regression, including Poisson regression analysis) assume independence of observations. The failure to account for the dependence among individuals

within the same group may result in misestimated standard errors (Raudenbush & Bryk, 2002). One way to determine whether the independence assumption is violated is examining the ICC, a measure of the proportion of the variance in the variable that is between higher level units. A large ICC indicates high interdependence within groups. Myers (1972) and Kenny et al. (1998) recommended an alpha level of .20 for the ICC as a rule of thumb when a statistical test is not plausible.³

Step 3. Testing the hypothesis about the curvilinear relationship between free time and cultural complexity. We used Poisson regression modeling for rate to analyze the data. Poisson regression is appropriate for modeling the number of events occurring within a given time interval (Agresti, 2002). In this study, the outcome variable, free time, or observations of subjects engaged in free time activities, can be considered as events that occurred over time, i.e., following a Poisson distribution. Considering that the length of observation time varied from subject to subject, we decided to use Poisson regression modeling for rate, which models the rate instead of number of observations (Agresti, 2002). The statistical Model can be expressed with the following formula:

$$\log(\mu / N) = \alpha + \beta x \quad \text{OR} \quad \log(\mu) = \alpha + \beta x + \log(N) \quad (2)$$

μ —the expected number of the occurrence of events for the subject

N—the number of total observations of the subject

In our model, the rate of observations of free time activities was modeled as a curvilinear function of population density (PD). The logarithm of population density was used to correct over/under fit problems due to the uneven distribution of this variable. Log 10 transformation was applied to population density to allow for easy interpretation ($X' = \log_{10} X$ represents the order of the magnitude of X, here population density. For instance, $1 < X' < 2$ means that the population density is between 10 to 100 persons/km², while a negative value of X' indicates the population

³Kenny et al. (1998) showed that the power to detect interdependence with the intraclass correlation is low.

density is below 1 person/km²). Additionally, it is reasonable to assume that males and females and people of different ages differ in their amount of free time to various degrees. Considering the unequal proportion of sex and age groups in each culture, these two variables, i.e., sex and age, were included in the model as covariates, in combination with population density, to predict free time. Formula (3) expresses the full model being tested in this study.

$$\log(\mu/N) = \beta_0 + \beta_1 \text{sex} + \beta_2 \text{age} + \beta_3 \log_{10}(PD) + \beta_4 (\log_{10}(PD))^{**2} \quad (3)$$

The model was estimated using the SAS system for Windows 8.0. The maximum likelihood method was used for parameter estimates and a negative binomial distribution was used to correct for data overdispersion⁴ (Agresti, 2002).

3.0 RESULTS OF DESCRIPTIVE ANALYSIS OF DAYTIME USE BY THE STUDY POPULATION

Daily time use by youths and adults is shown in Table 2. The average amount of time that youths and adults spent on work and leisure together were 466.5 minutes/day (or 7.8 hrs/day) and 484.4 minutes/day (or 8.1 hrs/day), respectively. In other words, the amount of time spent on work and leisure combined accounted

for over 70 percent of the daytime (11 hrs, from 7 a.m. to 6 p.m.). For both groups, less than 30 percent of daytime (about 3 hrs) was devoted to miscellaneous activities such as eating, self-grooming, taking care of others, etc.

On average, youths worked less than 2 hours and adults worked about 4 hours each day. Accordingly, youths spent twice as much time as adults on various free-time activities (5 hours for youths vs. 2.5 hours for adults). For both youths and adults, males tended to work longer but also had more free time than females. Females were considerably more occupied by housework (e.g., food preparation and cleaning). Idleness and recreational activities took up the majority of available free time, regardless of age and sex, with youths living a more active leisure life (i.e., engaged in more recreational activities than idleness) while adults spent more time on idleness.

3.1 Results of Independence Assumption Check and Poisson Regression Analysis

The intraclass correlation coefficient calculated from our data was 0.125, indicating 12.5 percent of the variance in the amount of free time is between cultures. Judging by the criterion recommended by Kenny et al. (1998), this value is moderate, suggesting (a) relative homogeneity of the 12 cultures included in our sample; and (b) no major violation of the independence assumption. In light of this result, we proceeded to analyze data using the Poisson regression modeling method. The results suggest that the hypothesized model fit well (df=1759, $\chi^2/df=1.06$, $p=0.05$). All four predictor variables were significant

⁴Overdispersion occurs when observed count data show greater variability than would be expected. This problem will cause biased estimates of variances and standard errors which in turn inflate test statistics for testing hypotheses (Agresti, 2002). The problem of overdispersion is common with count data and can be corrected by applying a negative binomial distribution.

Table 2.—Dawn-to-dusk time use by youth and adult^a

Subject	Total free time (minutes/day)	Idleness	Recreation	Education	Religion	Work/Obligations	
						Ecowork ^b	Housework
Female Youth	276.2	89.1	146.3	31.5	9.3	92.1	79.2
Male Youth	339.2	98.6	204.3	30.7	5.5	108.4	38
Ave. of Youth	307.7	93.9	175.3	31.1	7.4	100.2	58.6
Female Adult	149.8	76.6	57.0	3.4	12.9	185.9	144.4
Male Adult	163.1	83.0	58.0	5.0	17.1	300.6	24.9
Ave. of Adult	156.5	79.8	57.5	4.2	15.0	243.2	84.65

^aMeans across 12 cultures

^bEconomically valuable work, including food production, manufacturing, and commercial activities

($p < .0001$). Table 3 presents the parameter estimates for the model. This model has a multiplicative effect of each predictor on the outcome variable. With every unit increase in a predictor, the outcome variable increased by $\exp(\beta)$ times, with β being the corresponding estimated regression coefficient.

4.0 DISCUSSION AND CONCLUSIONS

Our findings suggest that, overall, people living in small-scale subsistence economies seem to work shorter hours (e.g., approximately 4 hours/day for adults) than people living in most industrialized or post-industrialized societies, assuming the latter, on average, work 40 hours per week (5.7 hours per day over a 7-day week). Moreover, males appeared to enjoy more free time than females and adults had significantly less free time than youths. These findings were further supported by the results from Poisson regression analysis which confirmed that the amount of available free time was a function of the complexity of the living environment as well as individuals' sex and age. Specifically, the amount of available free time for females was 11 percent less than that for males and time available for leisure decreased as people aged; toddlers had nearly 2.5 times as much free time as adults, for instance.

Finally, but most importantly, our hypothesis of a curvilinear relationship between free time and cultural complexity was supported. The tent-shape curve suggested that within the range of cultural complexity represented by our study sample, members of relatively simple and relatively complex cultures

have substantially less free time than members of societies with moderate levels of cultural complexity. Living in a society of either a relatively lower or higher level of complexity seems to require more time to manage survival for adults and accordingly leaves them with less leisure time. This finding is partially consistent with Chick's (1986) proposition which also hypothesized a curvilinear relationship between the two variables but with a U shape, i.e., suggesting members living in moderately complex societies enjoyed less free time than members of very simple or very complex cultures. This seeming contradiction, however, should be viewed in a larger context. The 12 cultural samples included in this study were relatively homogeneous and covered a very narrow range of cultures, namely, societies with small-scale subsistence economies. There are both advantages and disadvantages of having homogeneous samples:

High internal validity: due to the relative homogeneity of the samples, we can have more confidence that the relationship we observed from the data was unlikely to be confounded by other variables (Hoyle & Robinson, 2004). This notion, however, should be considered in combination with the next point.

Low generality: great caution is in order when generalizing findings to other cultures that are qualitatively different than those included in the study sample. It is likely that the picture offered by the current study was merely a very small section of the entire curve which would take a different shape (including a straight line) if data from all existing

Table 3.—Results of parameter estimates from Poisson regression analysis

Parameter	df	Standard Estimate	Error	Chi-Square	p
Intercept	1	-1.242	0.028	1953.52	<.0001
Sex 0 ^a	1	-0.112	0.025	20.56	<.0001
Sex 1	0	0.000	0.000	.	.
Age 1 ^b	1	0.659	0.068	94.89	<.0001
Age 2	1	0.913	0.032	812.52	<.0001
Age 3	1	0.747	0.03	625.44	<.0001
Age 4	0	0.000	0.000	.	.
$\log_{10}(PD)$	1	0.148	0.011	194.43	<.0001
$(\log_{10}(PD))^{**2}$	1	-0.069	0.006	126.05	<.0001

^aCoding of sex: 0-female, 1-male

^bCoding of age: 1-infant (<2), 2-Toddler (2-5), 3-youth (6-14), 4-adult (>=15)

societies, as well as those that once existed, were available. On a related note, researchers should not ignore the possibility that some factors function as important moderators and significantly modify both the direction and the shape of the relationship under investigation. For example, the relationship of free time to cultural complexity may follow a different pattern in industrialized societies than in small-scale subsistence economies. The same proposition applies to any other conceivable variables that are potential moderators.

In conclusion, our findings suggest that technological advancement and societal development do not necessarily and naturally lead to benefits when it comes to leisure. In addition to shedding some new light on the impact of cultural evolution on people's leisure lives, our study should serve as a good starting point for future research. We suggest: (a) including more predictors (e.g., occupation, other aspects of social status) under proper theoretical justification; and (b) collecting data from a wider range of cultures and modeling societal types (e.g., individualistic or collectivistic, egalitarian or highly stratified) or other relevant variables as moderators.

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TOWARD A THEORY OF PARTNERSHIP AS CONTEXT FOR A THEORY OF LEISURE

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Abstract.—The field of leisure studies has been developing a body of theory since the late 1960s, but construction of an overarching, unified theory of leisure remains an elusive goal (Bedini and Wu, 1994; Brown, Dyer, & Whatey, 1973; Burdge, 1983; Edginton, Hudson, & Lankford, 2001; Henderson, 1994; Henderson, Presley & Bialeschki, 2004; Hendricks & Burdge, 1972; Jackson, 2004; Jordan & Rowland, 1999; Samdahl & Kelly, 1999; Uhlik, 2006a, 2006b, 2007). Thirteen years ago, La Page (1994) presciently observed, “Although rarely recognized as such, [the] guiding principle [of partnerships] is what makes us unique as a profession” (p. 32). What La Page realized was that, irrespective of legal considerations, each partnership represents a potentially transformative “social contract.” Given that the attributes of any particular partnership are smaller-scale imitations of the surrounding society’s characteristics, a theory of partnership as a social contract serves as the crucial context from which a theory of leisure can be derived.

1.0 INTRODUCTION: INDIVIDUALS, SOCIETY, AND THE SOCIAL CONTRACT

The fundamental premise that leisure is individually defined—if not also experienced and expressed—has traditionally produced theories of leisure that focus on particular aspects or attributes of leisure, rather than on explaining the comprehensive whole (see Edginton, Hudson, Dieser, & Edginton, 2004, for examples). Nevertheless, the classical concept of leisure—the

freedom of educated persons to intelligently choose to invest their resources toward living meaningful lives—carried sufficient philosophical import to warrant inclusion among the three essential individual “rights” specifically listed in American colonies’ 1776 Declaration of Independence: “Life, liberty and the pursuit of happiness.”

In this sense, both the Declaration and the U.S. Constitution are a kind of social contract between citizens and their government that is specific to a democratic republic: individuals have the freedom to choose with whom to associate, and to act on their own behalf to reach their full human potential. The conception of leisure as a form of social contract—and of partnership as the essence of that relationship—allows a theory of partnership to support a theory of leisure. Just as leisure is individually defined, societies emerge from individuals’ decisions to associate with one another according to some commonality, with that commonality then serving as the basis for distinctive social contracts. However, because any two or more societies may emerge from widely divergent beliefs (political, religious, philosophical, etc.) the social contract that recognizes the right to leisure is not expressed in all societies in identical ways, if expressed at all.

In Uhlik (2006a), a theory of relationships based on self-predisposition to “others” was proposed:

Among various *schema* (Stangor & Schaller, 1996) for describing the organization of human relationships may be proposed an arrangement from most general to specific: from society, to civilization, to culture, and then to the realms of culture. The premise is that, fundamentally, society results from the association of individuals on the basis of their *preconception* of the “other,” and if that “other” is viewed in a societal context of favorable predisposition, then the subsequent

affiliation will be reciprocal. Conversely, an “other” *prejudged* as suspicious or threatening will produce an unequal relationship based on domination (or, perhaps, elimination) of the “other.” (pp. 4-5)

Further, Figure 1 (from Uhlik, 2006a) suggests that societies then can be classified along a continuum ranging from predation, through cooperation, and finally to partnership according to their members’ collective predispositions. A predominance of exploitive relationships—“partnerships” in name only—is an indicator of a predatory society; the authoritarian iron rule dictates that one preemptively must do unto others *before* they do unto you. Leisure in a predatory society would be a means to an end whereby individuals are prejudged as rivals in a competition producing winners and losers. Conversely, a partnership society wherein the other is welcomed, valued, and encouraged, embraces the Platinum Rule: do unto others as *they* would do unto themselves. Through the social contract nurturing partnership, leisure becomes both a means *and* an end: the journey of discovery taken together and the destination celebrated as a collective challenge met.

2.0 PARTNERSHIP DEFINED, AND REDEFINED

The original definition of “partnership” as “a contract of two or more competent persons to place their money, efforts, labor and skill, or some or all of them, in lawful commerce or business, and to divide the profit and bear the loss in certain proportions” (White,

1909) has been extended in leisure studies to include *a dynamic arrangement between two or more parties, based upon the beneficial satisfying of specifically identified, mutual needs* (Uhlik, 1995; James, 1999; Uhlik, 2005). The contrast is between *partnerships* as simply exchange arrangements emphasizing material profit, and *Partnership* as a shared effort intended to produce benefits and satisfaction as much intangible and intrinsic as tangible and extrinsic.

In light of the discussion, above, a third definition may be introduced: “Partnership” within the context of a theory of partnership is *a transforming relationship oriented toward the mutual achieving of meaningful goals*. This conception captures both the idealism implicit in the term’s common (non-economic) use and the social contract’s “freedoms” suggested by mutuality and transformation. But transformation is predicated on thoughtful action, which in turn requires meaningful awareness.

Abraham Maslow (1943) is said to have stated, “What is necessary to change a person is to change his awareness of himself”; this transformative process serves as the basis for Figure 2. Within this framework, Maslow’s first four stages are subsumed under the heading *self-awareness*. As one migrates from the first stage to the fourth, information is collected to form a knowledge base that, when compiled, informs the self about its needs and wants; strengths and weaknesses; and values, beliefs, attitudes, and behaviors. Integrated through reflection, these characteristics describe the individual’s true self at that moment.

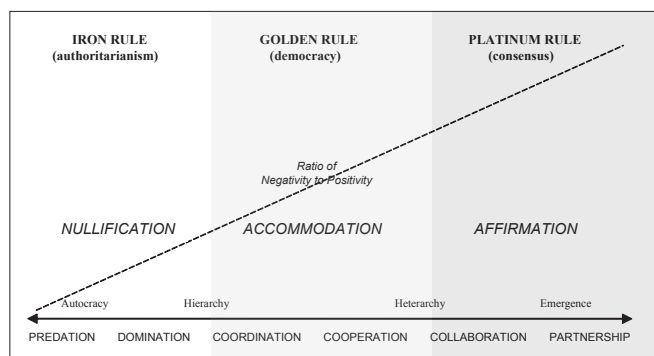


Figure 1.—The partnership continuum depicting overarching philosophy, partner affect, and ratio of negativity to positivity (from Uhlik, 2006a).

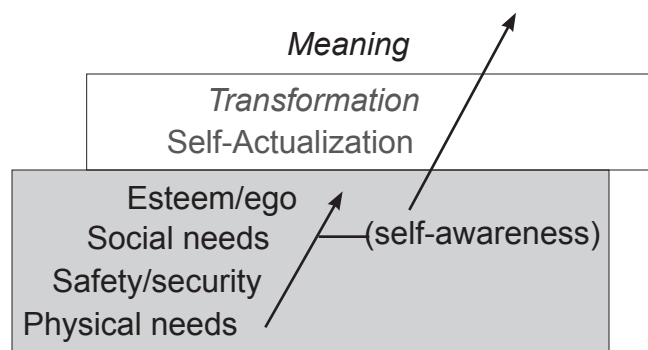


Figure 2.—The process of achieving a meaningful life in relation to Maslow's (1943) hierarchy of needs.

As Maslow indicated, an individual who becomes self-aware also feels the obligation to act on that awareness; at the same time, leisure requires the freedom to act. Herein, then, self-actualization becomes a precursor to the additional two stages shown in Figure 2: transformation, and meaning (which also may be perceived as satisfaction or fulfillment). Assuming one has been enabled by self-awareness to take authentic initiative during self-actualization, then experiencing both the process (journey) and outcome (destination) of one's actions is transformational for the self and the other, a mutuality achieved whether one is participating in or providing for the opportunity.

Transformation may occur in isolation, but a theory of partnership aligned with the social contract concept purports that purposeful transformation is accomplished through leisure's nurturing of self-awareness and self-actualization, and results in the creation of the meaningful life envisioned by the architects of classical democracy and of our own (Mechikoff & Estes, 2006). Further, the very existence of this form of leisure is a direct consequence of its being embedded in the type of society whose individual members create and maintain the social contract.

3.0 "MAPPING" A THEORY OF PARTNERSHIP IN RELATION TO SOCIETY AND LEISURE STUDIES

Figure 3 incorporates five essential elements delimiting the parameters of a theory of partnership as an intermediary or facilitator between leisure studies and the larger society. In this sense, partnership is the social contract linking the two. Despite its visual complexity, mapping the entire "landscape" may reveal the theoretical applicability of partnership to leisure.

Underlying the structure, each of the four like-sized overlapping circles encompasses one of the typical disciplines often comprising leisure studies: hospitality, tourism, travel, and commercial recreation; parks and recreation; therapeutic recreation; and

sports management. In the outer four corners of the figure are the ever-present *external* aspects (realms) that influence those disciplines: culture, law, politics, business, and education. These realms act as conduits through which the power of societal type is transmitted—for example, valuing uniqueness over ubiquity, inclusion over restriction, collectivism over individualism, equity over profit, and pragmatism over idealism.

Listed in a box located within each disciplinary circle are *internal* aspects that influence partnership: relationships, resources, networks, and organizations. These are the aforementioned smaller yet important theoretical perspectives that inform, but are subsumed under a theory of partnership.

Overlain on the disciplines and their internal influences are three concentric zones representing levels at which partnership exists, and where research can occur (Henderson, 1994; Henderson, Presley & Bialeschki, 2004). Partnerships themselves (as instruments or tools), and published descriptions of those partnerships in action (e.g. case studies), occupy Figure 3's central area. This is where the hoped-for individual transformations take place. Activity facilitators and their supervisors "partner" with those whom they serve with the expectation that working together enhances the probability that mutually beneficial goals will be achieved.

In the middle ring are models of partnership (e.g. Selin & Chavez, 1994; Uhlik, 1995), wherein procedures to insure transformation are designed and enumerated. It is here that managers and educators distill essential instructions from research and experience, filtered through leisure philosophy (the "pursuit of happiness"), that are then provided to their field staffs to guide actual practice.

A theory of partnership (e.g. Uhlik, 2006a; Uhlik, 2007) is located in the outermost ring, occupying the transitional space between the internal and external aspects and influences—between individual leisure and society—enabling their social contract. In total, Figure 3 employs a theory of partnership to integrate

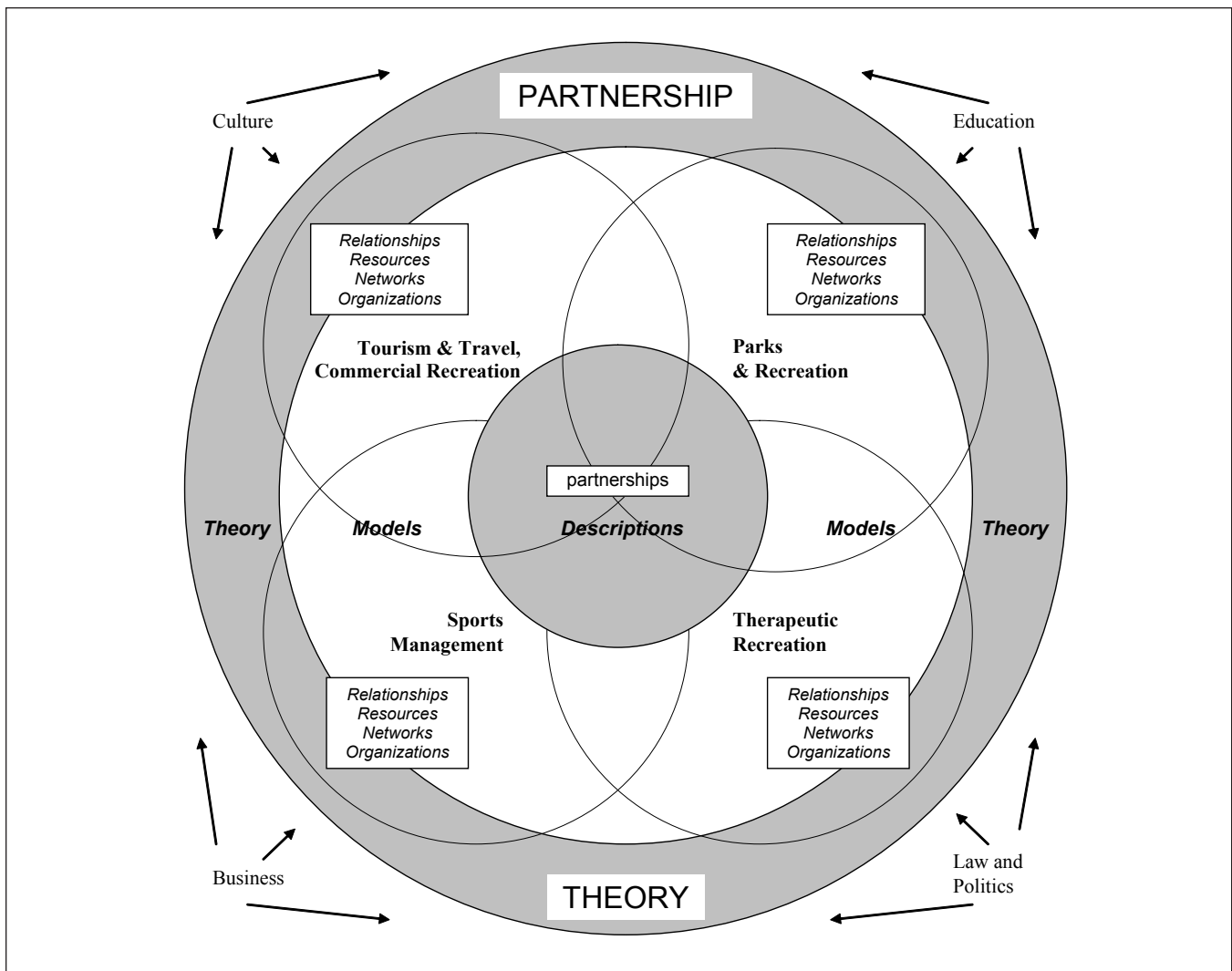


Figure 3.—The scope and potential of partnership research, extending between “partnerships” as a tool and “partnership” theory.

society and leisure into a holistic system supporting that social contract.

4.0 CONCLUSIONS AND IMPLICATIONS

Not every interaction is a partnership, but at a theoretical level every interaction is a relationship—momentary or prolonged, superficial or intense—affected by the reciprocal influence between societal type and the self and “other”. Although the larger American society embraces competition and may even tend toward dominance, the society formed more recently by leisure adherents exhibits a contrasting ethic. As LaPage (1994) argued, leisure embraces partnership as a fundamental value in the same way

that life and liberty are valued. People engaging in leisure activities have chosen to associate on the basis of a predisposition favoring each “other” as a potential partner rather than as a competitive rival. Thus, leisure service providers enter into a social contract—a partnership—with those they serve and with whom they work to provide opportunities for transformation.

It’s not so much that leisure professionals employ partnerships as tools to accomplish goals; this is the stereotypical view derived from unconnected case studies (Mowan & Kerstetter, 2004; Vaske & Donnelly, 1994). In Figure 1, this condition is represented by the *coordination* or *cooperation* arrangements reflective of partnership’s seminal,

functional definition. More significant is the discovery, implicit perhaps, that the goal of service to others offers a higher benefit: the possibility of transformation through self-aware, directed action, resulting in the creation of meaningful lives. This elevates the relationship as displayed in Figure 1 from simply an arrangement to a *collaboration* or *partnership*.

The practical implications are immediate and potentially far-reaching. First, leisure can unite its diverse, individually defined manifestations under the long-sought-after theoretical foundation, and refine its unique contribution to the well-being of every individual. Philosophically, the explicit link to leisure as a fundamental right of all Americans provides a firm platform on which to advocate for extensive programming—especially that which is targeted to underserved individuals and groups—along with the proper level of funding and support. Third, the concept of partnership answers the call(s) for grounding partnership research in theory (Mowan & Kerstetter, 2004; Vaske & Donnelly, 1994), and opens to research the many areas of leisure which have not previously been recognized as legitimate topics (Uhlik, 2006a).

Finally, and perhaps most widely applicable, the practical development of partnerships may be informed by the notion that not every “partner” subscribes to the higher goal of transformation; some partners actually seek only coordination of efforts to solve immediate problems and other “partners” actually intend to exploit their fellows in the name of partnership. By explicitly recognizing individuals’ varying motivations for forming partnerships, compatible goals and expectations can be established to insure that the relationship, or “arrangement,” operates at a level congruent with those preconceptions.

By focusing on the primacy of *individual relationships* and the subsequent association of individuals into societies sharing particular perceptions toward others, a context for a theory of leisure may be established. The essence of partnership is the quality of the individual partners’ relationship, just as the basis of society is each individual member’s predisposition

toward the “other,” which defines the range and types of potential relationships between them. A theory of partnership suggests that the type of relationships fostered by leisure professionals and organizations underwrites a theory of leisure: the social contract enabling—through transformation—an individual’s freedom to create a meaningful life.

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*PLANNING AND USE
OF OUTDOOR AREAS*

FACTORS THAT ATTRACT AND REPEL VISITATION TO URBAN RECREATION SITES: A FRAMEWORK FOR RESEARCH

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Abstract.—The mix of natural features and manmade elements in urban and metropolitan areas presents unique challenges for resource managers and planners. While some elements of the urban landscape (e.g., forested areas, parks, water features, and museums) may attract or encourage visitation, others (e.g., industrial and commercial activity, odors, noises, crime, litter, and perceived class/racial/ethnic differences) may negate and even trump the positive elements, thus repelling or deterring visitation. Interestingly, while a great deal of research has examined the positive factors that attract people to open spaces and recreation/tourism settings, relatively little has been done to understand the impact of factors that might repel, deter, or otherwise lead a person to avoid a particular urban/metropolitan site or destination. This paper seeks to address this gap in the research literature by outlining a conceptual framework and research effort (just currently under way) that is designed to develop a more complete understanding of the features and attributes at urban sites that repel or deter visitation—as well as those that attract or encourage visitation.

1.0 INTRODUCTION

While most recreation research looks at attractive places, our focus in this research is on less appealing places. This may include brownfields with contamination issues or other sites that cities and communities are thinking about reclaiming and developing for housing, businesses, retail, and recreation—or to attract tourists. In the heavily industrialized Calumet region of Illinois and Indiana, the impetus for the current study, various development and redevelopment projects are under consideration or in progress. At the same time, this area underscores the inherent challenges involved in such redevelopment efforts. Areas like Calumet are prevalent across the Midwest and the United States and in other countries as well.

In the early 1900s, the Calumet region emerged as a center for steel production and processing because of its central location in the country, access to Lake Michigan and the other Great Lakes, and extensive railroad network. Over the years Calumet has attracted a variety of steel-related industries including railcar manufacturing, oil refining, automotive production, and numerous other large-scale extractive and material processing operations. Since declines in the steel industry during the 1970s and the closing of several major plants and industrial sites, Calumet has become a classic example of the Midwest “rust belt landscape.”

Today Calumet is a mix of commercial operations and large-scale factories/industrial facilities, prominent waste disposal sites, a proposed Superfund site, other brownfield sites, major transportation resources (including three interstate highways, key rail corridors, and manmade waterways), well established residential communities, and a unique set of environmental resources (e.g., lakes, rivers, ponds, and marshes; elements of prairie and savanna ecosystems; and several rare plant and animal species). A central feature of the Calumet area is Lake Calumet, which

was originally a natural lake roughly twice its present size. About a quarter of the lake has been transformed over the years into land and other portions have been dredged from the original depth of 6 feet to a depth of 30 feet to accommodate large commercial boating traffic. The area north of the lake was once the Chicago Municipal Landfill noted for its large incinerator and methane gas vents/plumes visible to traffic on I-94, a major interstate connecting Indiana, Illinois, and Wisconsin. As an example of recent attempts to reclaim portions of the Calumet region for recreation use, the landfill was closed about 10 years ago, capped with 6 feet of blue clay, and transformed into the Harborside International Golf Course—a 36-hole links-style championship golf course, with a 24,000 square-foot Prairie-style clubhouse, an upscale golf school, and a practice area.

Just south of Lake Calumet is Hegewisch Marsh, adjacent to the Chicago neighborhood of Hegewisch. Hegewisch Marsh was recently chosen to become the future home of the Ford Calumet Environmental Center (FCEC). The building design for the FCEC was developed through a major architectural competition incorporating LEED (Leadership in Energy and Environmental Design) sustainable design principles. The winning plan draws on the metaphor of a nest and calls for materials for the 27,000-square-foot building to be drawn substantially from available/discarded elements in the immediate area—e.g., salvaged steel from the mills and processing facilities, floorboards and wood from factory floors, and slag which is widely available in local wetlands and on brownfield sites. Hegewisch Marsh site is located on a major migratory flyway and in order to keep birds from flying into the environmental center building, a screen on the façade and porch consisting of metal bars will be positioned to look like a basket surrounding the structure. This screen will be visible to birds, giving them a chance to slow down while adding shade to the building, and effectively serving as a blind for viewing wildlife in the area. Many other environmentally friendly design elements are being incorporated into the project like geothermal heat pumps, earth tubes, a biomass boiler, wind turbines, and water collection systems—elements that will become part of the educational component

of the center and site. The project is expected to cost \$14 million and to have the potential to attract more than 100,000 visitors per year to the region. The key question we ask in this research project is: if an attraction such as the FCEC is built, will they come? Or will the fact that the site is located in an area that some view as unappealing deter or inhibit visitation?

2.0 CONCEPTUAL FRAMEWORK

In general, urban recreation areas can be viewed as a mix of natural features and manmade elements. While some elements of the urban landscape (e.g., forested areas, parks, water features, zoos, nature centers, and museums) may attract or encourage visitation, other features or attributes (e.g., distance/accessibility, industrial development, commercial activity, odors, noises, litter, crime/security, safety/health concerns, and perceived class/racial/ethnic differences) may negate and even trump the positive elements, thus repelling or deterring visitation. Interestingly, while a great deal of research has examined the positive features and associations that attract or draw people to open space areas and recreation/tourism settings, relatively little has been done to understand the impact of elements that might repel, deter, or otherwise lead a person to avoid a particular site or destination, especially one that might be located in a diverse urban/metropolitan area.

Ajzen and Fishbein's (1980) theory of reasoned action (TRA) provides a useful conceptual framework for examining the factors that could influence the likelihood of engaging in specific behaviors, such as visiting a particular urban recreation site. The theory holds that volitional behaviors can be predicted based on cognitive factors such as beliefs (i.e., beliefs about the attributes and outcomes associated with a behavior), subjective norms (beliefs regarding social pressures to either engage in or not engage in a specific behavior), attitudes (overall evaluation of performing a behavior), and intentions (likelihood of performing or not performing a behavior). The components of the TRA model have been productively employed to study a number of recreational activities including camping (Young & Kent, 1985), hunting (Rossi & Armstrong,

1999), and biking (Ajzen & Driver, 1991), as well as resource management and development issues such as wildfire and forest fuels management (Vogt et al., 2005), recreation pricing preferences (Kerr & Manfredo, 1991), and facility development options (Bright, 2003).

The following sections provide an overview of prior research and describe our conceptual orientation toward three key elements of the TRA that are examined in this research: beliefs, attitudes, and intentions. In addition, we consider the potential for incorporating the concept of place attachment as an additional explanatory construct into an expanded TRA model (shown in Figure 1).

2.1 Beliefs about Recreation Sites

Prior research has examined the positive features and associations that attract or draw people to open space areas and recreation/tourism settings. For example, Schroeder and Louviere (1999) showed how recreation usage can be affected by a variety of site features including the type of vegetation (i.e., whether grass and/or trees were present at the site), type of terrain (flat versus rolling hills), and the presence of water resources (none, stream/pond, river, lake, etc.). Other researchers in the travel and tourism literature have used push-pull theory to study the forces that “push” people to travel away from home as well as those that attract or “pull” individuals to visit particular tourism destinations (Crompton, 1979; Pyo et al., 1989; Yuan & McDonald, 1990; Uysal & Jurowski, 1994; Turnbull & Uysal, 1995; Klenosky, 2002; Kim et al., 2003). The “push” factors explored in this line of inquiry have included the desire for escape, rest and relaxation, adventure, prestige, health and fitness, and social interaction. The “pull factors” have centered on beliefs about site features such as an area having a desirable climate, scenic areas, natural resources, unique cultural/historical attractions, outdoor recreation areas and facilities, affordable airfares, etc. Although the push-pull framework provides a useful way to think about site/destination choice behavior, the theory considers only the positive aspects of a site that attract visitors; it does not incorporate the impact of factors

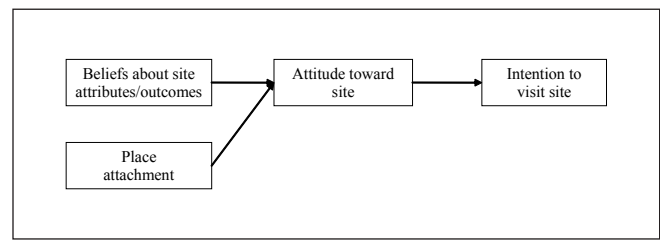


Figure 1.—Expanded TRA Model.

that might repel, deter, or otherwise lead a person to avoid a site or destination.

An alternative conceptual framework from the tourism literature that does incorporate the impact of negative elements in travel/site choice is Um and Crompton’s (1992) facilitator-inhibitor model. This approach views visitation as a function of two factors—“facilitators,” beliefs about destination/site attributes that help to satisfy a potential traveler’s specific motives; and “inhibitors,” beliefs about destination/site attributes that are not congruent with the traveler’s motives. The facilitators examined by researchers using this framework have included need satisfaction factors (degree of novelty, challenge, and relaxation to be experienced), social agreement (inclinations to act in accordance with social group opinions), and travelability (possessing available resources and qualities needed to travel). The inhibitors examined have tended to center on factors that constrain leisure behavior (cf., Crawford et al., 1991) such as time, money, distance, access, family constraints, and general destination-related factors such as safety/security concerns and health concerns. In addition, empirical applications of the facilitator-inhibitor model (Um & Crompton, 1992; Botha et al., 1999) have tended to focus on travel to out-of-state and foreign destinations. The model has been applied to study visitation to museums (Tian et al., 1996) but has not yet been used to study recreation visitation in other urban settings. More importantly, the model has not been used to examine the impact of the negative environmental factors (e.g., industrial development, commercial activity, noise, odors, litter) or other negative social/demographic factors (perceived racial/ethnic/social-class differences, crime, unemployment)

that might inhibit site visitation in a diverse urban/metropolitan area.

Other studies that have examined the impact of negative environmental factors on recreation and tourism behavior without using the facilitator-inhibitor model have also been reported in the literature. For instance, Schroeder and Anderson (1984) conducted a landscape preference study to examine perceptions of personal safety and scenic quality in urban parks. A related area of research has focused on perceptions of crowding and resource quality in outdoor recreation settings (Heberlein, 1977; Manning et al., 1996, 1999; Vaske et al., 1980, 1986). Winger and McKean (1991) used regression analysis based on visitor records and weather/climate data to model the impact of poor/low visibility levels on the length of stay in a national park setting. Recently, Klenosky (2005) used a conjoint analytic approach to investigate the impact of negative or degraded environmental features (i.e., industrial structures, odors, and noise) on recreation site choice decisions for three key recreation activities—golf, fishing, and bird watching.

When negative site features and attributes have been studied, they have usually been addressed independently of positive factors. Thus research has yet to examine positive and negative site beliefs together and has yet to consider questions such as whether positive and negative site beliefs would operate in an additive/compensatory manner (i.e., where positive site features would overcome or compensate for negative site characteristics) or whether these beliefs might operate in a non-additive/non-compensatory manner (where the presence of a strong negative factor would negate any/all positive site features).

2.2 Attitude toward Visiting a Recreation Site

In general, we assume that a person's attitude toward visiting a particular recreation site could be positive, neutral, or negative. That is, one could be attracted to the idea of visiting a site, indifferent about a site, or repelled/repulsed by the idea of visiting a site. This view is similar to the word of mouth (WOM) and

service complaining literature (e.g., Richins, 1983) in that consumers could range from “zealots/champions” (i.e., highly loyal purchasers/users and say nothing but good things about a product and are highly likely to recommend the product to others), to neutrals (who might or might not be users and that may or may not think or say much of anything about the product), to complainers/haters/avoiders (non-users who are likely to say negative things about a product and who may even discourage others from buying).

2.3 Intention to Visit a Site

Intention to visit a site refers to the likelihood that a person would visit a site. That is, a person could range from being highly likely to highly unlikely to visit a particular site. The TRA holds that intentions are the primary determinant of a person's likelihood to engage in a particular behavior.

2.4 Place Attachment

Over the past decade, recreation researchers have become increasingly interested in exploring the emotional and symbolic bonds or attachments that people form with places, landscapes, and recreation settings (e.g., Eisenhauer, Krannich, & Blahna, 2000; Kyle et al., 2004; Moore & Graefe, 1994; Schroeder, 1996; 2002; 2004; Shumaker & Taylor, 1983; Williams & Roggenbuck, 1989; Williams et al., 1992; Williams & Vaske, 2003). While a number of concepts have been examined in this line of inquiry, including “sense of place” (Shamai, 1991; Williams & Stewart, 1998), “place bonding” (Hammitt et al., 2003), and “special places” (Schroeder, 1996, 2002; 2004; Eisenhauer et al., 2000), the bulk of the research conducted to date has focused on the concept of “place attachment” (Williams & Roggenbuck, 1989; Williams et al., 1992).

Place attachment has been conceptualized in terms of two distinct but related components: “place dependence” (the functional importance of a place in supporting specific recreation activity goals) and “place identity” (the emotional or symbolic importance of a place in a person's life) (Williams, 2000; Williams & Vaske, 2003). Research on this two-dimensional

model of place attachment has provided insight into a wide range of leisure research and resource management issues. For example, the concept has been used to examine influences on resource usage (Moore & Graefe, 1994; Warzecha & Lime, 2001; Williams & Vaske, 2003; Kyle et al., 2004), conflicts among user groups (Watson et al., 1991; Watson et al., 1994), differences in recreation specialization levels (Bricker & Kerstetter, 2000), perceptions of fire management practices (Hendricks et al. 2002), reactions to user fees (Kyle et al., 2003), and influences on environmentally responsible behaviors (Vaske & Kobrin, 2001). Other research has explored factors that might help explain how attachments to places form and develop over time (Williams et al., 1992; Williams & Vaske, 2003; Kyle et al., 2003; Backlund & Williams 2004; Kyle et al., 2004; Kyle et al., 2004).

2.5 Possible Relationships between Place Attachment and Site Visitation Intentions

While prior investigations of place attachment have provided useful insight into the positive attachments or associations that attract people to open space areas and recreation settings, research has yet to provide a sufficient understanding of the negative associations to place that might repulse or repel potential resource users and visitors (cf. Manzo, 2003). The present research seeks to build on these prior efforts by exploring the usefulness of a broader conceptualization of the place attachment concept. Specifically, we propose that in addition to positive place attachments, people also can develop negative place attachments. These negative emotional attachments to place can occur in a variety of ways including exposure to negative information about an area through the media or via word-of-mouth, visiting an area during a disaster or time of war, or having bad personal experiences at a place. While it seems likely that negative place attachment may keep a person from visiting a site, it is also possible that negative attachment may make a person curious and actually draw him or her to a site (Lennon & Foley, 2000). In sum, while it may be safe to conclude that positive place attachment would draw/attract visitation to a site, the potential impact of negative place attachment on visitation seems more complex. A secondary objective of the present research

will be to use this broader conceptualization to develop a measure of place attachment (or adapt/modify an existing measure) that can be used to examine positive as well as negative place attachment. This new/adapted measure will then be used to examine attachment to relatively negative or undesirable recreation places in addition to the positive/desirable places that have been the primary focus of past research. Finally, the new/adapted measure will then be incorporated into the modified TRA model to predict intention to visit both desirable and undesirable recreation places.

Table 1 provides one perspective on how place attachment and place visitation intentions might be related. It is interesting to note that prior empirical research has tended to concentrate on only the top-left cell in the table—positive attachments and favorable intentions to visit a site. The proposed research will provide a framework to explore the other possibilities identified in the cells of the table.

3.0 PROJECT OBJECTIVES AND STATUS

In sum, the present research seeks to build on the foundation of prior research by developing a more complete understanding of the nature and impact of the factors that attract and encourage visitation as well as those that repel or deter visitation. Thus our initial objectives will center on reviewing the extant literature and conducting qualitative research to develop measures of site beliefs and place attachment. This work is currently under way. Our second and main study objective will be to use the framework

Table 1.—Possible relationships between place attachment and site visitation intentions

Attachment to a site	Intention to visit a site	
	Strong	Weak
Positive/Neutral	Likely to visit (typical/normative visitation behavior)	Unlikely to visit (negative site beliefs inhibit/deter visitation)
Negative	May visit out of curiosity (cf., "Dark tourism") or for therapeutic/nostalgic reasons	Avoid site (negative attachment and/or negative site beliefs inhibit/deter visitation)

provided by the theory of reasoned action to explore the relationships among beliefs about these positive and negative factors, attitudes, intentions, and place attachment in an empirical study involving a range of urban recreation sites in the Chicago area. A secondary objective in this phase will be to examine how these relationships vary for different respondent subgroups, such as those with an interest in nature/eco-tourism versus industrial/labor-heritage tourism.

Examining these relationships in the context of relatively negative or undesirable recreation places in addition to the positive/desirable places that have been the primary focus of past recreation research would make a useful contribution to the extant literature in recreation and tourism. In addition to its conceptual contributions, the research generated by this framework should be useful for exploring development options and other strategies for overcoming negative place associations. These findings would provide useful input for those involved in planning for the sustainable development of urban recreation sites in the Calumet region as well as other similar regions of the country.

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RUNNING UPHILL: URBANIZATION, CONFLICT, AND VISITOR USE AT KENNESAW MOUNTAIN NATIONAL BATTLEFIELD PARK

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Abstract.—At the Kennesaw Mountain National Battlefield, operated by the National Park Service (NPS) near Atlanta, differing uses – including walking for fitness, horseback riding, and organized cross-country running team practices on the trails – conflict with the NPS mission to protect the historic resources of the site and lead to conflicts among visitors. NPS managers at Kennesaw Mountain instituted a temporary permit program for organized running teams during October 2006. They also monitored visitor acceptance of the permit program and completed an assessment of visitors' perceptions of crowding. This paper discusses the impacts of urban sprawl, visitor management in terms of crowding, and user conflicts on National Park sites. Particular focus will be given to research methods used to address these issues and to the challenge of resolving user conflicts while protecting historic and natural resources.

1.0 INTRODUCTION

Located in the metropolitan Atlanta region of Georgia, Kennesaw Mountain National Battlefield Park (KMNBP) was set aside by the War Department in 1917. The Park was transferred to the Department of the Interior as a unit of the National Park Service in 1933. Kennesaw Mountain National Battlefield Park is the site of a Civil War battle in which 5,350 soldiers were killed between June 19 and July 2, 1864. The

2,888-acre park is home to historic earthworks, cannon emplacements, and monuments. The purpose of the park is to protect the site and interpret the remnants of one of the most intense battles of the Atlanta Campaign (National Park Service, n.d.c).

Atlanta today is far different than it was when the park was created. Greater metropolitan Atlanta is now the most rapidly growing urban center in the United States, with approximately 1 square mile being developed every 2 weeks during 2006. In 1990 the population of metro Atlanta was just under 3 million; today the population has reached almost 5 million, and encompasses 28 counties surrounding the city. It has been projected that over the next 25 years, metro Atlanta will add another 2 million people (Harris, 2007).

Green space plays an especially important role in providing recreation opportunities in urban environments (Walker, 2004). Every day the Atlanta region reportedly “lost 54 acres of trees and gains 28 acres of asphalt, concrete and impermeable surfaces” (Harris, 2007). Development, coupled with high real estate values, has resulted in few public recreation sites available in the region. The lack of outdoor recreation opportunities has resulted in unsustainable overuse and crowding at KMNBP.

KMNBP was visited by almost 1.4 million people in 2006, making it the second-most visited national battlefield in the country, behind Gettysburg National Military Park. Visitation during 2007 is well on its way to being the highest of all time (National Park Service, n.d.a). Different uses of the park include walking for fitness, horseback riding, and organized cross-country running teams training on the trails, all of which are activities that conflict with the NPS mission to protect the historic resources of the site. This leads to conflicts among various types of visitors.

2.0 LITERATURE REVIEW

Intensity of involvement and activity type have been shown to be significant predictors of 1) why people use a recreation area; and 2) how they perceive various aspects of a site (Lee, Scott, & Moore, 2002). Several studies have also identified factors that influence perceptions of crowding, such as motives for recreation, preferences for the experience, and norms of specific groups of visitors (Roggenbuck & Schreyer, 1977; Schreyer & Roggenbuck, 1978; Absher & Lee, 1981; Bultena, Field, Womble, & Albrecht, 1981; Graefe & More, 1992).

Research by Vaske, Carothers, Donnelly & Baird (2000) suggests that more out-group than in-group conflict exists in outdoor recreation – e.g. pedestrians tend to report more conflict with bicyclists than with other pedestrians. A number of studies have looked at recreation conflict among different user types, including hikers and mountain bikers (Watson, 1991; Ramthun, 1995); canoeists and motorboaters (Lucas, 1964; Stankey, 1973; Lime, 1977; Ivy, Stewart & Lue 1992); and hikers, horseback riders, bikers and motorcyclists (McCay & Moeller, 1976). Studies of crowding norms and conflict at recreation sites have focused more on wilderness and backcountry areas; more research needs to be done to understand visitors' crowding norms in urban environments such as KMNBP.

3.0 CONFLICTING USES AT KMNBP

Visitation numbers for KMNBP reflect the rapidly growing population of greater Atlanta. Park attendance was 784,310 in 1990; in 2006, it was almost 1.4 million (National Park Service, n.d.a). Intensive and conflicting park uses present a challenge to the NPS whose mission includes both protecting the historic resources of the site and providing for visitor experiences. Local people use the park for a variety of recreational activities including walking and jogging for fitness, biking, birding, and horseback riding. Organized running teams are a particularly large contingent of local recreational users; teams from at least 25 local high schools and colleges regularly use the trails at KMNBP for practice, especially in

late summer and fall. Most did not travel to the park together as a team, however; they arrived separately in private vehicles which put an enormous strain on the park's limited parking areas.

These comments from the Atlanta Journal-Constitution online blog in 2007 reflect some of the tension around recreational usage and overusage at KMNBP:

"...Face facts, y'all, that is a recreational park. The civil war is over and has been over for 150+ years!!! Now it's just some woods and a hill where people jog, walk and bicycle..." (John, 2007)

"For some reason the name is Kennesaw Mountain National Battlefield Park. It should be renamed Kennesaw Mountain National Recreation Area for what it actually is...If you travel the SE you'll quickly realize there's about a zillion Civil War parks. Losing one is no loss..." (Bob, 2007)

"THIS COUNTRY IS HEADED TOWARDS A NEW CIVIL WAR ...NOBODY WILL CARE ABOUT THE OLD CIVIL WAR IN A FEW MORE YEARS." (Harold, 2007)

The park management does not face total opposition, however. Another quote from the same blog read:

"...if we forget what happened in our past then we might repeat it in our future...If there are not enough Park Rangers to patrol the park then maybe we should contact our representatives..." (Sharon, 2007)

One specific pressing concern for the managers of KMNBP is maintenance of Kennesaw Mountain Drive, the road leading to the top the mountain. Built between the 1930s and the 1950s, the road provides vehicular access to a panoramic view of the region from the mountaintop and helps give visitors a greater understanding of the historical importance of the mountain. Interpretive signs point out the geographic features of the region and explain how they influenced

the strategy of the Confederate and Union armies during the Atlanta campaign. Mountaintop access is considered critical to interpreting and understanding the park's historic significance (National Park Service, n.d.b).

Kennesaw Mountain Drive, however, poses a number of safety risks. The 1.5-mile road is only 20 feet wide (4 feet less than a standard road), and is on a 12 percent grade. Approximately 80 percent of the road has less than 1 foot of shoulder, including large sections with no shoulder at all before the steep drop-off (National Park Service, n.d.b). The road is used on a regular basis by a walkers, runners, bicyclists, and people in motor vehicles. A 2003 engineering study by the Federal Highway Administration identified major safety concerns with the mixed usage of Kennesaw Mountain Drive (D. Brown, NPS, personal communication 2006). A 2004 analysis by federal transportation planners strongly recommended developing safe alternatives for pedestrians and bicyclists (National Park Service, n.d.b). Many mountain-road users recognize these dangers and have shared their concerns with the park staff (D. Brown, NPS, personal communication 2006).

4.0 MANAGEMENT OPTIONS

4.1 Running teams

NPS managers at KMNBP instituted a temporary permit program for organized running teams in October 2006. They subsequently monitored visitor acceptance of the permit program and assessed visitor perceptions of crowding at the site. The program requires all organized running groups that want to practice or train on trails in KMNBP to apply for a Special Use Permit. The KMNBP superintendent has elected to waive the usual permit fees for running groups provided that: 1) they comply with the conditions of the permit; and 2) that the park is able to sustain trail conditions and effect necessary trail repairs through adequate levels of volunteer support. All Special Use Permits specify the day(s) of week, time period, parking location, and staging area for warm-up. Due to the high volume of visitors at KMNBP, a maximum of two organized running groups

will be scheduled for each of four areas of the park on the same day during the same time period.

Permit holders are strongly encouraged to use buses or vans to travel to the site. Groups not using buses or vans are required to carpool four people to a vehicle. Due to overcrowding at the Visitor Center/Museum and its parking lot, organized running groups are only allowed to access the Center if they arrive by bus. As a requirement of the Special Use Permit Policy, groups are also required to attend a presentation given on-site by a park ranger prior to their first visit. The presentation focuses on established trail etiquette, which includes staying on the designated trails, running no more than two abreast on wide trail segments (single file on narrow trail segments), allowing faster runners to pass without having to go off-trail, and alerting other trail users when you approach them from behind (e.g. say "Passing on your left").

4.2 Road safety

As of this writing, the park management staff is seeking comments from stakeholders on alternatives for managing the mountain road; they will consider and evaluate the comments within the framework of the park's legislated purpose and NPS management policies. Any management solution selected must allow vehicular access to the top of Kennesaw Mountain for interpretive purposes and must provide for visitor safety. The following four Mountain Road Alternatives were presented by Superintendent Dan Brown at a public meeting held on March 27, 2007 (and are available to the public on the park's website, <http://www.nps.gov/kemo/parkmgmt/publicinvolvement.htm>):

1. Improve foot trail for accessibility – The existing foot trail to the top of Kennesaw Mountain was developed to provide pedestrian access to the mountaintop but is rocky and steep (with grades sometimes exceeding 22 percent). This alternative would reroute and redesign sections of the trail to make it accessible to all, including baby strollers and wheelchairs. The road would be left open to

private vehicles and bicycles, except on weekends and holidays when the shuttle would run (as it currently does).

2. Expand shuttle service – This alternative would incorporate an expanded shuttle service (9 a.m. to 5 p.m. 7 days a week), with a designated lane for pedestrians on the Mountain Road. The road would be closed to private vehicles but bicycles would continue to be allowed on the road in the shuttle lane.
3. Schedule user groups – Under this alternative, a schedule would be implemented separating users by times of day and day of the week (weekdays versus weekends). Pedestrians and private vehicles (including bicycles) would not share the road at any given time.
4. Combine elements of alternatives #1-3 – This alternative would allow for improvement of the foot trail, along with scheduling user groups by times of day. (National Park Service, n.d.b)

During the process of choosing an alternative management plan, the Park management staff is allowing all users on the road – including pedestrians, bicycles, and motor vehicles. For the time being, additional signs have been installed instructing pedestrians to use the proper side of the road, ranger patrol has been increased to enforce and educate visitors on the rules of the road, and citations are being issued to bicyclists and motorists exceeding the posted speed limit of 25 mph on the road. Pedestrians also are being encouraged to use the foot trail to reach the top of the mountain (D. Brown, NPS, personal communication 2006).

Kennesaw Mountain has also been identified as a “Globally Important Bird Area” (National Audubon Society, n.d.). Scientific research on the park’s bird population is ongoing and organized birding outings conducted by NPS volunteers are included in the park’s interpretive programs. Mountain Road is closed to all vehicles during bird research activities and birding events; this policy will remain in place in the future as Mountain Road management changes are implemented (National Park Service, n.d.c).

4.3 User fees

The U.S. Congress has passed legislation permitting NPS sites to collect daily and/or annual entrance fees, with 80 to 100 percent of those funds being used for improvements at the site. KMNBP will be introducing a user fee schedule in late 2007 and will be allowed to keep 100 percent of the funds raised; the park is considering implementing the National Park Service’s standard user fees:

- Daily pass at \$5 per person if entering by foot, bicycle, or bus
- Daily pass at \$10 per vehicle (excluding buses)
- Annual pass at \$20 per vehicle (or per family if not entering by vehicle)
- Annual pass that includes \$5 for the shuttle bus (if decision is made to close Mountain Drive to personal motor vehicles)

5.0 ASSESSMENT

Permanently closing Kennesaw Mountain Drive to private motor vehicles, keeping it open to bicycles and pedestrians, and offering an expanded daily shuttle service are very viable solutions to the current safety problems on the road. Many National Parks already have areas which are accessible only by a shuttle service (Miller and Wright, 1999; White, 2007). Charging user fees at KMNBP, including a fee for using the shuttle service, would alleviate much of the funding pressure that the park currently faces.

In addition to expanded shuttle service at KMNBP, other shuttle options should be investigated. Currently, the park uses a full-sized yellow diesel school bus as a shuttle but a cleaner, quieter, more fuel-efficient vehicle is needed. The steep incline on the mountain road may preclude use of all-electric vehicles as a shuttle but smaller buses or natural gas-powered vehicles may be more energy efficient options.

The on-site visitor intercept surveys currently being conducted are expected to help park management staff make decisions about changes in management strategies to address the issues of safety and overcrowding. Survey questions related to visitors’

perceptions of the park's meaning(s) may also inform management decisions and suggest future directions for visitor education. By examining different user groups' perceptions of conflict and crowding on the roads and trails, park staff will be able to identify trends related to the needs of individual groups and the sources of conflict between groups. Survey information may also help park managers anticipate levels of support or opposition to various management proposals.

Kennesaw Mountain National Battlefield Park is certainly not the only U.S. historic site where urban sprawl is causing use conflicts. Valley Forge National Historic Park on the edge of Philadelphia is facing similar overcrowding and use conflict issues. Manassas National Battlefield Park in Virginia has also recently been designated a globally important bird area by the Audubon Society and the site is under the threat of sprawl from Washington, D.C. At these and other national parks, NPS management is constantly struggling with the inherent conflicts between preservation of national historic features and recreational site use in the face of overcrowding and urban sprawl. It is important to find innovative management solutions so that the country's historic places are not lost under the feet of running teams and dog-walkers.

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PLACE MEANING I

MEN'S WILDERNESS EXPERIENCE AND SPIRITUALITY: FURTHER EXPLORATIONS

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Abstract.—Most previous research on wilderness experience and spirituality focuses on women only or mixed male and female groups. This qualitative research study investigated the spiritual impact of participation in a men-only wilderness canoe trip. In-depth interviews were conducted after the trip with six participants. Interpretive analysis identified five themes: spiritual friendships, friendships facilitated by conversations, openness facilitated by the men-only group, spirituality facilitated by wilderness as God's creation, and space for spirituality facilitated by wilderness.

1.0 INTRODUCTION

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 provide 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 with which to share experiences, opinions and ideas; and (2) being in a wilderness environment that 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 *solitude* as 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 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," "noncompetitive atmosphere") were sources of spiritual inspiration. Fredrickson and Anderson suggested future research with male-only groups. Subsequently Heintzman (2007) investigated the spiritual impact of participation in a men-only canoe journey into a remote wilderness area. In-depth interviews with six participants after the trip 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, were 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.

1.1 Purpose of Study

This study, similar to Heintzman's (2007) study, investigated the influence of wilderness experience upon the spirituality of participants in a men-only group.

1.2 Research Questions

1. What is the influence of participation in a men-only wilderness trip upon spiritual well-being?
2. How do the various components of the wilderness trip (activities, settings) affect spiritual well-being?
3. What is the influence of the “wilderness” environment upon spiritual well-being?
4. What is the influence of the “men-only” group upon spiritual well-being?

2.0 METHODS

This qualitative study investigated the spiritual impact of participation in a men-only wilderness canoe trip. The trip, organized annually by a men’s group at an Anglican church that the researcher attended, was 3 days long and took place in a designated waterway park in central Canada. Six men plus the researcher participated in the trip. The participants’ ages ranged from the 40s to 60s, most were professionally employed or retired, all came from a large metropolitan area, most were involved to varying degrees in the church, and all but one had previously been on one or more canoe trips organized by this group. The canoe trip had no formal structured program or spiritual components, although there was a very informal Sunday morning worship time. The participants were informed of the research project prior to the trip and after the trip all six of the participants on the trip volunteered to be interviewed.

Previous studies on wilderness experience and spirituality (e.g., Fredrickson & Anderson, 1999; Stringer & McAvoy, 1992) have been criticized for focusing on the immediate experience of the wilderness trip and not including a longitudinal dimension (Haluza-Delay, 2000). Thus interviews in this study were conducted 8 to 10 months after the completion of the trip to determine the long-term impact of the wilderness experience on spiritual well-being.

The researcher used a qualitative in-depth interview schedule as a guide during the interviews, which were approximately 45 minutes long. Interviews were

recorded on audiotapes for later transcription and data analysis. Interpretive analysis, which involved the transcripts being carefully read, reread and coded, was used to determine recurring patterns within the data (Patton, 1990). Analysis was done independently by both the researcher and a student researcher to verify the accuracy of the patterns. During this process, themes were observed that represented commonly shared explanations of the impact of participation in the wilderness trip upon spiritual well-being.

3.0 RESULTS

3.1 Spiritual Friendship

The theme that characterized the impact of the canoe trip was spiritual friendship. Ed stated that as a result of the trip he “knew a few more guys,” and Dan noted that the benefit of the trip that would motivate him to go again was “potential friendships.” Andrew explained that this friendship was spiritual friendship:

[The impact] has got to do more with the people I met on the trip that I didn’t know as well as or hadn’t met before and now I know them. That’s probably the lasting, you know that is something that is still reverberating in my life more than anything else as a result of that trip....the people who are involved...view their spirituality as being important. It is always there in the forefront being there with that group of people versus, say, a group of people who watch hockey...it was more than just friendship...because we had that common purpose.

Bruce also elaborated upon the spiritual impact of the trip: “A sense of getting to know each other better I think. Not only as people, but as Christians, as brothers...having contributed to their spiritual life and getting a sense of their heart and mind.”

3.2 Conversation Facilitated Spiritual Friendship

Spiritual friendships developed through the trip and were facilitated by informal conversations and discussions. The most frequently mentioned context of these conversations was the evening campfires:

“I think the sort of evening activities around the campfire was probably the most profound aspect of that particular trip. Conversations with other guys, around the campfire...helped to sort of ground, if you like, some of my own beliefs and thoughts...that was very helpful.” (Dan)

A sequence of the interview between Dan and the interviewer explains how and why these informal conversations were important for the participants’ spiritual well-being. When the interviewer asked Dan why the campfire conversations were so helpful to his spirituality, he responded, “It’s not very often in life that I find...opportunities to discuss one’s beliefs or explore other people or listen to other people expressing their thoughts.” Then the interviewer asked Dan why this happens on the canoe trip; Dan replied, “...there’s a different dynamic in that situation. I think there’s a non-threatening environment...Some environments are not that way.” He went on to explain:

“We have a lot of very different views and points of view and very different concepts on our faith but it’s a non-threatening environment. The dynamic seems to be right for that kind of expression. And also I suppose there’s no hurry, there’s lots of time, we’re not on schedule, and that really helps too.”

Other participants also commented on the openness of the discussion. Charles observed, “It was definitely more of a bonding experience, I mean people just open up, some people were quite open actually with things that were on their hearts and on their minds...” Andrew noted, “Even though, if I remember correctly, we had theological disagreements on certain points, that wasn’t the issue you know, the issue was that we could talk about those things. There were matters to be talked about and they were important.”

3.3 Men-Only Group Facilitated Openness

Participants observed that being part of a men-only group provided a different dynamic than if it had been a mixed group. There were a number of interrelated dimensions to this dynamic. Charles felt that if wives and children were on the trip, then he would feel

a sense of responsibility for them and there would be less opportunity for him to focus on his spiritual needs: “You didn’t have to look after anybody in any particular way. You had to look after yourself and help the group as a whole...from a spirituality point of view it just allowed me to center a little more attention on myself as a man in God’s eyes.” Dan added, “There are certain perspectives that the other guys have that we have in common.” Bruce noted that a men-only group “simplifies social interactions in a way. There’s an ease of conversation that might not be there perhaps in a mixed group.” Similarly Ed stated “there are times when I think it is useful to be together and experience stuff. I think men have spiritual needs, which are often unmet because of the difficulty of sharing those needs...” He went on to state, “I think guys act differently when women are present. They’re macho, show off when they’re with women... [When it’s men only] a lot of times, you get to see the real guys and they’re not putting on any masks.” Charles believed that “the canoe trip provided the chance for men to get together and let their hair down, not be judged.” Andrew elaborated:

“We talk about things...that we wouldn’t talk about if there were women present...or maybe we wouldn’t talk about it in exactly the same fashion. And so that creates a different experience. I think that can help build your spirituality in a way...I suppose that we’re able to address certain issues that we would probably be reluctant to address in a male/female environment and therefore we’re able to do certain things with a male-only group...Sometimes people are willing to open up about an issue and they might not open up if there were women present. Talk about something that’s bothering them or whatever you know...you know we’ve sort of developed a sort of comfort level with each other, and a trust level with each other.”

3.4 Wilderness as God’s Creation Facilitated Spirituality

For the men on this trip, being in God’s creation helped them to focus on God and enhance their spirituality. Ed said, “Just being out in nature...

reminds me of God.” Likewise for Dan, “The fact that when we’re surrounded by God’s creation there’s a constant reminder of his great power and the infinity of God compared to human beings. It tends to be a humbling experience...” Charles also referred to being in creation as a humbling experience: “I think during the trip perhaps...when I get out into nature, I’m just in awe of the stuff that he created.... it’s humbling you know... I almost feel insignificant in the majesty of nature.” Being humbled helped Charles focus on God: “I get hung up on me a lot, way too much. I take myself way too seriously and being out on this canoe trip... You know, it’s just you. You and God. Yeah, humbling.” Being in creation also led to thanksgiving:

“There’s this general sense of God’s creation and God’s presence in creation, that creator that speaks to us through what he’s made. I think it is an opportunity for praise, opportunity to give thanks to God, to glorify God for who he is, as evidenced by what he has made.” (Bruce)

3.5 Wilderness Created a Space for Spirituality

Wilderness provided the opportunity to get away from the distractions of everyday life to focus on spirituality. For Charles, going on a canoe trip and returning to everyday life helps him put his life in balance: “Coming out of the bush and going back to ‘civilization’ you see some of the futility in the rat race.” For Francis, “The beauty, grandeur, remoteness, and lack of distraction and those sorts of things allow me to think more closely about the God that made all these plants, than I would normally consider in a place when I’d be distracted by lots of other stuff.” Likewise, Ed explained that “the remoteness, the quietness, the less distraction helps one to mentally connect with God.” Similarly, Bruce claimed that the spiritual impact of the trip “would have to do with a sense of detachment from being in the city....I guess it would be a connection through, detached from daily life, creating an opportunity to be more attached to God and to, even from a viewpoint of time and mental space, spend more time in prayer and meditation.”

4.0 DISCUSSION

Unlike other similar studies (Fox, 1997; Fredrickson & Anderson, 1999; Heintzman, 2007; Stringer & McAvoy, 1992) the main impact of this wilderness trip was spiritual friendships. Explanations for this outcome include the fact that the participants were fairly homogenous in that they were from the same city, the same church, and in many cases they knew each other before the trip and had opportunity to continue their friendships after the trip. Most of these conditions did not exist for participants in other studies. Unlike other studies, solitude was not a factor on this trip, most likely due to the very communal and social nature of the trip with no structured time for being alone.

The importance of the wilderness setting for spiritual well-being is consistent with research that suggests wilderness settings enhance spirituality (Fox, 1997; Fredrickson & Anderson, 1999; Heintzman, 2002, 2003; Stringer & McAvoy, 1992). In the current study, unlike other studies, wilderness was important to spirituality as it was viewed as God’s creation; a finding which is consistent with the fact that the group was a Christian group. Another reason given was that the wilderness experience provided the opportunity to get away from everyday distractions. This finding is consistent with Stringer and McAvoy’s (1992, p. 17) 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,” and reflects the “being away” feature of restorative environments theory (Kaplan, 1995).

In previous studies on the wilderness experience of women-only groups, being part of a women-only group was a key factor in the spiritual experience of the women (Fox, 1997; Fredrickson & Anderson, 1999). In Heintzman’s (2007) study, only some of the men in the group viewed being part of a men-only group as an important factor in enhancing spiritual well-being. In the current study, all the men strongly believed that being part of a men-only group played a very important role in influencing the spiritual

outcomes of trip participation. A possible explanation was that the men in the current study had a common purpose and interest in spirituality while not all men in Heintzman's (2007) study were equally committed to the spiritual dimension of their wilderness experience.

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 was important to 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). Differences in the findings of this study and Heintzman's (2007) study suggest that there are a multitude of factors, such as characteristics of the participants, motivations of the participants, purposes of the trip, structure of the trip, that all influence the spiritual outcomes of wilderness trips. There can be quite a diversity of outcomes among different men's groups. Quantitative research on this topic is needed to generate findings that can be generalized. In terms of practical implications, this study suggests that designing wilderness experiences for spiritual outcomes requires consideration of a multitude of complex factors.

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PLACE MEANINGS AND CRITICAL ISSUES IN GRAND TETON NATIONAL PARK

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Abstract.—This paper seeks to contribute to a better understanding of the potential to use place attachment and meanings as a natural resource management tool. A mail-back survey was distributed to Grand Teton National Park (GTNP) visitors to collect opinions regarding “critical issues,” as well as perceived meanings of special places in the park. The central research questions were: 1) Do visitors who are affected negatively or positively by the critical issues differ in regard to whether they reported a special place in GTNP?; and 2) Among visitors reporting a special place in GTNP, do the reasons for their attachments (meanings) differ between the positive, negative, and neutral impact groups? Results indicated that GTNP is a place that holds a multitude of meanings for visitors. In addition, visitors who reported a special place in GTNP were more likely to indicate an impact due to the critical issues than visitors who did not report a special place. Finally, with regard to critical issue impact, few significant differences were noted between impact groups.

1.0 INTRODUCTION

Throughout most of the last century, natural resource management was focused predominately on commodity-driven relationships between people and natural resources that were grounded in economic and utilitarian principles. In the last 20 years, the emergence of ecosystem management as a management philosophy has included a shift away from this notion, and broadened public land manager’s

consideration of the diverse values placed on natural resources. Increasingly, these managers have been called on to integrate broader values and meanings of landscapes into their management objectives and plans (Brandenburg & Carroll, 1995; Greene, 1996; Mitchell, Force, Carroll, & McLaughlin, 1993; Williams & Stewart, 1998). During the last decade, a number of studies have sought to promote the incorporation of the meanings of places into land management decisions (Eisenhauer, Krannich, & Blahna, 2000; Kaltenborn, 1998; Warzecha & Lime, 2001).

The growing importance of understanding the deeper intangible values and meanings of places and the need to consider them in natural resource management planning were the impetuses for this study. This paper expands on previous research (Eisenhauer et al., 2000; Kaltenborn, 1998; Mitchell et. al., 1993; Warzecha & Lime, 2001) by assessing visitors’ meanings of special places in a premier national park and the ramifications for issues considered to be critical by park managers.

2.0 PLACE ATTACHMENT & PLACE MEANINGS – A BRIEF THEORETICAL OVERVIEW

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, Patterson, Roggenbuck, & Watson, 1992) and sense of place (SOP) (Cantrill, 1998; Hay, 1998; Shamai, 1991; Steele, 1981; Williams & Stewart, 1998). Place attachment is widely used to describe a person’s emotional, cognitive, symbolic, or spiritual response to a particular physical surrounding or environment. Experts agree that the concept of place attachment is complex and dynamic, involving numerous intertwined constructs that evade simple definitions and explanations (Brown & Perkins, 1992; Giuliani

& Feldman, 1993; Low & Altman, 1992). Converging trends have led many researchers and writers to conclude that a place is both a personal and a social phenomenon, whereby a place is imbued with meaning by people at both individual and collective levels (Greider & Garkovich, 1994; Low & Altman, 1993; Relph, 1976). Williams (1995) has advocated not only this concept of socially constructed places but also its application to managing land at an ecosystem level.

One issue only recently addressed 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 than 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, Stedman argued that the constructs should be separated. His study focused on place meanings and did not measure the strength of place attachment.

2.1 Place attachment, recreation, and land management

Several empirical studies in the last decade have found evidence to support the inclusion of place attachment when assessing different types of environmental impacts (Kaltenborn, 1998; Patterson & Williams, 1991; Vorkinn & Riese, 2001). There are several potential practical applications of assessing place meanings. Understanding the meanings that people have attached to the setting can help planners decide what they need to do to protect or preserve those meanings, if suitable. Newer tools, such as Geographical Information Systems (GIS), potentially could be used to create place attachment maps, and even for planning that could be based on a variety of dimensions, including place meanings (see, for example, Brown, Reed & Harris, 2002). In addition, researchers have noted that place attachment can be used in the public involvement process to identify either individuals or stakeholder groups whose participation should be invited or encouraged (Brandenburg and Carroll, 1995; Moore & Graefe, 1994).

The present research focused on a number of activities occurring within Grand Teton National Park (GTNP) that pre-date the park's existence and that may conflict with the National Park Service (NPS) mandate. In light of ongoing concerns about these activities and their possible ecological and social impacts, GTNP management had identified them as "critical issues" that need ongoing and active management. These issues include: 1) the Jackson Hole Airport, the only commercial airport in a national park in the contiguous United States and the busiest airport in Wyoming; 2) the Jackson Lake Dam, which regulates the water level of Jackson Lake (which is a natural, not human-made, lake) for primarily agricultural purposes and some flood control; 3) grazing of cattle and horses; 4) inholdings in the park (private land owned within the park); and 5) hunting [annual elk hunting is allowed within the park boundaries in the fall and early winter to reduce the number of elk to levels that federal and state wildlife managers believe the habitat can support]. While a number of national parks also have these types of activities or developments within them (and these generally pre-date the existence of the park), GTNP is perhaps unique in the extent to which these types of activities occur within its boundaries.

2.2 Study purpose

This paper expands on previous research by assessing visitors' meanings of special places in GTNP in relation to these critical issues. The central research questions addressed here are: RQ1) Do visitors who are affected negatively or positively by the critical issues differ in regard to the whether or not they reported a special place in GTNP?; RQ2) Among visitors reporting a special place in GTNP, do the reasons for their attachments (meanings) differ between the positive, negative and neutral impact groups?

3.0 METHODS

3.1 Study area

GTNP, located in northwestern Wyoming, was the site for this study. The Teton Range was first established as a national park in 1929, and after much political compromise over a number of years, a large portion

of the Jackson Hole (JH) valley was added in 1950 to form the present-day park, which is about 400,000 acres. 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 3 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, more than 95 percent of the immediate area is public land, protected to various degrees not only in GTNP, but also in national forests, wilderness areas, and the National Elk Refuge.

3.2 Data collection

The primary data collection instrument for the study was a questionnaire, in which both closed (quantitative) and open-ended (more qualitative) questions were used to address the research questions. 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). Six hundred and forty-nine questionnaires were distributed during the sampling period. Of these, 493 were completed and returned by visitors, for a 76 percent response rate.

Questions assessing visitor awareness of the critical management issues and visitor attitudes towards the impacts of the issues were included in the questionnaire. The awareness question was asked in the following manner: "Before this visit to Grand Teton National Park, were you aware that the following facilities or activities occurred within the park?" For each issue, visitors had a choice of two responses, "was aware it occurred/existed", or "was not aware it occurred/existed." Visitors were also asked, "To what extent did the following facilities or activities add to or take away from your experience in Grand Teton National Park?" All the previous activities were listed, and visitors were asked to rate

each one on a 7-point interval scale (-3 "made a lot worse" to +3 "made a lot better"). These responses were used to segment visitors into three groups: 1) negatively impacted; 2) neutral/not impacted; and 3) positively impacted. These three impact groups were identified for each of the five issues. An overall mean impact score was then calculated from the five individual impact scores to yield an overall level of perceived impact for all of the issues. The survey also collected information on respondents' special places in GTNP 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.

4.0 ANALYSIS

Analysis of the survey data took two forms, both quantitative and qualitative. As noted, awareness of the critical issues was measured using a nominal (yes/no) scale. The level of the impacts was analyzed by creating a nominal variable based on categorization of respondents into three groups based on their perceptions of the impacts as being negative, neutral or positive.

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. Respondents could list multiple reasons for the importance of places, resulting in a total of 1299 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 (Miles & Huberman, 1994). These categories were refined as analysis progressed. After initial coding, 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, Harris, Sanyal & Lind, 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, $p < .05$.

5.0 RESULTS

5.1 Awareness and impacts

Over half (59 percent) of the visitors said there were specific places in GTNP that were special to them. Visitors described a variety of place meanings, and the most common meanings included: 1) the physical setting (73 percent reported this meaning); 2) outdoor recreation activities (53 percent); 3) emotional connections (30 percent); 4) wildlife viewing (30 percent); 5) escape (27 percent); 6) social ties (24 percent); 7) special moments (16 percent); and 8) the undeveloped nature of the park (10 percent). Many respondents reported multiple meanings for a single place.

Many visitors were unaware of the facilities or activities that have been deemed “critical issues” by GTNP management. Although close to three-quarters (74 percent) of the visitors were aware that the airport was in GTNP, and about two-thirds (65 percent) knew grazing occurred, only about half knew about elk hunting (51 percent) and private inholdings (52 percent). Furthermore, only 31 percent knew that the water level of Jackson Lake is controlled for agricultural purposes. In terms of perceived impacts of these issues, the large majority of visitors indicated that these issues “neither detracted from nor added to”

their experience in GTNP (the airport—67 percent; Jackson Lake dam—74 percent; elk hunting—76 percent; grazing—72 percent; inholdings—81 percent).

5.2 Special places and impacts (RQ1)

As for respondents’ awareness of issues deemed critical by GTNP management, those reporting a special place were more likely to be aware of all the critical issues (Table 1). Statistically significant results were found for all Chi-Square analyses—results indicated that visitors who were aware of the issue were twice as likely to report a special place as those who were unaware.

Chi-Square analyses found statistically significant differences among respondents who reported having a special place and those who did not concerning perceived impacts (positive, neutral, or negative) related to the following issues: the airport ($\chi^2=8.105$, $p < .017$, Cramer’s $V=.152$); hunting ($\chi^2=7.633$, $p < .022$, Cramer’s $V=.178$); and grazing ($\chi^2=15.874$, $p < .001$, Cramer’s $V=.225$) (see Table 2). A statistically significant difference also was found in the case of the overall mean impact score ($\chi^2=10.535$, $p < .003$, Cramer’s $V=.269$). For all significant results, those reporting a special place were more likely to indicate a negative impact; and for the case of grazing as well as the overall impact, those reporting a special place were more likely to indicate either a negative or a positive impact. There was no significant association found between reporting a special place and impacts of the dam or inholdings.

5.3 Place Meanings & Impacts (RQ2)

The most commonly reported place meanings for the three impact groups are compared in Table 3. In this analysis, only the overall impact score was used (a similar pattern of findings also emerged when analyzing the individual impact scores, although some differences were noted). In addition, visitors who were aware of four out of the five critical issues were included in the following analyses; the issue relating to awareness of the dam was not included, because of its low awareness level compared to the other issues

Table 1.—Visitor awareness of critical issues and special places

Activity/Issue	Awareness	Had a special place	Did not have a special place	Totals	
Jackson Hole airport	Was aware	250 (70%)	105 (30%)	355 (100%)	$\chi^2 = 26.141^*$, Cramer's V=.234*
	Was not aware	55 (45%)	68 (55%)	123 (100%)	
Water level of Jackson Lake dam is controlled for agriculture	Was aware	127 (85%)	22 (15%)	149 (100%)	$\chi^2 = 41.667^*$, Cramer's V=.293*
	Was not aware	184 (55%)	152 (45%)	336 (100%)	
Elk hunting in the fall	Was aware	173 (71%)	72 (29%)	245 (100%)	$\chi^2 = 10.55^*$, Cramer's V=.148*
	Was not aware	133 (56%)	103 (44%)	236 (100%)	
Cattle & horse grazing	Was aware	219 (69%)	97 (31%)	316 (100%)	$\chi^2 = 11.613^*$, Cramer's V=.155*
	Was not aware	89 (54%)	77 (46%)	166 (100%)	
Private Inholdings	Was aware	186 (73%)	68 (27%)	254 (100%)	$\chi^2 = 19.557^*$, Cramer's V=.201*
	Was not aware	124 (54%)	106 (46%)	230 (100%)	

*Significance level, $p < .001$

Table 2.—Impact of critical issues and special places

Activity/Issue	Impact group	Had a special place	Did not have a special place	Totals for Impact groups	
Jackson Hole airport	Negative	46 (87%)	7 (13%)	53 (100%)	$\chi^2 = 8.107^*$, $p < .017$, Cramer's V=.293*
	Neutral	147 (68%)	70 (32%)	217 (100%)	
	Positive	54 (67%)	27 (33%)	81 (100%)	
Water level of Jackson Lake dam is controlled for agriculture	Negative	12 (86%)	2 (14%)	14 (100%)	$\chi^2 = .253$, $p < .881$
	Neutral	72 (84%)	14 (16%)	86 (100%)	
	Positive	40 (87%)	6 (13%)	46 (100%)	
Elk hunting in the fall	Negative	34 (90%)	4 (10%)	38 (100%)	$\chi^2 = 7.633^*$, $p < .022$, Cramer's V=.178*
	Neutral	118 (67%)	58 (33%)	176 (100%)	
	Positive	19 (70%)	8 (30%)	27 (100%)	
Cattle & horse grazing	Negative	37 (93%)	3 (7%)	40 (100%)	$\chi^2 = 15.874^*$, $p < .001$, Cramer's V=.225*
	Neutral	136 (63%)	80 (37%)	216 (100%)	
	Positive	44 (77%)	13 (23%)	57 (100%)	
Private inholdings	Negative	33 (83%)	7 (17%)	40 (100%)	$\chi^2 = 3.950$, $p < .139$
	Neutral	131 (70%)	57 (30%)	188 (100%)	
	Positive	19 (83%)	4 (17%)	23 (100%)	
Overall impact	Negative	39 (93%)	3 (7%)	42 (100%)	$\chi^2 = 10.535^*$, $p < .005$, Cramer's V=.269*
	Neutral	35 (67%)	17 (33%)	52 (100%)	
	Positive	44 (85%)	8 (15%)	52 (100%)	

*Significance level at least $p < .05$

Table 3.—Most commonly used place meaning codes (for all places)

Place meaning code	Percentage of all visitors using meaning (N=312)	Percentage of visitors in negative impact group using the meaning (N=45)	Percentage of visitors in positive impact group using the meaning (N=55)	Percentage of visitors in neutral impact group using the meaning (N=57)
Physical setting	73%	60%	55%	46%
Outdoor recreation	53%	53%	49%	33%
Emotional connections	53%	38%	24%	18%
Wildlife viewing	30%	33%	18%	14%
Getting away*	27%	36%	20%	16%
Social aspects	24%	29%	27%	19%
Solitude**	12%	24%	7%	2%

* Approached significance among impact groups, $\chi^2=5.971$, $p<.051$, Cramer's $V=.195$

** Statistically significant among impact groups, $\chi^2=14.933$, $p<.001$, Cramer's $V=.308$

(this low level was thought to be due to the wording of the question, and therefore was not deemed reliable). Comparisons between the impact groups and the place meanings using cross-tabulations found a statistically significant difference for only one place code, “solitude” ($\chi^2=14.933$, $p<.001$, Cramer's $V=.308$; 24 percent of negative group, 7 percent of positive group, 2 percent of neutral group). The place meaning of “getting away” was almost statistically significant as well ($\chi^2=5.971$, $p<.051$, Cramer's $V=.195$; 36 percent of negative group, 20 percent of positive group, 16 percent of neutral group). (“Getting away” and “solitude” were combined with other emotionally based or psychologically oriented meanings to create the overall emotional connections category.)

The emotional connection meaning also approached significance when comparing the impact groups. Further analysis revealed that when only the most important place in GTNP for each visitor was examined, a statistically significant result was found—the negative impact group was more likely to have reported emotional connections as a reason for the importance of that special place ($\chi^2=7.264$, $p<.026$, Cramer's $V=.214$). In this case, the negative group (27 percent used this meaning) was almost twice as likely to give that as a reason for importance of place as the positive group (16 percent), and four times more likely to report this meaning than the neutral group (7 percent).

6.0 DISCUSSION

Findings revealed that GTNP has numerous specific places that visitors noted as special, and these places have a variety of meanings associated with them. In fact, many visitors reported that a single place can have multiple meanings, confirming the complexity of places (Low & Altman, 1992). In general, commonly reported meanings for places in GTNP were the physical setting, outdoor recreation activities, emotional connections, wildlife viewing, social ties, and the undeveloped nature of the park. GTNP is a popular national park, known for its unspoiled mountain scenery, diverse recreation opportunities, and wonderful wildlife viewing. This study also found that emotional and social meanings were important to visitors' connections to the park. These are precisely the meanings that can be overshadowed by more easily recognized and measured scenic or recreation opportunities that managers often address when assessing place meanings (Brandenburg & Carroll, 1995).

A large number of visitors were not even aware that issues considered critical by GTNP managers existed or occurred within GTNP boundaries. The extent to which this ignorance was at least partly responsible for the finding that the majority of visitors were relatively unaffected by these issues is unknown. This finding suggests that information regarding critical issues for areas that include special places be more widely

disseminated and made available. However, it could well be that the issues deemed “critical” by GTNP management are not deemed equally important or “critical” to park visitors, and further research could help shed light on this situation.

Nonetheless, a variety of factors are likely to be important influences on visitor awareness of the critical issues, as well as the impact of those issues, including the season in which a person visits and changing environmental conditions. For example, the impact of the amount of local snowfall on the condition of Jackson Lake can later impact a visitor’s experience (i.e., less water forces marinas to close, etc.). In a low snowfall year, visitors are more likely to see effects of the dam on the lake and be aware of those effects. Due to these variable factors, the results reflected in this study may not be generalizable to other seasons or years. Ongoing evaluation of these critical issues is needed, and it should be done during the time most likely to yield informative and useful data—that is, at the particular time an issue is occurring (such as during hunting season for hunting, etc).

Visitors who reported a special place in GTNP were more aware of the critical issues identified by GTNP managers. This greater knowledge about the park is undoubtedly due at least in part to the fact that those who reported a special place also had a longer length of association with the park (Smaldone et al., 2005). Those reporting a special place were also more likely to be impacted, either negatively or positively, by the critical issues in the park than those not reporting a special place. Therefore, this evidence supports other researchers’ claims that place attachment can be an important variable to consider when identifying people to include in a park’s public involvement process, as visitors with high place attachment could be more sensitive to changes (Bricker & Kerstetter, 2000; Mitchell et al., 1993; Moore & Graefe, 1994; Patterson & Williams, 1991; Schreyer & Knopf, 1984). Measures of place attachment could also help predict reactions to environmental impacts (Kaltenborn, 1998; Vorkinn & Riese, 2001). Therefore, inclusion of place

attachment assessments when evaluating the public’s attitudes about environmental impacts at specific locations could help land managers better assess and understand the public’s reactions to management objectives and goals (Vorkinn & Riese, 2001).

Another finding of the present research concerned particular kinds of place meanings. The group negatively affected by critical issues for GTNP was almost twice as likely as the positively affected group to report that emotional meanings were important for their connections to a special place (and about four times more likely than the neutral group). The negatively affected group also reported more meaning associated with “solitude” and “getting away” than the other groups. Thus, even though both positively and negatively affected groups were more likely to have a special place in the park than the neutral group, the meanings of those places differed for the two affected groups. Managers seeking to grasp the full range of place meanings need to understand all types of impacted groups and the different place meanings they deem important. However, further replication is needed in a variety of settings, as well as with a variety of respondents, to further assess the types of place meanings and to make their use more applicable to local conditions based upon specific land manager’s objectives.

7.0 CONCLUSIONS

This study suggests that places that are widely regarded for scenic or recreational reasons, such as GTNP, in fact hold a great diversity of meanings for visitors. As others have noted, once the place meanings of a particular landscape are known, managers are better equipped to make informed judgments about their activities affecting it (Williams & Stewart, 1998; Galliano & Loeffler, 1995). Planners can more easily decide what they need to do to protect or preserve those meanings, as required. Management zones might then be created, for example, which take into account not only ecologically suitable uses, but also the emotional, social, cultural or even symbolic meanings of places (Brown, Reed & Harris, 2002).

A variety of studies in the last decade have found evidence to support the inclusion of place attachment when assessing different types of environmental impacts (Kaltenborn, 1998; Patterson & Williams, 1991; Vorkinn & Riese, 2001; Warzecha & Lime, 2001). Results of the present study affirm that place meanings could allow for the incorporation and consideration of a more holistic understanding of places in land management decisions (Williams & Patterson, 1994).

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POSTER SESSION

FOREST LANDSCAPE ASSESSMENT: THE EFFECTS OF PRE-EXPERIENCE EDUCATION ON PUBLIC PERCEPTION OF SCENIC BEAUTY

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Abstract.—Aldo Leopold argued for a type of “ecological aesthetic,” where perceptions of natural landscape beauty are tied to an understanding of the natural process of forests. The purpose of this study is to examine how education affects perceptions of scenic beauty. Thirty-two students were assigned to four groups, with each group participating in a different educational program (i.e., no pre-educational experience, lecture only, lecture/video, and lecture/video/walk-in-the-woods) related to forest settings. After the educational treatments were administered, the students viewed six video clips taken in a forest setting and asked to evaluate scenic beauty (0=very low scenic beauty to 100=very high scenic beauty) by turning a handheld dial throughout the viewing period. Pre-educational experience was found to significantly influence moment-to-moment scenic beauty ratings ($p<.001$). Students participating in a walk in the woods reported the highest and most varied average scenic beauty ratings, suggesting that sustainable forest ecosystems are better appreciated following first-hand experience. Educational demonstrations may thus help expand perceptions of natural landscape

beauty to include ecological processes and sustainable forest management practices that may otherwise be considered unsightly.

1.0 INTRODUCTION

Natural landscape beauty is important, especially to outdoor recreation enthusiasts. This study investigates the idea that perceptions of natural landscape beauty can shift as recreation users gain experience and appreciation of ecosystem processes that are maintained using sustainable forest management techniques. This shift to look beyond visual, dramatic scenery has been called an “ecological aesthetic” and was first described by Aldo Leopold in his *Sand County Almanac* (1949), where he argued for an expanded perception of landscape beauty based upon a cultivated understanding of the natural processes of forests.

Hammit (1981) further states that familiarity with a recreational environment can increase visitor preference for and during on-site recreation engagements. Perceptual learning increases the ability of a recreationist to get information from the environment as a result of practice in perceiving properties, patterns, and distinctive features of a landscape. That is, repeat experiences of an environment help develop perceptual skills that allow visitors to better understand and actively engage the forest by detecting more information (Pierskalla & Lee, 1998).

The purpose of this pilot study is to test if perception of scenic beauty is related to pre-experience education, and to identify setting attributes that contribute or detract from scenic beauty. We hypothesize that outdoor recreation students who have undergone educational programs related to forest ecosystems will have a richer and enhanced perception of the forest as displayed in video clips of forest settings. Results

of this project will guide us in developing additional forest-based educational tours that may complement lectures and/or instructional videos.

2.0 LITERATURE REVIEW

2.1 Aesthetics and Ecosystems

Natural landscape preferences have developed over evolutionary time and are thought to be influenced by age, ethnicity, and recreational activity. But contemporary preferences for landscapes are also fundamentally rooted in our dominant culture, including Romantic-era concepts of landscape beauty as visual scenery (Gobster, 1996). Following the ideas of Leopold, ecological aestheticians argue that this “scenic aesthetic” not only has taught us to view landscapes as static compositions rather than dynamic, multi-sensory places, but has led us to design and manage landscapes in ways that could be damaging to ecological sustainability.

Gobster (1996) builds the case that social acceptability in “ecosystem management” forestry programs lies in the way in which people view forest environments and how it relates to them as resource consumers. In most cases, social acceptability is perceived as a scenic aesthetic. Therefore, the concept of appropriateness in education and explanation will conceptually build on an ecological aesthetic. Ultimately, the appropriateness factor will help bridge two other important factors, aesthetics and biodiversity, in land management techniques (Gobster, 1996).

The appropriateness factor can be constructed around perceptual and educational interventions that directly deal with natural resources management. Increased education should lead to a wider range of aesthetic appreciation. Therefore, changing people’s perception of what is considered to have a higher aesthetic quality, reinforcing the importance of ecological systems in the environment (e.g., dynamic systems including disturbances of various spatial and temporal scales), and introducing what can be considered new forms of aesthetically pleasing landscapes such as forest management areas could be valuable to both managers and visitors.

2.2 Preserving Scenic Beauty

In direct contrast to Gobster’s writings on ecological aesthetics and social acceptability, Parsons and Daniel (2002) argue that advocating an ecological aesthetic is premature. They say that managers lack a full scientific understanding about how to implement ecological sustainability, and they reject Gobster’s premise that it is possible to “re-educate” people to new forms of perception of aesthetic quality in hopes of reaching sustainability goals. They suggest that an approach should be taken to better understand the adoption of concerns about environmental resources and how ecological responsibilities are engaged, rather than focusing on perception alone.

Parsons and Daniel (2002) suggest that ideas of landscape aesthetics do not need to be changed, but need better understanding, and that it may be easier or more beneficial *not* to make drastic changes in what is considered to be scenic quality. There is reason to believe that nature experiences, environmental attitudes, and ecological behaviors are influencing the origin of people’s environmental concerns (Parsons and Daniel, 2002). The researchers argue that forming an emotional attachment to a site by experience will trigger a greater appreciation for sustainable goal management as well as cognitive approaches to understanding and adopting a conservation ethics. We do not disagree with the latter argument, but we do propose that education is needed to help the public more fully perceive and enjoy the diverse information provided by nature—contributing to a more informed and meaningful experience.

3.0 METHOD

A set of training sessions was conducted for West Virginia University Recreation, Parks, and Tourism Resources students. Thirty-two students were systematically assigned to one of four groups that had varying levels of “pre-experience” education or different amounts of education related to six video clips of forest settings that they evaluated. Levels of pre-experience education (experimental factors) included:

- Group 1—No pre-experience information
- Group 2—Lecture only
- Group 3—Lecture and video tape (“Managing Your Woodlot” series)
- Group 4—Lecture, video tape (“Managing Your Woodlot” series), and a walk in the woods

After the respective levels of education were delivered to students, they were shown six video clips (ranging from 29 to 65 seconds) taken in a forest setting and asked to evaluate the scenic beauty (0=very low scenic beauty to 100=very high scenic beauty) by turning a handheld dial throughout the viewing period. At the end of each video, respondents were asked to rate the overall scenic beauty using the same scale. The data were collected using MSInteractive’s Perception Analyzer. This Continuous Audience Response Technology (CART) is an experience sampling methodology that eliminates the gap between the actual situation of study and report. This equipment and software merge computer and video technology to record responses every second. The collected responses from each treatment group were displayed as a running timeline over the video for comparison. Data were further analyzed to determine the effect of different levels of pre-experience education on average moment-to-moment and post-video assessments of scenic beauty. After each video clip was shown, students were also asked to write down setting attributes that contributed to or detracted from scenic beauty. The comments were inductively coded into 20 content categories. Each category was reviewed by three researchers for inconsistencies. Coding was revised until all categories were agreed upon.

4.0 RESULTS

Multi- and univariate analysis of variance (and Scheffe post hoc tests) were used to determine the effect of pre-educational experience (Treatment Groups) and video clip on average moment-to-moment and post-video assessments of scenic beauty (Table 1). A boxplot displaying each variables location and dispersion is also provided for comparison (Fig. 1). Both multivariate main effects were significant ($p<.01$); however, the univariate effect of pre-experience was greater for CART derived

moment-to-moment scenic beauty assessments when compared to post-video assessments.

Figure 1 illustrates the average moment-to-moment scenic beauty assessment scores by pre-educational experience and video clip. (Figure 1 note: the box itself contains the middle 50 percent of the data, and the line in the box indicates the median value; the vertical lines or “whiskers” indicate the minimum and maximum non-outlier observations; the points on the ends of the whiskers are outliers or extreme values.) Group 4 (lecture, video tape, and walk in the woods) reported the highest scenic beauty ratings (Scheffe, $p<.05$). Groups 2 through 4 (some pre-experience) reported more variable scores than Group 1 (no pre-experience).

Mean (M) moment-to-moment scenic beauty responses are reported on a timeline for each of the six videos (videos 1 through 6) (see Figs. 2-7) and provide additional support for the proposition that pre-educational experience does positively effect perceptions of scenic beauty. The most common attributes that contribute positively to scenic beauty, as reported by study participants include: trees, tree size, tree form, tree color, bird sounds, landscape, and the presence of roads (Table 2). Lack of tree health and the presence of roads were among the most common attributes detracting from scenic beauty. The presence of roads was among the most frequently and evenly divided setting attribute reported. Although only suggestive, Group 4 appears slightly more likely to comment about the positive effect of landscape extent ($\chi^2=6.0$, $p=.110$) and negative effects associated with dense shrubs ($\chi^2=9.1$, $p<.05$).

5.0 DISCUSSION

The results of this study indicate that educational pre-experience had a significant effect on perception of scenic beauty. Programs that included a walk in the woods had the greatest positive effect on perceptions with one exception: when zooming in on invasive species during video 5, Group 4 reported very low scores. Consistent with descriptions of the characteristics of an ecological aesthetic (e.g.,

Table 1.—Summary for scenic beauty assessments, multi- and univariate analysis of variance

Source of variation	Multivariate F-ratio	Univariate F-ratio	df	P less than	Scheffe ($\alpha=.05$)
Pre-experience treatment group (p)	4.893		6;322	.001	Groups 1-4
Post-video scenic beauty assessment		2.032	3;162	.111	N.S.
Moment-to-moment scenic beauty assessment		4.378	3;162	.005	4>1,3
Video clip (v)	13.274		10;322	.001	Videos 1-6
Post-video scenic beauty assessment		25.428	5;162	.001	1>2,3
Moment-to-moment scenic beauty assessment		26.730	5;162	.001	2>6 and 3<1,2,4,5,6
Interaction p x v	0.645		30;322	.926	

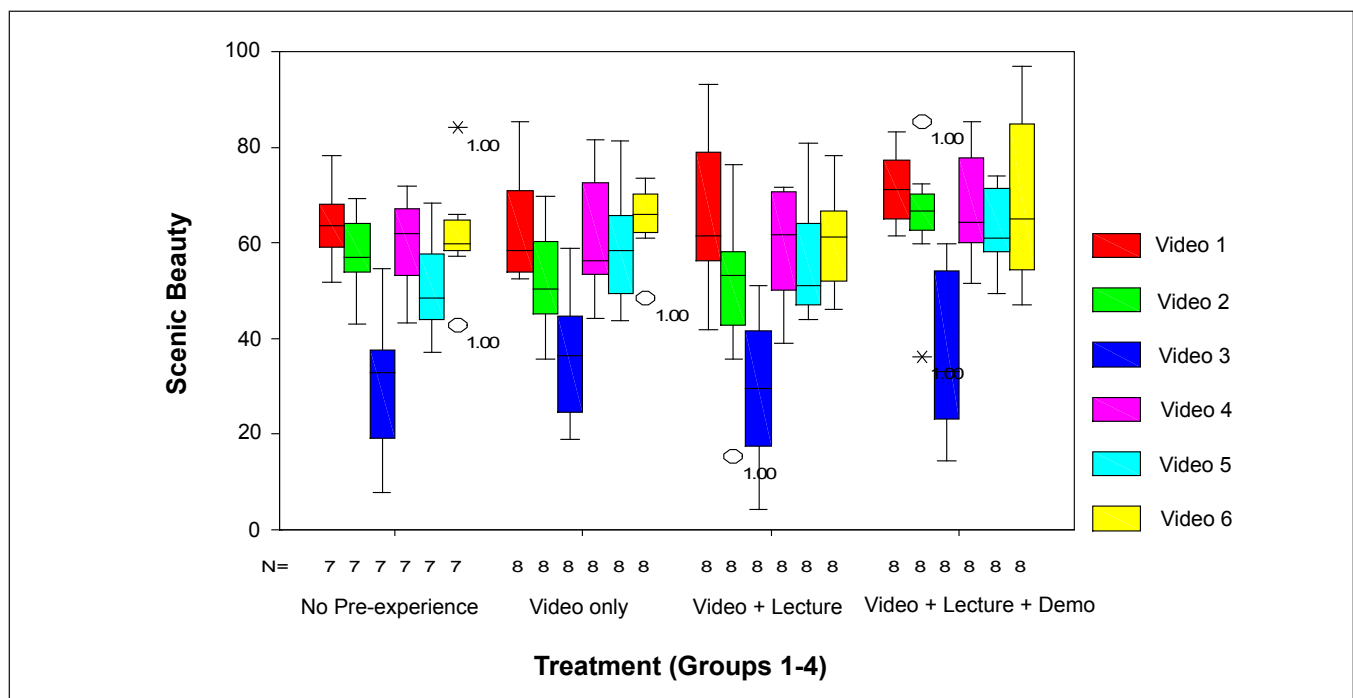


Figure 1.—Box plot of average moment-to-moment scenic beauty ratings by treatment group and video clip.

Gobster, 1996), perhaps sustainable forest ecosystems are better appreciated following on-site exploration and fascination. Self-guided nature walks and other demonstration programs may better involve the public and lead to a richer and enhanced understanding of sustainability.

Generally, video 3 (clearcut) was rated lower in scenic beauty when compared to all other videos (including invasive species on video 5). This finding indicates a need to better educate the public regarding the cost/benefits of clearcuts and invasive plants.

Greater variability in perceptions following pre-educational experience (especially after a walk in the woods) may mean that respondents gained a richer, multidimensional understanding of scenic beauty. Education, especially through demonstrations, can enhance perceptions of scenic beauty to include ecological processes and sustainable forest management practices that may otherwise be considered unsightly.

CART expands the repertoire of methods for examining perception-related phenomenon. It permits

Table 2.—Setting attributes that improved or detracted from scenic beauty

Content category	Improved scenic beauty		Detracted from scenic beauty	
	Selected examples	n	Selected examples	n
1. Tree age	Old tree	8	Not a mature forest	3
2. Tree general	Gnarly tree, spruce	24	Looked at trees	14
3. Tree health	Tree appears healthy	16	Dead trees everywhere	38
4. Tree size	Nice large trees	34	No small trees	13
5. Tree color	Variations in green	20	Not very many colors	4
6. Tree form	Tree canopy	24	Tree branches	8
7. Spatial pattern	Large trees spaced	8	Not uniform growth	7
8. Vines	Less vines	2	Vines	8
9. Shrubs	Color of shrubbery	5	Lots of brush, brush	12
10. Grass general	Grass	4	Small green plant	9
11. Bird sounds	Bird sounds	22	No bird sounds	3
12. Grass invasive	NA	0	Japanese stilt grass	13
13. Sky	You could see sky	4	NA	0
14. Clearcut	Nice clearcut	1	Clearcut	8
15. Road	Old country, dirt road	18	Unsightly logging road	22
16. Slash	Dead trees left	1	Litter, stumps, piled	8
17. MNGT	Small thinning edge	6	Site obviously timbered	14
18. Landscape	Scenic beauty intact	44	Not aesthetic	20
19. Wildlife	Good for wildlife	5	Not much wildlife	9
20. Recreation	Room for camping	2	No space for recreation	1

the analysis of perceptions over time, allowing the researcher to better understand important transitions in visual and audio stimuli. Moment-to-moment measurements revealed the stronger effects of education on perception of scenic beauty when compared to one-time, post-video measurements.

Perhaps post-experience assessments are more prone to memory recall problems. Replication of this study with other populations is needed to extend the generalizability of the results and to better understand the complex relationships between education and perceptions of scenic beauty.

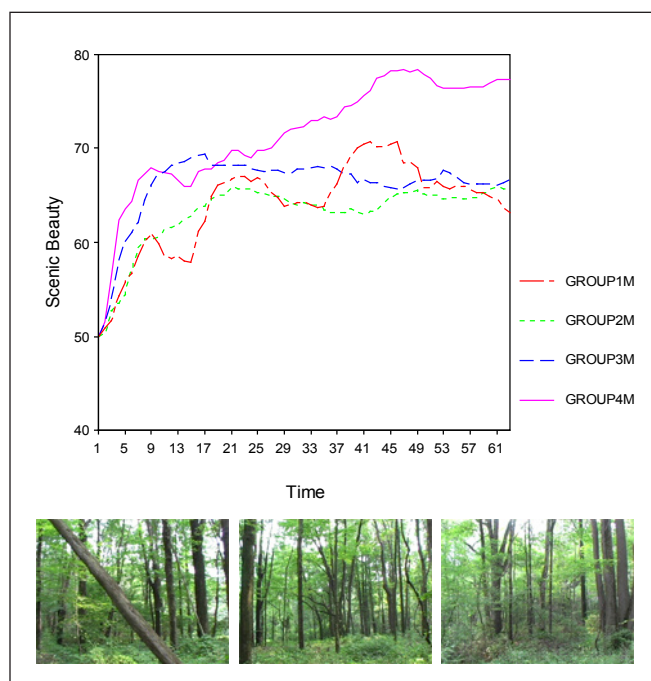


Figure 2.—Video 1: Panning through an unmanaged stand.

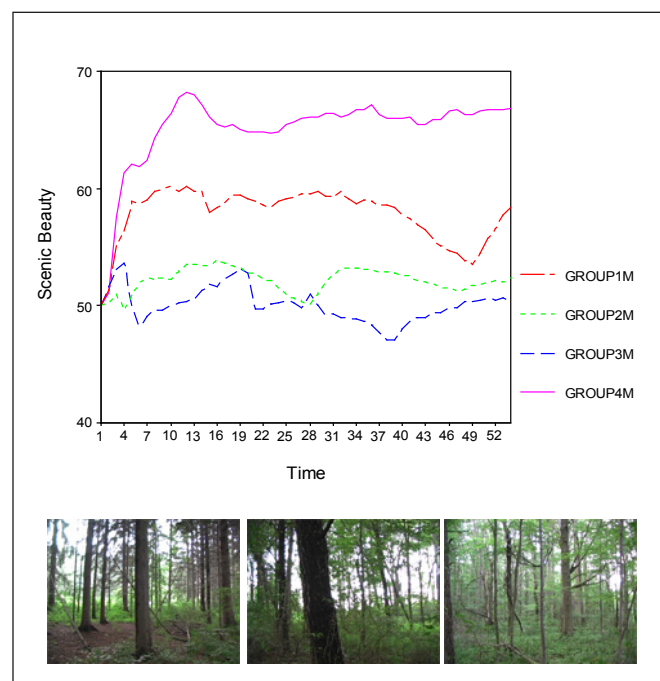


Figure 3.—Video 2: Panning from conifer plantation to natural hardwoods.

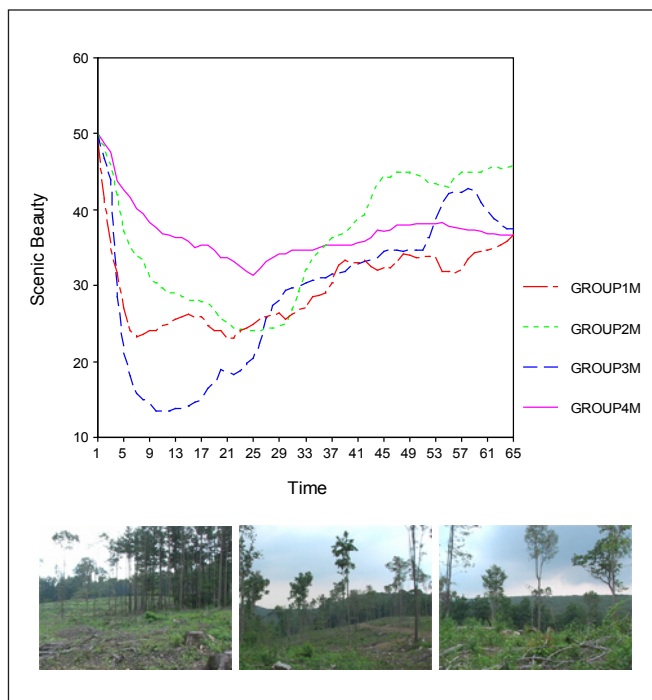


Figure 4.—Video 3: Panning from landing area to clearcut.

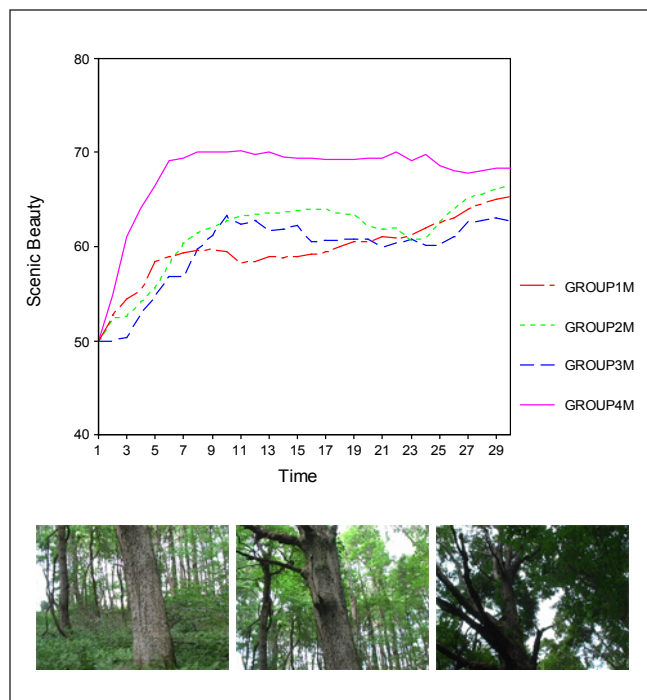


Figure 5.—Video 4: Panning up a large tree.

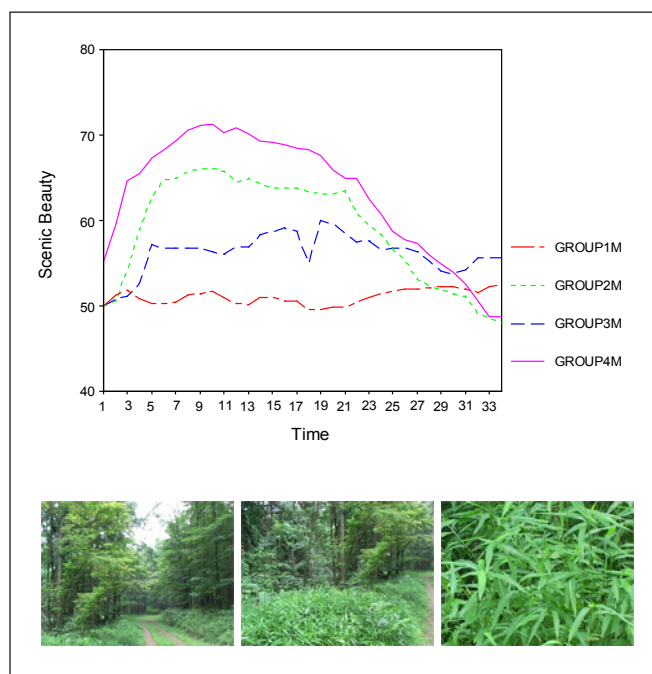


Figure 6.—Video 5: Zooming into Japanese Stilt Grass.

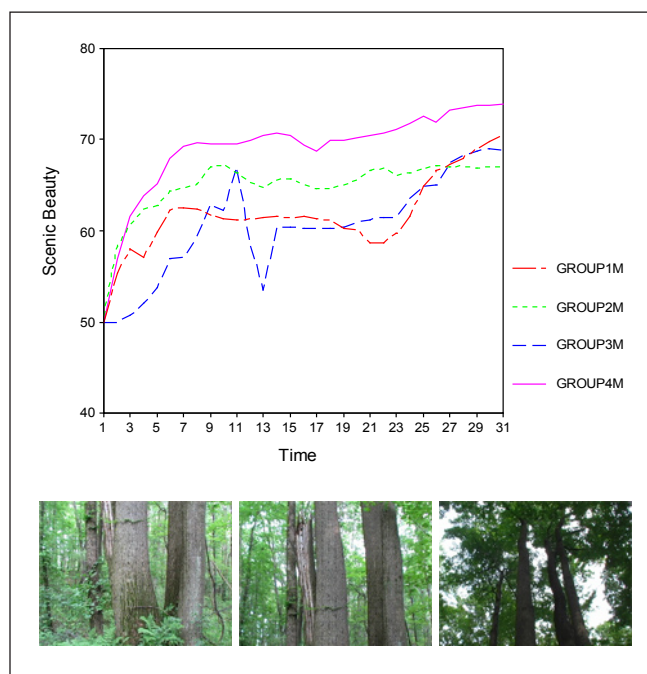


Figure 7.—Video 6: Panning up a uniform shaped tree.

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RESIDENTS' VALUES AND FUELS MANAGEMENT APPROACHES

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Abstract.—The research utilizes the Forest Value and Salient Value Similarity Scales to examine homeowners' value orientations and relate them to attitudes toward and support for fuels management approaches. Data were collected from homeowners living in the wildland-urban interface of the Huron-Manistee National Forest at two time periods, in 2002 and 2006. The panel data allowed for testing of whether residents' attitudes toward and support for fuel treatments changed within different value orientation and value similarity groupings over the 4-year period. Results show the Salient Value Similarity Scale provided strong predictive power in explaining attitudes toward and support for fuel treatments with the high value similarity group being more positive and supportive of the fuel management approaches over a 4-year period.

1.0 INTRODUCTION AND RELATED LITERATURE

Fire in the forested northern area of Michigan is an ever-present and natural part of the landscape. The Healthy Forests Initiative calls for agency management

and industry and community improvements that “ensure more timely decisions, greater efficiency, and better results in projects that reduce the risk of catastrophic wildfires and restore forest and rangeland health” (USDA Forest Service, 2007). Investigating people's value orientations and attitudes toward fuels management approaches between different periods of time could reveal any change in people's preferences for these approaches and assess the role of different values in shaping those preferences. This research examined the relationship between two different value scales—value orientation and salient value similarity—and individual preferences of different fuels management approaches.

One value orientation scale places individual's values on a spectrum ranging from anthropocentric to biocentric. Individuals with an anthropocentric orientation view environmental resources as “materials to be provided to humans rather than other species and to be used by human” (Scherer & Attig, 1983). At the other end of the spectrum, people with a biocentric orientation tend to see environmental resources as objects to be protected, not consumed or ruined by humans, and believe that “human economic uses and benefits are not necessarily the most important” (Steel et al., 1994). These value orientations may influence attitudes toward fuel management approaches (i.e., prescribed burning, mechanical fuel reduction, defensible space ordinance). In this paper, this scale is referred to as the Forest Value Scale. The Salient Value Similarity Scale is defined by Vaske and his colleagues (2007) as measuring “people's 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 meaning agency.” Their research found that higher salient value similarities were related to higher levels of social trust in an agency and as trust increased so did approval for fuels management approaches.

Our research incorporated both of these value scales – the Forest Value Scale (Steel et al., 1994) and the newer Salient Value Similarity Scale (Siegest et al., 2000; Winter, 2003; Winter and Cvetkovish, 2004) – into a panel study to examine the extent to which homeowners' values relate to attitudes toward and support for specific fuels management approaches. We hypothesize that anthropocentric values and high similarity values would be positively related to positive attitudes toward and support for fuels management (Winter et al., 2004). This means that anthropocentric individuals would be more likely to support human-driven behaviors such as prescribed burning, mechanical thinning, and defensible space compared to biocentric individuals. We also hypothesize that those individuals with high shared values with respect to an agency's values would be more supportive of its management and of human-driven actions than individuals with low shared values.

2.0 METHODS

In 2002, a mail survey was sent to homeowners in three counties living in the wildland-urban interface of the Huron-Manistee National Forest (HMNF) where fuels management activities had been increasing on forest lands. Using Dillman's (2000) mail survey procedures with three mailings, we received 1,253 completed questionnaires for a 53 percent response rate. In 2006, we resurveyed the same sample of homeowners (n=1,292, response rate of 46 percent). Both a longitudinal data set (homeowners in 2002 and 2006) and a panel data set (homeowners who lived in the area and responded in both years) resulted.

The Forest Value Scale (FVS) with eight items yielded a summated scale with internal consistency of 0.75 Cronbach's alpha (Steel et al. reported .82 and .81). Values of 8 to 23 were classified as anthropocentric, 24 to 39 were classified as intermediate, and 40 to 56 were classified as biocentric using the tri-segments of the scale ranging from 7 to 56. The Salient Value Similarity Scale (SVS) with five items yielded a summated scale with internal consistency from 0.91 to 0.93 Cronbach's alpha (Vaske et al. reported 0.96). Values of the mean and lower were classified as low value similarity and values higher than the mean were

classified as high value similarity. Both the FVS and the SVS scales were used to examine the extent to which values relate to attitudes toward and support for fuels management approaches (FVS only measured in 2002, SVS only measured in 2006). In addition, we examined changes in attitudes and support by comparing the 2002 and 2006 panel data set. Attitudes toward and support for each the three fuel treatments were assessed with seven-point Likert scales. The questions of the FVS asked respondents to rate the extent to which they agreed with value-oriented items. The questions of SVS scales asked respondents to rate the extent to which they shared their goals and values with agencies that manage fuels (the data reported here are for Forest Service ratings).

3.0 RESULTS

This section presents the results of the research by: geographical location comparison, value orientation comparison, value similarity indicator comparison, value similarity comparison, and panel data comparison.

3.1 Geographical location comparison

Michigan results for the Forest Value Scale are presented along with national and Oregon statistics (Table 1), based on research by Steel and colleagues (1994). The national and Oregon data were measured with a five-point scale, whereas the Michigan data were measured with a seven-point scale but were also translated into a five-point scale for comparison. On the anthropocentric items, Michigan respondents scored slightly lower than national respondents on three items and similarly on the other two items in the scale. On the biocentric items, Michigan respondents were found to be very similar to the national respondents. In sum, the sample of Michigan homeowners were more like the national average than Oregon residents, revealing that geographic location or situational factors may be an influence on value orientations.

3.2 Value orientation comparison

After classifying the Michigan respondents as anthropocentric, intermediate or biocentric, a

Table 1.—Forest Value Scales: Comparing national and Oregon publics (Steel et al., 1994) to Michigan (Vogt et al., 2002)

	National mean*	Oregon mean*	Michigan mean**	Translated Michigan mean***
Anthropocentric items (reverse coded in additive scale)				
The primary use of forests should be for products that are useful to humans.	2.3	2.5	3.2	2.3
Forest resources can be improved through human management.	4.2	4.2	5.2	3.7
Forests should be used primarily for timber and wood products.	2.0	2.2	2.9	2.1
We should actively harvest more trees to meet the needs of a much larger human population.	2.2	2.1	2.5	1.8
Plants and animals exist primarily for human use.	2.6	3.4	2.8	2.0
Biocentric items				
Humans should have more love, respect, and admiration for forests.	4.4	4.0	6.2	4.4
Forests have a right to exist for their own sake, regardless of human concerns and uses.	3.6	3.3	5.0	3.6
Wildlife, plants and humans have equal rights to live and develop.	3.9	3.7	5.0	3.6
Additive scale mean	28.8	25.2	38.1	27.6
Cronbach's alpha	.82	.81	.76	---

*5-point scale where 1 = strongly disagree and 5 = strongly agree.

**7-point scale where 1= strongly disagree and 7 = strongly agree.

***translated 7-point scale to 5-point scale.

frequency distribution shows that most respondents are in the biocentric (52 percent of respondents) or intermediate group (44 percent of respondents) with only 4 percent of respondents in the anthropocentric group (Figure 1). ANOVA tests show that attitudes toward prescribed burning ($F=3.8$, $p<.05$) and mechanical thinning ($F=4.3$, $p<.05$) were significantly different between people with different value orientations; anthropocentric people had more positive attitudes toward these two fuel treatments (Table 2). Defensible space ordinances were rated similarly by the three forest value groups. Similar results were also found for support levels for the implementation of each of the fuel treatments. Support for the implementation of prescribed burning ($F=4.1$, $p<.05$) and mechanical thinning ($F=15.0$, $p<.001$) were significantly different. Scheffe's post-hoc comparisons revealed that those with biocentric values held significantly less positive attitudes toward mechanical fuel reduction ($p<.05$) than those with intermediate values. People with biocentric values also showed significantly lower support for mechanical thinning than those with anthropocentric ($p<.05$) and intermediate values ($p<.001$).

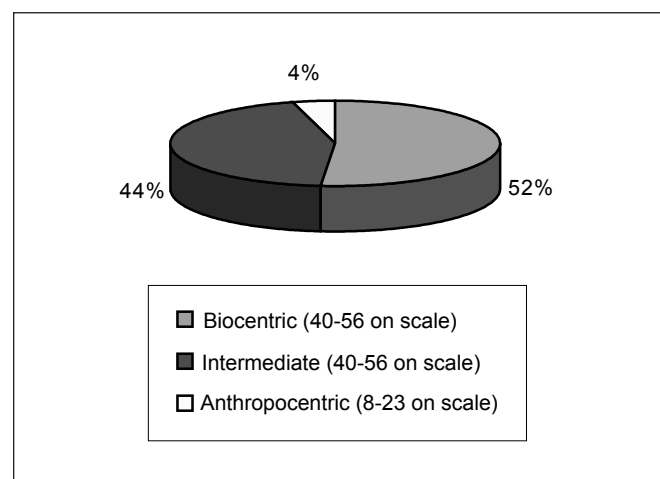


Figure 1.—Distribution on Forest Values Scale.

3.3 Value similarity indicator comparison

On the SVS scale Michigan results are compared to Colorado respondents (Vaske et al., 2007). Two of the scale items were replicated across the two studies, but the subject matter varied from a more global subject (i.e., forest fire management) in the Colorado study to specific measures of three fuel treatments in the

Table 2.—Forest Value groups and fuel management – 2002 data

	Anthro*	Intermediate	Biocentric	F-test, p-level
Group size	n=25	n=271	n=314	
Attitudes toward**				
Prescribed burning	4.6	4.1	3.8	3.8, p<.05
Mechanical fuel reduction	5.2	5.1 ^{B****}	4.7 ^I	4.3, p<.05
Defensible space ordinances	3.2	4.2	4.0	2.4, ns
Support for the Implementation***				
Prescribed burning	4.2	3.8	3.4	4.1, p<.05
Mechanical fuel reduction	5.3 ^B	4.9 ^B	4.3 ^{A,I}	15.0, p<.001
Defensible space ordinances	3.0	3.9	3.8	2.5, ns

*groups formed on tri-segments of the scale ranging from 8 to 56.

**7 point scale where 1 = strongly disagree and 7 = strongly agree.

***7 point scale where 1 = strongly disapprove and 7 = strongly approve.

****Different letter superscripts indicate significant post-hoc group mean differences (^A significantly different from Anthro; ^B significantly different from Biocentric; ^I significantly different from Intermediate).

Michigan study (Table 3). The scale items show high reliability across the fuel treatments (Cronbach alphas over .90). Overall, Michigan respondents were lower in shared value for all three of the fuel treatments compared to the Colorado respondents.

3.4 Value similarity comparison

Next, Michigan respondents were classified into a low value similarity or high value similarity group. The frequency distributions show that for all three fuel management approaches there were more respondents in the high value similarity group (Figure 2). For the SVS testing, high value similarity individuals were

significantly more positive toward prescribed burning ($t=16.981$, $p<.001$), mechanical thinning ($t=10.359$, $p<.001$) and defensible space ordinances ($t=12.863$, $p<.001$) than low value similarity individuals (Table 4). Similar results were found for homeowners' support levels for the implementation of each of the fuel treatments. High value similarity individuals were significantly more supportive of the implementation of prescribed burning ($t=21.406$, $p<.001$), mechanical thinning ($t=15.822$, $p<.001$) and defensible space ordinances ($t=17.317$, $p<.001$) than low value similarity individuals.

Table 3.—Salient Value Similarity indicators: Comparing Vaske, Absher, and Bright (2006) to Michigan (Vogt, Winter, and McCaffrey, 2006)

	Colorado residents of Front Range WUI (from Vaske et al.)	Michigan residents of Huron Manistee NF WUI		
	Forest fire mgmt.	Prescribed burning	Mechanical fuel reduction	Defensible space ordinance
I feel that the USDA Forest Service*:				
Shares similar values as me	4.9	3.7	3.8	3.6
Share similar goals as me	4.6	3.8	3.9	3.7
Shares similar opinions as me	4.5	n/a	n/a	n/a
Thinks in a similar way as me	4.5	n/a	n/a	n/a
Takes similar actions as I would	4.5	n/a	n/a	n/a
Trusts the USFS to manage forest fuels and wildland fire	n/a	3.7	3.8	3.6
Cronbach's alpha	.96	.93	.92	.91

*Scale: 1 = agency does not share my values/different goals than me/do not trust the agency at all; to 7 = agency shares my values/same goals as me/trust the agency completely.

Scales originate from: Siegest, Cvetkovich & Roth (2000) and Winter & Cvetkovish (2004).

n/a= not asked.

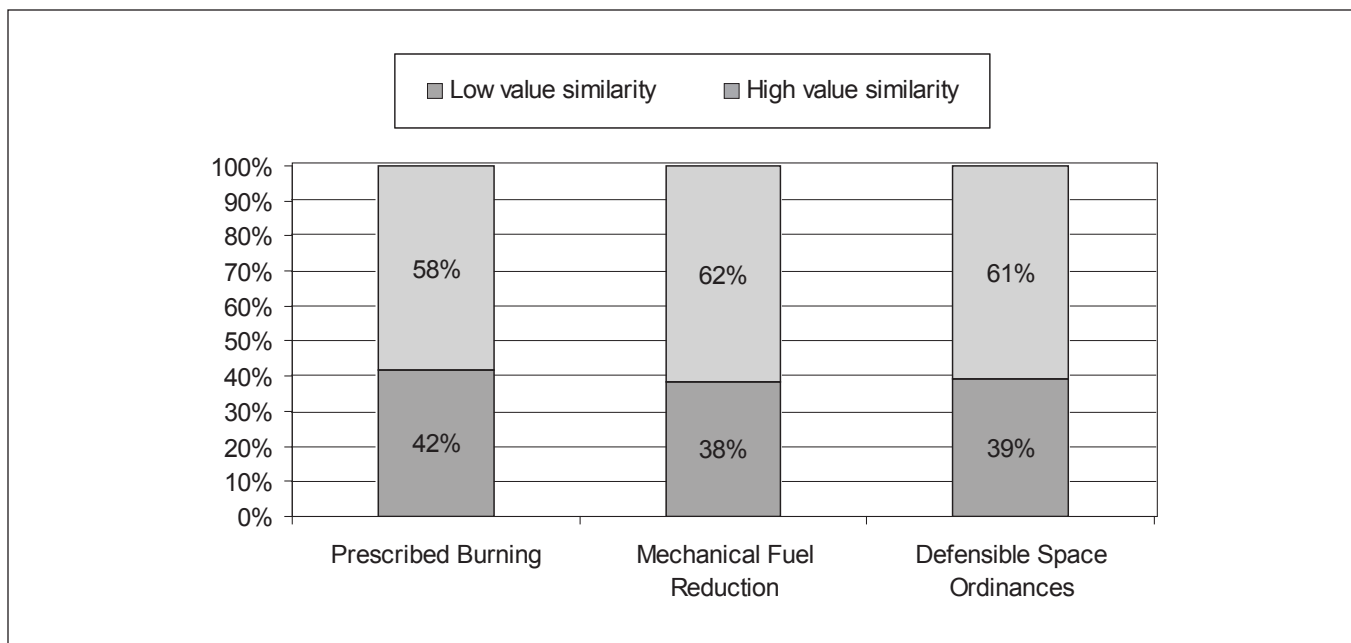


Figure 2.—Frequency distribution on Value Similarity Scale.

Table 4.—Salient Value Similarity groups and fuel management – 2006 data

	Low value* similarity	High value similarity	t-test, p-level
Attitudes Toward**			
Prescribed burning	3.0	4.7	16.98, p<.001
Mechanical fuel reduction	4.3	5.3	10.36, p<.001
Defensible space ordinances	3.5	4.9	12.86, p<.001
Support for the Implementation***			
Prescribed burning	2.6	4.6	21.41, p<.001
Mechanical fuel reduction	3.4	4.9	15.82, p<.001
Defensible space ordinances	2.8	4.5	17.32, p<.001

*groups formed on each scales mean value – low group was the mean and lower values.

**7 point scale where 1 = strongly disagree and 7 = strongly agree.

***7 point scale where 1 = strongly disapprove and 7 = strongly approve.

3.5 Panel data comparison

A final analysis tested whether attitudes toward and support for implementing specific fuels treatments changed within these value groupings over the 4-year period (from 2002 to 2006). Paired t-tests were applied to the panel data. The FVS orientation groups showed little change over time for attitudes or support (Table 5). Only the intermediate group showed significant differences: in 2006, they were more positive in their attitudes toward defensible space ordinances ($p<.05$) and less supportive of mechanical thinning ($p<.01$).

The SVS scale produced significant results in the low and high value groups. Over the 4- year period, homeowners with low value similarity with the Forest Service had become less positive toward – and were also less supportive of implementation of – prescribed burning and mechanical thinning (Table 5). Conversely, homeowners with high value similarity with the Forest Service had more positive attitudes toward and become more supportive of implementation for all three treatments over the 4-year study period.

Table 5.—Changes in attitude toward and support of fuel management approaches by Forest Value and Salient Value similarity groups – comparison of 2002 and 2006 panel data

	Global measure*		For each fuel management*	
	Intermediate** Forest Value	Biocentric Forest Value	Low Value Similarity	High Value Similarity
Attitudes Toward				
Prescribed burning	No change	No change	Less positive, $p < .001$	More positive, $p < .01$
Mechanical fuel reduction	No change	No change	Less positive, $p < .05$	More positive, $p < .01$
Defensible space ordinances	More positive, $p < .05$	No change	No change	More positive, $p < .001$
Support for the Implementation				
Prescribed burning	No change	No change	Less support, $p < .001$	More support, $p < .001$
Mechanical fuel reduction	Less support, $p < .01$	No change	Less support, $p < .001$	More support, $p < .01$
Defensible space ordinances	No change	No change	No change	More support, $p < .001$

*The Forest Value Scale measured a global value; whereas the Value Similarity Scale was measured for each of the three fuel treatments.

**Anthropocentric group was not tested because of too few cases.

4.0 DISCUSSION

This research demonstrates the importance of understanding values held by different members of the public and how values are related to attitudes toward and support for fuels management methods in high risk wildfire areas. With the two value scales, FVS and SVS, we found similar results: homeowners with different value orientations held different attitudes toward and expressed different levels of support for prescribed burning and mechanical thinning. As hypothesized, anthropocentric individuals showed more positive attitudes and higher levels of support for mechanical fuel reduction (but not prescribed burning or defensible space ordinances). It should be noted that 4 percent of the sample was “true” anthropocentric. However, 44 percent were considered intermediate (a mix of anthropocentric and biocentric) and their attitude and support levels to were similar to those of anthropocentrics. We also hypothesized that high shared values with agencies would be associated with more supportive attitudes toward human-driven actions, a statement upheld by our data for both attitudes and support across all three fuel treatment approaches. Only with the SVS did we find that value orientations differed on attitudes toward and support for defensible space ordinances. Further, the panel research shows that respondents’ attitudes toward and

support for different fuel management approaches over time can change in a positive direction thus revealing an “up-beat” outlook for public support for these fuels management approaches in wildfire policy.

As researchers, we also learned about the different performance or predictive validity of the two different value scales. At the time of our first study, the Forest Value Scale was published and appeared to be a reliable and valid measure of homeowners’ values, particularly for forest management plans. Four years later, a different value scale (i.e., the Value Similarity Scale) was available. We didn’t implement both value scales in each of our data collection efforts because of space and possible respondent fatigue. Both scales advocate measuring “values” but may tap different types of values, particularly global or holistic values versus more specific subject matter (like a fuel treatment). Future researchers can benefit from this research by continuing to test these value scales in different geographic, management, and policy contexts, as well as across different environmental or resource issues. The Value Similarity Scale appears to reveal more about agency or management of resources, whereas the Forest Value Scale appears to reveal more about core values that humans hold about the Earth and its resources.

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CULTURAL AND RECREATIONAL CENTERS: HOW THEY INFLUENCE WHERE HOUSING IS BUILT

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Abstract .—Known for its cultural attractions, extensive recreational activities, and intrinsic natural beauty, Berkshire County on the western edge of Massachusetts, has seen a housing boom in recent years. This paper examines whether the cultural attractions in Berkshire County have had a significant effect on the location of new single-family residential development, using building permit issuances by each municipality as a proxy variable for new development. The study also designates three localities as cultural centers, assigning one center per geographic subregion. One hypothesis of the research is that new development is heaviest in the communities surrounding the cultural centers and radiates outward. The regression results indicate there is a significant relationship between a shorter driving time to the center and the amount of permits issued. Additionally, the southern subregion appears to be preferred for new construction.

1.0 INTRODUCTION

Massachusetts' Berkshire County, situated on the border with New York, is geographically diverse. It is bordered on the west and east by mountain ranges and has numerous lakes and rivers in the central valley where the major north-south artery, Route 7, is located. Interstate 90 runs east-west through the southern section of the county. The county has 32 municipalities including two cities, Pittsfield and North Adams. Pittsfield, which is nearly 3 hours by car from Boston, is the county seat for government, finance, and industry. North Adams has the distinction of being Massachusetts's smallest city with a population of 14,681. Nearly 64 percent of the housing units

throughout the county are classified as single-family dwellings (Berkshire Regional Planning Commission, 2003).

Single-family dwellings are the subject of investigation in this study. Specifically, what factors provide the greatest marginal benefit, making one location more attractive than another for the construction of new single-family dwellings?

A tension exists between the attractions of rural life and the amenities most people consider necessary. New residents are often either second-home owners or urban/suburban refugees seeking to locate away from cities and, to a lesser extent, homogenized suburban areas. One hypothesis of this study is that tourism to recreational and cultural attractions, an increasingly important staple of the local economy, is a significant force behind new single-family residential development. This study measures the amount of new single-family development through the number of building permits issued per year by each municipality.

A second hypothesis is that the number of permits issued is directly proportional to each municipality's distance from the nearest cultural center (in terms of driving time). A "cultural center" is defined here as a community that contains significant cultural and/or recreational resources (ranging from concert halls to ski resorts) that draw tourists. While there are such attractions in all corners of the county, I propose three principle cultural centers: Williamstown in the northern subregion of the county, Lenox in the central subregion, and Great Barrington in the southern subregion (Fig. 1). This analysis will examine each cultural center's influence on the location of new single-family residences in the county. It should be noted that these cultural centers also provide significant employment opportunities but that distilling their effects on new housing development is beyond the scope of this paper.

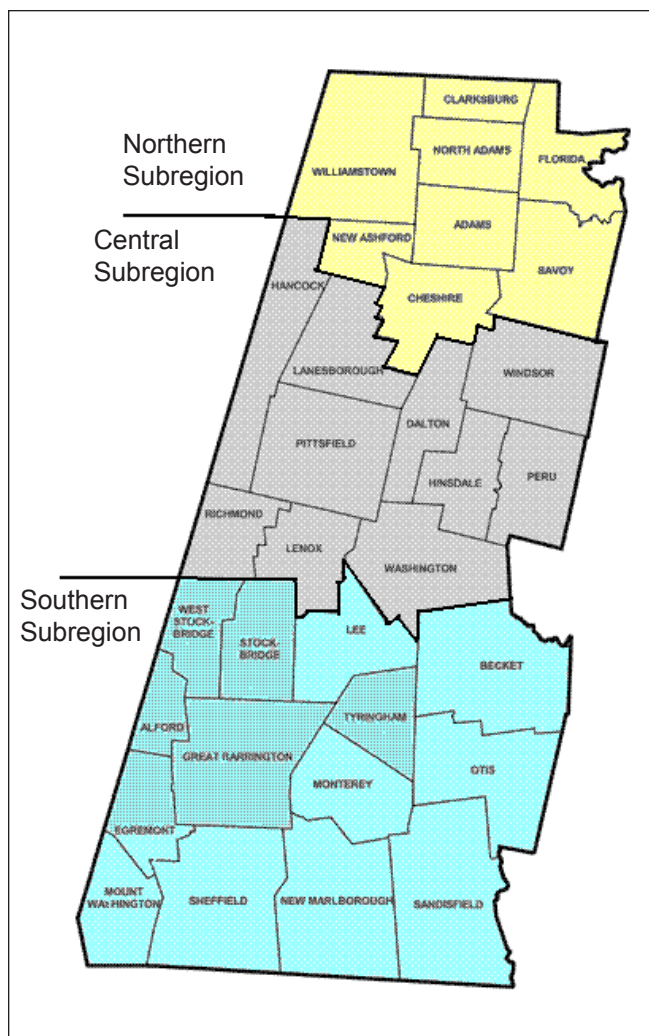


Figure 1.—Map of Berkshire County. Cultural Centers are located in Williamstown (north subregion), Lenox (middle subregion), and Great Barrington (southern subregion).

2.0 OVERVIEW OF THE COUNTY

The vast majority of Berkshire County has a decidedly bucolic character, with a population of approximately 132,000 people spread over 931 square miles (approximately 142 people per square mile). However, in the past few years there has been a significant housing boom, mirroring trends across the nation. Nearly two-thirds of the new permits for single-family residential structures issued in the county between 1995 and 2005 were issued in just 3 years: 2003, 2004, and 2005. Furthermore, there appears to be a concentration of development in the southern subregion of the county. But just what draws new residents to a county with a dearth of high paying jobs and relatively sparse infrastructure?

According to the Berkshire Visitors Bureau, Berkshire County is “America’s Premier Cultural Resort” offering abundant recreational and cultural attractions. Mount Greylock, the state’s highest peak, along with Wahconah, Ashley, and Bash-Bish Falls, offer pristine natural mountain scenery. Onoto, Pontoosuc, Laurel Lake, Otis Reservoir, and the Stockbridge Bowl are just a few of the hydrological attractions. The Ashuwillticook bike trail runs 11.2 miles between Lanesborough and Adams. The Jiminy Peak, Bousquet, and Butternut ski areas welcome visitors from around the world in winter months. Nature preserves, such as Sheep Hill in Williamstown and The Massachusetts Audubon Society’s 1300-acre Pleasant Valley Sanctuary in Lenox, along with myriad state forests and local parks, provide endless opportunities for recreation. The Appalachian Trail, which runs from Maine to Georgia, crosses sections of the county. Museums, such as the Massachusetts Museum of Contemporary Art, The Clark Art Institute, and The Williams College Museum of Art are all located in the northern subregion, as is the Williamstown Theater Festival. The central subregion is host to The Mount, Arrowhead, Shakespeare & Company, and world-renowned Tanglewood, among other attractions. The southern subregion includes the bustling downtown of Great Barrington, The Berkshire Theater Festival, Simon’s Rock College, Berkshire Botanical Gardens and the Mahaiwe performing arts center.

Throughout the county, residents and industry recognize the necessity of both preserving open space and woodlands and, as some development is requisite to a healthy economy, promoting sustainable growth. Indeed, there is evidence that local companies and service industries are following environmentally friendly practices, such as purchasing comestibles from the Berkshire Grown Co-op or installing a wind turbine. Organizations such as the Williamstown Rural Lands Foundation, Berkshire Natural Resources Council, and the Housatonic River Initiative are just a few of the many groups working toward the common goal of sustainability and preservation. The Berkshire County Regional Issues Committee recently advocated for communities to adopt the Scenic Mountains Act legislation, which would limit development in pristine mountain areas.

3.0 LITERATURE REVIEW

The “gravity model” of economic analysis is built on the theory that people, goods, and commerce, are generally drawn to population centers and that closer and/or larger population centers provide a stronger “pull.” In this type of analysis, distance is a key variable. Prior research has generally not used the gravity model to analyze the impacts of recreational and cultural tourism on residential development.

Carrion-Flores and Irwin (2004) investigated residential development and the factors affecting it in a suburban area of Ohio near Cleveland. They use spatial statistics to obtain the distance variable “mean to nearest neighbor.” While their study focuses principally on sprawl and land-use conversion rates, several facets are applicable to the present study. They found that residential development has become increasingly fragmented and dispersed in their study area. Similarly, my previous research (Fedoryshyn, 2006), found that the majority of new residential development in Berkshire County is taking place in the more rural communities.

Guo (2004) used the gravity model in his investigation of the effects of cultural differences (including variables such as religion, language, and GNP) on the foreign trade between nations, particularly China and the United States, Guo denoted “DISTANCE” as the distance between the “geographical centers of gravity of the i th and j th countries” (p. 788). The model also accounts for two nations being adjacent to each other with a dummy variable “ADJACENT”. Guo (2004) concluded that having similar language(s), religion(s), etc. are a boon to trade between nations.

Lee and Pace (2005) examined the influence of distance on retail sales. Like the present research, they measured how distance affects human behavior on a *small* scale in contrast with the majority of gravity analysis-based research which looks at national or multinational scales. Lee and Pace’s distance variable also takes into account how distance is representative of marginal benefits (in terms of potential dollar amount).

4.0 EMPIRICAL MODEL

This study uses the number of building permits issued by each municipality as a proxy for the number of new homes constructed. In general, people may build homes in a particular locale because of proximity to public service bundles, transportation, and potential or actual employment opportunities. Berkshire County is atypical in several respects, however. In the county, there is a substantial market for second homes and second-home buyers often do not need or want amenities like schools and highways. Further, many residents move to Berkshire County to distance themselves from what Carrion-Flores and Irwin call “urban disamenities” like overcrowding or noise. The Berkshires are also distinguished by the abundant cultural and recreational opportunities available to residents and tourists alike, and the region therefore tends to attract residents who value natural beauty, country-like settings, and cultural attractions.

In economics, the gravity model is considered “the workhorse for studies on the pattern of trade and the influence of transportation costs” (Brun et al., 2005, p. 99). And according to Lee and Pace (2005, p. 55) the gravity model “incorporates space via a distance variable.” The distance variable in the present study is driving time to the nearest cultural center. In theory, the farther away in terms of driving time one is from a cultural center, the less likely they are to build a home there; in mathematical terms, a proportional change in building permits is dependent on a proportional change in distance from the nearest cultural center.

Each municipality exports patrons and money, on the positive side, and traffic on the negative to the nearest cultural center. The number of permits issued is therefore described in this function:

$$\# \text{ of permits issued} = f(\text{driving time, population, median income, year dummy, southregion dummy, northregion dummy})$$

This function is similar to the one that Guo (2004) developed using a distance variable along with language, religion, and others. As Guo’s variables

represent the factors that could attract new trading partners to a particular country, the variables in this function for this study represent the factors that can make a community more desirable to people seeking to construct new single-family residences. Furthermore, this model takes into account the elasticity of a cultural center's power to attract new residents. The closer people live to one of these centers, the more likely they are to visit; in other words, there is an increase in the marginal benefit of building a new single-family home near a cultural center.

The primary data for this study is the number of single-family, new construction, residential building permits issued by each of the 32 municipalities in Berkshire County between 1995 and 2005. The distance variable is the driving time from the municipal hall (representing an average distance from any point in the municipality) to the municipal hall of the nearest cultural center. All driving distances were acquired from Mapquest.com. This is more accurate than simply using the raw geographic distance (i.e. miles) because of the varied terrain found throughout the county. For example, it might take just as long to get through 3 miles of Berkshire County's mountainous terrain as it would to go 10 miles in a place with flat terrain.

Cultural centers will not survive economically without sufficient patronage and municipalities cannot provide public services without funds collected through taxes. In the Berkshires, proximity to cultural centers seems to make near and adjacent communities more attractive to potential new residents. While the overall gain in utility from living within a practical driving time is beyond the scope of this paper, I did attempt to construct a model that takes this relationship into account, using a gravity model as a linear regression.

$$Y_{permits} = x_1 mintime + x_2 dummyyear + x_3 inc + x_4 popden + x_5 dummynorth + x_6 dummysouth + u$$

Where:

$Y_{permits}$ = The number of permits issued in each municipality by year, 1995-2005

$Mintime$ = The minimum driving time from a municipality to the nearest cultural center

$DummyYear$ = Distinguishes pre- and post-2003 data

Inc = The median income for each municipality

$Popden$ = The population density of each municipality (found by dividing the raw population by the amount of land, in square miles)

$DummyNorth$ = Indicates northern subregion data

$DummySouth$ = Indicates southern subregion data

u = The error term

The standard application of the gravity model contains a representation of GDP, population, and a variable representing distance. For the above model tries to account for "trade" between a town and the nearest cultural center, the standard variables must be adjusted. Median household income therefore substitutes for GDP, population of the municipality (from the Massachusetts Government Databank) is used for population, and driving time to the nearest cultural center substitutes for distance.

Three dummy variables are also included.

$DummyYear$ separates the building permit data into two categories: a zero (0) if the observation is prior to 2003 or a one (1) if the observation is from 2003 onward. This controls for the marked rise in residential building permits from 2003 onward. The second dummy variable, $DummyNorth$ distills out municipalities that are in the northern subregion of the county so that a zero (0) denotes that the observation is not from the northern subregion and a one (1) denotes that it is. Lastly, $DummySouth$ is the converse of $DummyNorth$, where a one (1) denotes a community in the southern subregion. $DummyNorth$ and $DummySouth$ are necessary for several reasons. Since we have named three principle cultural centers in the county (Williamstown, Lenox, and Great Barrington), the chance that one subregion is having more of an effect than another must be distilled out. Thus I have separated the draw of the northern versus the southern sections of the county. Communities that receive zeroes for $DummyNorth$ and $DummySouth$ are from the central subregion.

Table 1 gives the descriptive statistics of the variables including mean, extrema, and standard deviation. The dummy variables all have extremes of 1 and 0 since there are only two choices for each observation. The mean of PopDen (population density) is only about 140 (140 people per square mile) because the county is so rural.

5.0 RESULTS

Out of 352 building permits issues in Berkshire County between 1995 and 2005, over two-thirds (73 percent) were issued in 2003, 2004, or 2005. Also, only 25 percent of the building permits were issued in the northern subregion while about 44 percent were in the southern subregion. The mean of the median incomes in the entire region was \$25,814. All variables were found to be significant to $<.001$ (see Table 2). The standardized coefficients support this paper's hypotheses, namely that new single family home construction is clustered around recreational and cultural attractions and that the number of new homes

in each community is directly proportional to the distance of that community from the region's cultural center.

The only unexpected finding was the relationship between existing population and the number of new building permits in a community. It may be that larger communities had a greater percentage increase in permit issuances, thus skewing this variable. Median income also seems to have a negative effect on the new permits issued in a community; it may be that these variables are indirectly related and if less expensive in municipalities with lower median incomes.

As expected, new residents are more strongly attracted to municipalities with high population densities presumably because many people still want to be close to public service bundles. As expected, the southern subregion with its many year-round cultural and recreational opportunities is the most popular for new home construction. At the same time, the northern

Table 1.—Descriptive statistics (N = 352)

Variable	Mean	Minimum	Maximum	Standard deviation
No. of starts	9.92	0	77	9.54
Mintime (in minutes)	20.03	1.2/41.0	41.0	10.91
DummyYear	.27	0	1	.44
Inc (Median household income in thousands of \$)	25.81	16.4	50.2	7.79
PopDen (people per square mile)	140.50	5.99	1087.8	218.64
DummyNorth	.25	0	1	.43
DummySouth	.43	0	1	.50

Table 2.—Coefficient estimates

Variable	Beta coefficient	T-Stat	Significance
Mintime	-.172	-4.760	.000
DummyYear	4.58	6.453	.000
Inc	-.433	-7.984	.000
Popden	.022	11.342	.000
DummyNorth	-6.99	-6.282	.000
DummySouth	4.21	4.979	.000
Constant	20.16	10.235	.000

N= 352; R-Squared= .541

subregion had the lowest number of new home permits, perhaps because of the lower availability of buildable land, jobs, and cultural activities. The mintime variable also has an inverse relationship with the number of new home permits, confirming that the further a municipality is from a cultural center, the less desirable it is as a place to build a new single-family home.

The beta coefficient estimates in Table 2 describe the influence of each variable on the number of permits issued in a municipality. For example, an increase of one minute in driving time to a cultural center (variable mintime) is associated with a 17 percent decrease in the number of new permits issued in a municipality. Thus, as one gets further from a cultural center, there tend to be fewer new, single-family homes.

6.0 CONCLUSIONS

As Brun et al. (2005) suggest, “distance is not dead.” That is, despite all the advances in modern transportation and technology, distance still drives people’s settlement patterns. In Berkshire County, there is a significant relationship between a municipality’s distance to a cultural center and the number of new single-family residential building permits issued in the municipality. This study successfully used the gravity model of economic analysis to examine settlement patterns by substituting local building permits for international trade in commodities.

Given the results, I failed to reject the null hypothesis that proximity to a cultural center is directly related to new, single-family residential development; in other words, new single-family residential development is concentrated in municipalities with the shortest driving distances to regional cultural centers. An r-square of .54 indicates that this analysis explains roughly 54 percent of the reason that people decide to build single family houses in a specific municipality.

In addition, this study found that from 1995-2005, development was concentrated in the southern subregion of Berkshire County where nearly 44

percent of the new residential permits were issued. The draws there are large, rural communities, relatively inexpensive and expansive tracts of land, and cultural centers.

Carrion-Flores and Irwin investigated the relationship between sprawl, “leap-frog” development, and new residential development. I share many of their conclusions. People build new homes in rural areas at least in part to get away from urban disamenities – what Carrion-Flores (2004) has called “flight from blight” (p. 899) – yet there is also a desire to be near *something*. This research has found that proximity to nearby cultural centers, existing population density, and a location in the southern subregion of Berkshire County are three of the principle factors that determine where someone is most likely to construct a single family home.

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*ADMINISTRATIVE
MANAGEMENT ISSUES*

THE NORTHEASTERN AREA'S OBJECTIVES AND BELIEFS TOWARD NATIONAL FORESTS AND GRASSLANDS

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Abstract.—The Northeastern Area, an organizational unit of the State and Private Forestry branch of the U.S. Forest Service, serves the Northeastern and Midwestern United States. For this study, residents of the Northeastern Area were asked about their *objectives* for the management, use, and conservation of forests and grasslands and *beliefs* about the role the Forest Service should play in fulfilling those objectives on public land. This paper summarizes the Northeastern Area results and compares these results with the other states. Major findings for the Northeastern Area states and the other states include but are not limited to the following: (a) The public sees the protection of ecosystems and habitats as an important objective and role for the agency; (b) There is a lack of support for developing new paved roads; (c) On average, the public is neutral with respect to expanding energy and mineral production, and expanding timber production and livestock grazing; (d) Reducing the loss of open space is supported; (e) Using management tools to reduce wildfires is an important objective and an appropriate role for the agency; (f) There is support for increasing law enforcement efforts.

1.0 INTRODUCTION

Objectives are statements of outcomes or conditions that an individual, group, or government body desires to achieve. In the context of decisions, objectives are explicit statements of why people care about a problem (Kenney, 1988). Beliefs are expressed as agreement with a proposition, or more formally as cognitive content held as true. Information on the strength of an individual's agreement with land management objectives, and their beliefs regarding the role of federal agencies in achieving those objectives, have been shown to provide useful public input to the forest planning process (Shields et al., 1999).

Objectives can also be thought of as general beliefs (i.e., goals which guide decisionmaking) (Keeney & Raiffa, 1976). This approach is consistent with work on cognitive hierarchies, which have gained recognition as a theoretical framework for understanding human behavior (Fulton et al., 1996; Vaske & Donnelly, 1999). One of the constructs included in the cognitive hierarchy is beliefs, which include general and specific beliefs. Beliefs are defined as what is believed to be true or factual. Whittaker et al. (2006) analyzed the cognitive hierarchy by considering the specificity of the measured variables. Their findings suggest that general beliefs have more influence on general management action acceptability (e.g., hunting) than on more specific management actions (e.g., destroying a problem bear). General beliefs (e.g., objectives) and specific beliefs yield different information and can inform management decisions in different ways.

1.1 Legislative background

The 1993 Government Performance and Results Act (Public Law 103-63) requires that each federal agency submit to Congress a strategic plan every 3 years that includes long-term goals and objectives. For the Forest Service, these goals and objectives must be consistent

with the agency's mission, which is to sustain the health, diversity, and productivity of the nation's public forests and grasslands to meet the needs of present and future generations. The Government Performance and Results Act requires each agency to ask for the views and suggestions of anyone "potentially affected by or interested in" its strategic plan. The long-term goals and objectives of the Forest Service's strategic plan must therefore reflect not only the agency's mission, but also the public's views and beliefs regarding our country's publicly managed forests and grasslands.

1.2 National survey background

The National Survey of Values, Objectives, Beliefs, and Attitudes (VOBA) is one source of information on the public's views and beliefs that is used to develop the Forest Service's strategic plan. This recurring survey is designed to reflect the changing goals and interests of the American public over time. The original survey instrument was implemented in 1999/2000 as a module of the National Survey on Recreation and the Environment (NSRE) (Shields et al., 2002). The survey was revised and implemented again as part of NSRE in 2003/2004 (Version 2) (Shelby et al., 2007a). In Version 2 of the survey respondents were asked about their:

- *objectives* for the management, use, and conservation of forests and grasslands; and
- *beliefs* about the role the Forest Service should play in fulfilling those objectives on public land.

1.3. Northeastern area of the United States

Twenty Northeastern and Midwestern states¹ are served by the Northeastern Area, State and Private Forestry branch of the U.S. Forest Service (NE Area). This part of the U.S. is more than 40 percent forested and more than 75 percent of the forests are privately owned (one of the largest concentrations of privately owned forests in the world). Nearly 50 percent of the U.S. population resides in this area,

which contains less than 20 percent of U.S. land. The Northeastern and Midwestern states are the nation's leading producers of forest products and employment (USDA Forest Service, 2006). The NE Area works in partnership with state forestry agencies and other partners to influence the management, protection, and sustainable use of forests, and provide financial support and professional expertise to states, private forest landowners, nonprofit groups, tribal nations, and communities (USDA Forest Service, 2006). The NE Area mission statement is to "lead and help to support sustainable forest management and use across the landscape to provide benefits for the people of the 20 Northeastern and Midwestern states and the District of Columbia" (USDA Forest Service, 2003, p. 3). Given the unique population distribution and forest ownership in this region of the country, and the forestry goals and objectives of the NE Area, it is crucial that public input is obtained on a regular basis. This article examines data from respondents in the 20 states in the NE Area as a subset of the VOBA Version 2 data (see Shelby et al., 2007b for more detailed information and results). General beliefs (objectives) and specific beliefs are examined to explore whether or not the different levels of specificity yield different information. These results are intended to facilitate an understanding of the objectives of NE Area residents, and provide information on which of the Forest Service's current and potential activities NE Area residents believe to be appropriate.

2.0 METHODS

Thirty objective statements and 30 corresponding belief statements were included in Version 2 of the telephone survey (implemented in 2003/2004). Prefacing the objective statements with "It is a role of the Forest Service to..." created corresponding belief statements. These question modifications shifted the focus from general objective statements to specific beliefs about the appropriate role of the Forest Service on public land. Items were measured on a 5-point scales (objectives, 1 = *not at all important* to 5 = *very important*; beliefs, 1 = *strongly disagree* to 5 = *strongly agree*).

¹The NE Area includes Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Wisconsin, and the District of Columbia.

The VOBA survey is administered by the Human Dimensions of Research Laboratory at the University of Tennessee, Knoxville, as part of the National Survey on Recreation and the Environment for the U.S. Forest Service. The survey uses a nationwide random sample of telephone numbers facilitated by a computer-aided telephone interviewing system (CATI). Each respondent was given a random selection of the objective statement and the corresponding belief statement. With this sampling design, the number of respondents for each set of objectives and beliefs varies. The overall goal of this matrix sampling design was to control interview time with respondents, yet still collect analytically valuable information. The design lowers the costs of survey administration and reduces respondent burden, which leads to fewer nonresponses and better sample quality. The number of respondents for each statement in the Northeastern Area ranged from 253 to 316 (confidence interval of ± 4.6 percent to ± 5.1 percent at a 95 percent confidence level). For the remainder of the United States, the number of responses ranged from 369 to 451 (confidence interval of ± 5.5 percent to ± 6.2 percent at a 95 percent confidence level). In total, 1,437 NE Area respondents and 2,066 respondents from the remainder of the United States were asked a random selection of the VOBA survey statements.

The 30 U.S. states not in the NE area are referred to as *Other States*. Paired samples *t*-tests are used to examine differences in responses between the 30 matching belief and objective statements for the NE Area respondents. Independent samples *t*-tests are used to compare the NE Area States to the Other States for the objective and belief statements. Effect sizes (Cohen's *d* for the paired samples *t*-test and Pearson's *r* for the independent samples *t*-test) were calculated as indicators practical significance. A correction for multiple comparisons (e.g., a Bonferroni correction) was not conducted due to the low sample sizes, which would result in a decrease in power and an increase in the probability of a Type II error. Our findings should be viewed as exploratory.

3.0 RESULTS

The results of the paired and independent samples *t*-tests for the objective and belief statements with statistically significant differences are in Tables 1 and 2. Table 3 shows the remaining survey statements where no statistical differences were evident for either the paired or independent samples *t*-tests. All tables report the complete statement as presented in the survey. The descriptive results are limited to a selection of objectives/beliefs, and to statistically significant differences (See Shelby et al., 2007b for more information). All Cohen's *d* results were ≤ 0.3 . All Pearson's *r* results were $\leq .11$. These results suggest that the relationships are "minimal" (see Vaske et al., 2002 for more information on interpreting effect sizes)

3.1 Developing new paved roads

Average objective ratings ($M = 2.67$, $SD = 1.43$) and belief ratings ($M = 2.91$; $SD = 1.46$) for NE Area respondents were slightly less than neutral (3.00) for developing new paved roads. Paired *t*-test results ($t = -2.64$; $p < .05$) showed that respondents were less than likely to think that the objective of developing new paved roads was important than they were to believe that achieving the objective was an appropriate role for the Forest Service (Table 1).

3.2 Protecting ecosystems and habitats

Mean responses were positive for NE Area respondents on the objective ($M = 4.60$, $SD = 0.86$) and belief statements ($M = 4.61$, $SD = 0.86$). The mean response for NE Area residents was statistically different from the other states for the belief ($M = 4.46$, $SD = 1.00$) that an appropriate role of the Forest Service is to protect ecosystems and habitats (independent samples, $t = -2.06$, $p < .05$; Table 2).

3.3 Expanding energy and mineral production

Expanding energy and mineral production resulted in means near neutral for both the objective ($M = 3.18$; $SD = 1.32$) and belief statements ($M = 2.86$, $SD = 1.42$) for NE Area respondents. A paired *t*-test showed that the difference between the objective and belief

Table 1.—Paired *t*-test results for NE Area objective/belief responses

Objective statement ¹	Mean difference	SE	<i>t</i>
Developing new paved roads on forests and grasslands for access by cars and recreational vehicles.	-0.25	.10	-2.64*
Reducing the loss of open space and wildlife habitat due to conversion of forests and grasslands to residential areas or other development.	0.19	.09	2.07*
Expanding energy and mineral production on forests and grasslands.	0.36	.09	3.93**
Expanding timber production and livestock grazing on forests and grasslands.	0.21	.10	2.08*
Simplifying the permitting process for some established uses of forests and grasslands such as grazing, logging, mining, and commercial recreation.	-0.18	.08	-2.18*
Developing volunteer programs to improve or maintain forests and grasslands (e.g., planting trees, improving water quality, or maintaining trails and recreation sites).	0.22	.07	3.42*
Informing the public about recreation concerns on forest and grasslands such as safety, respect for other visitors and wildlife, and minimization of impacts from recreational use.	-0.22	.06	-3.86**
Informing the public on the economic value received by developing our natural resources.	0.22	.07	2.97*
Increasing law enforcement efforts by public land agencies on public lands in order to increase safety of visitors and protect resources.	-0.16	.07	-2.47*
Using management tools such as prescribed fires and tree thinning in order to reduce the risk of catastrophic wildfires across forests and grasslands in general.	-0.33	.07	-5.09**
Using management tools such as prescribed fires and tree thinning in order to reduce the risk of catastrophic wildfires on forests and grasslands, but only around communities.	-0.16	.08	-2.12*

p* < .05; *p* < .001

¹Matching belief statements are identical to the objective statements with a preface of "It is a role of the Forest Service to...". Objectives were measured on a 5 point scale 1 = *not at all important* to 5 = *very important* and beliefs were measured on a 5 point scale 1 = *strongly disagree* and 5 = *strongly agree*.

Table 2.—Independent samples *t*-test results for NE Area States and other states

	NE Area States		Other States		
Objective statement ¹	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Objective differences					
Providing natural resources from forests and grasslands to support communities dependent on grazing, energy production, mining or timber harvesting.	3.60	1.22	3.88	1.16	.004*
Making management decisions concerning the use of forests and grasslands at the local level rather than at the national level.	3.82	1.19	4.00	1.13	.046*
Using management tools such as prescribed fires and tree thinning in order to reduce the risk of catastrophic wildfires on forests and grasslands, but only around communities.	3.82	1.12	4.05	1.05	.009*
Belief differences					
Protecting ecosystems, and wildlife and fish habitats.	4.61	0.86	4.46	1.00	.040*
Informing the public on the economic value received by developing our natural resources.	3.76	1.31	4.03	1.20	.005*
Increasing law enforcement efforts by public land agencies on public lands in order to increase safety of visitors and protect resources.	4.15	1.03	3.99	1.17	.050*

p* < .05; *p* < .001

¹Matching belief statements are identical to the objective statements with a preface of "It is a role of the Forest Service to...". Objectives were measured on a 5 point scale 1 = *not at all important* to 5 = *very important* and beliefs were measured on a 5 point scale 1 = *strongly disagree* and 5 = *strongly agree*

Table 3.—Additional VOBA survey statements**Objective statement¹**

- Managing use of motorized off-highway vehicles (e.g., snowmobiles, dirt bikes, or all-terrain vehicles) on forests and grasslands by restricting them to designated roads, trails and areas.
- Developing and maintaining continuous trail systems that cross both public and private land for motorized vehicles such as snowmobiles or ATVs.
- Developing and maintaining continuous trail systems that cross both public and private land for non-motorized recreation such as hiking, cross-country skiing or horseback riding.
- Conserving and protecting forests and grasslands that are the source of our water resources, such as streams, lakes, and watershed areas.
- Preserving the ability to have a 'wilderness' experience on public lands, through protection and management of areas in designated wilderness systems.
- Preserving the cultural uses of forests and grasslands by Native Americans and traditional groups, such as firewood gathering, herb/berry/plant gathering, and ceremonial access.
- Developing national policies that guide natural resource development of all kinds (e.g., by specifying sustainable levels of extraction, and regulating environmental impacts).
- Expanding commercial recreation services on forests and grasslands (e.g., by specifying sustainable levels of extraction, and regulating environmental impacts).
- Providing companies with forest commodities in exchange for assistance in achieving management goals, such as ecosystem restoration on public forests and grasslands.
- Informing the public on the potential environmental impacts of all uses associated with forests and grasslands.
- Allowing the transfer of responsibility for managing public lands to members of a local community advisory board.
- Using public advisory committees to advise government agencies on public land management issues.
- Allowing for diverse uses of forests and grasslands such as grazing, recreation, and wildlife habitat.
- Reducing the spread of invasive species across forests and grasslands (e.g., invasive weeds, nonnative fish, or exotic insect and disease pests).

¹Matching belief statements are identical to the objective statements with a preface of "It is a role of the Forest Service to..."

responses differed statistically ($t = 3.93$; $p < .001$, Table 1). On average, NE Area respondents were more likely to think that expanding energy and mineral production was important than achieving the objective was an appropriate role for the Forest Service.

3.4 Expanding timber production and livestock grazing

Similarly to expanding energy and mineral production, responses were neutral for expanding timber production and livestock grazing on the objective ($M = 3.25$, $SD = 1.38$) and the belief ($M = 3.06$, $SD = 1.48$). NE Area states were more likely to think that expanding timber production and livestock grazing was important than expansion as an appropriate role for the Forest Service (paired samples, $t = 2.08$, $p < .05$; Table 1).

3.5 Reducing loss of open space

Overall, mean responses for the objective ($M = 3.99$, $SD = 1.27$) and the belief statements ($M = 3.79$, $SD = 1.36$) indicated the objective was important and that the respondents agreed with the belief. A paired t -test showed that the difference between the objective and belief statement responses were statistically significant ($t = 2.07$, $p < .05$; Table 1). Individual respondents were more likely to think that the objective important than they were to beliefs achieving the objective was an appropriate role for the Forest Service.

3.6 Using management tools to reduce wildfire

Using management tools to reduce wildfire was asked by two different objectives in the VOBA survey (i.e., reducing wildfire in general and reducing wildfire around communities). For the *in general* question, the mean responses for the objective ($M = 4.08$, $SD = 1.07$) and the belief statements ($M = 4.41$, $SD = 0.99$) were positive. For the question stating that the management methods were acceptable *but only around communities*, the responses were still favorable, but lower than the *in general* question. For the objective ($M = 3.82$, $SD = 1.12$) and the belief ($M = 3.98$ and $SD = 1.08$), the statements were

positive. Paired *t*-tests results showed that the difference between the objective and belief statements for both the *in general* question ($t = -5.09$; $p < .001$; Table 1) and the community specific question ($t = -2.12$; $p < .05$; Table 1) were statistically significant. On average, individual respondents were less likely to think that the objectives were important than achieving the objectives as appropriate Forest Service roles.

3.7 Increasing law enforcement efforts

Overall, mean responses for the objective ($M = 4.08$, $SD = 1.07$) and the belief statements ($M = 4.41$, $SD = 0.99$) were positive. A paired *t*-test showed that the difference between the objective and belief responses were statistically significant ($t = -5.09$; $p < .001$; Table 1). On average, individual respondents were less likely to think that the objective was important than that achieving the objective was an appropriate Forest Service role on public lands.

4.0 DISCUSSION AND CONCLUSIONS

Although findings such as those reported here provide practical insights into the objectives and beliefs of the NE Area public, the effect sizes were minimal. This information coupled with the survey statements that were not statistically significant (Table 3) either for the objective versus the belief, or for NE Area states versus other states, supports the idea that the VOBA survey's objectives are a solid predictor of the beliefs. This preliminary information is consistent with the VOBA survey being reliable across the Forest Service regions of the United States. To thoroughly understand the objectives and beliefs of the NE Area residents toward national forest and grassland management, future research should involve the creation of a survey specific to the needs of the NE Area.

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*VISITOR PREFERENCES/
SATISFACTION*

DESTINATIONS AND ACCOMMODATIONS—HOW LINKED ARE THEY FROM A CUSTOMER'S PERSPECTIVE?

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Abstract.—Success in the hotel and tourism industry depends on understanding the key factors of customer satisfaction. Customer satisfaction leads to purchase repetition, intention to revisit, and potential increased future patronage of the hotel. The purpose of this research is to better understand (1) the factors that influence overnight accommodation decisions; (2) how these factors relate to satisfaction ratings for a variety of accommodation and destination elements; and (3) how these factors and satisfaction ratings relate to return visitation and/or making positive recommendations to others. Results indicate that some hotel services and facilities had significant influence on hotel satisfaction ratings. Most *Push* factors (i.e., sightseeing, shopping, business trip), hotel satisfaction, and some of the other satisfaction factors tested (i.e., family attraction, value of a vacation, shopping, restaurant, entertainment) had a positive relationship with overall trip satisfaction. For the destination studied, the results also showed that shopping satisfaction can result in repeat visitation and recommending the destination to others.

1.0 INTRODUCTION

Customer satisfaction is a leading criterion for measuring the perceived quality of a product or service and any accompanying services (Vavra, 1997). Customer satisfaction or dissatisfaction is the result of interaction between the consumer's prepurchase expectations and post-purchase evaluation (Czepiel and Rosenberg, 1997). Success in the hotel industry depends on understanding the key factors that influence customer satisfaction both at the hotel property and possibly the larger geographic destination. Satisfying customers during their first visit and prolonging their stay can help develop customer loyalty and thereby encourage the desire to revisit the destination (Poon and Long, 2005). This can lead to purchase repetition over time and increased future patronage of the hotel or revisitation to the destination. Otto et al. (2004) found that the relationship between customer satisfaction and repeat purchase was bolstered when the customer found value in the product.

The purpose of this research is to better understand (1) the factors that influence overnight or accommodation decisions; (2) how these factors relate to satisfaction ratings for a variety of accommodation and destination elements and (3) how these factors and satisfaction ratings relate to return visitation and/or making positive recommendations to others. Results indicate that some hotel services and facilities had significant influence hotel satisfaction ratings.

2.0 LITERATURE REVIEW

2.1 *Push* and *Pull* Factors in Travel Motivation

One of the travel motivation models related to travelers' decisionmaking in choosing a destination involves defining *Push* and *Pull* factors (Crompton, 1979; Uysal & Hagan, 1993). According to this theory, when people make travel decisions, they are pushed by

internal motives and pulled or attracted by destination attributes (Uysal & Hagan, 1993). *Push* motivations have been useful in explaining the desire for travel, whereas *Pull* motivations help to explain actual destination choices (Christensen, 1983; Crompton, 1979). *Push* factors include the cognitive processes and socio-psychological motivations that cause individuals to travel (Chon, 1989).

2.2 Hotel Services and Facilities

Past hotel services and facilities research has focused on the relationship between customer satisfaction and repeat visitation (Choi & Chu, 2001; Skogland & Siguaw, 2004). Because of the intangibility, inseparability, variability, and perishability of services, customer satisfaction criteria may include contextual cues that customers use to evaluate service quality and to make decisions about future patronage (Bitner & Parasuraman, 1991). Wuest, Tas, and Emenheiser (1996) defined perceptions of hotel attributes as the degree to which travelers find various services and facilities important in promoting their satisfaction with hotel stays.

2.3 Customer Satisfaction

In the hotel industry, customer satisfaction with reception desk services, food and beverages, housekeeping, and price are important factors in determining whether a customer will repurchase and/or recommend (Kandampully & Suhartanto, 2000). Getty and Thompson (1994) studied relationships between quality of lodging, satisfaction, and the resulting effect on customers' intentions to recommend lodging to prospective customers. Their findings suggest that customers' intentions to recommend are a function of both their satisfaction with the lodging experience and their perceptions of service quality.

Satisfaction with a tourist destination can be defined as a tourist's affective state resulting from an overall appraisal of pleasure and psychological preferences connected to the tourist destination (Huang and Chiu, 2006). Customers who have a satisfactory experience with a tourist destination are more likely to show positive behavioral intentions (Zeithaml, Berry, &

Parasuraman, 1996), leading to increased destination loyalty (Bearden & Teel, 1983; Tax & Brown, 1998).

2.4 Repeat Visitation and Recommendation

In tourist behavior research, repeat visitation has been used to assess tourists' destination loyalty. Repeat visitation is conceptually similar to two of the three customer loyalty indicators, namely, intention to continue buying and intention to buy more. However, repeat visitation may not truly represent loyalty and a nonrepeat visit behavior may not represent lack of loyalty to a destination. For example, those who do not return to a previously visited destination may remain loyal to that destination but simply want to seek different travel experiences at new destinations. It may be true that loyal tourists are more inclined to use the same airline and stay in the same franchised hotel wherever they travel but this may not necessarily be applicable to selection of travel destinations. To test this concept, the measure of a tourist's willingness to recommend a destination was applied as an indicator of their loyalty. Thus, destination loyalty was operationally defined as the level of tourists' perceptions of a destination as a recommendable place (Chen & Gursoy, 2001).

3.0 METHODS

A questionnaire collected information about tourists' reasons for visiting a destination, their loyalty to the destination, descriptions of their experiences there, and their level of satisfaction with services and facilities. On-site questionnaires were used to study overnight tourists who stayed in motels, hotels, and bed and breakfast businesses in Saginaw County, a major tourist destination in Michigan. Saginaw County is located in mid-Michigan, is home to two of Michigan's most visited tourist destination communities, is a center for health care, and has a number of highly regarded professional service firms and a growing medical device and technology sector. This research was conducted at 12 bed & breakfast (B&B) establishments and 42 hotels, which have a combined total of 3,279 rooms in the cities of Saginaw, Bridgeport, Birch Run, Chesaning and Frankenmuth.

Tourism and the hospitality industry in this county are dependent on leisure, group, and business travelers.

The questionnaire consisted of four sections. The first section was designed to extract tourists' experiences at the lodging facility where they stayed. The second section collected information on tourists' activities during their Saginaw County stay, asked respondents to rate their levels of satisfaction with various aspects of Saginaw County on a seven-point Likert scale, and provided open-ended questions regarding revisitation to the destination and recommendation to others about the destination. The third section was about tourists' experience levels with Saginaw County. The last section asked about socio-demographic information.

The target population for our study was tourists who stayed overnight in the Saginaw County area for leisure or business over a 6-month period from July to December 2006. During 6 months, 4,494 surveys were provided to hotel properties for distribution, according to the sampling frame designed by researchers, to ensure random selection and generalizability of results. In July, 54 properties agreed to participate in the study, which required them to follow the sampling frame. Forty-two of these properties continued participating in the research study through December. After 6 months, 662 completed questionnaires had been returned to researchers in prepaid envelopes, for an approximate response rate of 15 percent at the time this analysis was completed.

4.0 RESULTS

4.1 Demographic and Traveling Characteristics of the Respondents

Descriptive statistical methods including cross-tabulations were used to analyze tourists' demographic and traveling characteristics as presented at Table 1. Among the respondents, 66 percent were female and 34 percent were male. The average age of the respondents was 51 years old. Annual household income was high with a majority (68 percent) earning more than \$50,000. The respondents were primarily from Michigan (41 percent), Ohio (10 percent), Canada (8 percent), Indiana (5 percent), and other

Table 1.—Demographic and travel characteristics of respondents

Characteristic	
Male	34 %
Female	66 %
Average age	51 years old
Zip code of respondent's primary residence	
Michigan	41 %
Ohio	10 %
Canada	8 %
Other states	36 % of total but each state <5 %
Annual household income	
less than \$25,000	7 %
\$25,000-\$49,999	25 %
\$50,000-\$99,999	47 %
\$100,000 or more	21 %
Primary purpose of a visit to Saginaw County	
Shopping	25 %
Sightseeing	18 %
Visiting a friend or a family	16 %
A business trip	11 %
The most important factors in selecting the hotel where respondents stayed*	
Hotel location	39 %
Room rate/package price	26 %
The specific hotel room	25 %
Hotel amenities	24 %
Repeat guests	19 %
Hotel service	14 %
Hotel membership holder	14 %
Recommended by a friend	11 %
Hotel advertising	10 %
Mean satisfaction with: ^a	
Family attraction	1.7
Hotel	1.8
Restaurants	1.9
Shopping	1.7
Overall trip	1.8
Visit Saginaw County again in the next 12 months	
Yes	73 %
No	24 %
Not sure/Maybe	3 %
Recommend Saginaw County visit to others	
Yes	96 %
No	4 %

*Note: Three responses allowed

^a1=extremely satisfied; 7=not at all satisfied)

states (36 percent total but fewer than 5 percent of respondents were from any one state).

Four out of ten respondents indicated the primary purpose of their visit to Saginaw County was

shopping (25 percent), sightseeing (18 percent), visiting friends or family (16 percent), or a business trip, conference/convention, or truck route (11 percent). The most important factors in selecting the hotel where they stayed were (three responses allowed): hotel location (39 percent), room rate/package price (26 percent), the specific hotel room (25 percent), hotel amenities (24 percent), repeat guests (19 percent), hotel service (14 percent), hotel membership holder (14 percent), recommended by a friend (11 percent), and hotel advertising (10 percent). When asked to rate various aspects of their visit to Saginaw County, respondents were most satisfied with shopping (mean 1.7, on a scale where 1=extremely satisfied and 7=not at all satisfied), followed closely by family attractions (1.7), hotels (1.8), and scenery (1.9). Overall satisfaction was rated very high (1.8). More than seven out of ten respondents indicated that they would revisit Saginaw County in the next 12 months (73 percent), and 96 percent of respondents would recommend Saginaw County for a visit to others.

4.2 Relationship between Accommodations and Destinations

To test the relationship between hotel service/facilities and hotel satisfaction, two different types of cluster analysis were applied to hotel service/facilities factors. The data were initially analyzed using a hierarchical clustering procedure to measure similarity between cases. The K-means clustering technique was then used to fine-tune the results. As shown at Table 2, the three clusters were:

Cluster 1: Recommended by a friend or a family

Cluster 2: Price and advertising

Cluster 3: Loyal and satisfied past customers

The three clusters were then entered into multiple regression analysis to determine their contribution to hotel satisfaction ratings. Surprisingly, the result was that these three clusters were not significantly related to hotel satisfaction. Thus, each variable of hotel service/facilities was analyzed again using multiple regression analysis and showed that several individual variables had positive relationships with hotel satisfaction, as shown Table 3: ‘Hotel rooms are very good’ ($\beta = .144$, $t=3.12$, $p<.05$), ‘Hotel service is very good’ ($\beta = .117$, $t=2.589$, $p<.05$), ‘Recommended by a friend’ ($\beta = .095$, $t=2.021$, $p<.05$), ‘I always stay at this hotel’ ($\beta = .103$, $t=2.226$, $p<.05$), ‘I like the location of this hotel’ ($\beta = .108$, $t=2.278$, $p<.05$), and ‘Hotel amenities are very good’ ($\beta = .156$, $t=3.535$, $p<.05$).

Table 4 presents the data related to connections between trip purpose, hotel services/facilities, hotel satisfaction, other satisfaction related to a trip, and overall satisfaction with a trip. The analysis suggests that hotel service/facilities were not significantly related to overall trip satisfaction but that hotel satisfaction had a positive correlation with tourists’ overall trip satisfaction ($\beta = .24$, $t=5.648$, $p<.001$). Most of other measures of satisfaction had positive relationships with overall trip satisfaction as well; these included satisfaction with family attractions ($\beta = .236$, $t=4.472$, $p<.001$), satisfaction with vacation

Table 2.—Clusters of hotel service/facilities by respondents who stayed at a hotel in Saginaw County

Cluster 1 Recommended by a friend or a family member	Cluster 2 Price and advertising	Cluster 3 Loyal and satisfied past customers	Others Not clustered in any group
I prefer staying at a new hotel	I saw advertising for the hotel	Hotel rooms are very good	My organization chose the hotel
Recommended by a friend	Easy to reserve online	Hotel service is very good	I like the location of this hotel
Allowing pets, kid-friendly feature (i.e., cribs, game rooms, activities)	Room rate/package price	I always stay at this hotel	I like the restaurant at this hotel
		I have a membership card with this hotel	Special events that are held at the hotel
		Hotel amenities are very good (i.e., lobby, pool, breakfast area)	

Table 3.—Relationships between hotel service/facilities and hotel satisfaction

	β	t	Sig.
Hotel service is very good	.117	2.589	.010
Easy to reserve online	.048	1.081	.280
Room rate/package price	.070	1.542	.124
I prefer staying at a new hotel	.053	1.226	.221
Recommended by a friend	.095	2.021	.044
I always stay at this hotel	.103	2.226	.026
I have a membership card with this hotel	.015	.323	.747
My organization chose the hotel	.031	.683	.495
I like the location of this hotel	.108	2.278	.023
I like the restaurant at this hotel	.081	1.861	.063
Special events that are held at the hotel	.082	1.892	.059
Allowing pets, kid-friendly feature (i.e., cribs, game rooms, activities)	.044	.979	.328
Hotel amenities are very good (i.e., lobby, pool, breakfast area)	.156	3.535	.000
Hotel rooms are very good	.144	3.120	.002
I saw advertising for the hotel	.017	.358	.720

Note: Adjusted R square: 0.62

value ($\beta = .210$, $t = 4.541$, $p < .001$), satisfaction with shopping opportunities ($\beta = .171$, $t = 3.906$, $p < .001$), satisfaction with restaurants ($\beta = .120$, $t = 3.013$, $p < .05$), and satisfaction with entertainment' ($\beta = .135$, $t = 2.845$, $p < .05$). The result of the regression analysis was not significant so ANOVA was used again. The findings this time were that satisfaction with sightseeing ($df = 586$, $p < .05$), shopping ($df = 586$, $p < .05$), and business trips ($df = 577$, $p < .001$) were significantly related to overall trip satisfaction.

The last tests showed positive relationships between each independent variable related to customer loyalty. Logistic regression analysis found that only shopping satisfaction had a significant relationship with destination revisitation (S.E. = .406, $p < .05$). This result was expected because shopping is a primary reason for visiting Saginaw County, as previously mentioned. Other variables were not significantly related to destination revisitation. However, recommendation to others about the destination was not tested because there was not enough variance to test between

Table 4.—Relationship between purpose of trip, hotel services/facilities, hotel satisfaction, other satisfaction measures related to the trip and overall satisfaction with the trip

	β	t	Sig.
Purpose of trip			
Visit with friends or family	.115	.658	.418
Sightseeing	.540	3.092	.080
Shopping	.031	.179	.673
Business trip	.607	3.478	.064
Other satisfaction measures related to trip			
Family attractions	.236	4.472	.000
Value of a vacation	.210	4.541	.000
Entertainment	.135	2.845	.005
Shopping	.171	3.906	.000
Restaurants	.120	3.013	.003
Hotel service/facilities ^a	-.001	-.026	.980
Hotel satisfaction	.240	5.648	.000

Note: Adjusted R square: .817

^aAnalyzed with clustered cases

“yes” (96 percent responded) and “no” (4 percent responded).

5.0 CONCLUSIONS AND IMPLICATIONS

One of the main objectives of this research was to identify the factors that influence accommodation decisionmaking. Several hotel service/facilities factors were found to be important, including hotel location, hotel room and package rate, the type of hotel room, hotel amenities, repeat guests, and recommendations from a friend. Findings from this study showed that some *Pull* factors (i.e., hotel room type, hotel service, recommendation by a friend, always stay at this hotel, location, hotel amenities) had a significant relationship with hotel satisfaction. Hotel satisfaction also had a positive relationship with tourists' overall trip satisfaction. Most *Push* factors (i.e., sightseeing, shopping, business trip), with the exception of ‘visit with friends or family’, and some of other satisfactions (i.e., family attraction, value of a vacation, shopping,

restaurant, entertainment) had a positive relationship with tourists' overall trip satisfaction. Finally, it was found that shopping satisfaction alone can positively influence repeat visitation and recommendation of the destination to others.

Our findings are useful to the hotel industry as they provide a clear indication of how to improve their services. Once the hotel attributes in relation to customers' requirements are clearly identified and understood, hotel managers are more able to anticipate and cater to their customers' desires and needs, rather than merely reacting to their requests. A better understanding of tourists' behavior to revisit the destination or to recommend the destination to others would help the hotel and tourism industries develop customer loyalty. Although our study found that hotel service/facilities are less important in influencing tourists' overall satisfaction and customer loyalty to the destination, this model can be used by hotels and tourism-related businesses to increase customers' satisfaction with and loyalty to the destination.

Future studies using this model could help us better understand the relationships between push/pull factors, destination loyalty, and trip satisfaction for various destination. First, future studies could investigate more resort-dominated destinations using this model to see if there are more causal relationships between hotel service/facilities, hotel satisfaction, and destination loyalty in this different type of setting. Second, this model needs to be re-examined using other possible data analysis. For example, structural equation modeling may provide additional rigor and add to the robustness of the model.

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PLACE MEANING II

SENSE OF PLACE ALONG A SCENIC BYWAY IN MAINE

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Abstract.—Sense of place defines the value and meaning of location. The Rangeley Lakes area of Maine, an unusual natural environment with cultural and historic significance, was nationally recognized in 2000 by the designation of the Rangeley Lakes National Scenic Byway. A survey during the summer of 2006 sought to identify sense of place in the midst of tourism-related growth and development. Respondents, primarily visitors with above-average income and education, were attached to specific special places in the area. Perceptions concerning threatened places were not place-specific but were regional and connected to general environmental issues.

1.0 INTRODUCTION

The rich, known human history of the Rangeley Lakes area of Maine began with Abenaki Indian hunting and fishing camps. Edward Ellis (1983) reported that by the early 1900s, more than 200 fishing guides made their living in the area while extravagant resort hotels and sporting camps flourished on Mooselookmeguntic and Rangeley Lakes. When rail travel declined due to the ascendance of the automobile, Maine built roadways along Benedict Arnold's famous trail and old Indian trail systems that connected the St. Lawrence River to the Maine coast (Franklin, 2006). Historically, these roadways were the site of travelers passing for

trade, raid, or migration and are considered some of "the most history-laden roads in the state" (Franklin, 2006, p. 32).

Rangeley Lakes National Scenic Byway (RLNSB) is one of 126 distinct roads designated by the U.S. Secretary of Transportation under the umbrella of "America's Byways" with the purposes of promoting the nation's scenic corridors and protecting natural and cultural resources (Yamada et al., 2002). In partnership with Rangeley Lakes Heritage Trust (RLHT), RLNSB is working to protect "the integrity of the landscape, the character of the region, and the quality of life cherished by residents and visitors alike" (Rangeley Lakes Heritage Trust, 2005, p. 4).

Today, the Rangeley Lakes area, with 1,200 permanent residents, remains a destination vacation spot providing magnificent mountain, lake, and river views with access to 33,000 acres of conserved public lands. Year-round recreational activities include fishing, hiking, hunting, skiing, snowmobiling, and wildlife viewing but the popularity of the area has brought change. Condominiums are on the hillsides, jet skies are on the lake, ATVs are in the remote areas, businesses are stretched linearly along Route 4 near Rangeley, and the narrow two-lane roadways are congested with travelers and local traffic. Increasing property taxes are putting pressure on residents as large vacation and retirement homes are built. During the summer of 2006, the Maine Department of Transportation (MDOT) sponsored a survey on the nearby Old Canada Road National Scenic Byway. The director of the RLNSB requested a preliminary survey in the Rangeley area as a first-look evaluating sense of place, perceptions of growth among residents and visitors, and determining impact on special and threatened places. This research was a response to that request.

2.0 LITERATURE REVIEW

Among many definitions for “sense of place” in the literature, an important component is emotional identification with a landscape (Cantrill, 1998; Galliano & Loeffler, 1999). Cheng et al. (2003) defined sense of place as “the rich and often powerful emotional sentiments that influence how people perceive, experience, and value the environment” (p. 87). Tuan (1977) discussed several dimensions of the environment in terms of “space” and “place” and acknowledges that “space is an abstract term for a complex set of ideas” (p. 34). Many researchers have made an effort to clarify these dimensions and explore the connection to environmental attitudes and behavior. Bolt et al. (2003), however, cautioned against too narrow a construct that associates place with “only built or only natural environments”; they encourage consideration of “experience of all varieties of places” (p. 101). Many researchers point out that sense of place is socially constructed and that people give meaning to places when they interact with the environment (Eisenhauer et al., 1999; Galliano & Loeffler, 1999).

Galliano and Loeffler (1999) asserted that it is important for natural resource managers to investigate “how humans identify, describe, and interact with the environment [in order to] more actively inventory and understand the meanings people attach to the lands and resources they manage” (p. 1). Natural resource managers have historically regarded specific places or settings as products that are useful for meeting recreation needs; in this context, if one setting proves unsuitable, another can be substituted (Williams et al., 1992). Mitchell et al. (1993), however, found important differences between use-oriented and attachment-oriented visitors to a place; use-oriented individuals connect environmental qualities to activities and experiences while attachment-oriented visitors value the settings themselves over the activities and experiences enjoyed there. Cheng et al. (2003) also suggested that connections between people and place extend far beyond use. The concept of “sense of place” has the potential to bridge the gap between the science and management of ecosystems by offering managers a “way to

anticipate, identify, and respond to the bonds people form with places” (Williams & Stewart, 1998, p. 18). With regard to place, an economic or commodity metaphor can thus be replaced with a focus on the human values, experiences, benefits, satisfactions, meanings, symbols, and emotions that have important implications for management of natural areas (Williams et al., 1992; Williams & Stewart, 1998; Galliano & Loeffler, 1999; Eisenhauer et al., 2000; Davenport & Anderson, 2005). Many managers understand that place meanings affect public responses to programs and the management decisions and may be a barrier to the success of management strategies such as substitutability (Eisenhauer et al., 2000).

A key topic in sense of place is place attachment. Williams et al. (1992), Cheng et al. (2003), and Davenport and Anderson (2005) referred to the connection between place and “self-identity,” “social-group identity.” Cantrill (1998) discussed the “environmental self (i.e. that portion of one’s self-construct system associated with the larger environment, seen through the lens of personal history)” (p. 304). Bolt et al. (2003) explained place identity as a “sense of self-in-place” representing a “higher level” concept and potential predictor of behavior that may explain mental and emotional investments in a location (p. 106).

Human perceptions of the environment are also intimately connected to the physical attributes of place and the impact of change on the landscape. Stedman (2003) asserted that, “It is crucial that we understand the importance of meanings and how they may change in response to physical landscape change” (p. 682). According to McCool and Martin (1994), tourism-induced change can disrupt a community’s sense of attachment and destroy the value of the community in people’s eyes; their study also raises interesting questions about length of residency and attachment. Davenport and Anderson (2005) asked, “What happens to sense of place when places change?” (p. 630). Conflict over natural resources can include alienation between residents vs. newcomers caused by differences over use (Cantrill, 1998), “in-groups” vs. “out-groups” (Cheng et al., 2003), or community

members vs. outside developers (Davenport & Anderson, 2005). Davenport and Anderson (2005) concluded that “contentious issues like development can be better understood by identifying and examining place meanings” (p. 639). Vorkinn and Riese (2001) examined the affect of change on the attitudes of local inhabitants and whether attitudes can be predicted based on different levels of place attachment; they conclude that “place attachment also predicts the attitudes toward specific proposed environmental change” (p. 260).

3.0 METHODS

The purpose of this study was to survey people visiting or living in communities along the RLNSB in Maine about their perceptions of the area and their opinions about how it had changed over time. This study is rooted in land managers’ and decisionmakers’ concerns about the effects of tourism, population growth, and land development on the RLNSB region.

Travelers along the RLNSB were surveyed in four MDOT rest areas (Chambers Park, Smalls Falls, Whip Willow, and Rangeley Overlook) during the summer of 2006. They were asked to respond to 18 questions and complete a map exercise. The survey collected demographic data and information about their trip including their place of origin, the purpose of the trip, their method of travel, and the length of their stay. Repeat visitors were asked how many years they had been coming to the area and how they thought the area had changed over that time. Questions were designed to explore the multiple reasons people might visit the byway. Systematic random on-site surveying during the peak summer season resulted in 678 completed surveys. A nearly equal number of randomly selected AM (10 a.m. to 2 p.m.) and PM (2 p.m. to 6 p.m.) times were assigned to the randomly selected days. There was a nearly equal distribution of weekends and weekdays, excluding holidays which were treated separately.

4.0 RESULTS

Survey participants ranged in age from 18 to 83 years, with a median age of 47 years. Mean income was

above average in the \$50,000 to \$74,999 category and 48 percent of respondents held a college degree. About 55 percent were male. More than one-third were in the area for only one day (day-trip) while 46 percent stayed overnight on extended visits of four or more days (Table 1). Seventeen percent were first-time visitors, indicative of new tourism flowing into the area. Questions that explored why people had chosen to come to the area indicated that most were there because of the natural resources (72 percent). Eleven percent had friends and family in the area and were designated as social-based visitors. Fourteen percent of respondents were seasonal or full-time residents.

When asked if the Rangeley Lakes area had changed, 39 percent responded that they had observed a change for the better since they first came to the area. Positive changes related to growth and development included improvements in amenities, services, appearance, byway facilities, or economic factors. Twenty-five percent of respondents reported that the area had changed for the worse with regard to cultural character, environmental issues, regulation/zoning, or economic issues. Over one-third of participants were not sure about change or did not recognize any change. There were many comments about perceptions that the Rangeley Lakes area was undergoing tourism-related changes:

- “Rangeley is unusual – high percent [of people] from away and a small group of have-nots who clean cabins. The money people say they don’t want anyone else, but we need jobs and housing.” (Resident, 4 years)
- “Could be loved to death. I came here, others want to come too. They will want to build.

Table 1.—Visitor profile

Category	% of respondents
Overnight, resource	58%
Day-trip, resource	14%
Overnight & day-trip, social	11%
Seasonal residents	7%
Residents	7%
Non-recreational	3%

I have no right to restrict others but I am concerned for Rangeley being mobbed.”
(Resident, 18 years)

- “[It’s] crowded, too many McMansions, moved here to get away from it but it is following, but the IGA [supermarket] is an improvement.”
(Resident, 38 years)
- “People from the cities on vacation...make it more city and should not change it.” (Resident, 20 years)
- “...It will turn into just another junked up tourist location, yuck.” (Visitor, 33 years)

To determine visitors’ satisfaction with specific aspects of the area, respondents were asked to rate nine items on a five-point *expectation* scale (Table 2). Respondents were then asked to rate their level of *satisfaction* for the same nine items on a five-point attainment scale. Five of these items had satisfaction levels higher than expectation levels: forests, rural area, mountain views, lake views and rivers. Mountain views had the highest expectation level, while forests had the highest satisfaction level. Satisfaction ratings were lower than expectation ratings on the remaining four items: quiet setting, wildlife, uncrowded setting and lakes). Quiet setting had the greatest difference between expectation and satisfaction while wildlife had the lowest overall satisfaction level.

The map exercise asked respondents to identify three “special places” and three “threatened places.”

Table 2.—Visitors ratings

Feature	Expectation mean	Satisfaction mean	Difference
Forests	4.40	4.54	+ .14
Rural	4.32	4.46	+ .14
Mountain views	4.49	4.56	+ .07
Lake views	4.45	4.52	+ .07
Rivers	4.40	4.47	+ .07
Quiet Setting	4.47	4.36	- .11
Wildlife	4.41	4.31	- .10
Uncrowded	4.40	4.32	- .08
Lakes	4.55	4.52	- .03

Expectation: 5=Very important; 1=Very Unimportant;
Satisfaction, 5=Fully met; 1=Not at all met

There were 537 “most special places” given of which 92 percent of the responses were distinct and mapable locations. Seven percent of respondents said everything was special, and just over 1 percent mentioned generic natural places (the lakes, the forests). Including all responses, nearly 1,300 special places were mentioned by the 678 respondents (Fig. 1). When asked to designate “threatened places,” many respondents said they could not think of anything. The question was then re-worded to ask what “places or things” in the area were threatened. After that change, 460 responses were given. Threat-related issues included over-development (n=105), protection of natural resources including wildlife (n=67), land access and forest issues (n=57), Rangeley Lake environmental issues (n=42), cultural issues, Town of Rangeley (n=42), water quality (n=27), and scenery and fishing decline (n=18).

5.0 DISCUSSION

The data support the idea that tourism-related growth and development is causing a lot of concern among people who live in or visit the area. One caution is that our survey respondents were primarily resource-oriented and older, perhaps as a result of our sampling method. Nonetheless, a very high percentage of visitors (83 percent) identified “over-development” as the greatest threat to the area. While five natural features of the area exceeded respondents’ expectations, four did not, indicating that the area was less quiet, more crowded, with less wildlife and a less-than-ideal lake environment than visitors expected. It is notable that many visitors’ special places were distinct, definable, and mapable. A portion of survey respondents indicated that they had use-oriented attachments to the area (e.g. fishing, skiing, wildlife viewing) while the great number of special places mentioned could indicate attachment-oriented visitors. The inability to name threatened places could mean that people do not perceive their special places as threatened. However, the many environmental and tourism-related issues that were brought up after the question was expanded may hint at people’s attachment-oriented concerns and highlights the need for further study of this issue in the area.

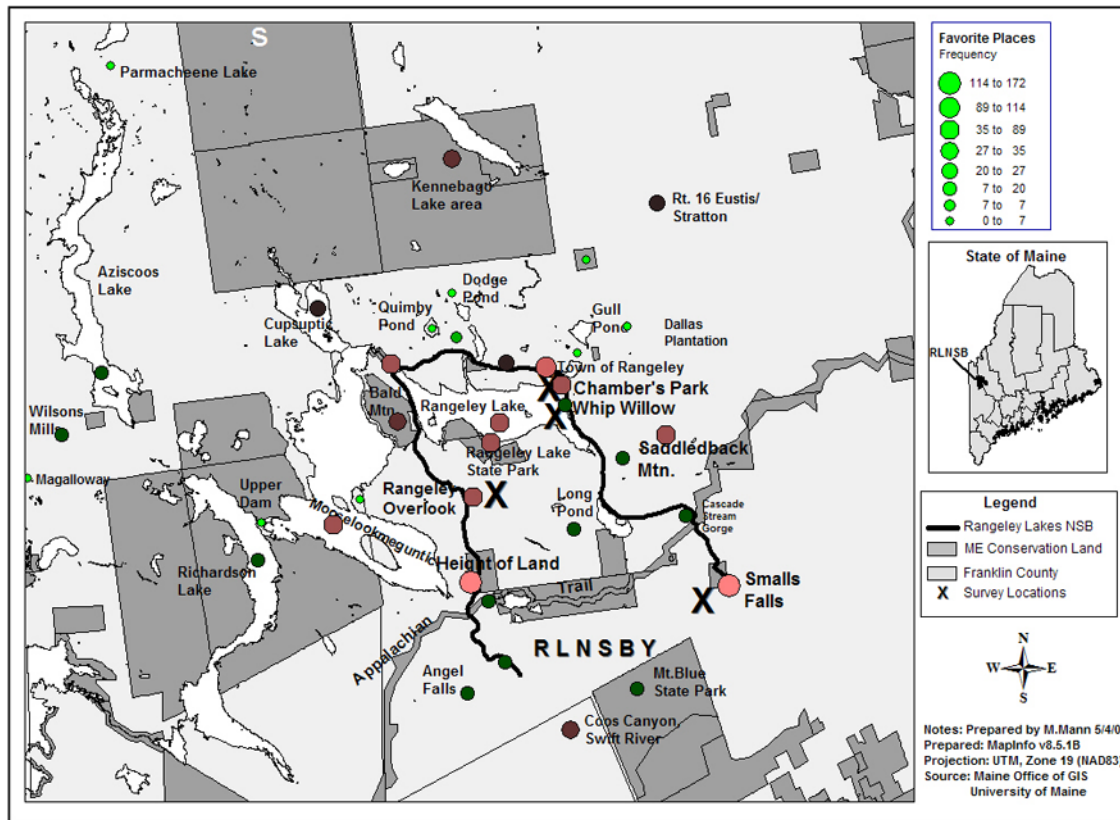


Figure 1.—Rangeley Lakes National Scenic Byway: special places.

Survey responses indicate that setting is important in the RLNSB area and should be incorporated into public management of natural resources in this area. Attachment and the level of attachment may help explain people's different perceptions of change (Vorkinn & Riese, 2001). Better understanding of contentious issues of a social nature in the Rangeley Lakes area could provide guidelines and management direction regarding sustainable tourism development. As this was an exploratory study, more research into sense of place would be useful in defining "place" and "space" and would help resource managers design effective strategies for sustaining the region's resources in the face of pressure from tourism and development.

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EXPLORING THE EFFECT OF EXPERIENCE USE HISTORY AND PLACE BONDING ON RESOURCE SUBSTITUTION

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Abstract.—Although place bonding has been a prominent aspect of human dimensions research for over 25 years, there remains a need to understand the construct's behavioral implications. One area that has received attention is the relationship between experience-use history (EUH), place bonding, and resource substitution. To further examine the relationships among these constructs, we hypothesized that EUH and place bonding would be significantly related to campers' willingness to substitute their camping location for another local campground. The three campgrounds in the study from which we drew our sample were managed to reflect different points along the recreation opportunity spectrum (ROS); from primitive, semi-primitive/nonmotorized, to rustic. We also examined the effect of "setting type" on the hypothesized relationships. The results of the regression analysis indicated that EUH and place bonding are significant predictors of a campers' willingness to substitute and that setting type influences these relationships.

1.0 INTRODUCTION

Place bonding has been a prominent aspect of research on the human dimensions of natural resources for more than 25 years. Much of the resulting literature has focused on conceptualizing and defining the place bonding/attachment construct (Giuliani & Feldman, 2003; Hammitt et al., 2006; Hay, 1998; Jorgensen & Stedman, 2001). Also, researchers have examined the antecedents of place bonding by examining outdoor recreation constructs, such as experience use history (Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Williams et al., 1992). However, much remains to be understood about the effect of place bonding on selected outdoor recreation behaviors.

The purpose of this study was to further explore the relationship between experience use history, place bonding, and resource substitution among individuals who were camping at three southern Appalachian campgrounds. As shown in Figure 1, we hypothesized that experience-use history (EUH) and place bonding would be significantly related to campers' willingness to substitute their camping location for another local campground. Specifically, the greater the EUH and the higher the degree of bonding a camper felt toward their campground, the less likely they would be willingly to substitute another campground for their own. Since each campground was hypothetically managed at different points along the recreation

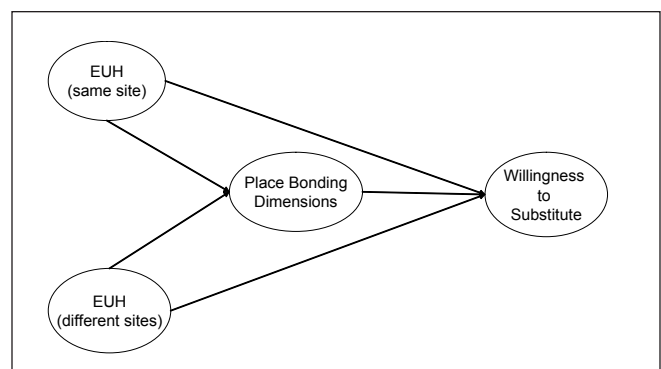


Figure 1.—Hypothesized model.

opportunity spectrum (ROS; rustic, semi-primitive/nonmotorized, and primitive), each site had unique attributes. Consequently, we also examined the effect of “setting type” on the hypothesized relationships.

2.0 RELATED RESEARCH

2.1 Place Bonding

How do people identify themselves? Where do they choose to work, study, and play? How does the environment affect these choices? One of the ways that researchers have attempted to examine these questions is by exploring the relationships people have with place. These works have most often fallen under the rubric of “sense of place,” “place attachment,” “place bonding” and so forth. In the context of our own work, we have utilized the label “place bonding” which refers to “the person-place bond that evolves from specifiable conditions of place and characteristics of people” (Shumaker & Taylor, 1983, p. 221). Regardless of its label or definition, much remains to be learned of the behavioral implications stemming from an individual becoming bonded to a place. Specifically, a key question of concern, in the context of our own investigation, is how one’s bond to a place impacts their recreational behaviors, such as willingness to substitute one recreation setting for another. Hammitt and colleagues have hypothesized that place bonding is comprised of five dimensions: 1) place identity; 2) place dependence; 3) place familiarity; 4) place belonging; and 5) place rootedness (Hammitt & Cole, 1998; Hammitt et al., 2004; Hammitt et al., 2006). The authors posited that as bonding intensity increase, certain types of attachment to a place also develop.

The first dimension in their taxonomy is labeled *place familiarity*. Place familiarity is bonding due to remembrance and cognition of a place and is indicated by a sense of familiarity and “typicality” (Nasar, 2000). The second dimension in the taxonomy is *place belongingness*, or attachment to a place through social bonding. This bonding causes individuals to feel that they have connected and hold ‘membership’ with an environment (Mesch & Manor, 1998). Another dimension is *place identity*. It involves

using the bonded place in creating and expressing an individual’s self identity. In fact, Proshansky et al. (1983, p. 59) consider place identity a substructure of the self-identity. The fourth dimension in Hammitt and colleagues’ taxonomy is *place dependence*, which is characterized as bonding due to the functional necessity of a certain resource. In other words, the physical attributes of the place contain features and conditions that support specific goals and desired activities (Stokols & Shumaker, 1981). The final dimension is *place rootedness*. Hummon (1992) defines this as every day rootedness. This high level of bonding is indicated by an individual’s elevated sense of security in a place and by a sense of possession over that place. This taxonomy helps to more clearly understand the different dimensions of place bonding.

2.2 Place Bonding and Experience Use History

Some have hypothesized that place bonding occurs through the attitudes one develops while interpreting the symbolic meanings one attributes to a place (Jorgensen & Stedman, 2001; Williams et al., 1992; Williams, 2002). Attitude strength varies from mild to extreme (Mannell & Kleiber, 1997). Attitudes are strongest when they are based on direct experience with the attitude object (Fazio & Williams, 1986). Since places, as objects, are one of the most stable concepts in human environments, it follows that people will encounter repeated experiences in particular places. Furthermore, attitudes have a cognitive component and an affective component (Kraus, 1995). Hence, attitudes developed through repeated experiences lead to a sense of bonding to the place where the experiences occur. Thus, the more experiences one has with a particular place, the more likely it is that they will become bonded to that place. To understand how the quantity of past experience affected various recreational and natural resource concepts, Hammitt & McDonald (1983) and Schreyer et al. (1984) developed the construct labeled ‘experience use history’ (EUH). EUH is a measure of past experience and has been measured using indicators of total visits, total years of use, frequency of use, etc. (Hammitt & McDonald, 1983; Schreyer et al., 1984). Recently, Hammitt et al. (2004) determined

that EUH was correlated with place attachment. However, they did not specify the nature of this relationship.

2.3 Resource Substitution

Similar to the relationship between experience use history and place bonding, many researchers have suggested a correlation between place bonding and resource substitution (Hammitt et al., 2004; Mesch & Manor, 1998; Stokols & Shumaker, 1981; Williams et al., 1992). Substitution for recreation resources occurs when similar recreational motivations, needs, and benefits can be achieved at another location with a similar resource experience (Brunson & Shelby, 1993; Hendee & Burge, 1974; Iso-Ahola, 1986). Substitution can occur for a variety of reasons, such as displacement from a preferred resource area or boredom with a particular setting. Willingness to substitute differs among different types of recreationists. For example, Korpela et al. (2001) found that highly experienced individuals who had a strong bond with the resource were unwilling to substitute if the need arose. Likewise, willingness to substitute has been associated with a lower place bonding intensity (Hammitt et al., 2004; Williams et al., 1992). However, the directionality of the relationship between place bonding and resource substitution has yet to be empirically tested.

3.0 METHODS

3.1 Study Area, Population, and Response Rate

The data used for this analysis were collected during the summer and fall of 2003 from visitors to Sumter National Forest in South Carolina. The instrument was designed to be completed by the respondent onsite, however some respondents were permitted to take the survey with them and return via mail in a postage paid envelope provided by the researcher. A convenience sample of overnight campers at Cherry Hill, Burrells Ford, and Ellicot Rock campgrounds elicited 424 returned surveys, thus achieving an 84 percent response rate (The authors would like to acknowledge the work of Drew and Jenny Cavin in the data collection). Each campground was managed

to be consistent with different points along the recreation opportunity spectrum; Cherry Hill is a rustic campground, Burrell's Ford is managed as a semi-primitive/nonmotorized area, and Ellicot Rock is a primitive campground in a wilderness area.

3.2 Survey Instrument

The items used in this analysis consisted of four EUH items (Hammitt & McDonald, 1983; Schreyer et al., 1984) which asked respondents to indicate number of years camping at the particular campground where they were contacted, frequency of camping at that campground in the past year, number of years of camping at other campgrounds, and frequency of camping at other locations in the past year. Place bonding was measured using a five-point agreement scale (1=strongly disagree; 3=neutral; 5=strongly agree) for 26 place bonding items (Hammitt et al., 2004). Finally, respondents indicated their willingness to substitute by responding to two items based on a five-point scale (1=not at all willing; 3=neutral; and 5=very willing).

4.0 ANALYSIS AND RESULTS

Respondents' ages ranged between 18 and 79, with a mean age of 39 years. Most had indicated that they were Caucasian (n=398, 94 percent) and over two-thirds were male (n=301, 71 percent). Only 15 percent (n=64) of the sample had not attended any college. Respondents' household incomes were well dispersed with about half earning over \$60,000 a year. They indicated that they had been camping the current site for a mean of 6.5 years (SD=8.88) and at other sites for 9.5 years (SD=10.95). They also reported that their frequency of camping at the present site was 1.4 times during the previous year (SD=2.63) and their frequency at other campgrounds was 2.4 times during the same time period (SD=4.23). Finally, there were no significant differences between any of the EUH items among the three campgrounds.

The results of the confirmatory factor analysis (CFA) of the place bonding items are reported in Table 1. Although the five dimensional model was tested, the CFA indicated that a four dimensional model was a

better fit due to low factor loading and cross loading between the belongingness and identity dimension items. Hence, the items that were hypothesized to represent the identity and belongingness dimensions were combined to form a dimensioned labeled “affect.” The reliability coefficients and the factor loadings indicate that this dimensional model of place bonding (affect, dependence, familiarity and rootedness) is a good fit for these data. Using the four dimensions of place bonding, an analysis of variance (ANOVA) was conducted to test for differences in

place bonding between each of the three sites (Table 2). The data indicated that mean place bonding scores for the dependence ($F=6.45$; $p<.01$), familiarity ($F=4.23$; $p\leq.01$) and rootedness ($F=7.95$; $p<.01$) dimensions were significantly lower for Ellicot Rock, compared to Cherry Hill and Burrell’s Ford. There were no differences between sites for the affect dimension. Also, an ANOVA was conducted to identify any differences between the sites for the respondents’ willingness to substitute another site for their present one; there were no significant differences.

Table 1.—Factor Loadings, Reliabilities and standard errors of the place bonding scale

Dimension Items	α	λ	SE
Dependence	0.92		
_____ is the best place for camping		0.69	0.04
No other place can compare to _____ for camping		0.79	0.04
I wouldn’t substitute any other area for camping		0.86	0.04
Camping at _____ is more important to me than camping elsewhere		0.93	0.04
I get more pleasure at camping at _____ than elsewhere		0.87	0.05
Familiarity	0.82		
I know _____ like the back of my hand		0.84	0.05
I have many memories of camping at _____		0.81	0.06
I could draw a rough map of _____		0.71	0.06
Rootedness	0.89		
I rarely ever camp any place other than _____		0.81	0.05
_____ is the only place I desire to camp		0.94	0.04
I consider only _____ when I go camping		0.89	0.04
If I could not camp at _____ I would not camp anymore		0.66	0.05
Affect	0.95		
I feel connected to _____		0.90	0.05
When I am at _____ I feel a part of it		0.79	0.05
_____ is very special to me		0.78	0.04
I am very attached to _____		0.84	0.05
I identify strongly with _____		0.87	0.04
I feel like _____ is part of me		0.88	0.05
_____ means a great deal to me		0.85	0.05

Table 2.—Differences in place bonding at each of the campgrounds

Dimension	Cherry Hill		Burrell’s Ford		Ellicot Rock		F	p
	Mean	SD	Mean	SD	Mean	SD		
Dependence	2.94	0.98	2.85	0.88	2.55*	0.73	6.45	<.01
Familiarity	3.23	1.07	3.05	1.08	2.86*	1.02	4.23	0.02
Rootedness	2.40	1.03	2.30	0.95	1.95*	0.73	7.95	<.01
Affect	3.26	0.98	3.32	0.91	3.21	0.95	0.41	0.67

One-way ANOVA; $df=400-405$

*Post-hoc analysis revealed that only Ellicot Rock was different from the other sites for the dimensions indicated

Means based on a 5-point agreement scale: 1=strongly disagree; 3=Neutral; 5=strongly agree

The last step in this analysis was to use linear regression to test the relationship between EUH, place bonding, and willingness to substitute. Figure 2 illustrates the results of the analyses for the pooled sample of all respondents. This overall model ($\chi^2 = 34.43$; RMSEA = .09; NFI = .98; CFI = .98), reveals that EUH with the site at which the respondent was camping was positively predictive ($p < .05$) of all four place bonding dimensions: affect ($\beta = .52$; $R^2 = .27$); dependence ($\beta = .40$; $R^2 = .16$); familiarity ($\beta = .61$; $R^2 = .38$); and rootedness ($\beta = .33$; $R^2 = .12$). However, EUH at the other campsites was only related to the rootedness dimension ($\beta = -.11$; $R^2 = .12$), and the relationship was negative. Willingness to substitute was negatively predicted by the respondent's EUH with the site at which they were camping and the familiarity dimension of place bonding ($\beta = -.13$ and $\beta = -.21$, respectively; $R^2 = .09$). In general, for the

overall model, as EUH at the present site increased, place bonding increased and willingness to substitute decreased.

Figures 3, 4 and 5 exhibit the relationship between EUH, place bonding, and willingness to substitute for each of the three campsites individually. As indicated, the general relationship between the constructs was the same for the developed campground, Cherry Hill ($\chi^2 = 20.65$; RMSEA = .09; NFI = .98; CFI = .99) as it was for the overall model, except EUH was negatively related to familiarity ($\beta = -.09$) instead of rootedness. However, for the respondent's camping at the semi-primitive site, Burrell's Ford ($\chi^2 = 24.62$; RMSEA = .11; NFI = .94; CFI = .96), their EUH at other campgrounds again became a significant predictor of rootedness ($\beta = -.18$). Also, the Burrell's Ford model indicates that EUH with Burrell's Ford

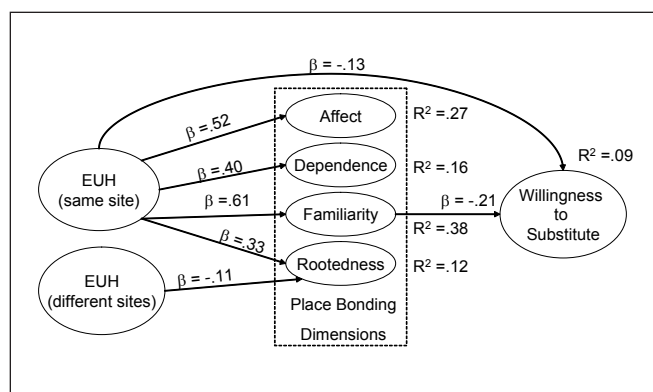


Figure 2.—Overall manifest regression model for the relationship between EUH, place bonding, and substitution. Chi-square = 34.43; RMSEA = .09; NFI = .98; CFI = .98.

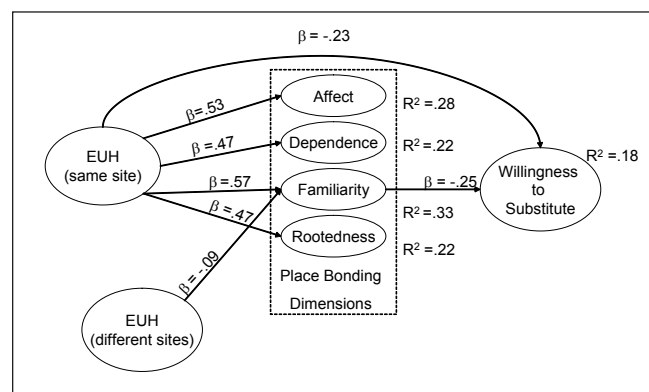


Figure 3.—Manifest regression model for the Cherry Hill (developed) setting. Chi-square = 20.65; RMSEA = .09; NFI = .98; CFI = .99.

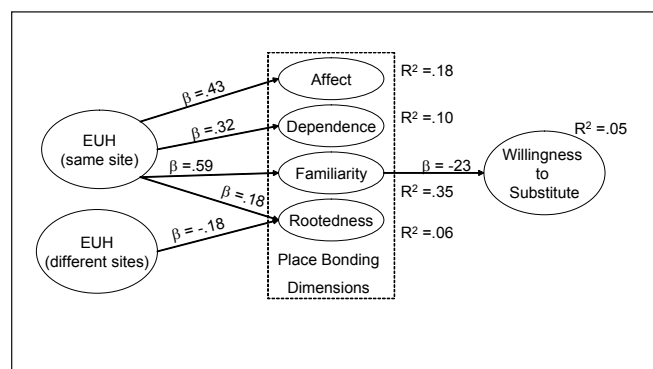


Figure 4.—Manifest regression model for the Burrell's Ford (semi-primitive) setting. Chi-square = 24.62; RMSEA = .11; NFI = .94; CFI = .96.

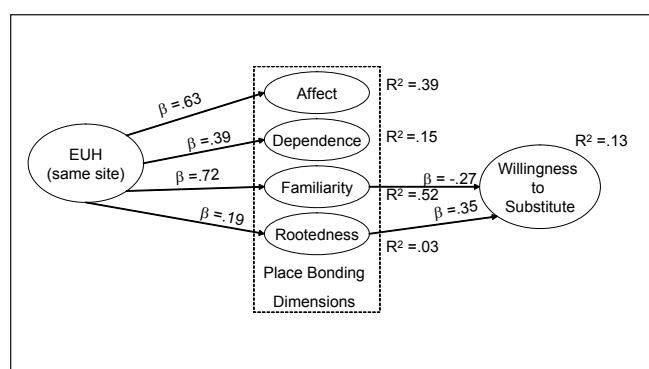


Figure 5.—Manifest regression model for the Ellicot Rock (wilderness) setting. Chi-square = 24.33; RMSEA = .11; NFI = .94; CFI = .95.

was not related to willingness to substitute. The only predictor of substitution was the place bonding dimension of familiarity ($\beta = -.23$; $R^2 = .05$). Finally, for wilderness campers at Ellicott Rock ($\chi^2 = 24.33$; $RMSEA = .11$; $NFI = .94$; $CFI = .95$), EUH with the other campgrounds did not predict place bonding or willingness to substitute. EUH with Ellicott Rock was positively related to each of the four place bonding dimensions, but not willingness to substitute. Willingness to substitute was predicted by the place bonding dimensions of familiarity and rootedness ($\beta = -.27$ and $\beta = -.35$, respectively; $R^2 = .13$). It is interesting to note that familiarity was negatively related to substitution as hypothesized, but rootedness was not. In this model, rootedness was shown to be positively related to willingness to substitute. Clearly, these data indicate that the relationship between EUH, place bonding, and willingness to substitute differs between the overall model and each campground setting as well as between each of the three settings.

5.0 DISCUSSION

The purpose of this study was to continue the work started by Hammitt et al. (2004) and others by further exploring the relationship between experience use history, place bonding, and resource substitution. This analysis went beyond previous studies, which identified that a relationship between the constructs existed, by suggesting the directionality of the relationships and identifying the nature of the interplay between EUH, place bonding, and resource substitution. We also examined how the setting type, reflected in each of the campsites, may affect these relationships.

The results indicated that the structure of the relationships between EUH, place bonding, and resource substitution differ from setting type to setting type. Since the data indicated there were no differences in EUH or willingness to substitute between each of the three setting types (campgrounds), we suggest that the effect of setting type on the relationship is due to how the type of setting impacts respondents' place bonding. This became evident when it was shown that Ellicott Rock had significantly different means

from the other two campgrounds on three of the place bonding items (Table 2). Furthermore, the Ellicott Rock model was the most structurally different from the other campground models and the overall model. Further research is needed to determine whether the cause of these difference is related to the setting itself, individual characteristics of people who camp at these sites, or activity differences among these campers.

Although the models for each of the campgrounds were different, it is important to examine the similarities in order to see the general relationship between the constructs. Respondents' EUH with the campground that they were camping at was generally a good predictor of each of the dimensions of place bonding. This result, along with the result that same site EUH was a predictor of willingness to substitute for two of the three settings, but not the third, suggests that respondents' experience with a setting influences the strength of their bonding with place. At the same time, past experience with a setting also limits their willingness to abandon one place for another. Further research should be conducted to more clearly identify the casual relationship between EUH and place bonding.

Another similarity between the models was that familiarity was a significant negative predictor of willingness to substitute. This suggests that as a visitor develops a cognitive bond through memories and past experiences they are less likely to substitute an alternate campground. Moreover, since the dependence and affect dimensions were not related to substitution, we can conclude that, for the campers in this study, the emotional component and the evaluation of the functionality of the setting attributes are not considered when one chooses to substitute one campsite for another. This supports the notion that EUH is an antecedent to place bonding, at least as place bonding relates to resource substitution.

A somewhat surprising result in this analysis was that, in the Ellicott Rock model, the rootedness dimension was positively related to willingness to substitute. The idea that the more rooted one is to a place the

more likely they are to substitute runs contrary to our hypothesis. Our speculation on the basis of this finding is that people who frequent wilderness areas are often a more adventurous type of visitor. Thus, as their experience with a specific site increases and they, in turn, become more rooted to a campground, they also become bored with the area. And, since these wilderness campers are more adventurous, they may seek out new experiences in an unfamiliar place to appease their boredom. Clearly, research incorporating optimal arousal theory (Berlyne, 1971) is needed to ascertain the truth of these suggestions.

5.1 Implications

Since the models for each of the individual campgrounds varied from the overall model, future research should consider examining these constructs not as an aggregate pooled sample of all recreationists but as subgroups based on the settings where respondents are recreating. Furthermore, if setting type plays a role in this relationship, then future research should also try to identify other ways to segment recreationists to identify other factors influential to the relationship.

These results also demonstrate a need to identify other variables and constructs that are influential in a recreationist's decision to substitute one site for another. Although all of the models were significant, the variance explained never exceeded 18 percent. This indicates that there may be elements missing from our hypothesized model. Future research should consider adding other constructs to this model. For example, discussion with colleagues leads us to suggest that social relationship variables (e.g. relationship to others in respondents camping party, strengths of relationships with other individuals in the party, etc.) and/or motivational items should be considered in future models of the relationship between EUH, place bonding, and resource substitution.

5.2 Limitations

As with all research, these findings have limitations. First, the means for each of the place bonding dimensions are relatively low. This indicates that the

respondents in this study were not very attached to any of the campgrounds. Hence, results may be different for a sample of campers who are highly attached or vary greatly in their attachment to the study sites.

Second, we had concerns about the management of each of the sites and the location along the ROS spectrum given the impacts we witnessed on the ground (e.g., extensive clearing of underbrush, informal campsites, campfires, etc.). Consequently the sites were proximately close both in terms of their geographic location and their positions along the ROS continuum. This lack of setting variation may have manifested itself in the similarity of visitor type that we observed in these data.

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***NATURAL RESOURCE
MANAGEMENT***

RECREATION-RELATED VALUES, ATTITUDES, AND BELIEFS OF BUSINESS OWNERS IN THE SARANAC LAKES REGION OF NEW YORK STATE'S ADIRONDACK PARK

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Abstract.—Public forest management agencies often work with recreation-related business owners as they implement management policies. The main objective of this study is to quantify the values, beliefs, and attitudes of business owners in the Saranac Lakes Region of New York's Adirondack Park regarding motorboating, nonmotorized boating, and personal watercraft use. The Theory of Planned Behavior (Ajzen, 1991) provides the theoretical basis for the study. The influence of resource- and recreation-related values on attitudes and beliefs is studied. A survey of the 58 recreation-related business owners identified in the Saranac Lakes Wild Forest was conducted. A response rate of 43 percent (25 questionnaires) was obtained. A path analysis was used to identify significant relationships between values, attitudes, and beliefs toward motorboating, nonmotorized boating, and personal watercraft use. Results indicate significant relationships between resource values and attitudes and beliefs for some forms of boating; few significant relationships were identified between recreation-related values and attitudes and beliefs. Results from the entire study will be used to identify management implications for public and private forest properties in the Saranac Lake region.

1.0 INTRODUCTION

Public forest management agencies work with diverse stakeholder groups as they implement forest management policies in the Northern Forest Region. One such stakeholder group is recreation-related business owners (e.g., guide service, sporting goods, campground, marina, lodging, and restaurant owners). For forest management agencies to implement policies successfully, it is necessary for managers to understand the values, beliefs, and attitudes of this group toward outdoor recreation activities.

This study focuses on the values, beliefs, and attitudes of business owners concerning the use of motorized boats, nonmotorized boats, and personal watercraft (PWC) within the Saranac Lakes Region of New York State's Adirondack Park. The framework for this study is the Theory of Planned Behavior (Ajzen, 1991; Hrubes et al., 2001) which was chosen because of its focus on the relationships between the concepts of beliefs and attitudes. Understanding beliefs and attitudes toward boating can provide public land managers with important insights for management decisions. In addition, understanding how values influence attitudes and beliefs can provide managers further insight into what is important to stakeholders concerning resource management.

The objectives of this study are: (1) to quantify the values, attitudes, and beliefs of business owners toward nonmotorized boating, motorized boating, and PWC use within the Saranac Lakes Wild Forest area; and (2) to identify the relationships among the values, beliefs, and attitudes of business owners for each type of boating within the Saranac Lakes Wild Forest area. Specifically, the following are hypothesized:

1. There is a significant relationship between *beliefs* and *attitudes* for each of the three types of

boating in the Saranac Lakes Wild Forest area ($p < 0.05$).

2. There is a significant relationship between *values* and *beliefs* for each of the three types of boating in the Saranac Lakes Wild Forest area ($p < 0.05$).
3. There is a significant relationship between *values* and *attitudes* for each of the three types of boating in the Saranac Lakes Wild Forest area ($p < 0.05$).

2.0 LITERATURE REVIEW

The Theory of Planned Behavior (Ajzen, 1991) provides a framework for understanding the relationship among beliefs and attitudes toward boating-related behaviors explored in this study. *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 the 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 toward the behavior. Likewise, normative beliefs influence an individual's

perceptions concerning the social pressure for or against a specific behavior (i.e., subjective norms; Hrubes et al., 2001), and control beliefs influence the individual's perceptions concerning the ease or difficulty of performing a specific behavior (i.e., perceived behavioral controls; Ajzen and 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).

Recent studies indicate that personal values may be theoretically and practically important to the Theory of Planned Behavior. Hrubes et al. (2001), for example, identify significant relationships between wildlife-related values and the beliefs and attitudes included in their study of hunting intentions and behaviors. Dougherty et al. (2003) likewise indicate the influence of wildlife-related values on attitudes toward specific management policies associated with natural resource use for hunting. Previous research posits the existence of relationships between personal values for natural resources and both beliefs about resource use and attitudes toward use. Thus, this study will focus on the influence of values on beliefs and attitudes related to boat use on water bodies within the Saranac Lakes Wild Forest area. The relationships between values, beliefs, and attitudes are operationalized in Figure 1.

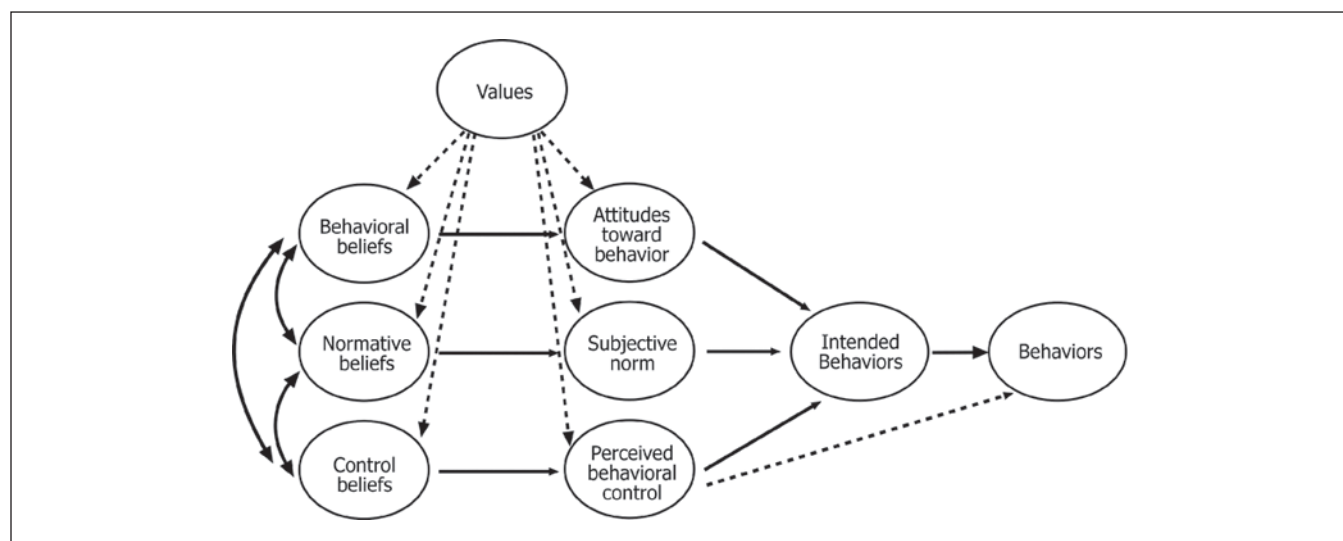


Figure 1.—Operationalized relationships among concepts (based on Ajzen, 1991; Hrubes et al., 2001). The concepts of intended behaviors and behaviors are not examined in this study.

3.0 METHODS

In the fall of 2005, a mailing list of all recreation-related businesses near the Saranac Lakes Wild Forest in New York's Adirondack Park was compiled. The list comprised 66 businesses, including campgrounds, marinas, restaurants, bed and breakfasts, hotels, motels, tour boat operators, and hunting and fishing guide services identified through visitor guidebooks, chamber of commerce publications, individual business brochures, and the local phone directory.

The qualitative results of 20 land manager interviews conducted during 2005 were used to develop a business owner questionnaire. Five-point Likert-scaled questions were included to obtain data on the concepts of values, beliefs, and attitudes toward motorboat, nonmotorized boat, and personal watercraft use. Resource value questions focused on the importance of natural resources in general to the business owner, while recreation-related value questions focused on the importance of outdoor recreation to the owner. Business owners were asked to indicate their level of agreement with positive statements concerning each concept (i.e., -2 = strong disagreement, 0 = neutral, and 2 = strong agreement). Three nearly identical sets of questions (i.e., one for nonmotorized boating, one for motorized boating, and one for PWC use) were included on the questionnaire; the only difference between the questions was the type of boating mentioned in the question. Questions were also included on the characteristics of the business, the business owner's personal recreation interests, and opinions concerning current boating regulations and access.

The questionnaires were distributed by mail in spring 2006 to all 66 business owners in the Saranac Lakes Wild Forest area. A modified total survey design method was used for the mailing (Dillman, 1978). The first and third mailings consisted of the questionnaire, cover letter, and the postage-paid return envelope; the second and fourth mailings were reminder postcards. Following the completion of the four mailings, all nonrespondents were sent a one-page questionnaire by certified mail to identify significant differences

(using a two-independent sample t-test; $p < 0.05$) in their years in business, annual number of months of business operation in 2005, and attitudes regarding the use of nonmotorized and motorized boats and personal watercraft.

Data from the surveys was entered into SPSS. Descriptive statistics were identified. Factors were created for each value, belief, and attitude by averaging the three questions related to each concept. The internal consistency of each factor was then identified using Cronbach's alpha. For exploratory research, a Cronbach's alpha at or above 0.60 indicates the adequate reliability of a factor (Hair et al., 1998, p. 118). Significant correlations were identified between respondents' experience with each type of boating and their values, beliefs, and attitudes. A path analysis was conducted for each type of boat use (i.e., motorized, nonmotorized, and personal watercraft) to identify significant relationships ($p < 0.05$) between values, beliefs, and attitudes as indicated by standardized beta coefficients.

4.0 RESULTS

4.1 Response and Nonresponse

Out of the 66 surveys sent, eight surveys were undeliverable, leaving a qualified sample of 58 business owners. Of the 58 qualified surveys, 25 completed surveys were returned for a response rate of 43 percent. All 33 nonrespondents were sent a one-page survey used to test for nonresponse bias. Thirteen of the nonrespondents returned the nonresponse survey. No significant differences between respondents and nonrespondents were identified for any of the business characteristics or attitudes included on the nonresponse survey, indicating that the survey respondents are likely representative of the population of recreation-related business owners in the Saranac Lakes area.

4.2 Characteristics of Business Owners

Recreation-related businesses within the Saranac Lakes area were diverse; 32 percent of respondents owned a fishing, hunting, or other type of guide service, 32 percent owned a bed and breakfast or inn,

20 percent owned a hotel or motel, 12 percent owned a sporting goods store, 12 percent owned a restaurant, 8 percent owned a marina, and 28 percent owned some other type of recreation business. Nine of the business owners operated more than one of these types of businesses. Respondents indicated that they had owned or managed their business for an average of 17.2 years. Eighteen out of 24 of the respondents indicated that their business was open year-round; the remaining businesses were open 11 months per year.

The majority of responding business owners (71 percent) indicated that their customers participated in nonmotorized boating; 42 percent indicated that customers used motorized boats while 13 percent indicated customer use of personal watercrafts. Business owners were also asked to rank the three types of boating according to their perceptions concerning the relative economic impact of each type of boating on the Saranac Lakes area. Motorboating was perceived by respondents to have the largest economic impact on the area, followed by nonmotorized boat use, and, lastly, personal watercraft use.

When asked for opinions concerning the level of existing access for each type of boating, 76 percent of the respondents indicated that access for motorboating was adequate; 4 percent that less motorboat access was needed and 20 percent that more access was needed. For nonmotorized boating, 83 percent of respondents indicated that access was adequate; no one indicated that less access was needed but 17 percent indicated that more access was needed. For personal watercraft use, 56 percent of the respondents indicated that access was adequate while 40 percent indicated that less access was needed; 4 percent indicated the need for more access.

Business owners on average indicated strong agreement to the questions concerning resource-related and recreation-related values. The concept of “resource value” had a mean of 1.71, similar to the mean of 1.70 for “recreation values” (Table 1). Mean attitudes and beliefs toward nonmotorized boating were all positive, indicating that business owners generally agreed with

positive statements concerning this type of boating. While the mean behavioral belief of business owners for motorized boating was slightly negative (-0.36), other attitudes and beliefs for motorized boating were positive, indicating agreement with positive statements concerning motorized boating. However, for personal watercraft use, disagreement with the positive statements was indicated for mean attitudes and beliefs of business owners (with the exception of control beliefs and behavioral controls which were 0.38 and 0.72, respectively).

4.3 Path Analysis Results

Testing for Cronbach’s alpha revealed that only one factor had an alpha value below 0.60 (i.e., perceived behavioral control for nonmotorized boating). Significant relationships were identified between some of the factors through path analysis (Figure 2). For nonmotorized boating, significant and positive relationships were identified between resource

Table 1.—Means and standard errors for values, beliefs, and attitudes toward each type of boating activity (n = 25)

Activity Concept	Mean	Standard error
General		
Resource value	1.71	0.10
Recreation value	1.70	0.07
Nonmotorized boating		
Behavioral Belief	0.99	0.17
Attitude toward behavior	1.51	0.15
Normative belief	0.52	0.19
Subjective norm	0.68	0.18
Control belief	0.59	0.14
Behavioral control	1.13	0.13
Motorized boating		
Behavioral belief	-0.36	0.21
Attitude toward behavior	0.33	0.26
Normative belief	0.52	0.15
Subjective norm	0.89	0.16
Control belief	0.59	0.15
Behavioral control	0.81	0.17
Personal Watercraft Use		
Behavioral belief	-1.19	0.18
Attitude toward behavior	-1.24	0.24
Normative belief	-0.48	0.21
Subjective norm	-0.31	0.22
Control belief	0.38	0.15
Behavioral control	0.72	0.13

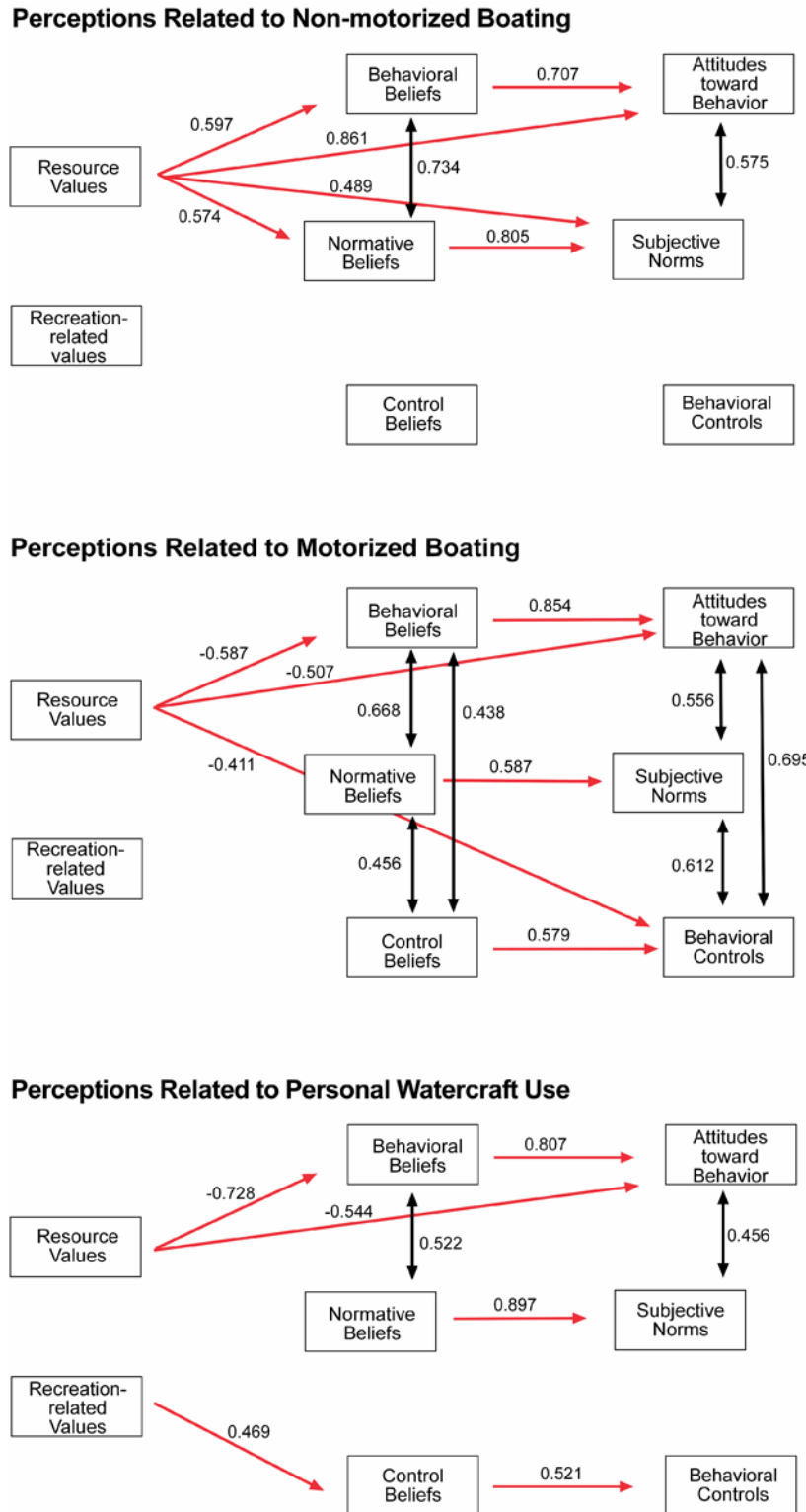


Figure 2.—Results of the path analyses for nonmotorized boat, motorized boat, and personal water craft use. Only significant relationships ($p < 0.05$) are shown.

values and behavioral beliefs, normative beliefs, and attitudes toward behaviors, as well as between behavioral beliefs and attitudes, and normative beliefs and subjective norms. The path analysis for perceptions concerning motorized boating indicated slightly different relationships. For example, there is a significant but negative relationship between resource values and both behavioral beliefs and normative beliefs. A negative relationship was also identified between resource value and behavioral controls. For personal watercraft use, negative, significant relationships were identified between resource values and both behavioral beliefs and attitudes toward behavior. Positive, significant relationships were identified between recreation-related values and control beliefs, and between control beliefs and behavioral controls.

5.0 DISCUSSION

The first objective of this study was to quantify the values, attitudes, and beliefs of business owners related to each type of boating. The means for respondents' behavioral beliefs and attitudes toward behaviors were positive for nonmotorized boating, close to neutral for motorized boating, and negative for personal watercraft use. These means indicate that business owners on average positively evaluated nonmotorized boat use, had a generally positive but near neutral perception of motorized boating, and had a negative perception of personal watercraft use. Control beliefs and behavioral controls were positive for all three types of boating, indicating that respondents' perceive current boating access, regulations, and enforcement to be adequate for all three types of boating.

The second objective was to identify the relationships among the values, beliefs, and attitudes of business owners toward nonmotorized boating, motorized boating, and PWC use for the Saranac Lakes area. The first hypothesis was that a significant relationship exists between beliefs and attitudes for each of the three types of boating. This hypothesis was accepted for nonmotorized boating, motorized boating, and personal watercraft use for the relationships between behavioral beliefs and attitudes toward the behavior,

and between the normative beliefs and subjective norms; there was also a significant relationship between control beliefs and behavioral controls for both motorized boating and personal watercraft use. All of these significant relationships were positive.

The second hypothesis was that a significant relationship exists between values and beliefs for each of the three types of boating. The hypothesis was accepted for the relationships between resource value and behavioral beliefs for all three types of boating. These results indicate that the respondents' personal values concerning natural resources did influence their beliefs concerning the three types of boating. However, it is important to note that these relationships were negative for both motorized boating and personal watercraft use. In other words, as a respondent's perceived resource value increased, their level of agreement with belief statements concerning motorized boating and personal watercraft use decreased. Significant relationships were also identified for nonmotorized boating between resource value and normative beliefs, and, for PWC use, between recreation values and control beliefs.

The third hypothesis was that a significant relationship exists between values and attitudes for each of the three types of boating. This hypothesis was accepted for each type of boating for the relationship between resource values and attitudes toward the behavior. These results indicate that the respondents' personal values concerning natural resources did influence their attitudes toward the three types of boating. There was also a significant positive relationship between resource value and subjective norm for nonmotorized boating, and between resource value and behavioral controls for motorized boating.

Examination of the correlations of past boating experience on attitudes revealed further insights. Specifically, level of participation in nonmotorized boating was significantly and positively correlated ($r = 0.449$; $p < 0.05$) with attitudes toward nonmotorized boating; similar findings were revealed for motorized boating ($r = 0.512$; $p < 0.01$). However, the level of participation in motorized

boating was inversely correlated with attitudes toward nonmotorized boating ($r = -0.471$; $p < 0.05$). In other words, the more frequently a respondent participated in motorized boating, the more likely they were to have a less positive evaluation of nonmotorized boating.

6.0 CONCLUSION

The results of this study indicate that resource value appears to influence personal attitudes and beliefs in this setting. In one instance (i.e., for nonmotorized boating), resource value was also found to influence the respondents' perceptions of the beliefs and attitudes of other individuals (i.e., normative beliefs and subjective norms). The fact that no significant relationships were identified between resource value and control beliefs and between resource value and behavioral controls indicates that respondents' may have the perception that factors such as access and regulations are outside of their control and have little to do with their personal values. Only one significant relationship was identified for recreation value (i.e., relationship between recreation value and control beliefs), indicating that resource values may provide a fundamentally stronger basis for beliefs and attitudes than do recreation-related values.

While significant relationships were identified through this study, it is important to note several limitations. First, even though the entire population of recreation-related business owners in the Saranac Lakes area was studied, we still had a small number of respondents. This small number of respondents constrained the complexity of the relationships that could be studied using a path analysis and suggests the need for further replication of these tests. It also made it impossible to conduct a detailed analysis of how business type may influence owners' attitudes and beliefs. In addition, the results are not generalizable to populations outside of the Saranac Lakes area since both the qualitative and quantitative portions of this study were focused on beliefs specific to this area.

Nevertheless, the fact that significant relationships were identified, given the small number of respondents, is important in itself. Basing the

questionnaire on the qualitative findings of the first phase of this study with land managers is likely one of the reasons for these significant relationships (i.e., we were able to focus the questionnaire on the actual beliefs and attitudes of stakeholders residing in the Saranac Lakes Wild Forest area). Using the Theory of Planned Behavior as a framework for this study was effective in revealing relationships between concepts, especially those concepts directly related to an individual's own personal perceptions (i.e., resource value, behavioral beliefs, and attitudes toward the behavior).

In summary, examining stakeholder perceptions of specific recreational activities revealed insight into the positive perceptions of business owners toward nonmotorized and motorized boating. It appears that business owners are very reliant on both of these types of boating for the profitability of their businesses, and wish to ensure that nonmotorized and motorized boating experiences are maintained for visitors in the future. Perceptions concerning personal watercraft, however, were more negative and appeared to conflict with the resource-related values of business owners. These results can be used by public area managers to better understand the values and perceptions of stakeholders, and to create recreational settings that better meet the values of stakeholders.

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FOREST FUELS TREATMENTS FOR WILDLIFE MANAGEMENT: DO LOCAL RECREATION USERS AGREE?

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Abstract.—In recent years, managers, policy makers and researchers, particularly in the social sciences, have worked to better understand the perspectives of homeowners, residents, tourists, and recreationists on wildfire and fuels management and how resource agencies can better involve these stakeholders in planning and implementation (Vogt et al., 2006). This research examined how one group of stakeholders, homeowners who participate in local outdoor recreation, viewed the relationships between fuel treatment approaches and improved wildlife conditions. Specifically, we studied hunters, anglers, and wildlife viewers who were also wildland interface homeowners in a three-county area of Huron-Manistee National Forest (HMNF). Study participants generally viewed “prescribed burning” as more likely to improve wildlife conditions than mechanical fuel reduction or a defensible space ordinance. Moreover, the two largest recreation user groups in the population (hunters, anglers) were more likely than wildlife viewers to expect prescribed burning to have benefits for wildlife.

1.0 INTRODUCTION

In recent years, managers, policy makers and researchers, particularly in the social sciences, have worked to better understand the perspectives of homeowners, residents, tourists, and recreationists on wildfire and fuels management and how resource agencies can better involve these stakeholders in planning and implementation (Vogt et al., 2006).

According to a report from the United States Department of Agriculture (Reeder & Brown, 2005) and tracking by other researchers (e.g., Johnson, 1999), residents of urban areas in America have been moving into rural areas located in or near natural areas, such as forests, parks, and open spaces. The wildland-urban interface (WUI) is often attractive to residents, permanent and seasonal, for the nearby recreation opportunities and natural, aesthetic setting that a forest can provide (Stewart & Stynes, 1994; Monroe & Nelson, 2004; Winter et al., 2005). The population of rural counties around wildland areas has increased 23 percent, compared to 11 percent population growth nationwide between 1970 and 1988 (Bailey, 1991). During the last decade, the population of recreation counties has grown almost three times as fast as non-recreation counties (20 percent vs. 7 percent, on average) (Reeder & Brown, 2005). This migration and increased private and commercial development near wildlands has increased both the complexity of fire fighting in these areas and concerns regarding the safety of people, as well as private and public property.

While federal agencies and local governments have often been viewed as the best equipped to conduct fire prevention or protection activities, there has been increasing interest in involvement of other stakeholders in addressing fire management problems in the WUI (Bright & Burtz, 2004). Both residents and recreationists are important stakeholders for resource managers and community officials to work with in

efforts of risk reduction, such as practicing defensible space around homes, burning trash responsibly, following recommended campfire use, and being watchful of other fire-prone activities (e.g., ATV use, cigarette smoking) (Vogt et al., 2006).

Research has shown that participating in outdoor recreation can expose people to specific examples of environmental management or degradation and subsequently increase their concern about such degradation on a broader scale (Bright & Porter, 2001). Pinhey and Grimes (1979) reported participants in outdoor recreation activities exhibited more concern for wildlife than non-participants. Jackson (1986) found recreation users held stronger attitudes toward protection of the resources necessary for engaging in the activity than attitudes held about more general environmental topics. Vogt et al. (2006) reported cognitive factors that influence support for fuel management approaches differed across recreation users and nonusers. Other research has found few or weak connections between wildlife recreation users and beliefs in fuel treatment approaches leading to improved wildlife conditions (Geisler et al., 1977; Van Liere & Noe, 1981).

Building on the study of Vogt et al. (2006) which surveyed residents of six Missouri counties near a national forest, this research continues with the examination of the relationship between local recreation users and beliefs that fuel treatment approaches will lead to improved wildlife conditions. Specifically, hunters, anglers, and wildlife viewers were studied as prominent recreation user types in the national forest. Resource managers also agreed that these groups can be directly impacted by fuel management applications.

2.0 METHODS

A survey was used, in part, to assess local recreation users' beliefs about three fuel management approaches (prescribed burning, mechanical fuel reduction, and defensible space ordinance) practiced in three northern Michigan counties (Crawford, Ogemaw, and Oscoda) at various levels by a federal agency (U.S. Forest Service), a state agency on state forest

land (Michigan Department of Natural Resources), or homeowners on their own property or through associations. The questionnaire that was used was an adaptation of a previous questionnaire sent in 2002 to the same households. The baseline questionnaire data from homeowners that were collected in 2002 were preceded with focus group sessions held with homeowners, resource managers, and stakeholders in the Mio areas (Winter et al., 2002). The focus groups helped identify local issues and understanding by homeowners of the three fuel management approaches that formed the base for the questionnaire (Vogt et al., 2005).

The three counties where data were collected are located in or near the boundaries of Huron-Manistee National Forest (HMNF). The counties provided a study site with a mixture of permanent and seasonal homeowners, federal and state forest (Au Sable State Forest) management, a history of catastrophic fires (Mack Lake, Stephan Bridge), jack pine forest management for the Kirtland warbler, and moderately frequent wildland fires, fuel breaks, and prescribed burns. The original 2002 sample was developed with expert help by delineating high-risk areas of the three-county region using township, ranges, and sections. We obtained the tax assessment databases from each county's equalization department and extracted the property records for these high-risk areas. Thus, our sample represents specific areas of each county where homeowners and potentially flammable vegetation fuels coexist. Only owners of properties for which tax assessor records indicated the presence of a residential structure with a value of at least \$25,000 were treated as part of the sampling frame (to eliminate vacant lots and hunting cabins). In all areas, owners of single-family homes and mobile homes were considered to belong to the population of interest. Due to the low population density in the study area, all homeowners meeting these criteria were included in the sample. This procedure was repeated for the 2006 sample. The high-risk area remained the same, however we increased the property value threshold to account for inflation over the 4-year period. Homeowner names were updated and parcels with new homes were added for the 2006 survey process.

The mail questionnaire was administered following Dillman's (2000) methodology. From March 27 through May 10, 2006, 2,951 households were surveyed. One hundred sixty-seven surveys were undeliverable and 1,292 surveys were completed and returned for an overall response rate of 46 percent, slightly lower than the 52 percent response rate in the 2002 survey. During data collection, many respondents sent additional letters about wildlife concerns and the protection of natural resources for their recreation activities. These letters led us to examine the relationship between recreation users and their beliefs about the outcomes of fuel treatment techniques applied near their homes and recreation areas.

3.0 RESULTS

To understand recreation rates by homeowners living in or near the national forest, the mail questionnaire asked, "Do you or others in your household recreate in the HMNF?" More than two-thirds (69 percent) of the homeowners indicated that they had recently used the HMNF for outdoor recreation: daily or weekly (25 percent of those who recreate), a couple times per month (44 percent), or a couple times per year (31 percent). The next question asked respondents to list the three most important activated they had participated in on HMNF in the past 12 months (which allowed for all seasons to be considered). Respondents self-reported many types of outdoor recreation including hunting, fishing, watching wildlife, hiking, camping, canoeing/ kayaking, and snowmobiling (Table 1).

Next, we recoded (i.e., dummy coding) the recreation activity data so that any respondent who listed a recreation activity was noted. A respondent could have up to three activities recorded, however, for the purposes of this analysis we focused on three recreation activities that rely on wildlife management – hunters (44 percent); anglers (41 percent); wildlife viewers (15 percent). Slightly more than one-third (39 percent) participated in only one of these three activities, 28 percent participated in two activities, 2 percent in all three activities, and 31 percent participated in other recreation activities in this national forest (Table 2).

Table 1.—Primary recreation activities in a Michigan national forest*

	Percent (n=819)
Hunting	49.3%
Fishing	46.4%
Hiking	35.5%
Canoeing/Kayaking/Boating	28.0%
Skiing	23.9%
Snowmobiling	21.7%
Camping	16.1%
Watching Wildlife	15.4%
Walking	14.5%

*Up to three activities could be offered by respondents

Table 2.—Activity levels by homeowners living in or near a Michigan national forest

	Percent of each (n=819)	Total percent by levels
One activity only		
Hunting	16%	} 39%
Fishing	15%	
Wildlife viewing	8%	
Two activities		
Hunting & fishing	23%	} 28%
Fishing & wildlife viewing	2%	
Hunting & wildlife viewing	3%	
All three activities	2%	2%
Only participated in other activities such as hiking, kayaking, camping, snowmobiling, etc.	31%	31%

A demographic profile of recreationists who live near or in the HMNF showed that most respondents to the overall survey were male (74 percent), most recreation users were male (82 percent), and the three recreation groups of interest were also primarily male (Table 3). Wildlife viewers had the highest proportion of females (27 percent). Most respondents were full-time area residents. Hunters were slightly more likely to be full-time residents than anglers or wildlife viewers. Anglers and wildlife viewers were more likely to be retired than to be unemployed, a homemaker, or working outside the home. For hunters, working full time was the most common employment status.

Table 3.—Demographic Profile of Selected Respondents

	All Respondents (n=1,292)	Hunters (n=404)	Anglers (n=379)	Wildlife Viewers (n=159)
Gender				
Male	74%	88%	86%	73%
Female	26%	12%	14%	27%
Residential Status				
Full-time	57%	79%	74%	74%
Seasonal	40%	21%	26%	26%
Employment Status				
Retired	51%	41%	45%	46%
Employed full-time	34%	43%	38%	40%
Self-employed	7%	8%	9%	4%
Employed part-time	4%	3%	5%	4%
Homemaker	2%	3%	2%	3%
Unemployed	1%	1%	1%	2%

For each fuel treatment, we assessed respondents' beliefs about the likelihood that the "fuel treatment improves conditions for wildlife." The scale was anchored with "1" = Zero Likelihood, "4" = Somewhat Likely, and "7" = Certain. Across all recreation users, prescribed burning (mean on 7 pt scale=4.41) was viewed as more likely to improve wildlife conditions than mechanical fuel reduction (mean 3.98) or defensible space ordinances (mean 2.91) (Table 4).

Using regression analysis, we examined hunters', anglers' and wildlife viewers' beliefs about whether burning would improve conditions for wildlife ($R^2 = .02$, $F=7.5$, $p<.001$) – anglers ($\beta=.12$, $t=3.3$, $p<.01$) and hunters ($\beta=.09$, $t=2.4$, $p<.05$) (Table 5). The regression equations were not significant for mechanical fuel reduction ($R^2 = .000$, $F=1.066$, ns) or defensible space practices ($R^2 = -.002$, $F=.509$, ns) (Table 6 and 7) or in a MANOVA including all three fuel treatments.

Table 4.—Beliefs viewed across all recreation users

	Improved Wildlife Conditions				
	All respondents (n=1292)	All recreation users (n=797)	Hunters (n=404)	Anglers (n=379)	Wildlife viewers (n=159)
Prescribed burning	4.35	4.41	4.59	4.66	4.24
Mechanical fuel reduction	4.08	3.98	4.05	4.10	3.92
Defensible space ordinance	3.14	2.91	2.89	2.86	2.90

Table 5.—Prescribed burning improving wildlife conditions

Independent variables (n=803)	Beta	T-statistic	P
Hunting	.086	2.395	.017
Fishing	.120	3.301	.001
Wildlife viewing	-.007	-.185	.853
Adjusted R-square = .024, $F=7.476$, $p < .001$			

Table 6.—Mechanical fuel reduction improving wildlife conditions

Independent Variables (n=799)	Beta	T-statistic	P
Hunting	.041	1.107	.269
Fishing	.036	.970	.333
Wildlife Viewing	-.012	-.344	.731
Adjusted R-square = .000, $F=1.066$, ns			

Table 7.—Defensible space ordinance improving wildlife conditions

Independent Variables (n=796)	Beta	T-statistic	P
Hunting	-.010	-.278	.781
Fishing	-.039	-1.064	.288
Wildlife viewing	-.016	-.444	.657
Adjusted R-square = -.002, F=.509, ns			

4.0 CONCLUSION

Homeowners who recreate in the HMNF, specifically a three-county region on the east side of the forest, viewed “prescribed burning” as more likely to improve wildlife conditions than mechanical fuel reduction or a defensible space ordinance. Prescribed burning may have been highly rated because burning can bring new vegetation that can attract deer, birds, and other popularly hunted animals thereby improving hunting opportunities. Specifically, hunters and anglers were more likely to expect prescribed burning to improve wildlife conditions than those in the nonconsumptive recreation group (wildlife viewers). This was a surprising result given that the HMNF’s management plan is directed at the endangered Kirtland warbler, a prize species for birders and one that generally benefits from prescribed burning in jack pine forests. A more sizeable group of wildlife viewers, particularly one that includes tourists from outside of the area, may show a better understanding of the desired outcomes of management programs like prescribed burning. Currently, birding tours highlight the use of prescribed burning to enhance habitat areas.

The weak prediction of this simple equation, which included recreation participation and beliefs about the effects of different fuel treatment strategies on wildlife conditions, suggests there are other more predictive variables and models for explaining the relationship between participation in a local outdoor recreation activity and beliefs about achieving desired outcomes through specific forest management activities. This paper did not address other forms of involvement or participation in forest management other than

recreation use. For example, homeowners are also likely to (1) hold jobs directly or indirectly related to the forest; (2) volunteer for local fire departments or other local service groups; and/or (3) visit the forest for gathering wood or foods, which are other forms of visiting or relying on the forest. It would be worthwhile to examine how these uses or involvement in a forest may influence belief outcomes for fuel treatment approaches.

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MANAGEMENT ROUNDTABLE

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and lead author of this paper)
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Panelists:

James Absher
U.S. Forest Service

Alan Graefe
Penn State University

Bill Hammitt
Clemson University

Linda Krueger
U.S. Forest Service

Jerry Vaske
Colorado State University

1.0 INTRODUCTION

This year (2007) at the Northeastern Recreation Research (NERR) Symposium, we took the opportunity to reflect on the past 15 to 20 years of recreation research and discuss the opportunities and challenges that might face us in the next decade. The session utilized a panel to entertain four primary questions focused on recreation research. Following a panel presentation with interaction from the moderator, the session was opened to the audience to add to the discussion or ask new questions of the panel. The session was well attended by about 100, including public recreation research directors and staff members (from federal, state, and local agencies), university faculty and students, and private research consultants.

The guiding questions to the panelists were:

- What natural resource/recreation issues are pertinent today and how do they relate to the past and the future?
- What changes have occurred that 1) got us to where we are; and 2) have stopped us from going further than we could have?
- What socio-demographic and policy/level changes have occurred/will occur that may change the way we operate in the natural resource field?
- What theoretical models/frameworks are relevant today and how does that compare to what you studied in grad school (relating to the many graduate students in the audience)?

2.0 PANELIST COMMENTS

The first panelist was Jerry Vaske, a co-founder of the NERR Symposium, professor at Colorado State University, and editor of *Human Dimensions of Wildlife*. He shared a recent meta-analysis he completed on the journal to highlight recreation and resource issues as they have shown in published papers. First, the number of international contributions nearly doubled from the first 5 years of the journal (1996-2000) to the next 5 years (2001-2005). Second, *HDW* authors have examined a wide range of wildlife-related issues including consumptive activities (i.e., hunting, fishing, trapping), nonconsumptive activities (i.e., wildlife viewing, wildlife tourism), and preservation efforts (i.e., endangered species). Third, the major social science disciplines (e.g., social psychology, sociology, demography, anthropology, economics, political science, geography) have been represented throughout the first decade of the journal's existence. Fourth, the breadth of concepts examined (e.g., value orientations, attitudes, norms, behavior, behavior change) spanned the range of key variables that should be included in a journal promoting the application of social science theories to fisheries and wildlife management.

The second panelist was Linda Krueger, a social scientist for the U.S. Forest Service. She has seen recreation become one of several integrative and multi-

or inter-disciplinary topics upon which Forest Service managers and researchers focus. She emphasized the dyad between managers and researchers being critical for sustainability in agencies such as the Forest Service. Emerging topics that she sees receiving greater emphasis (and funding) include:

- Global change – Including studies of climate, recreation (particularly on public lands), fishers, social impacts and demographic shifts (e.g., retirement, migration into resource or amenity areas – her interest is on local communities), and land-use change with an emphasis on urban, rural, and wildland interfaces. She commented that these topics require researchers who can compile social, economic, and environmental discussions and recommendations.
- Forest health – Including studies on biomass and use of fuels from forests; invasive species and their impacts on water and land resources; and fire and disease effects.

The third panelist was Bill Hammitt, a recently retired Clemson Recreation professor. He has seen great interest and need for research on the topic of the interaction of the public and environment. A strong body of research has emerged on place attachment and place bonding in recent years. Place research has assisted in resource management in federal and state resource agencies. Much of this research spans from beliefs to behaviors of humans in a preferred environment. Hammitt sees future opportunities for researchers to think even harder about models and applications for place research. Another topic of current and future interest is in the area of restoration. This research transcends both the natural resources or landscape and the human as emotional, physical, and social restoration. Finally, Hammitt sees more sophisticated analytical tools being used like structural equation modeling. However, while these models often yield a good fit of the data to the theoretical models proposed, the theories/models are often weak at predicting recreation behavior. Today's researchers need to ponder the theories being used and continue to work with these sophisticated modeling techniques to be able to claim greater understanding of the phenomenon they are studying.

The next panelist, James Absher, is a research social scientist with the U.S. Forest Service. He claims we now have a “recreation science” that has been constructed primarily on social psychological theories and concepts. He argues that we need to develop broader perspectives (other disciplines), involve other social scientists (e.g., political scientists), and get “the R-squared higher” (explain more). Along with improved explanatory power, we need to continue to show how recreation science impacts or benefits society. This takes additional skills such as marketing, communications, and public relations. Absher also suggested that the question “what do public lands mean to society” should guide our thinking and work. According to Absher, “as social scientists, we need to make people come alive and be an integral part of multiple management topics!” For instance, currently, the Forest Service seems like “the U.S. Fire Service” as fire is driving the agenda and budgets, while the linkages to tourism, recreation, or leisure are not obvious. Some additional issues of interest are diversity, internationalization, and urbanization. Public lands agencies, and the social issues they manage, need to have better links with a plethora of communities, spanning cultural and political issues.

The final panelist was Al Graefe, faculty member of Penn State and co-founder of the NERR Symposium. He talked about funding in past decades and today. He has experienced limited financial resources from federal agencies, such as the Forest Service and U.S. Army Corp of Engineers, but greater resources and opportunities with state agencies (particularly on studies of use monitoring and carrying capacity). He commented that university professors now face higher requirements to secure external funding to fund graduate student research and development. Another issue related to grants has been applying for OMB approval from the federal government to conduct survey research. He feels that improvements have been made by researchers in terms of the quality of the research (both in substantive topics and rigorous methodologies), more longitudinal research to show trends, and more synthesis of research reports to cover the “body of knowledge” rather than one study.

3.0 AUDIENCE COMMENTS

Next, members of the audience added additional challenges or opportunities that they encounter as a recreation or resource researcher.

Challenges included:

- Dependency on survey research and decreasing response rates in recent years. This is coupled with OMB approval and its requirements to yield high response rates.

Opportunities included:

- We lack (and need) studies on change and its causes and consequences. We could also bring about change rather than just studying change.
- We lack (and need) philosophy or thinking essays about recreation and leisure, resources, or society.
- We lack (and need) funding mechanisms for more innovative and “deeper” methodological inquiry.
- We lack (and need) more research on participatory planning and volunteering as funding for field positions are cut and there is a greater emphasis on citizen involvement.
- We need to make greater progress on integrative social and biological research.

Two individuals provided additional thoughts on this topic of recreation and resource research. Bob Ditton of Texas A & M University added that researchers need to be more in tune with and responsive to decisions that are made from their research findings. He sees that more peer reviews are occurring in the research process (not just when a manuscript is submitted to a journal). He has seen recreation and resource researchers turn to contract research over grant-funded research and suggested we need to return to grant-funded so that more theoretical work can be accomplished. He shared that the “pot of research money” hasn’t increased, but now social scientists are trying to get a portion of that pot. This has created animosity from bio-physical researchers who would rather not share or work with social scientists. Ditton recommends establishing relationships that have long-term potential and developing the skills to be able to endure changing leadership within the agencies. Steve Selin, West Virginia University, closed the session by reporting that efforts are under way to engage a diverse set of stakeholders in developing a strategic plan for “the future of outdoor recreation research and education.” He is in the process of learning more about research agendas in terms of who sets them and how the work is allocated between agencies, universities, and others. He and others in the audience agreed that there is a role for a professional organization to be a contact and partner with agencies in their research and education investments.

FISHING FOR IMPROVEMENTS: MANAGING FISHING BY BOAT ON NEW YORK CITY WATER SUPPLY RESERVOIRS AND LAKES

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Abstract.—In 2003, the New York City Department of Environmental Protection Bureau of Water Supply undertook a 5-year initiative to improve fishing by boat on its water supply reservoirs and controlled lakes in upstate New York. The project includes: revising administrative procedures; cleaning up 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 responsible for ensuring a continuous supply of high-quality drinking water to 9 million New York State residents. This water comes from a 2,000-square-mile upstate watershed that encompasses most of the Catskill Mountains and lands east of the Hudson (EOH) River in the counties of Dutchess, Delaware, Greene, Putnam, Schoharie, Sullivan, Ulster, and

Westchester. DEP owns nearly 124,000 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 are located in more than 60 municipalities.

Public access to some water-supply lands for certain low-impact recreation is allowed by permit 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 benefit watershed communities economically and culturally, to promote appreciation and understanding of watershed conservation, and to 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 Introduction

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, nonmotorized 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. To place a boat on water-supply lands, anglers must 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 *de facto* created by anglers placing their boats in what they found to be desirable locations that were later designated as boat storage 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.

1.2 Background

In spring 2003, the Bureau of Water Supply was reorganized. Boat management was reassigned to a different division and the boat management process was required to be reviewed. At that time, approximately 12,000 private boats were believed to be stored on the shores of 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.

At that time, 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 also were 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 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 5 years and maintained thenceforth:

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
5. Finalize a long-term management plan for deep water fishing access.

The strategy and ensuing project were informed by feedback from reservoir boat anglers and a review of other boat fishing programs, especially on the Saltonstall Reservoir of the New Haven, CT, water supply (Powell, 2002). Other relevant information was gathered from observations of boat fishing administration, management, and storage area conditions. 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.

2.1 Clean-up

From 2003 to 2005, clean-up of administration methods and boat storage areas were priorities. Boat registration databases were improved by removing errors and duplicates. They were then integrated into

the existing 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 was 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 special permit formerly required of anglers became unnecessary and was eliminated, and boat registrations were extended from 1-year duration to 2 years. Centralization also reduced the resources needed for boat administration, freeing up local office staff for other duties.

In the field, nearly 4,000 abandoned or dilapidated boats were removed from DEP storage areas. The first “reservoir clean-ups” were also held where volunteers assisted staff with trash removal from reservoir lands. These are now an annual event with at least one reservoir clean-up scheduled for each reservoir and lake in the warmer months. Attendance in the 2005 season was more than 220 participants at 20 locations with over 20 truck-loads of trash removed.

2.2 Communication

Also beginning in 2003, improved communications with boat anglers became 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 email address was created for direct communication on recreation-related comments and questions; this address now receives an average of more than 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.

2.3 Inventory and assessment

A baseline inventory and assessment of boat storage areas began in 2004. This was the first-ever 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 (GPS) 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 inventory and assessment goals. This method is called *Boat Area Rapid Assessment (BARA)*.

2.3.1 Boat Area Rapid Assessment (BARA)

BARA is a systematic tool for inventorying boat storage areas and using the data to determine boat storage area carrying capacity. Initially, officials sought an existing boat storage area assessment tool suitable or adaptable to DEP’s needs. Several elements made DEP’s situation unique: storage of nonmotorized row boats for angling only; the steam-cleaning requirement; and the location of these storage facilities on unfiltered water supply waters. As a result, no suitable existing model was found.

Development of BARA was based on several information inputs: staff experience with and observation of DEP boat storage areas and boat use; previous research on the limits of acceptable change (Stankey et al., 1985) and visitor impact management (Graefe et al., 1990); input from an academic authority on conservation area recreation (Schuster, 2004); and “trial and error” on some boat storage areas EOH, where angler use is highest. BARA was also developed based on the assumption that anglers have historically placed their boats where storage is best for them,

where they have the best luck fishing, and where there is easy access to the water's edge.

The first step in creating BARA was to identify boat storage area characteristics that are important to inventory and could be used to determine boat storage capacity. Thirteen characteristics were selected:

1. 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 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 two points, and one-half point 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 greater than or equal to negative three points passed the parking requirements. Parking areas that received less than a negative three were determined as unsafe for recreational use.
2. 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.
3. Distance from parking to boat storage area – How many feet distant 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.
4. Slope of boat storage area – What is the average slope (percent) 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.
5. Slope of boat storage area at shoreline – What is the slope (percent) 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.
6. 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 a reason to limit boat storage.
7. Estimated extent of exposed soil – What percentage of soil in the area has been denuded and exposed due to boat fishing? Exposed soil can erode more easily than vegetated soil, and is considered a limitation on boat storage capacity.
8. Tree damage – Are 50 percent or more of the trees damaged due to boat fishing? This included any type of impact that could be reasonably attributed to the activity of fishing by boat in the area, but was most often girdling or constriction of trees by chains or cables used to secure boats.
9. Count of hitches – How many opportunities are there for anglers to secure their boats in the boat storage area? While securing boats to trees is undesirable from a land management view, trees were counted as boat hitches in this inventory for practical reasons; without trees most boat areas would have no hitching capacity. It was assumed that most anglers will not store boats in areas where they cannot secure them from theft.
10. Length of trail – What is the length of the pathway from parking area or road's edge to the closest boundary of the boat storage area measured in feet? It was assumed for this inventory that longer walking distances have a negative effect on the popularity of the storage area and that areas closer to available parking will have more boats.
11. 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. These characteristics are descriptive and are fulfilled by a yes or no.

12. Buffer potential – Can a 10-foot vegetated buffer be established along the shoreline? A minimum 10-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 under or around boats. In some places, rock slabs or insufficient distance between the reservoir shore and roadway precluded the creation of a vegetated buffer, while in other places current storage of boats on the shore was the only obstacle.
13. Potential for improvements – Can the area be improved for boat storage? This characteristic evaluated whether or not a boat area, given its limitations, was a good investment for remediation. In some cases, remediation of a boat area was not feasible. For example, off-side parking on the blind turn of a four-lane highway or extreme steepness would preclude improvement and these examples would be rated “no”. An eroded storage area that could be remedied through water management techniques, for example, would receive a “yes”.

Three of these variables (tree damage, aesthetics, and distance to parking) 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 it never exceeded 50 percent of all trees; thus, the 50 percent standard was not sensitive enough to capture tree impacts. Impact on trees was also observed to be related to how anglers treated the trees, but not related to the number of boats in the area per se. Although aesthetics was a management concern, aesthetics was also determined to be unrelated to boat carrying capacity. For example, trash and vegetated screening were not necessarily related to the number

of boats in the area; aesthetic factors like 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, was not directly relevant to the number of boats an area could or should accommodate.

Several other inventory characteristics were initially considered but rejected. Measurement of soil compaction, exposure and erosion would be too time consuming for a rapid assessment tool. A single slope measurement of each boat area was rejected as too broad to be useful. 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; also, given their existence in several popular boat storage areas, guide rails were not likely to be a significant obstacle to access for many anglers. Original parking area safety standards were updated to prevent the elimination of too many storage areas. 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 unnecessary.

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 was the number of boats that could fit in each storage area regardless of all other characteristics. This was obtained by calculating the area of the location using GIS data. Since registered boats were 12 to 14 feet long and at least 4.5 feet wide according to DEP rules, and anglers needed room to move around boats, 72 square feet were allotted for each boat.

With this quantity of boats as a starting point, inventory data were systematically used site by site to create a final boat storage carrying capacity. This analysis was done 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 was assessed with regard to access safety and whether or not the opportunity existed to develop a vegetated shoreline buffer free of boats. These characteristics were considered first 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 were eliminated. This meant that they were closed to any new boat storage, they were given a carrying capacity of 0 boats, and they were 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 10-foot wide vegetated buffer ($10 \times$ shoreline length) was deducted from the total boat storage area to calculate the boat storage area that would be available with a vegetated buffer in place. The total number of estimated hitches in this revised boat storage area was calculated by deducting the estimated number of hitches in the vegetated buffer, where no boats would be stored, from the total count of hitches. The estimated number of hitches in the vegetated buffer was 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 was multiplied by two, since each hitch can accommodate two boats, to obtain an initial boat storage carrying capacity (K_i) for the area.
- 3) **Incorporate Natural Resource Conditions**—The natural resource conditions of the boat storage area were assessed in three steps that addressed

erosion, soils, and slope; the presence of erosion, exposed soils, and steep slopes would reduce the area’s boat carrying capacity. For each characteristic, the amount by which the boat carrying capacity was reduced at each natural resource impact level was determined by observation and trial and error. Assessors kept in mind that while boat quantities might 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 was deducted from K_i in proportion to the estimated level of erosion. At sites with severe erosion, this could result in a boat carrying capacity of 0 (see Table 1). After this assessment, the area was given a new carrying capacity, a number of boats K_{i1} .

The presence of exposed soils was treated similarly, with K_{i1} being further modified to reflect conditions regarding exposed soils. The more estimated exposed soil there was in the storage area, the more the boat carrying capacity was reduced (Table 2). The result of this assessment step was the new carrying capacity, a number of boats K_{i2} .

Table 1.—Reduction in boat area carrying capacity according to erosion level

Percentage of boat storage area eroded	Number of boats deducted from K_i
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 K_{i1}
0 – 10 %	–0
11 – 20%	–20
21 – 30 %	–40
31 – 40 %	–80
> 41 %	$K = 0$

The slope of the boat storage area was again treated similarly, with Ki_2 modified to reflect the slope of the storage area. The greater the slope of a storage area, the more boat carrying capacity was reduced (Table 3). Where the average slope across the boat area equaled or exceeded the slope at the shoreline, the deduction in boat carrying capacity was proportionately greater than in situations where the shoreline slope exceeded the average slope across the whole storage area. This is because greater shoreline slopes were regarded to be self-selecting, with fewer anglers willing to maneuver their vessels in and out at a steep shoreline. Also, the potential threat of erosion from steeper slopes across the whole boat area was considered a bigger problem. The result of this assessment step was a new carrying capacity for the boat area, a number of boats Ki_3 .

- 4) Recognize Parking Limitations—The boat area carrying capacity Ki_3 was 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 exceeded parking, the carrying capacity was reduced to create a storage capacity of no more than 10 boats per parking space. The intent was 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 closure. Carrying capacities were established for most of the boat storage areas EOH, documented in the land management database, and linked to the boat storage area so that staff could register boats for specific locations according to storage availability. The database tracks total carrying capacity for each area as well as current availability.

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 % (slope at shoreline)	–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 % (slope of area)	–0
16 – 20 %	–10
21 – 25 %	–30
26 – 30 %	–60
> 31 %	–120

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.

Storage areas that were identified in BARA as unsafe due to access issues and having no potential land to develop vegetated shoreline buffers were priorities for elimination. Exceptions were storage areas that did not pass Step 1 of BARA but were located on reservoirs where there was no alternative storage space available. In these cases, the storage areas would be closed to new boats but existing boats could stay. It is anticipated that most of these storage areas will be eliminated over time by attrition as anglers remove boats on their own. If 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 boat fishing activity 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 with 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 BARA IMPLEMENTATION

Initially BARA was developed based on conditions observed around reservoirs and lakes EOH. Storage problems are more numerous on the reservoirs EOH and therefore BARA was used here first. It was determined that the improvement strategy and BARA adequately identified problems and produced carrying capacities realistic to actual conditions. In 2006 BARA was implemented on reservoirs west of the Hudson River (WOH). It became evident that due to the vast differences between the EOH and WOH reservoirs, BARA had to be updated. Reservoirs WOH are larger and have more space for storing boats, but ironically storage is not in high demand because the number of recreation users is lower. Although space is not an issue, WOH storage areas needed improvement and BARA was updated in order to ensure the accurate estimation of boat storage capacities.

3.1 BARA updates

Much of BARA remained unchanged in an effort to establish standard procedures across the entire watershed, but some changes were made to accommodate different issues in the WOH storage areas. These changes include:

- The characteristic evaluating the condition of trees was changed from ‘50 percent of trees damaged’ to an observation of the overall condition of trees in an area. Conditions of the trees were given a rating of excellent, good, satisfactory, or poor where excellent indicated virtually no tree damage, and poor indicated significant damage area wide. This is a descriptive characteristic that does not limit the number of boats stored in an area.
- ‘Distance walked by anglers’ was added as a characteristic after discovering that simply measuring the distance between the parking area and the shoreline did not reflect the actual distance walked by anglers, especially on Ashokan reservoir. Due to excess space WOH, boats would sometimes be scattered along shorelines for great distances. This characteristic gives a more realistic estimation at how far anglers are actually walking to get to their boats. This is also a descriptive characteristic that does not limit the number of boats stored in an area.
- ‘Percent of storage area that is wet’ was added because it was observed that significant portions of certain storage areas WOH contained streams or wetlands. Since boat storage in or near waters that flow into the reservoirs poses a threat to water quality, this characteristic was noted. The percentage of an area that is wet is estimated, then the square footage of this estimated wet area is calculated. The total wet amount is then subtracted from the total area, reducing the carrying capacity of the storage area.

3.2 Results

Currently, nearly 9,000 people own 11,400 boats on water-supply lands, out of 110,000 estimated recreational users of city water supply property. Of the total 435 boat storage areas, 420 have been inventoried using BARA. Carrying capacities have been calculated for all of the 178 storage areas EOH; 68 of these have been closed to new boat storage, and one has been substantially improved. Of the 257 storage areas WOH, 12 have been retired and analysis is 100 percent complete. In the fourth year of the 5-year initiative, steps one, two, and three of the

improvement strategy—clean-up, communication, and inventory—are complete and the results are being actively maintained. Improvement of boat storage areas is 10 percent complete and creation of a final boat management plan is 20 percent complete. Improvements of the other 90 percent of 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 2008, carrying capacity determination will continue on the WOH reservoirs and the Boat Management Working Group will reconvene 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 WOH showed that the inventory characteristics and their value in calculating carrying capacity needed modification; shorelines are generally steeper WOH, angler use of boat storage areas is more diffuse, distances from parking to boat storage areas are longer, and boat storage areas are larger with fewer boats. Further investigation may prove that the differences between EOH and WOH storage areas are too great and that other evaluation measurements need to be developed.

It is possible that management strategies for some reservoirs WOH may not be immediately required due to low current usage levels. DEP needs to determine if it is in the agency's interest to set up designated boat areas first, then apply BARA and work towards improvements. All of this will be determined in the future as we work towards implementing a long-term boat management strategy across the entire watershed.

Since current boat storage areas were largely created by the anglers themselves, it would be interesting to use the inventory characteristics to describe what makes a good boat storage area from the anglers' point of view. Can we determine from the existing boat areas

what characteristics of boat storage areas are most important to anglers? How are the different features of a boat storage area 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 and all of this information would help reservoir managers improve and create better new boat storage areas.

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***OUTDOOR RECREATION AMONG
SPECIFIC POPULATIONS***

THE EFFECT OF PERCEPTIONS OF SUPPORT FOR AUTONOMY, RELATEDNESS, AND COMPETENCE ON INTEREST IN CAMP FOR ADOLESCENT GIRLS

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Abstract.—Understanding whether young people perceive camp to be supportive of their needs for autonomy, relatedness, and competence (ARC) is important for camp administrators and staff as they plan and structure opportunities for positive youth development. We conducted a study during the summer of 2006 at a Girl Scout camp in Pennsylvania. Through hierarchical linear regression analyses, we explored how motivation to attend camp, the camp's support for individuals' autonomy, relatedness and competence, motivation to attend camp, and the interaction of these variables predicted girls' interests in camp. Results showed that support for ARC from counselors and peers was significantly and positively predictive of interest in camp. However, level of interest was also associated with motivation to attend camp; internal motivation was significantly and positively related to interest, while amotivation showed a significant negative relationship. External motivation was not significantly associated with interest in camp. Findings suggest that camp administrators and staff need to work to make camp intrinsically appealing to girls before they arrive at camp, and to specifically target those campers who

report being externally motivated or amotivated to attend camp by supporting their needs for ARC.

1.0 INTRODUCTION

Structured contexts for youth development offer opportunities to explore identities, develop skills and interests, exert autonomy, and experience intrinsic motivation. Young people's accomplishment of these developmental tasks can lead to sustained engagement and perseverance in other contexts (Hunter & Csikszentmihalyi, 2003; Larson, 2000). Camp is one context in which a supportive climate can foster developmental outcomes for young people. Bialeschki et al. (2003) concluded that elements of camp culture (including opportunities, camp structure, staff, and campers) promoted many of the intended outcomes of camps. These elements mirror what Grolnick et al. (1997), and Hidi and Renninger (2006) have identified as environmental elements that lead to intrinsic motivation and engagement. Environments that support autonomy, allow for relatedness with others, and structure experiences for competence are those that will lead to internal regulation of motivation (Grolnick et al., 1997).

When one is internally motivated to engage in an activity, one is interested in the activity. Young people who follow their interests initiate their own behavior (Deci, 1992). Interest is defined as a psychological state that can serve as a "predisposition to re-engage content that applies to in-school and out-of-school learning" (Hidi & Renninger, 2006, p. 111). Camps desiring to develop long-term engagement and appreciation of the outdoors can benefit from identifying program elements that have the potential to influence interest and prevent participant drop-out and program failure.

The purpose of this study was to explore how precamp motivation to attend camp predicts interest in camp at the end of camp, and to understand the effect of perceptions of support for autonomy, relatedness, and competence (ARC) from counselors, activities and peers, on campers' interest in camp. Figure 1 depicts the conceptual model guiding the study, which examines the main and interactive effects of motivation to attend camp and ARC support from peers, counselors, and activities on interest in camp.

2.0 METHODS

2.1 Data Collection

Thirty-two girls ages 12-15 and five adult volunteers pilot-tested questionnaires for readability and provided feedback during a volunteer work weekend before camp began. In addition, two Girl Scout staff members reviewed and commented on the questionnaire. The first author then administered questionnaires to groups of campers in the dining hall, cabins, or the recreation center at the end of their 2-week camp sessions. Once they agreed to participate, girls were read a standard introduction to the study and given the questionnaire. They asked clarifying questions as needed. The process took about 15 minutes per group.

2.2 Measurements

Participants completed the questionnaires on the last day, or second-to-last day of each camp session. Motivation was measured using an adapted version of the Free Time Motivation Scale for Adolescents (Baldwin & Caldwell, 2003) in a retrospective pretest approach (i.e., campers were asked to think back to before camp started). To simplify analyses, scales measuring intrinsic motivation (i.e., doing something for its own sake) and identified motivation (i.e., doing something because it is in accordance with one's identity) were combined to measure internal motivation. External motivation and amotivation were measured as reported by Baldwin and Caldwell. The motivation scale consisted of questions related to why campers came to camp: *amotivation* (four items, e.g., "I don't know why I came to camp"), *external* (four items, e.g., "My parents/guardians expected me to go to camp"), *internal* (four items, e.g., "Camp is

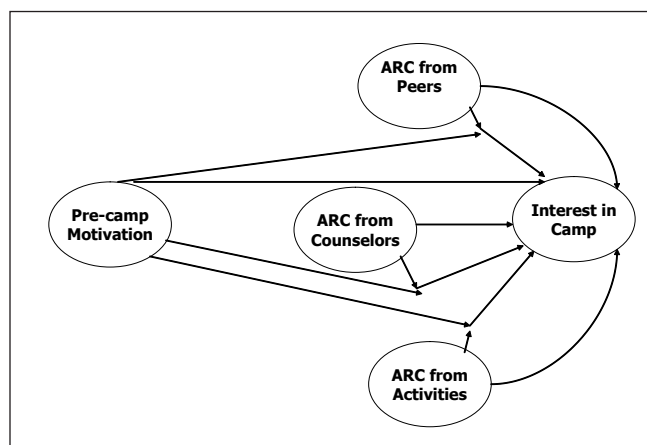


Figure 1.—Analysis model of direct and interactive effects of motivation to attend camp and ARC supports from peers, counselors and activities on interest in camp.

important in my life"). A high score on the dimension of amotivation indicated a lack of motivation, or acting without purpose. A high score on external motivation meant that the camper reported attending camp to gain rewards or to avoid negative consequences. A high score on internal motivation indicated that the camper reported high levels of intrinsic and identified motivation.

Campers' perceptions of support for their ARC needs in three areas (activities, counselors, and peers) were measured using a post-test approach. The scales were adapted from the Learning Climate Questionnaire developed by Williams and Deci (1996) to understand the degree to which learning contexts are perceived to be supportive of students' autonomy. Three items for each area of support (i.e., autonomy, relatedness, competence) were developed for peers, counselors, and camp activities. In total, 27 items were used to measure camp climate. A principal components factor analysis with Varimax rotation was performed on these adapted scales, and measures for autonomy, relatedness, and competence loaded into one score (ARC) for three factors. Other studies have found that autonomy, relatedness, and competence consistently yet differentially contribute to the prediction of outcomes (LaGuardia et al., 2000; Patrick et al., 2007; Reis et al., 2000). In this study, factors represented the level of total perceived ARC support from peers (eigenvalue=3.376), counselors (eigenvalue=1.763) or

camp activities (eigenvalue=1.288), respectively. Each factor consisted of three items and approximately 64 percent of the variance was explained by these three factors.

Perceived support for ARC for each domain was measured by three items on a 7-point scale in which one indicated perceptions of low support and seven indicated high support. Activity autonomy support focused on within-activity perceptions, (e.g. “I was pressured while doing the activities”). Activity relatedness centered on peer pressure within camp activities, (e.g. “I was pressured by girls to do things”). Competence in activities was measured by feelings of success (e.g. “I understood what I needed to do to be successful in the activities”).

Perceptions of counselor support for autonomy, relatedness, and competence were similarly measured. Counselor autonomy support focused on inclusion of campers in decision-making, (e.g. “I could express myself to my counselors”). Relatedness with counselors centered on perceptions of opportunities for connectedness with others, (e.g. “My counselors gave me the chance to make friends”). Perceptions of competence were measured by how much counselors were seen to be supporting campers’ efforts and providing appropriate feedback (e.g. “My counselors made sure I really knew what I needed to do”).

Peer autonomy support focused on feelings of choice within the group (e.g. “Other girls respected the decisions I made”). Peer relatedness centered on the quality of relationships between campers (e.g. “I was able to be open with other girls”). Competence was measured by perceived levels of support from peers (e.g. “Other girls showed that they were confident I could do well at camp”).

Interest in camp was measured by four items, and measured value- and feeling-related valences in individual and situational camp experiences (e.g., “I was usually in a good mood at camp;” and “I wanted to be somewhere else besides camp most or all of the time”) in a post-test approach (Krapp, 2002).

3.0 RESULTS

3.1 Participant Characteristics

The sample for this study was 143 girls enrolled in two-week horseback riding or general programs at a residential Girl Scout camp in northeastern Pennsylvania. All girls (77 percent response rate) who received parental consent completed the questionnaires. They ranged in age from 9 to 15 years old ($M=11.8$) and had a range of 0-9 weeks ($M=3.3$) of previous camp attendance. Sixty-seven percent were white or Caucasian, 24 percent were black or African American, and the rest identified as Latina, Asian, or other.

3.2 Regression Analyses

Table 1 shows the descriptive statistics for all measures used in the study. Measures for internal motivation, counselor support for ARC, peer support for ARC, activity support for ARC, and interest were positively skewed above the mid-point for each measure. Conversely, mean scores for measures of external motivation and amotivation were negatively skewed above the mid-point. Not unexpectedly, the skew of the scores reflect a sample that tended to want to be at camp, rather than felt forced to attend. All measures but activity support met acceptable levels of internal consistency ($\alpha > .60$; Cortina, 1993).

Once data were cleaned and factor analyses were performed, study variables were examined for intercorrelations to rule out multicollinearity issues and to examine bivariate relationships among the study variables (see Table 2). An examination of the table reveals that among the variables, Pearson’s r is

Table 1.—Descriptive statistics for measures used in analyses (n=143)

Scale Name	# Items	Range	Mean	SD	α
Interest	4	1-7	4.759	1.404	.777
Counselor ARC	3	1-7	4.916	1.453	.716
Peer ARC	3	1-7	5.094	1.405	.882
Activities ARC	3	1-7	6.231	0.769	.526
Intrinsic motivation	4	1-7	5.524	1.240	.676
External motivation	4	1-7	1.953	1.191	.637
Amotivation	4	1-7	2.548	1.461	.668

Table 2.—Bivariate correlations among the study variables (n=143)

	1.	2.	3.	4.	5.	6.
1. Interest	—	—	—	—	—	—
2. Counselor ARC	.536**	—	—	—	—	—
3. Peer ARC	.395**	.417**	—	—	—	—
4. Activity ARC	.206*	.299**	.204*	—	—	—
5. Internal motivation	.306**	.276**	.211*	.057	—	—
6. External motivation	-.149	-.086	-.150	-.111	-.249**	—
7. Amotivation	-.311**	-.136	-.160*	-.107	-.103	-.163*

* $p < .05$ (2-tailed); ** $p < .01$ (2-tailed)

below .60 for all relationships. On a bivariate level, interest was positively and significantly correlated with ARC scores for counselors ($r=.536, p<.01$), peers ($r=.395, p<.01$) and activities ($r=.206, p<.05$), as well as internal motivation ($r=.306, p<.01$). Interest was negatively and significantly correlated with amotivation only ($r=-.311, p<.01$).

A series of hierarchical linear regressions was conducted. The interactions among combined ARC support variables for activities, counselors and peers, and the ARC variables with precamp motivation were regressed on interest in camp. Independent

variables were entered as blocks into the regression model with ARC support variables entered first, followed by motivation to attend camp, and then the interaction terms for the specific ARC support variables and motivation to attend camp. 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. Overall, three separate regression models were tested. Table 3 shows the results of the multiple regression analyses for each motivation variable.

Table 3.—Multiple regression analyses predicting interest in camp (n=143)

Variable	r	R ² Δ	B	SE B
Model with internal motivation (R ² = .330)			.870	.529
Block 1	.568	.313***		
Counselor ARC			.401***	.075
Peer ARC			.190*	.076
Block 2	.609	.021*		
Motivation			.172*	.082
Model with external motivation (R ² = .312)			1.779	.476
Block 1	.568	.313***		
Counselor ARC			.431***	.074
Peer ARC			.199*	.077
Block 2	.572	.004		
Motivation			-.079	.083
Model with amotivation (R ² = .357)			2.343	.471
Block 1	.568	.313***		
Counselor ARC			.402***	.072
Peer ARC			.193*	.074
Block 2	.609	.048**		
Motivation			-.214**	.066

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Across motivation types, ARC support from counselors and peers was positively and significantly associated with interest in camp; activity support of ARC was not significant. These two variables account for approximately 31 percent of the variance in interest in camp. In models containing internal motivation and amotivation, a significant main effect for motivation to attend camp was found. Internal motivation was positively and significantly associated with interest ($B = .190, p < .05, Adj. R^2 = .021$), while amotivation had the opposite effect ($B = -.214, p < .01, Adj. R^2 = .048$). External motivation was negatively, but not significantly associated with interest in camp. No interactive effect between the motivation and ARC support variables was found.

4.0 DISCUSSION AND IMPLICATIONS

Two major findings emerge from the analyses. First, the peers and counselors at camp were seen as being supportive of campers' needs for ARC and subsequent interest in camp. Second, motivation to attend camp had a significant bearing on interest in camp following in-camp ARC support from counselors and peers; this suggests that precamp dispositions are a powerful influence to overcome.

Not surprisingly, this study suggests that the influences of counselors and peers were important in achieving higher levels of interest in camp. While camp activities were distinct from the relationships with people that were experienced within the activity, within-activity support was not associated with interest in camp. Given these findings, it appears that activities are the context of interest development, while feeling connected to others in the activities is the mechanism. These relationships were seen to be important sources for the development of interest in camp. Other studies on the salience of adolescent girls' friendships in other out-of-school time (OST) contexts also support this finding (e.g. Dwyer et al., 2006; Loder & Hirsch, 2003; Watson et al., 2000).

Of the two relationship-based supports (peer and counselor), the support from counselors had the greater impact on campers' reported interest in camp.

These findings support the growing body of literature that suggest that adults leading structured activities are influential in the lives of young people (Larson et al., 2005). Positive relationships between young people and non-parental adults in their lives can also improve their health and well-being (Grossman & Bulle, 2006). Youth program settings such as summer camps, after-school programs, and sports can be contexts where supportive adults provide opportunities for ARC and can influence young peoples' interests in these programs. As evidenced in this study, high levels of support can even counter the effects of initial amotivation and external motivation. The structure of OST programs lends itself to the development of these important developmental processes, for there is a greater opportunity for young people to engage in relationships with nonparental and nonteacher adults in a nurturing, informal, and respectful climate during OST. However, the effect of these relationships on interest is enhanced when young people are internally motivated to participate in the activity or program.

Taking these conclusions into consideration, several practical implications for camp administrators and staff emerge. Camps should focus on building internal motivation in campers before camp starts, as motivation is a strong influence on interest. The promotion of internal motivation could be achieved through precamp open houses, communication with campers about expectations, and connection of campers' existing interests with those opportunities found at camp. These methods would be particularly useful for young people who are amotivated or strongly externally motivated to attend camp. Camps can also solicit information from campers' families such as their levels of motivation to attend, homesickness concerns, etc. This information can be shared with counselors who can also receive training and support for creating interest. Once camp begins, care must be taken with those campers who appear to be less than fully internally motivated to attend camp, so as not to scare them away. The strong influence of counselors can make or break campers' interest in camp, depending on campers' motivation to be there. Counselors can help amotivated and externally

motivated campers find elements of camp that align with their preexisting interests, and give them space to synthesize their own camp experiences.

At camp, counselors create climates that can support campers' needs for autonomy, competence, and relatedness. Autonomy-supportive interaction styles are characterized by adults being sensitive to young people's needs and providing choices (Soenens & Vansteenkiste, 2005). Adults can support autonomy by: providing information about options and actions; acknowledging feelings; incorporating student perspectives into activities; providing optimally challenging tasks; providing structure and guidance that demonstrate the reasons for certain behaviors; and minimizing a performance-based climate (Eisenman, 2007). Competence-supporting experiences can lead to self-determined motivation to continue participation (Ntoumanis, 2005; Standage et al., 2003). Contexts that support young people's needs for competence are those that have a high quality of relatedness with adults who appropriately organize activities to maximize skill-building, provide effective positive feedback, and create feelings of self-efficacy.

While relatedness is a need that can be met within the provision of autonomy and competence, there are some steps that adults can take to meet the needs of young people to feel related and connected to others. For example, Murray (2002) suggests the following for improving relationships: recognize that young people need to feel supported by adults; provide them with opportunities to learn positive relationship skills with adults; learn more about young people's backgrounds, interests, and communities; develop increased awareness of group interactions; and model and expect appropriate behavior. Camp administrators should hire, train, and support staff who are skilled instructors, and who interact with young people in a comfortable, caring, and respectful manner (Grossman & Bulle, 2006).

There are some limitations to this study. As this study was done at one camp, results cannot be generalized to all camps, or even to all girls' camps. This study was exploratory, and a cross-sectional design was used;

future research would benefit from a more quasi-experimental design with pre-, post-, and follow-up tests. Finally, there may have been a social desirability response bias as the girls were at the end of their sessions and experiencing the high that comes at the end of an intensive experience. However, we felt that this retrospective pretest approach (Pratt et al., 2000) was appropriate because it illuminated girls' lived experiences at camp as they reflected on their precamp self-assessments of their motivations to attend camp. This study demonstrates a need for more research on patterns of preinvolvement motivations, as well as on strategies that staff can employ in meeting young people's needs for autonomy, relatedness, and competence. The development of interest in positive youth development contexts such as summer camp is important for young people as they internalize the positive values promoted in such settings. These findings help further research on youth development by elaborating on how interest in positive activities is developed.

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THE INFLUENCE OF GENDER ON PARTICIPATION FOR NONRESIDENTIAL BIRDWATCHERS IN NEW YORK STATE

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Abstract.—In 2006, New York Sea Grant and the SUNY College of Environmental Science and Forestry conducted a mail survey of 1,000 New York State residents (i.e., 500 males and 500 females) who were members of birdwatching organizations. Respondents were asked about their birdwatching initiation, participation, and activity characteristics. Of the qualified sample of 797 individuals, 232 males and 228 females returned usable surveys for a response rate of 58 percent. Descriptive statistics were used to identify significant differences between genders. The majority of male and female respondents were initiated into birdwatching by themselves and many birdwatch alone. Males reported higher median participation rates than did females for in-state, out-of-state, and total birdwatching trips taken in 2005. Men and women reported choosing similar birdwatching locations but owned somewhat different types of birdwatching equipment.

1.0 INTRODUCTION

Birdwatching is a popular outdoor activity in the United States (Cordell and Herbert, 2002). According to a U. S. Fish and Wildlife Service report (2002), an estimated 46 million Americans, aged 16 years and older, participated in birdwatching (U.S Fish and Wildlife Service, 2002) in 2001. About 88 percent of birdwatchers (approximately 40 million people) were “backyard birders” who watched birds around their homes (La Rouche, 2003). Twenty-six percent of

birders (about 18 million people) took birdwatching trips away from home and about 26 percent (12 million people) watched birds both at home and elsewhere. Most birdwatchers (72 percent) were married and 54 percent of birdwatchers were women in 2001 (La Rouche, 2003).

The same U.S. Fish and Wildlife report (2002) breaks birdwatching statistics down by state. In New York State, 2.8 million individuals observed birds around the home and on birdwatching trips in 2001. Eighty-eight percent (approximately 2.48 million individuals) were New York State residents, while 12 percent (approximately 326,000 individuals) were from out of state. A large majority (82 percent or approximately 2.3 million individuals) were residential birdwatchers, while 42 percent (approximately 1.2 million individuals) were reported taking trips away from home to watch birds. These birdwatchers spent an estimated \$1.4 billion on trip-related expenditures, equipment, bird-related magazines, membership dues and contributions, land leasing and ownership, and plantings, and are therefore an important economic development force in New York State (U.S. Fish and Wildlife Service & U.S. Census Bureau, 2003).

Previous studies suggest that gender differences exist in birdwatching. Kellert (1985) found that committed birders (as compared to casual birders) were more likely to be male than female. McFarlane and Boxall (1996) found that 60 percent of casual birdwatchers were typically female, while 63 percent of advanced birders were male. Scott et al. (1999) found that 85 percent of participants in one birding competition were male but Scott and Thigpen (2003) found that participants in a different birding competition were disproportionately female (74 percent). Hvenegaard (2002) found that advanced-experienced and advanced-active birders were more likely to be male (82.2 percent and 80 percent, respectively). Finally, La Rouche (2003) showed that, unlike for hunting and

fishing, a slightly higher percentage of birdwatchers (54 percent) were women in 2001. Results of these studies suggest that gender is an important factor to consider in understanding participation in birdwatching.

As wildlife managers and recreation service providers seek strategies to enhance birdwatching opportunities and experiences, information concerning gender differences in birdwatching initiation, participation rates, and characteristics become essential. The objective of this study is to identify similarities and differences in initiation, participation rates, and characteristics of birdwatching between males and females. This manuscript presents the quantitative results of a mixed-methods study on nonresidential birdwatching in New York State conducted by New York Sea Grant and the SUNY College of Environmental Science and Forestry. The results of the first phase of the study (i.e., 64 qualitative interviews with birdwatchers) are presented in a separate article (Sali and Kuehn, 2007).

2.0 METHODS

2.1 Mail survey design

The quantitative portion of this study used a mail survey of 1,000 male and female nonresidential birdwatchers in New York State. Results from the prior qualitative portion of this study were combined with a literature review to guide the development of the survey questionnaire. The survey instrument was composed of 31 short-answer questions related to involvement in birdwatching and respondent demographics. Questions about demographics focused on gender, month and year of birth, years of education, race, marital status, area of residence, whether the respondent had children, and whether the respondent bird-watched with his or her children. The four categories of area of residence were: (1) rural area, hamlet, or village (under 5,000 people in size); (2) small city (5,000 to 24, 999 people in size); (3) medium city (between 25,000 and 99,999 people in size); and (4) large city (over 100,000 people in size). Questions concerning initiation into birdwatching focused on the age at which the respondent started

birdwatching, the individual from whom he or she first learned how to bird watch, and characteristics that influenced initial participation in birdwatching. Questions about characteristics of birdwatching activity focused on the respondent's primary birding group, birdwatching-related activities in 2005, type of bird species sought, preferred birdwatching locations, birdwatching equipment used, number of bird species on his or her life list, number of bird species that the respondent could identify without a field guide, number of birdwatching books owned, and number of birdwatching magazine subscriptions. Participation rates were assessed by asking for the number of birdwatching trips (i.e., in-state, out-of-state, and international trips) taken in 2005.

2.2 Mail survey implementation

In the fall of 2005, a letter stating the purpose of the study and requesting mailing lists for birdwatchers was sent to birding organizations in New York State. From the 44 organizations to which request letters were sent, 11 organizations positively responded and sent their mailing lists. The names on all the lists were combined and sorted by New York State American Birding Association (ABA) region. For each of the 20 ABA regions, 50 names (i.e., 25 males and 25 females) were systematically chosen. The final sample was made up of 1,000 individuals (i.e., 500 males and 500 females) representing all 20 New York State ABA regions. An equivalent number of males and females were included in the sample to enable gender comparisons.

The mail survey was conducted in winter, 2006, using a modified Total Design Method (Dillman, 1978). The date of return of surveys was recorded for each respondent to identify response bias. The first question—"During 2005, did you travel a mile or more from home to birdwatch?"—was used to determine if the respondent was a nonresidential birdwatcher. Respondents answering "no" to this question were asked to return their uncompleted survey.

Nonresponse bias was identified by contacting 100 nonrespondents. A one-page questionnaire composed of seven questions about nonrespondents'

participation in birdwatching was sent by certified mail. Comparisons between nonrespondents and respondents were made to identify significant differences in participation in terms of the total number of birdwatching trips taken in 2005 and on the response rates between the two groups.

2.3 Data analysis

Data analyses were conducted in Statistical Package for Social Sciences (SPSS) version 12.0 with an alpha level set at 0.05. Some variables were recoded to create new variables. For example, data for age were recoded to create age categories similar to those used by La Rouche (2003): 44 and below, 45-54, 55-64, and 65 & above. Due to the low number of respondents who belonged to younger age groups, those who belonged to ages 44 and below were categorized in one age group (i.e., 44 and below). Three categories of educational level (i.e., high school diploma or less, undergraduate college education, and graduate degree) were created by recoding the number of years of school completed. The total number of birdwatching trips was derived by summing the in-state, out-of-state, and international birdwatching trips taken by each respondent in 2005.

Descriptive statistics (i.e., frequencies, means, median, mode, standard deviations, standard errors of mean, confidence intervals, variances, variable ranges, minimum values, maximum values, skewness, and kurtosis) were calculated. Two-independent-sample t-tests were used to compare mean ages of initiation for males and females. Two-independent-sample z-tests were used to compare proportions of males and females selecting each categorical answer on the survey. A Mann-Whitney test was used to compare differences in median participation rates (in-state, out-of-state, international, and total number of birdwatching trips taken in 2005), median number of species on the respondent's birding life list, median number of bird species that the respondent could identify without a field guide, median number of birdwatching-related books owned, and median number of birdwatching magazine subscriptions for male and female respondents. The Mann-Whitney test was also used to check nonresponse bias by

comparing the median participation (i.e., total number of birdwatching trips taken in 2005) of mail survey respondents with that of non-respondents. A two-independent-sample z-test was used to compare proportions of returned usable surveys between respondent and non-respondent groups. The Spearman's rank correlation test, a nonparametric equivalent of Pearson's correlation test, was used to identify association between the return dates of surveys and respondents' participation to identify potential response biases related to participation.

3.0 RESULTS

3.1 Mail survey

From the original sample of 500 male and 500 female birdwatchers, 172 returned questionnaires that were identified as unusable (i.e., the respondent either did not participate in birdwatching trips in 2005 or was not from New York State); 28 questionnaires were undeliverable and three were duplicates. A qualified sample of 414 male and 383 female respondents remained. From this qualified sample, 460 nonresidential birdwatchers (i.e., 232 males and 228 females) responded for an adjusted response rate of 56 percent and 60 percent, respectively. The final adjusted response rate for males and females combined was 58 percent.

3.2 Nonresponse bias and response bias analyses

Of the 100 nonresponse surveys sent, 26 were identified as unusable (i.e., the respondent did not participate in birdwatching trips in 2005) and 11 were undeliverable. Following the removal of surveys that were unusable and undeliverable, a qualified sample of 63 nonrespondents was identified from the original sample of 100. From this qualified sample, 17 nonresidential birdwatchers completed and returned usable surveys. The response rate for the short nonresponse survey for nonresidential birdwatchers was 27 percent of the qualified respondent sample. The percentage of respondents (N=460) who returned usable surveys (i.e., were non-residential birdwatchers) was significantly different from the percentage of nonrespondents (N=17) who were nonresidential

birdwatchers (58 percent and 27 percent, respectively; $p < 0.05$). The lower proportion of those who returned usable surveys from the group of nonrespondents indicates that this group likely includes individuals who are either residential or inactive birdwatchers.

A Mann-Whitney test revealed a significant difference between mail survey respondents ($N=457$) and the 17 nonrespondents in median participation ($U=2396.0$, $p=0.019$). These data indicate that the median participation for the population of nonresidential birdwatchers in New York State may be lower than that of the sample used in this study. However, because this study examines elements that influence participation for male and female nonresidential birdwatchers, the sample is likely to provide results that enable greater insight into the elements influencing higher participation.

A Spearman's correlation coefficient test, used to identify response bias, revealed no significant correlation between the date of return of questionnaires and the respondents' participation ($\rho=-0.059$, $N=456$, $p=0.208$). Based on these results, it is unlikely that those who returned questionnaires on earlier dates had higher participation levels than those who returned questionnaires on later dates (i.e., it appears that no response bias existed).

3.3 Respondent demographics

The sample was largely representative of Caucasians (99 percent) who were married (69 percent), highly educated (93 percent had some college education), and residing in rural areas (55 percent) or small cities and suburbs (26 percent). The respondents were also likely to be middle-aged or older (68 percent of the respondents were 55 years of age or older). The sample was almost equally split between males and females. Most respondents (64 percent) had children and 57 percent of those with children indicated that they bird watched with their children.

3.4 Birdwatching initiation

The mean initiation age for male respondents ($N=226$) was 22 years of age and was not significantly different

from the mean initiation age of 23 years for females ($N=214$; $p \leq 0.05$). Most respondents (54 percent) were initiated into birdwatching by themselves, with no significant difference existing between males and females for the initiator category ($p \leq 0.05$).

Respondents were asked to identify characteristics that influenced their initial participation in birdwatching. "Having easy access to an area where there are birds," "reading books or magazines about birds," "maintaining a bird feeder," and "living in a house surrounded by birds" were the most influential characteristics. Significant differences were identified between the percentage of males (68 percent) and females (78 percent) who were influenced by "having easy access to an area where there are birds" ($p \leq 0.05$). Additional significant differences were found for "maintaining a birdfeeder" (males=47 percent, females=67 percent, $p \leq 0.05$), "living in a house surrounded by birds" (males=30 percent, females=45 percent, $p \leq 0.05$), and "having experiences in hunting or fishing" (males=28 percent, females=8 percent, $p \leq 0.05$).

3.5 Participation rates

The Mann-Whitney tests revealed significant differences in participation rates between males and females for median number of birdwatching trips in 2005 (Table 1). Specifically, males reported having a higher median participation rate than females for in-state ($U=17788.00$, $p=0.0005$), out-of-state ($U=19519.00$, $p=0.0005$), and total birdwatching trips ($U=18062.00$, $p=0.0005$) taken in 2005. However, there was no significant difference between males and females for participation rate in international birdwatching trips ($U=22597.00$, $p=0.163$).

3.6 Characteristics of birdwatching activity

Both similarities and differences were identified between genders for primary birding groups, birdwatching-related activities in 2005, types of bird species sought, preferred birdwatching locations, types of birdwatching equipment used, number of bird species on birding life list, number of species identified

Table 1.—Differences in participation rates between male and female respondents

Trip category	Gender	N	Median ^a	Mean Rank	Mann-Whitney U	Z-value	p
In-state	M	226	14.00	254.79	17788.000	-5.205	0.0005
	F	220	6.00	191.35			
Out-of-state	M	228	2.00	249.89	19519.000	-4.230	0.0005
	F	221	1.00	199.32			
International	M	224	0.00	227.62	22597.000	-1.396	0.1630
	F	216	0.00	213.12			
BTRIPS ^b	M	231	17.00	263.81	18062.000	-5.701	0.0005
	F	226	9.00	193.42			

^aNumber of birdwatching trips

^bSum of in-state, out-of state, and international birdwatching trips taken in 2005

without using a field guide, number of birdwatching books owned, and number of birdwatching magazine subscriptions. Analysis of the primary birding groups of respondents indicates a moderately high percentage of both males (43 percent) and females (33 percent) who participated in birdwatching alone, with no significant difference between genders. Other groups used for birdwatching were “friends and family” and “family only,” with no significant differences between genders.

The birdwatching-related activity for 2005 most commonly chosen by male and female respondents was “maintained a birdfeeder or nest box,” followed by “kept a list of the bird species I saw” (Table 2). Significant differences between males and females were identified for “led a birdwatching walk or tour” and “gave presentations on birds or birdwatching,” with a higher proportion of males for each. Large percentages of male and female respondents searched for songbirds and birds of prey, with no significant differences between males and females. However, significant differences existed between male and female respondents seeking water birds, with a higher proportion of males (84 percent) than females (75 percent) looking for water birds such as herons and shorebirds.

The birdwatching location most preferred by male and female respondents was woodlands (90 percent of both males and females), followed by brush-covered areas and meadows (75 percent of males and 71 percent

Table 2.—The proportions of males and females according to birdwatching-related activities in 2005

Birdwatching-related activity	Proportion ^a	
	Males ^b	Females ^c
Maintained a birdfeeder or nest box	0.90	0.88
Kept a list of the bird species I saw	0.69	0.70
Record bird songs	0.05	0.05
Led a birdwatching walk or tour	0.30	0.15
Attended a birdwatching walk	0.55	0.58
Took part in an organized bird census	0.54	0.47
Kept notes about the activities of birds I saw	0.36	0.31
Took photographs of birds	0.48	0.40
Attended a tour or a presentation on birds and birdwatching	0.50	0.53
Gave presentations on birds or birdwatching	0.20	0.11
Other	0.07	0.11

^aSignificant differences identified through a two-independent-sample z-test ($p \leq 0.05$) are in bold.

^bN males=230

^cN females=228

of females; Table 3). No significant differences were found between males and females for these preferred birdwatching locations.

While almost all of the respondents had a pair of binoculars, significant differences were noted between males and females for birdwatching equipment, such as scopes, spotting cameras, tape recorders, and birdfeeders (Table 4). Specifically, a significantly greater proportion of males than

Table 3.—The proportions of males and females according to preferred birdwatching locations

Birdwatching location	Proportion	
	Males ^a	Females ^b
Woodlands	0.90	0.90
Brush-covered areas	0.75	0.71
Meadows	0.71	0.71
Agricultural lands	0.58	0.51
Landscaped areas	0.51	0.50
Ocean shorelines	0.52	0.48
Lake and stream shorelines	0.52	0.48
Marshes, wetlands, swamps	0.52	0.48
Other	0.20	0.13

^aN males=232

^bN females=226

females reported using a scope (65 percent and 43 percent, respectively), spotting camera (65 percent and 57 percent), and tape recorder (24 percent and 13 percent), while a higher proportion of females (90 percent) than males (84 percent) reported having birdfeeders ($p<0.05$).

Differences were noted between genders concerning birding life lists (i.e., a tally of bird species seen by a birder during his or her lifetime) and bird species identification. The percentage of male respondents ($N=232$) who kept a life list (72 percent) was significantly higher than the percentage of females (64 percent) who indicated doing so ($N=228$; $p\leq 0.05$). Males reported a higher median number of species on their birding life list than their female counterparts ($U= 6545.00$, $p=0.0005$). Males also indicated that they were able to identify a higher median number of bird species without using a field ($U= 13078.00$, $p=0.0005$). Finally, males reported that they own a higher median number of books and magazine subscriptions related to birds and birdwatching ($U=18883.00$, $p=0.0005$ and $U=22271.00$, $p=0.0295$, respectively).

4.0 DISCUSSION

Both similarities and differences were identified between males and females for initiation into birdwatching, participation, and characteristics of

Table 4.—The proportions of males and females according to the types of birdwatching equipment used

Birdwatching equipment	Proportion ^a	
	Males ^b	Females ^c
Binoculars	0.99	1.00
Scope	0.65	0.43
Spotting camera	0.65	0.57
Tape recorder	0.24	0.13
Birdfeeder	0.84	0.90
Nesting boxes	0.53	0.52
Video camera	0.13	0.08
Boat	0.36	0.40
Parabolic microphone	0.03	0.02
Other	0.07	0.05

^aSignificant differences identified through a two-independent-samples z-test ($p\leq 0.05$) are in bold.

^bN males=232

^cN females=228

birdwatching activity. For both men and women, initiation to birdwatching started at similar ages and was influenced greatly by the respondents' interest in birdwatching on their own. The average age at which male and female respondents began to birdwatch were 22 and 23 years of age, respectively, which parallels McFarlane's (1996) findings that the majority of Canadian birders (60 percent) started birding during their adult years (i.e., over 18 years of age). The late start for nonresidential birdwatchers could be linked to the lower proportions of males and females initiated into birdwatching by immediate family members and friends during childhood.

One important difference between genders is that, for a higher proportion of female respondents than males, initiation into birdwatching was influenced by having birdfeeders, living in a house surrounded by birds, and having easy access to areas where there are birds. The initiation of 28 percent of male respondents was influenced by having experiences in hunting and fishing; only 8 percent of female respondents were influenced by these experiences. Birdwatching initiation for females appears to be greatly influenced by having opportunities to watch or observe birds in close proximity to their homes, whereas birdwatching

initiation for males appears to be influenced by having experiences in other wildlife-related recreation activities. The data also reveal differences in participation rates between males and females, with females reporting lower median participation rates for in-state, out-of-state, and total birdwatching trips taken in 2005.

Some similarities were found for the birdwatching habits of male and female respondents. For instance, a moderately high percentage of both males and females participated in birdwatching alone. These findings were similar to McFarlane's (1996) results that the majority of Canadian birdwatchers who started as adults participated in birdwatching alone (53 percent). In addition, the proportions of males and females seeking each type of birdwatching location are similar.

Results also reveal differences between genders in birdwatching activity characteristics. For example, a higher proportion of males owned technical equipment such as scopes, spotting cameras, and tape recorders, while a higher proportion of females owned birdfeeders. These results suggest that females may be more involved in birdwatching around the home than males. In contrast, males might be more involved in birdwatching away from home using highly technical equipment. In terms of avidity, males appeared to have a higher perception of their birdwatching ability as compared to females in terms of the number of species on birding life lists and number of birds identified without using a field guide. Male respondents also reported having a higher median number of birdwatching books and magazine subscriptions, and a higher proportion of males than females participated in educational activities such as "leading a birdwatching walk or tour" and "giving presentations on birds and birdwatching."

5.0 CONCLUSION

Nonresidential birdwatchers are an important constituency in wildlife-related recreation. In order to enhance opportunities and experiences in birdwatching, it is important to examine the effects of gender on birdwatching initiation, participation rates, and characteristics of birdwatching activity

of nonresidential birdwatchers. Understanding differences between males and females in relation to these factors can help wildlife managers and recreation service providers improve programs and products for the birdwatching population.

The objective of this study was to identify similarities and differences in the initiation, participation, and characteristics of birdwatching between males and females. Both similarities and differences were identified for birdwatching initiation, with large percentages of both genders starting on their own as adults. It appears that initiation into birdwatching may not be as dependent on childhood participation and support from family and friends as in other recreational activities. Moreover, initiation for males appeared to be influenced by involvement in other wildlife-related recreational activities, while initiation for females was influenced by birdwatching opportunities around the home. Significant differences between males and females were also identified for participation in birdwatching. Both differences and similarities were identified for the various characteristics of birdwatching activities.

This research adds to the existing knowledge on gender and participation in wildlife-related recreational activities, but it is important to note some limitations that decrease the generalizability of the findings. First, since the sample was only composed of nonresidential birdwatchers, this study is not generalizable to all birdwatchers. Second, the sample included only active birdwatchers who are members of birdwatching organizations; other birdwatchers in New York State who are not members of these groups were not represented by the sample. Third, since respondents were asked to recall their participation (i.e., number of in-state, out-of-state, and international birdwatching trips) during the previous year, recall bias may have influenced the results (i.e., there is a possibility that the respondents underestimated or overestimated their participation).

In conclusion, some significant differences were noted for birdwatching initiation, participation rates, and characteristics of birdwatching activity

for males and females. From a promotional or marketing standpoint, males and females might respond differently to marketing strategies targeted at attracting birdwatchers. Males might be motivated by messages that emphasize sharing knowledge about birds and birdwatching with other people, whereas females might be motivated by messages that highlight experiencing birdwatching around the home. In addition, while results suggest that social support may not be that important to nonresidential birdwatchers since many birdwatch alone, sharing knowledge about birds or birdwatching may be important. Programs and other efforts that enable birdwatchers to share their knowledge with others should be considered.

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PARTNERSHIPS

A COMPARATIVE ANALYSIS OF PARTNERSHIP BEHAVIORS IN THE NATIONAL PARK SERVICE

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Abstract.—The partnership phenomenon has received considerable attention as an alternative management strategy for public agencies. The growing use of partnerships has created a need to understand key elements of partnership success and failure, how partnerships address park and recreation management paradoxes, and guidelines for best practices (Mowen & Kerstetter, 2006). National Park Service (NPS) employees participated in a Internet survey (n=5,398) examining partnership attitudes and behaviors. Analysis revealed that the majority of NPS employees are currently engaged in partnerships (60 percent) and reported that their past experience was rewarding and productive (60 percent). Respondents averaged seven partnerships in the previous 5 years. From the 18 types of NPS units (i.e. National Parks, National Battlefields, National Monuments, etc.), three groups were identified for this analysis. Achieving a better understanding of the scope, motivations, and perceived limitations of engaging in partnerships will be important to the NPS in meeting the demands of providing access to, and protecting resources, in times of fiscal constraint.

1.0 BACKGROUND

The current political culture of fiscal constraint and “doing more with less” has caused a groundswell of interest in collaborative, partnering, and resource sharing arrangements among park and recreation service providers (Selin & Myers, 1995). The pressures for more efficient government and increased citizen involvement have resulted in the movement toward more effective management of common resources. Partnerships offer innovative strategies for managing public resources and agencies, as well as empowering people to solve common problems. Collaborative agreements allow government agencies, communities, and private groups to build bridges between one another that enable them to deal with common problems and create forward-thinking strategies (Wondolleck & Yaffee, 2000). Partnership offers a process to increase involvement through democratic means and provide a viable approach for expanding the range of services offered, enhancing the opportunities of park visitors, and building a sense of community pride (Vaske et al., 1995).

Partnership has been defined by various authors in different fields of literature who generally refer to it as the voluntary pooling of resources between two or more parties to achieve collaborative goals (Yoder & Ham, 1999). Wood and Gray (1991) refer to collaboration as groups of autonomous stakeholders that engage in an interactive process, using shared rules, norms, and structures to act or decide on issues related to a particular problem. However, the term partnership is a broad label that describes various types of interpersonal, relational, and organizational transactions (Mowen & Kerstetter, 2006; Yoder & Ham, 1999). The gaps in the consistency of partnership terminology lead to confusion in defining collaborative relationships and systematically evaluating the impact of partnership activities (Cousens et al., 2006).

Despite issues with partnership terminology and clear partnership organization and evaluation processes, partnerships are becoming increasingly important in the management of public agencies, specifically parks and recreation service providers. With diminished public resources and an expanding, demanding, and increasingly diverse constituency, public agencies must seek assistance from commercial and non-profit organizations to operate (Mowen & Kerstetter, 2006). Furthermore, concerns for public welfare, including environmental degradation, obesity, and juvenile delinquency, to name a few, are problems that no one organization or government agency can solve alone. The public is impatient and dissatisfied with government performance and is demanding the revitalization of responsible government practices (Osborne, 1993). Today's government is therefore under extreme pressure from the public to be more productive and efficient. Words like rethink, rebuild, revitalize, restructure, and reinvent carry clear messages from the public that the federal, state, and local governments must deliver services more efficiently to meet the challenges of a rapidly changing society and to restore public trust (Callahan & Holzer, 1994). Citizens' heightened awareness of broader social issues are creating demands to find solutions to financial, human, and capital problems through alternative methods such as collaborative agreements. Through collaboration, traditional park and recreation providers are repositioning themselves to provide goods and services that address broader social missions while supporting their agencies (Mowen & Kerstetter, 2006).

2.0 OBJECTIVES

The growing practice of building partnerships has created a need to understand key elements of partnership success and failure, how partnerships address park and recreation management paradoxes, and guidelines for best practices (Mowen & Kerstetter, 2006). In the past 20 years, knowledge of partnerships has grown exponentially. Yet, despite the growing literature, few systemic empirical partnership assessments have been pursued. This study investigates the potential for parkland managers to

implement partnership and collaborative strategies to support their parks and determine partnership training and development priorities for National Park Service (NPS) employees. Specifically, the purpose of this study is to determine partnership training and development priorities for NPS employees by obtaining baseline data regarding knowledge, skills, and abilities as well as partnership attitudes that will identify existing and future training needs of employees and partners associated with NPS partnerships work.

3.0 METHODS

The study focused on NPS employees. The NPS provided the database of contact information of NPS employees for this study. Based on a thorough review of the partnership literature in various fields of study and discussions with NPS management personnel, an Internet-based survey instrument was developed. Care was taken to identify those variables found to influence partnership behavior by examining previous studies, in terms of both motivations and perceived constraints to partnering. Moreover, an exhaustive list of employee competencies pertaining to partnerships was developed by NPS professionals, reviewed by a team of researchers, and then incorporated into the instrument. The survey instrument was administered using the Online Questionnaire Authoring Tool (OnQ). Methods outlined by Dillman (2000) were modified for survey design. The survey included questions regarding: demographics, knowledge, skills, and abilities; past and present partnership experience; future partnership intent; and partnership attitudes.

A total of 18,224 names were selected to participate in the study. The survey was viewed by 7,041 employees and a total of 5,398 usable surveys were downloaded. Out of the 18,224 employees, 39 percent of them viewed the survey while 29 percent of them completed it. Out of the 7,041 employees who viewed the survey, 76 percent of them finished the survey. The overwhelming majority (97 percent) were permanent, full-time employees who averaged 18 years of service in the agency and 21 years in the federal government. The average respondent was 49 years old, white

(84 percent), male (58 percent), and had a completed a bachelor's degree or higher (77 percent).

4.0 RESULTS

From the 18 types of NPS units (i.e. National Parks, National Battlefields, National Monuments, etc.), three groups were identified for this analysis. These groups were: 1) "National Parks"; 2) other units within the National Parks System (including historic, recreation area, lakeshore, etc.); and 3) managerial support units including regional and Washington offices. The highest percent of survey respondents (45 percent) worked in "other" units in the NPS, while 34 percent worked in the icon 'National' parks, and the least (21 percent) worked in NPS managerial support units (Table 1).

Respondents were asked to quantify how many partnerships they had been involved with in the preceding 5 years, regardless of agency affiliation. Overall, respondents reported participating in an average of 7 partnerships over the past 5 years. Across the three groups, "National Parks" respondents reported the lowest average number of partnerships (5), other units reported an average of 7 partnerships and NPS managerial support units reported 10 partnerships, on average.

Past experience with partnerships was described as 'rewarding' by 60 percent or more of respondents in all three groups (Table 2). Both National Parks (16 percent) and other NPS units (17 percent) were similar in reporting past partnership experiences as difficult, frustrating, or not very productive, while only 12 percent of NPS managerial support units reported this. Less than 28 percent of all park units reported having

Table 1.—Frequency distribution of park unit respondents

Response of Park Units	Number of Respondents	Percent of Respondents
National Parks	1,821	34%
Other National Park System Units	2,419	45%
Managerial Support Units	1,158	21%
Total	5,398	100%

no experience working with partnerships.

Currently, 60 percent of the National Parks employees, 62 percent of employees from other park units, and 69 percent of employees in NPS managerial support units reported being in one or more partnerships (Table 3). However, approximately 40 percent of respondents from each park unit reported not currently being engaged in any partnership activity.

The overwhelming majority of respondents in all park units expected to be engaged in one or more partnerships in the future; however, differences between groups emerged for the 'belief that they will be involved in partnerships in the future because it is the best way to conduct park business.' Thirty-two percent of respondents from National Parks agreed, while 35 percent of respondents from other park units agreed, and 39 percent of respondents from NPS managerial support offices felt the same (Table 4). However, approximately 12 percent of respondents from each of the three groups reported that they would avoid becoming involved in partnerships if they could help it.

Table 2.—Past partnership behaviors with organizations outside of the NPS

Past partnership behaviors	National Parks	Other National Park System units	Managerial support units
I have no experience working with partnerships	23%	21%	27%
My past experience working with partnerships was difficult, frustrating, and not very productive	16%	17%	12%
My past experience working with partnerships was rewarding and productive	61%	62%	61%
Total	100%	100%	100%

Table 3.—Current partnership experiences with organizations outside of the NPS

Current partnership behaviors	National Parks	Other National Park System units	Managerial support units
I am not currently engaged in any partnership activity with the NPS	40%	38%	41%
I am engaged in one partnership program/project	23%	20%	18%
I am engaged in multiple partnerships programs/projects	37%	42%	41%
Total	100%	100%	100%

Table 4.—Future Partnership Intent with Organizations outside of the NPS

Future partnership intent	National Parks	Other National Park System units	Managerial support units
I will try to avoid becoming involved in a partnership if I can	12%	12%	11%
I expect to be engaged in one or more partnerships because this will be a primary way the NPS will conduct park business in the future	56%	53%	50%
I intend to be engaged in one or more partnerships because I believe this is a better way to conduct park business in the future	32%	35%	39%
Total	100%	100%	100%

5.0 CONCLUSIONS

Understanding partnership attitudes and behaviors are increasingly important in managing our national parks as government fiscal climates change and budget cuts are implemented. Current partnership behaviors may have impacts on the NPS promoting partnership as a fiscal solution in the future; it is therefore important to gain an understanding of present attitudes. Overall, the majority of NPS employees is currently engaged in partnerships and intends to be engaged in one or partnerships in the future. However, partnership behaviors vary little depending on type of park unit. This finding reveals that regardless of park unit type, partnerships are a widely used management tool in the NPS. Employees generally hold a positive attitude about partnerships and intend to engage in them in the future. Further examination of study results by other variables including position type or region may yield more insightful results for future training.

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TRAVEL & TOURISM I

TRAVEL TRENDS IN NEW ENGLAND AND THE NORTHEAST UNITED STATES: UPDATING POST 9-11 TRENDS

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Abstract.—This paper examines the travel market trends in New England after September 11, 2001 (9-11). Comparisons of travel to New England are also made with overall national domestic travel trends and vacation travel trends. The primary purpose is to examine the markets that travel to both the Northeast United States and New England¹ regions to determine if and when the markets had rebounded since 9-11. Subregions of New England are also examined.

1.0 BACKGROUND AND INTRODUCTION

The overall purpose of this paper is to re-examine and update trends in travel and tourism activity markets by those who seek to travel to the Northeast United States and New England and, specifically, to look at these trends beyond the year 2001, or post September 11, 2001 when the U.S. was attacked by terrorists using civil planes to hit U.S. targets (World Trade Center and the Pentagon; hereafter referred to as 9-11). The primary purpose is to examine travel patterns of the various market segments that traveled to these regions from 2001 through 2005/2006 to determine if and when the markets have rebounded since 9-11.

Comparisons of travel to New England are also made with overall national domestic travel trends and

vacation travel trends. Selected travel variables and recreational/sport activities associated with travel are examined across destination subregions within New England – Northern New England and Southern New England – to determine if travel to these subregions is similar or not, and how the markets have changed.

2.0 REVIEW OF LITERATURE

In previous studies (Kelly and Warnick, 1999; Warnick, 2002, 2004, 2006), the major data sets employed to examine trends over time were either Simmons Market Research Bureau's *Study of Media and Markets* or Standard Rate and Data Service's (SRDS) *Lifestyle Market Analyst*. Each data set had its limitations. The Simmons data sets often were not current and data were difficult to extract although the data has become available in CD format in recent years and does allow queries and data analysis customization. The SRDS data was available in tabular form and did not allow one to break down the data beyond the presentation tables but was perhaps the most current and was available on a yearly basis by major metro areas or designated market areas (DMAs) (SRDS, 1995-2007).

Other similar data sets exist and are now available online via research university libraries and through subscription services for further analysis. One such data set is MediaMark's *TopLine Research Reports*. Their data are now available through 2005/2006, are similar in format to the Simmons data, and provide information on market size, participation rates, market profile, DMA rankings and market indices. However, *TopLine Research Reports* does not allow extensive opportunities to conduct data queries as does Simmons.

The line of research and trend analysis presented in this paper is based on the data in MediaMark's *TopLine Research Reports (TRR, 2001 - 2006)*. The TRR data are collected consistently the same way each

¹New England includes six U.S. states: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. The Northeast region of the U.S. is the New England states plus New Jersey, New York, and Pennsylvania.

year and provide an excellent foundation for long-term trend analysis much as the Simmons and SRDS data sets have in the past. These data provide activity patterns within regional markets that represent New England and the Northeast U.S. destinations' travel patterns and behavior.

There was evidence in previous data sets that 9-11 impacted travel in the Northeast U.S. and New England. However, because these data sets lagged in time, the long-term trend events were not readily available. The measured impact of 9-11 on the travel and related recreational activity behavior did appear in these data when the first few years post 9-11 became available. The previous analysis (Warnick, 2006) of the data and research did report a decline in travel to the New England primary target market region. Those previous data are discussed here briefly to provide a baseline or benchmark for examining travel trends over time.

Travel activities in the United States, both domestic travel and vacation travel appeared to have peaked in 2000 or 2001 according to previous studies (Warnick, 2003, 2005). Although declines in travel to these destinations were not as dramatic as expected post 9-11, the losses were indeed found to be much more pronounced in the New England and selected Northeast regional market areas, such as the New York metro area and within the primary market DMAs of the New England travel market. The overall New England domestic travel rate dropped from a peak of 43.5 percent in 2000 to 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 using the SRDS data from the *Lifestyle Market Analyst*. Further analysis from those data sets indicated that these rates rebounded in 2004 and 2005. There was also some evidence that participation in selected recreational activities was affected less in overall decline rates than the travel variables. However, a limitation of the SRDS data on recreational activities is that these activities are not linked to travel behavior and are linked only to the resident DMA's market behavior. It was concluded that people continued to participate in recreational activities, perhaps locally, and that their

activity patterns or behavior rebounded more quickly than travel behavior.

3.0 METHODS

This is a descriptive study of the activity and participation rates for travel and related activities from 2001 through 2006. Trend analysis was conducted by examining the change rates from year to year and calculating an average annual change rate during the specific time period (where data are available). The average annual change rate examines the percent change from each year to the next throughout the period and then averages the change rate over the total period. This eliminates the decade-to-decade change comparisons, which are often large. Comparisons are also insightful when these change rates within a region are compared with a larger or national change rate. For example, change rates in overall population change can be used as a benchmark for measuring change in travel participant numbers. Changes in numbers of participants were compared to overall adult population size growth to determine if the travel growth was changing at a rate comparable to these base rates. This benchmark for population growth was an average rate of 1.5 percent. Visual analysis of the data was used to determine the directional patterns of change. For the purposes of this study, several statistical variables were used to describe the trends evident in these data.

Number of travelers and participation rates of the adult population were used as the primary variables to examine the overall trends. Domestic travel and travel for vacation purposes and travel by primary regional destination including New England and the Northeast as a region were examined. Where the data were reliable (i.e., number of subjects sufficient for reliable statistical analysis), further analysis of the state travel trends was conducted by selected destination area (subregions), in this case Northern New England (Maine, New Hampshire and Vermont) versus Southern New England (Connecticut, Rhode Island and Massachusetts). Data were available in the *TRR* from 2001 through 2005/2006. The data for 2006 were available on the national level but were not yet available at the regional level. Additional lifestyle variables were examined to determine if people who

travel also might participate in recreational/leisure activities (general sightseeing, visiting family and friends or engaging in selected outdoor recreational or sport activities). However these statistics were available only at the national level and not for the Northeast or New England or its subregions (Northern and Southern New England).

4.0 RESULTS

4.1. National versus Regional Travel Trends Post 9-11

The *TRR* data indicate that the number of travelers has remained relatively constant between 2001 and 2006 (Table 1). However, the 0.7 percent growth rate in the number of domestic travelers is lower than the overall population growth rate in the same period (1.5 percent). This has resulted in a slight decline in the domestic travel participation rate during this period. In 2001, 55.2 percent of the adult population engaged in domestic travel and by 2006 the rate had dropped to 53.2 percent. Analysis of the year-to-year participation rates indicates that the rates remained relatively constant from 2001 through 2003 at approximately 55 percent of the total households participating before dropping off in 2004 and then gradually declining through 2006. Table 1 contains these data.

4.2. Travel Trends by Primary Travel Purpose

Among the primary travel purposes, the largest proportion of people reported traveling for vacation; more than 35 percent of the adult population traveled for vacation in 2005 (Table 2). This figure is close to the SRDS data from that period (Warnick, 2006). However, the average annual rate of vacation travel declined by a rate of 1.3 percent per year between 2001 and 2006. Only honeymoon travel and personal travel grew between 2001 and 2006 and these types of travel comprise only a small portion of all domestic travel.

4.3. Regional Travel Destination Trends: Where are the travelers going?

Of all regions of the country, the Northeast United States had the lowest proportion of domestic travelers between 2001 and 2006 ranging from 13 percent in 2001 to 11.8 percent in 2006 with an average annual decline of 1.9 percent (Table 3). During this time, the South Region of the country was the primary destination for most domestic travelers from U.S. markets with 29.1 percent and 27.5 percent of U.S. adults traveling to the South in 2001 and 2006, respectively, but with an average decline of 1.1 percent

Table 1.—U.S. population domestic travel: 2001 through 2006

Travel Category	Years						Average Annual Change Rate
	2001	2002	2003	2004	2005	2006	
Total adults ('000)	202,753	204,964	209,657	213,454	215,800	218,289	1.5%
Total adults who traveled	111,920	112,730	115,521	114,838	115,453	116,087	0.7%
Domestic travel part. rate	55.2%	55.0%	55.1%	53.8%	53.5%	53.2%	−0.7%

Note: Average annual change rate is measured by percentage change from year-to-year and averaged over period.

Table 2.—Participation rates of U.S. domestic travel markets by primary purpose: 2001 through 2006

Primary Travel Purpose	Years						Average Annual Change Rate
	2001	2002	2003	2004	2005	2006	
Business (company-paid)	7.5%	7.0%	6.7%	5.9%	6.4%	6.3%	−3.2%
Business (self-paid)	1.9%	2.0%	1.8%	1.8%	1.8%	1.7%	−2.1%
Honeymoon	0.7%	0.6%	0.7%	0.7%	0.7%	0.8%	3.3%
Vacation	37.3%	36.3%	37.7%	36.3%	35.1%	34.8%	−1.3%
Personal (not vacation)	16.0%	16.1%	15.7%	15.3%	15.5%	16.6%	0.8%
Part business/vacation	2.8%	2.7%	2.6%	2.6%	2.7%	2.3%	−3.6%

per year during that period. The North Central Region had the greatest average annual percent decline (–2.2 percent per year) between 2001 and 2006

The *number* of travelers who selected one of the six New England states as a primary destination declined only slightly from 13.17 million in 2001 to 13.05 million in 2005 (data were not available for 2006); the participation rate of domestic travel to New England declined from 6.5 percent to 6.0 percent during this time period. These changes do not indicate a significant overall directional change or rebound after 9-11. However, there was a small *increase* in travel to New England during the years immediately after 9-11 but the numbers and rates declined beginning in 2004.

4.4. Travel Volume Trends

While the overall numbers and participation rates reveal a decrease in domestic travel between 2001 and 2006, an analysis of travel frequency may be more revealing (Table 4). Travel by those who took three or more trips per year declined slightly between 2001 and 2006, from 22.5 percent to 20.5 percent. The only “travel volume” category (number of trips per year)

that increased during that time involved people who took only one trip per year. Data were not available by subregion for volume of travel. *TRR* does provide information that links recreational and leisure activities to travel activity, especially vacation travel.

4.5. Trends in Travel to New England

The overall participation rate of travelers to New England held relatively constant from 2001 to 2005 (Table 5). Within New England, the northern subregion (Maine, New Hampshire and Vermont) has been slightly more popular than the southern subregion (Massachusetts, Rhode Island and Connecticut) in 4 of the 5 years (2003 is the exception). Likewise, the percentage of travelers from the Northeast U.S. Region who selected Northern New England destination states over Southern New England states has also been consistently higher.

4.6. Travel Activity Pattern Trends

Selected tourism and recreational activities engaged in by travelers while on vacation were also analyzed (Table 6); data on these specific activities were available only at the national level, not at the regional

Table 3.—Primary regional destinations of U.S. domestic travel markets: 2001 to 2006

Part. Rate by Region	Years						Average Annual Change Rate
	2001	2002	2003	2004	2005	2006	
Northeast	13.0%	12.8%	12.6%	11.8%	12.0%	11.8%	–1.9%
North Central	15.4%	14.6%	14.3%	14.1%	12.9%	13.7%	–2.2%
South	29.1%	29.9%	29.3%	28.1%	28.1%	27.5%	–1.1%
West	18.8%	17.6%	18.6%	18.7%	18.4%	18.0%	–0.8%

Travel Variable	Years						Average Annual Change Rate
	2001	2002	2003	2004	2005	2006*	
Travel to New England	13,170	13,699	13,346	12,256	13,052		–0.1%
Trav. part. rate New Eng.	6.5%	6.7%	6.4%	5.7%	6.0%		–1.6%

*Data were not available for 2006 at the subregion level.

Table 4.—Number of trips taken by U.S. domestic travelers: 2001 to 2006

Number of Trips	Years						Average Annual Change Rate
	2001	2002	2003	2004	2005	2006	
One	19.3%	19.1%	19.1%	19.4%	19.8%	19.5%	0.2%
Two	13.4%	12.9%	13.7%	12.9%	13.1%	13.2%	–0.2%
Three or More	22.5%	22.9%	22.4%	21.5%	20.6%	20.5%	–1.8%

Table 5.—Travel to New England: 2001 through 2005

Travel Variable	Years					Average Annual Change Rate
	2001	2002	2003	2004	2005	
Travelers ('000) - New England	13,170	13,699	13,346	12,256	13,052	-0.1%
Travelers ('000) - No. New Eng.	6,738	6,885	6,625	6,393	6,811	0.4%
Travelers ('000) - So. New Eng.	6,432	6,814	6,721	5,863	6,241	-0.4%
Participation Rates	Years					Average Annual Change Rate
	2001	2002	2003	2004	2005	
Part. rate to New England	6.5%	6.7%	6.4%	5.7%	6.0%	-1.6%
Part. rate to No. New England	3.3%	3.4%	3.2%	3.0%	3.2%	-0.6%
Part. rate to So. New England	3.2%	3.3%	3.2%	2.7%	2.9%	-2.0%
Portion from Northeast Market	Years					Average Annual Change Rate
	2001	2002	2003	2004	2005	
% from No'east to No. New Eng.	61.7%	64.7%	65.9%	66.9%	58.2%	-1.2%
% from No'east to So. New Eng.	51.4%	56.8%	58.3%	51.6%	52.5%	0.8%

*Data were not available for 2006 for subregional analysis.

level. These included general sightseeing, going to the beach, attending a special event, visiting a national park, shopping, backpacking/hiking, golfing, bicycle riding, skiing, outdoor sports, theme park visitation, visiting family and friends, and visiting a spa or retreat. Between 2001 and 2006, there were declines in most of these activities (exceptions were spa/retreat visitation and skiing) but most had only 1-2 percent average annual declines. Four activities – backpacking/hiking, golf, playing outdoor sports, and visiting a theme park – had average annual declines of more than 3 percent during the study period.

5.0 DISCUSSION AND IMPLICATIONS

This review of New England and Northeast destination travelers and their respective markets enhances the understanding of the market potential of the region and its potential to attract travelers. It will also provide another viewpoint on the recovery of the tourism sector post 9-11.

New England's tourism industry had been on the rise in the 1990s prior to 9-11. Previous studies reported a rather dramatic decline in travel to New

Table 6.—Recreation activity participation rates of vacation travelers: 2001 to 2006

Number of Trips	Years					Average Annual Change Rate
	2001	2002	2003	2004	2005	
Going to beach	11.6%	11.7%	11.7%	11.2%	11.1%	-1.0%
General sightseeing	18.7%	18.3%	18.8%	18.9%	17.3%	-1.1%
Attending event	7.6%	7.5%	7.7%	7.6%	7.2%	-1.6%
Shopping	14.8%	14.0%	14.6%	14.4%	13.7%	-1.5%
Visiting national park	6.2%	5.9%	5.8%	5.3%	5.5%	-1.9%
Playing golf	2.4%	2.5%	2.3%	2.2%	2.0%	-5.5%
Backpacking/hiking	3.0%	2.8%	3.0%	2.6%	2.6%	-3.3%
Bicycle riding	1.4%	1.5%	1.5%	1.4%	1.3%	-2.9%
Skiing	0.8%	0.8%	0.9%	0.8%	0.9%	0.6%
Engaging in outdoor sports	6.3%	5.8%	5.1%	5.0%	4.9%	-3.6%
Visiting theme park	25.7%	24.2%	23.0%	22.8%	23.1%	-3.4%
Visiting family and friends	13.9%	13.2%	14.6%	13.7%	13.8%	-0.4%
Visiting health spa/retreat	0.8%	0.9%	1.0%	1.2%	0.9%	3.7%

England following 9-11. Using a different data set, MediaMark's *TRR* data, this study also found that declines were evident, but these declines were not as dramatic as previously reported. One possible reason for the discrepancy is the total number of years for which data are available. For most of the data sets analyzed in previous research, the actual report year often lags the stated report year by 1 to 2 years.

Another explanation may be that the analysis did not include data from years prior to 9-11. It is possible that data from those years would have revealed strong participation rates and, thus post 9-11 declines would have been more pronounced. Unfortunately, these data were not available at the time of the review.

The Northeast United States, and specifically the New England Region, is relatively compact which facilitates domestic and vacation travel, especially by car. Mintel Reports (2003) research indicates that, after 9-11, travelers reacting to financial concerns and lingering safety fears were less likely to fly and more likely to drive to their vacation destinations (compared to the 3 years prior to 2001). In addition, when people did travel after 9-11, they often opted for shorter vacations (25 percent of respondents indicated they did so), both to save money and to take less time away from work.

Finally, there is some evidence here that Northern New England experienced a smaller decline in travel interest than Southern New England after 9-11. This may reflect an interest in places where abundant recreation and vacation destination opportunities exist, and where a different pace of life offers the opportunity to escape the major urban areas of the Northeast United States. This will need to be further monitored over time as a potential evolving trend in travel behavior in this region. Further data monitoring and analysis will also need to be undertaken to determine if travel rates will return to pre-9-11 rates.

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VISITORS' PERCEPTIONS OF TOURISM DEVELOPMENT IN WEST VIRGINIA

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Abstract.—Previous studies indicate that tourists' destination choices are increasingly influenced by perceptions of sustainability but research into tourists' insights and sensitivities about sustainability is lacking. This study examines how visitors to West Virginia perceive tourism development in the state. Findings indicate that visitors' perceptions are basically homogeneous and that they are more concerned about environmental and socio-cultural sustainability than about economic sustainability. Males are not significantly different from females in their perceptions of all seven subcategories of tourism sustainability. However, visitors' lengths of stay are positively related ($p < .05$) to their perceptions of environmental protection and their satisfaction is positively related ($p < .05$) to frequency of visits. Finally, local visitors are more willing than nonlocal visitors to pay bed taxes and more for higher quality services.

1.0 INTRODUCTION

While it is generally recognized that tourism, regardless of its form or location, should be planned, developed, and implemented to be environmentally, economically, and socio-culturally sustainable, sustainable tourism development still means different things to different people in different places. Although people tend to relate the concept of sustainability to its ecological dimension, economic achievement is often more valued than environmental and socio-

cultural sustainability (Ratz, 2000; Tosun, 2002). This is particularly true in developing countries and in less developed regions of developed countries where tourism is viewed as an important component of local or regional economic development. In addition, for entrepreneurs, investors, regional planners, developers, and politicians, economic sustainability may be a more immediate priority than environmental and social sustainability. The opposite may be true for environmental interest groups who are especially concerned about the environmental consequences of tourism development. Moreover, local residents may perceive different aspects of tourism sustainability differently than visitors (Cottrell et al., 2004; Gezici, 2006).

Past research has looked at tourism sustainability from the perspective of local residents but studies on visitors' perceptions of sustainable tourism development are relatively scarce. According to Cottrell et al. (2004), less attention has been paid to visitors' views in part because "tourism producers... [claim] that tourists 'do not care' [about sustainability] and if they do care, this concern for the environment is not shown in practice" (p. 410). However, outsiders may be able to see things that insiders cannot, and may have different perceptions of and opinions about tourism development for an area than local residents and politicians. To address this gap in the literature, this study examines how visitors perceive tourism development in West Virginia.

West Virginia, nicknamed the "Mountain State", is the second most rural state in the nation; 20 of the state's 55 counties are 100 percent rural and an additional 14 are >75 percent rural, according to the U.S. Census Bureau definition (West Virginia Department of Health and Human Resources, 2007). West Virginia has rich and abundant natural resources and has great potential for environment-based tourism development. Tourism is the second largest industry in the state in terms of

total economic impact and employment, second to coal mining, and followed by forestry (West Virginia Division of Forestry, 2006).

In recent decades, tourism has been playing an increasingly significant role in promoting rural economic development and diversification in West Virginia. A 2005 study by the Dean Runyan Associates found that the size of the travel industry in relation to the total economy of a locale is more significant in some smaller communities and rural areas of the state than in the state's most urban area (the Charleston metropolitan area). For rural Fayette, Greenbrier, Tucker, and Pocahontas counties, the travel industry is an extremely significant component of the total local economy (Dean Runyan Associates, 2005). Rural areas also offer different tourism experiences than urban areas; while Charleston has a variety of commercial lodging accommodations and entertainment facilities, smaller communities and rural areas offer unique scenic and outdoor recreational opportunities.

Despite its significant contribution to the West Virginia state economy, tourism development may pose a long-term sustainability threat by modifying the natural appearance and rural atmosphere upon which the tourism industry is largely dependent. Pressure to protect the state's natural resources is likely to increase in the coming decades given that the state is less developed compared to other states in the U.S. and first priority is placed on economic development, as reflected by the state slogan being changed from "Wild and Wonderful" to "Open for Business."

The objectives of this study are: 1) to better understand visitor perceptions of West Virginia; 2) to examine visitor perceptions of tourism development in the state; 3) to compare similarities and differences in perceptions between local visitors (i.e., visitors from West Virginia itself) and nonlocal visitors (i.e., visitors from other states/countries); and 4) to use this information to explore management and development implications for decisionmakers.

2.0 METHODS

The authors of this study created a questionnaire consisting of three sections (visitors' perceptions, trip characteristics, and background information). The questionnaire was then reviewed and approved by the WV Division of Tourism. Twenty statements designed to elicit visitors' perceptions were developed by drawing upon findings from the literature. These statements involve three general dimensions of tourism sustainability (environmental, social, and economic). The visitor survey was distributed at two welcome centers (I-79 Southbound and I-68 Westbound Welcome Centers, see Figure 1) near Morgantown, WV on weekends in October, 2006, by students taking a sustainable tourism development course taught by the lead author. All 20 items on the questionnaire were further grouped into seven categories: environmental protection, environmental learning, nature tourism, social impact, economic impact, willingness to pay, and satisfaction (for subcategory and associated items, please refer to Tables 1 and 2). Visitors' perceptions of sustainable tourism development were measured using a 5-point Likert scale (1= strongly disagree, 5 = strongly agree). Data were analyzed by multiple regression, ANOVA, *t*-test, and Chi-square using SPSS 11.5 for Windows.

3.0 RESULTS

3.1 Visitor profiles

A total of 222 participants were involved in this study. Male participants (54.1 percent) numbered slightly more than females (45.9 percent). Most participants were older with 41 percent between the ages of 45 and 64 and another 12 percent beyond the age 65, indicating that participants were largely baby boomers. The majority of participants were well educated (65.6 percent of participants had a postsecondary degree or postgraduate degree) and affluent (58.6 percent had a family income of \$50,000 or more). Their four most common home states were West Virginia (24.1 percent), Pennsylvania (18.6 percent), Massachusetts (11.4 percent), and Virginia (9.1 percent).

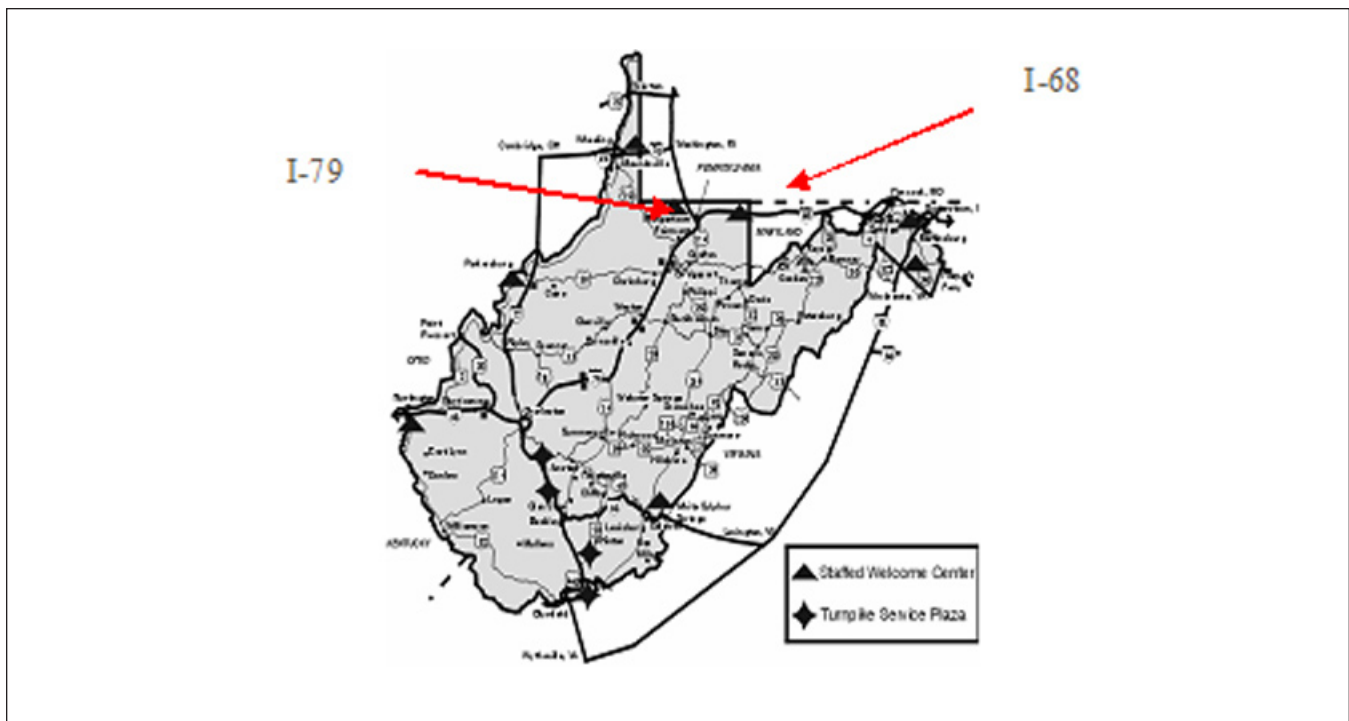


Figure 1.—Locations of the I-79 and I-68 Welcome Centers.

About 35 percent of respondents reported their main reason for traveling to West Virginia was to visit family and another 33 percent were visiting for leisure (vacation). The most popular destination type was small towns (23 percent), followed by forests (13.2 percent). In addition, the majority of participants (57.7 percent) had visited the state 10 times or more, and most of them had stayed or planned to stay for at least one night (18.3 percent one night, 30.3 percent 2 to 5 nights, and 27.4 percent more than 5 nights) during the current trip. Finally, most of them traveled with one (40.7 percent) or two to five other persons (32.5 percent).

3.2 Perceptions of Tourism Development

Table 1 presents respondents' perceptions of tourism development in West Virginia. Of the 20 items relating to the three dimensions of tourism sustainability, over 70 percent of respondents either mildly or strongly agreed with 11 of them. The item "Overall, I am satisfied with my trip(s) in West Virginia" had the highest percentage of responses (93.0 percent) in the category "mildly agree" and "strongly agree" combined, with the mean of 4.5. The item "Tourists should pay a special tax on hotel and motel fees"

received the highest negative percentage of responses (i.e., 53.9 percent of respondents either mildly or strongly disagreed with the statement), followed by "West Virginia appears to be competitive with surrounding states in tourism development" (17.3 percent) and "I am willing to pay more for higher quality services" (15.8 percent).

The mean for each dimension is 4.04 (environmental), 4.13 (social/cultural) and 3.63 (economic). Paired *t*-test found that visitors' perceptions of the three dimensions were significantly different from one another ($p < .05$). That is, visitors were most concerned about the social-cultural dimension of sustainability and least concerned about the economic sustainability. Each general dimension was then regressed on socioeconomic variables (i.e., sex, age, education, and income), and trip characteristics (i.e., frequency of visits and lengths of stay). Results indicate that length of stay and frequency of visits are significantly related to the environmental and socio-cultural dimensions ($p < .05$), respectively, while none of these independent variables are significantly related to the economic dimension ($p > 0.5$).

Table 1.—Percents, means, and standard deviations for visitors' perceptions

	Percents of respondents					Descriptive statistics	
	Strongly Disagree	Moderately Disagree	Neutral	Moderately Agree	Strongly Agree	<i>M</i>	<i>SD</i>
Environmental dimension							
1. The natural beauty of West Virginia is well protected	4.2	8.4	16.4	44.9	26.2	3.8	1.1
2. West Virginia is a place to experience the rural atmosphere	0.5	3.0	11.2	29.9	55.3	4.4	0.8
3. West Virginia is a place to learn about nature	1.9	0.5	13.4	38.4	45.8	4.3	0.9
4. Tourism development in West Virginia should take into account the environmental protection	3.3	1.4	9.9	28.2	57.3	4.4	1.0
5. West Virginia should place priority on nature-based tourism or rural tourism development	1.8	3.7	16.6	36.4	41.5	4.1	0.9
6. Small towns and historical sites/buildings are appropriately protected	3.0	8.4	38.9	35.0	14.8	3.5	1.0
7. Touring around West Virginia increases environmental awareness	1.4	3.2	28.6	42.4	24.4	3.9	0.9
Economic dimension							
8. Tourism attracts investment and spending to West Virginia	1.9	3.3	7.6	39.0	48.1	4.3	0.9
9. West Virginia appears to be competitive with surrounding states in tourism development	4.7	12.6	27.0	37.2	18.6	3.5	1.1
10. Tourism is a means of economic diversification for farmers	4.3	11.1	40.4	30.3	13.9	3.4	1.0
11. Tourists should pay a special tax on hotel and motel room fees	26.7	27.2	23.0	15.2	7.8	2.5	1.3
12. I am willing to pay more for higher quality services	4.8	11.0	24.9	38.3	21.1	3.6	1.1
13. West Virginia should put more efforts on marketing its nature-based assets	1.4	1.9	22.6	42.0	32.1	4.0	0.9
14. Tourism development contributes to regional economic development	1.4	1.9	19.1	48.8	28.8	4.0	0.8
Socio-cultural dimension							
15. Tourism development improves the appearance of West Virginia	2.4	9.1	21.2	40.4	26.9	3.8	1.0
16. Tourism contributes to the conservation of traditional culture	1.9	10.2	25.9	43.1	19.0	3.7	1.0
17. Local residents will benefit from living in a tourism destination area	2.3	5.6	25.9	48.6	17.6	3.7	0.9
18. West Virginia is a place worthy of visiting again	1.4	0.5	7.2	22.0	68.9	4.6	0.8
19. I will recommend West Virginia to my friends	1.4	0.9	6.9	26.3	64.5	4.5	0.8
20. Overall, I am satisfied with my trip(s) in West Virginia	1.4	0.5	5.1	30.4	62.6	4.5	0.7

Note: Participants were instructed: "Listed below are statements about your perceptions of tourism development in West Virginia. Please use the following scale to indicate how much you agree or disagree with each statement by circling your response." Items are measured using a 5-point scale (1 = strongly disagree, SD; 2 = mildly disagree, MD; 3 = neutral, N; 4 = mildly agree, MA; 5 = strongly agree, SA).

Table 2.—Comparison of perceptions of tourism sustainability between local visitors and nonlocal visitors

Subcategory and associated items	Local visitors		Outside Visitors		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>F</i>
Environmental protection Items 1, 4, and 6	3.88	0.73	3.89	0.66	1, 199	0.00
Environmental learning Items 3 and 7	4.15	0.68	4.21	0.61	1, 194	0.26
Nature tourism Items 2 and 5	3.85	0.65	3.97	.075	1, 208	1.18
Social impact Items 15, 16 and 17	3.70	0.73	3.87	0.83	1, 205	1.78
Economic impact Items 8, 9, 10, 13, and 14	3.72	0.71	3.72	0.83	1, 204	0.00
Willingness to pay Items 11 and 12	2.97	0.87	3.32	1.10	1, 207	5.52*
Satisfaction Items 18, 19, and 20	4.48	0.77	4.68	0.60	1, 206	2.75

* $p < .05$.

Further analysis was conducted based on the each subcategory. Specifically, Chi-square tests show no difference in perceptions of the state's tourism development between male and female respondents ($p > .05$). Several multi-regression analyses indicate that length of stay is the only variable that is positively and significantly related to environmental learning ($p < .05$), suggesting that the longer they stayed, the more they learned about West Virginia's nature and environment. Likewise, income was the only variable that was positively related to willingness to pay ($p < .05$). This suggests that the more affluent a visitor is, the more willing he or she is to pay more. However, this relationship is only marginally significant ($p = .061$). Finally, satisfaction is found to be significantly related to frequency of visits ($p < .05$), suggesting that the more satisfied visitors would visit or had visited more frequently.

3.3 Comparison between West Virginia (WV) Respondents and Out-of-State Visitors

ANOVA indicates that there is no significant difference in perceptions of the three dimensions of sustainability between the two groups ($p > .05$) (see Table 2). However, WV respondents ($M = 3.32$) were more

likely than nonlocal visitors ($M = 2.97$) to be willing to pay more for higher quality services and to be willing to pay bed taxes ($p < .05$) when they were compared by each subcategory of tourism sustainability. However, these groups were not significantly different from each other with regards to perceptions of the other six aspects of sustainable tourism development in the state.

4.0 DISCUSSION

West Virginia, one of the most forested states in the United States, is still a wild and wonderful destination to visit. However, this situation may change in the coming decades due to tourism development related to theme parks and gambling activities. For example, a hot topic in West Virginia has been the new Volcano Island water park to be opened in the summer of 2008 in Fairmont. In addition, planning for several gambling centers is under way. There have been questions about the environmental, economic and social sustainability of such initiatives which could change the state image from wild and wonderful to wild development. Thus, a major challenge for the state is to determine how to promote economic development through tourism, while maintaining the rural character and preserving the natural features that attract tourists today.

This research indicates that the state's natural features are very important to current tourists. Forests, mountains, lakes, small towns – and associated cultural and historical values – are the state's biggest tourist attractions and decisionmakers need to plan carefully for their conservation. Most survey respondents in this study perceived West Virginia as well protected and think of the state as an ideal place to experience nature and rural landscapes. However, one area of deficit was the preservation of small towns and historical sites; a large number of respondents did not think the state has done a satisfactory job in protecting these resources.

As Swarbrooke (2005) pointed out, “sustainable tourism is not just about protecting the environment; it is also concerned with long-term economic viability and social justice” (preface). Tourism as a business first needs to be economically sustainable. Thus, sustainable tourism development should first meet the needs of tourists. This study found that 90.9 percent of respondents reported that West Virginia is a place worth visiting again and 90.8 percent of respondents would recommend the state to their friends. Furthermore, 93.0 percent of respondents felt satisfied with their visit. This is a very promising for the state but the high percentage of responses on these three items may be partially due to the fact that a large number of visitors live in the state (24.1 percent in this survey) or used to live in the state. Another recent survey of visitors to the same two welcome centers (conducted by the lead author for *Wonderful West Virginia* magazine) found that 23.6 percent of respondents were from the state, 32.1 percent have lived in the state and 37.6 percent had family living in the state. Therefore, the high percentage of responses on these items may have something to do with place attachment, and hence may not reflect the real situation of tourism services in the state.

It is said that the triple bottom line of tourism sustainability is built upon tourism experience and satisfaction. Thus, high quality tourism experiences and satisfaction should correspond to a highly positive response to each dimension of tourism sustainability. However, that was not the finding in this study. That is, visitors' perceptions of tourism sustainability are

not as high as their perceptions of tourism satisfaction. For example, the percentage of positive responses (mildly agree or strongly agree) on three items related to tourism experience and satisfactions is as high as 91.6 percent on average, while the percentage for environmental, economic and socio-cultural dimensions (note: the three tourism experience and satisfaction items are excluded from socio-cultural dimension for such comparison) are 74.3 percent, 60.2 percent, and 65.2 percent, respectively.

It should also be noted that visitors' perceptions of the three general dimensions were not consistent, in that they were more concerned about environmental and social aspects than economic aspects. This is true for both local and nonlocal visitors. Previous studies also found that tourists consider environmental attributes more significant than social and economic attributes (Gezici, 2006). Also, this implies that visitors are more concerned with what they can experience and less concerned with economic benefits for local communities, which is the major concern of most local residents and developers.

While local and nonlocal visitors were not significantly different from each other in most perceptions of tourism sustainability, they did exhibit a significant difference in willingness to pay, with locals being more likely than nonlocals to be willing to pay special taxes and to be willing to pay more for higher quality services. There are two possible explanations for this. First, locals are more concerned about the economic well-being of their home state than nonlocals, because such benefits are directly related to the improvement of quality of life for them and other West Virginians. Second, locals may think that they are not required to pay such special taxes while visitors from other states are required to do so. Thus, there is no perceived risk for them to express a more positive response.

5.0 CONCLUSIONS

This study examined how visitors to West Virginia perceive tourism development in the state. Findings indicate that visitors' lengths of stay are significantly and positively related to their perception of

environmental protection ($p < .05$). Similarly, their satisfaction explicitly relates to their perceptions of frequency of visits ($p < .05$). In addition, males are not significantly different from females in their perceptions of all seven subcategories. Finally, local visitors are more likely than nonlocal visitors to pay for bed taxes and higher quality services.

Participants cared very much about sustainable tourism development in West Virginia. They were specifically interested in the protection of the rural character and natural beauty of the state and, for example, had misgivings about the visual disturbance of scenery by mining activities. They were also apprehensive about the change in the state's slogan from "Wild and Wonderful" to "Open for Business." A number of respondents expressed their concerns that this change has compromised West Virginia's true value and image as a place full of recreation, beautiful scenery, and historic landmarks. There are many indications that the future of tourism in West Virginia depends on the authenticity of natural features and rural character.

This study is not without limitations. First, survey respondents from the two welcome centers may not be representative of visitors to the state. Second, the two welcome centers are at the northern end of the state and are not close to the state's major tourism destinations. Future surveys should be replicated at other visitor centers closer to the major tourism destinations. Also, a long-term study is needed to monitor the perceptual and attitudinal changes of visitors to the state over time.

6.0 ACKNOWLEDGMENTS

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*COMMUNITIES AND
NATURAL RESOURCE
MANAGEMENT*

THE MASSACHUSETTS COMMUNITY PRESERVATION ACT: FACTORS INFLUENCING ACCEPTANCE

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Abstract.—In New England, urban sprawl creates a need for protecting open space. In 2002, residents of Southwick, MA, voted to accept the Massachusetts Community Preservation Act (CPA), which helps communities implement smart growth by providing funds for affordable housing, open space protection, and historic landmark preservation. This paper summarizes the findings of a survey administered before the town-wide CPA vote. Survey and demographic data from Southwick and other Massachusetts communities are compared in order to anticipate additional acceptance of the statewide initiative. The data suggest that communities that have higher median household incomes and more extensive housing stock are more likely to adopt the CPA.

1.0 INTRODUCTION

Urban sprawl is often associated with the expanded built-up environment surrounding cities. At one extreme, highly populated areas are found across the globe and are coined “megacities” (Uitto, 1998); Bombay, India, Lagos, Nigeria and Tokyo, Japan are classic examples with populations approaching 25 million. Stateside, much of the New England population resides in our own Megalopolis (Gottmann, 1961) which stretches from Boston to Washington, D.C. and in recent decades has “sprawled” as far north as Portland, Maine, and south toward the Carolinas.

Common to both megacities and megalopolises is a large population dependent on extensive transportation networks to move people from their homes to places of employment and all areas in between. As cities expand, natural habitats and farmlands are lost to make way for the development needs of a growing population (Harvey & Clark 1965; Sierra Club 2000). One of the more prominent negative impacts of sprawl is pollution from increased energy consumption that contributes to urban heat islands and global warming (Sierra Club, 2007). While some may see benefits in the form of more jobs, housing stock, and opportunities for the citizens, population growth and the development of accompanying infrastructure needs careful planning in order to offset the potential consequences of environmental and social degradation.

Suburban sprawl is development of the built environment far away from urban centers at the edges of cities and existing suburbs. While development typically follows transportation corridors, a community some distance away from existing development may grow because of its ability to attract people to the location. To address this growth, the research by Hamin et al. (2006) found that rural communities usually spend some portion of their general funds on open space; at the same time, suburban communities concentrate more of their spending on affordable housing despite concerns about how in-migration of people seeking such housing might affect the local community. Thus residents’ perceptions may vary depending on whether or not the community views itself as rural or suburban.

The need to preserve open space while also increasing housing and protecting historic heritage is an ongoing struggle in New England. As early as 1921, and again in 1962, Regional Planner Benton MacKaye proposed strategies for greenways (MacKaye, 1921, 1962). Population growth in the region has always had an impact on the natural resources.

1.1 Case Study

Southwick, MA, is a “bedroom” community of 9,000 people on the border north of Hartford, CT; it is located in western Massachusetts on the fringe between large metropolitan areas and expansive public lands. The lack of local industry and employment means that most of the working population commutes daily to neighboring Springfield, MA, along Route 57 or south to Hartford, CT, on Routes 10/202. Southwick is also a gateway tourism community for the fall foliage season and spring maple sugaring operations in northern New England and western Massachusetts. Southwick is easily located on national maps since much of the town extends south into Connecticut and is locally known as the “jog” (Town of Southwick, n.d.).

According to the 2000 U.S. Census, 97.4 percent of Southwick’s 8,835 residents are white. Thirty-seven percent of the 3,316 households, have children younger than 18 years old, while 8.3 percent have children younger than 18 and are headed by a female householder. Twenty-one percent of the households are made up of one person living alone. Overall 40 percent of the households have individuals under 18 and 23 percent have individuals older than 65 years of age. The median age in Southwick is about 38.

In 2002, we administered a survey to the citizens of Southwick in order to understand their views of different land use planning strategies and to collect information on their recreation patterns. This study was commissioned by the Southwick Conservation Commission and Westfield State College to support the Community Open Space and Recreation Demand Study. Specifically, the survey instrument gathered information about household characteristics (length of residency, number in family and ages), 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. For the complete report, see Bristow et al. (2004).

1.2 Background

The Massachusetts Community Preservation Act (CPA), signed September 14, 2000 (Commonwealth of Massachusetts 2003), allows communities to establish a funding mechanism dedicated to open space, historic preservation, and affordable housing. True to the New England philosophy, local citizens must vote to adopt the Act to make it effective in their town, all decisions are local and are administered by a committee of local people subject to local comment and approval, and local citizens may repeal the act if they feel it is not working as they expected.

Housing in Massachusetts is an expensive commodity and the CPA is designed to improve the availability of affordable housing (Kotval, 2004). This goal, along with historic preservation, is enhanced once open space acquisition/preservation is included in the mix (de Brun, 2007). While the vast majority of permanently protected open space in Massachusetts is found in the sparsely populated western third of the state, pockets of growing residential communities exist here as well. Thus smart growth and the protection of open space land are essential to preserving the region’s rural character and high quality of life. Southwick is at a good stage to explore the potential advantages of open space protection; if all of the available space in town were developed to the extent permitted by current zoning, the population could more than triple to more than 29,000 (Commonwealth of Massachusetts, 2004)

Southwick voted to adopt the CPA on November 5, 2002, by a slim margin of 51.9 percent (Union News, 2002). Question 4 on the ballot asked voters to support a 3-percent property tax surcharge to fund the CPA. The first \$100,000 of property value is exempt from this surcharge.¹

2.0 METHODS

We used a random telephone survey to collect information about the case study. We compared

¹Other Massachusetts communities that are considering adoption of the CPA are invited to read *An Introduction to the Community Preservation Act* (Sweetzer, 2004).

the survey data to demographic data from a sample of other communities in Massachusetts. We used tests of association and significance to analyze the characteristics of communities that have voted to accept the CPA.

The 892 total survey calls attempted to reach 26.8 percent of Southwick's 3,318 households (2000 Census). The sample size of 251 is 7.6 percent of the town's population.

We hypothesized that communities of like socio-demographic characteristics are more likely to adopt the CPA. As part of our analysis, we calculated a measure of environmental awareness by asking people whether or not they would support specific land conservation efforts as outlined by Ward (2001). This "green measure" was based on the following questions:

Would you:

- 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?

3.0 SURVEY RESULTS

A large majority of survey participants (82.1 percent) said that they supported the idea of strengthening zoning and development laws in the community to protect wetlands and floodplains. A majority (71.3 percent) also supported the acquisition of land to preserve open space. Only 48.6 percent, however, said that they would sell and/or donate land to the town. About 52 percent of respondents said that they would donate money and 37.5 percent would support increasing taxes to preserve open space. Almost 53 percent of respondents were in favor of creating a real estate tax to establish a land bank. It should be noted that the acceptance of the real estate tax in our

survey mirrors the CPA election results that occurred a year later (51.9 percent voted in favor of adopting the CPA).

A two-step cluster analysis determined the breakpoint between environmental-minded or "green" households and nongreen households; survey respondents who supported four or more of the six land conservation proposals were considered to be green.

For Southwick residents, we found a significant relationship between the length of residence and greenness (independent samples t-test = -1.908 , $p = 0.05$). In analyzing survey respondents' support of the individual strategies to protect open space, we found only one significant relationship indicating that the aggregate measure of green is a more powerful determinant. Specifically a test of association for the cross tabulation of length of residence and favoring residential growth shows that longer time residents generally oppose additional residential growth ($\text{Gamma} = 0.213$, $p = 0.05$). For example, 27 percent of survey participants have resided in the town for more than 21 years and 69 percent of them opposed residential growth. Among short-time residents (less than 5 years), half favored and half opposed further residential growth.

3.1 Adoption of the CPA across Massachusetts

As of autumn 2006, 127 of the 351 communities in Massachusetts had adopted the CPA (see Fig. 1). The towns of Becket, Worthington, Chesterfield, South Hadley, Brimfield, Andover, and West Bridgewater are scheduled to vote on the CPA in the spring of 2008 (Community Preservation Coalition, 2007). For our study, we selected a convenience sample of 50 communities across the state, 25 of which had adopted the CPA and 25 of which had not. Southwick is included in this sample as a community that had adopted the CPA. We collected standard demographic data for each community in the sample.

We used an independent samples t-test to determine if there was a significant difference between communities that adopted the CPA and those that

Status of Community Preservation Act Adoption

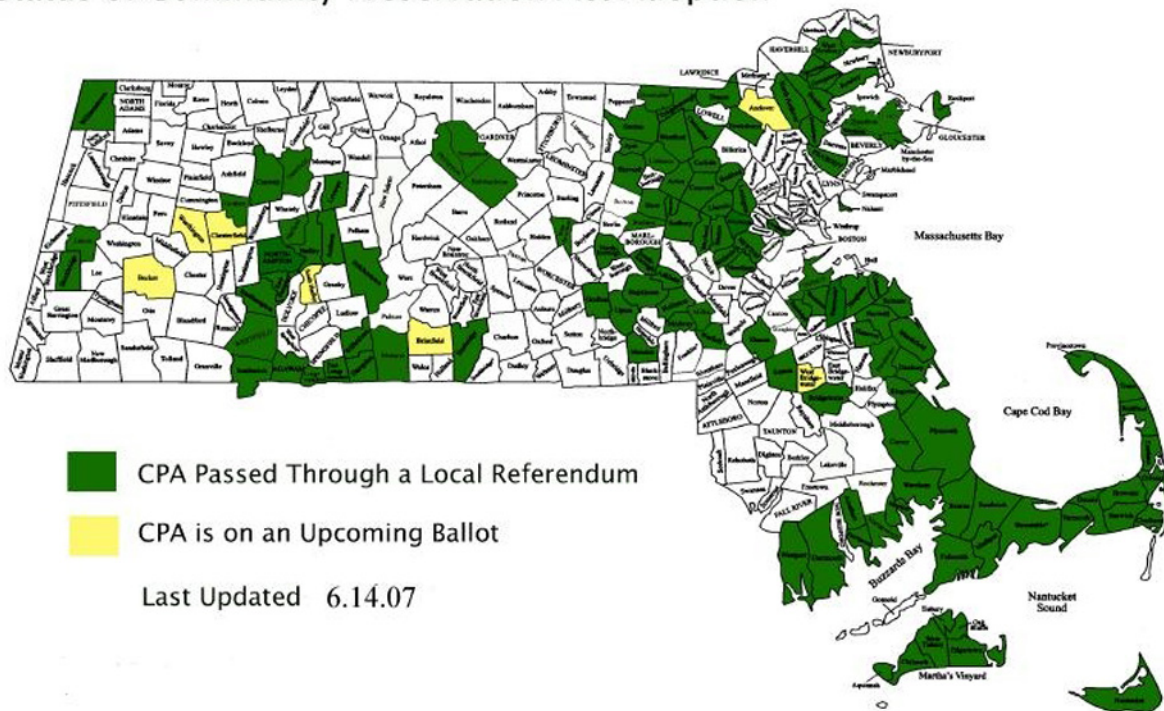


Figure 1.—Current map of CPA communities, 14 June 2007 (Source: Community Preservation Coalition).

had not adopted the CPA based on demographic characteristics. In this analysis, the demographic characteristics of Southwick are found to be similar to those of other communities that have adopted the CPA (see Table 1). We found that, in general, towns with a larger population, higher median income, a larger percentage of college educated citizens, a more diverse population, and more homes owned by the occupants were more likely to have adopted the CPA.

The distribution of citizens who are 35 to 44 years old does not appear to be different in CPA and non-CPA communities but in CPA communities there was a greater standard deviation in people's ages indicating a greater variety in this demographic variable. One might surmise from the total housing units summary that larger communities are more likely to adopt the CPA, but it could also be the case that towns with fewer housing units may have more open space already and therefore do not need to adopt the CPA.

Table 1.—Statistics of CPA vs. non-CPA adoption communities

CPA vs. noCPA		Median household income (\$)	% Bachelor's degree or higher	% Age 35-44	% White	% Owner occupied	Total housing units
CPA	Mean	59899.96	26.2	17.8	94.7	72.1	4913.88
	S.D.	15460.03	8.9	3.6	4.4	13.1	3996.66
noCPA	Mean	49377.84	21.4	18.2	96.5	67.2	1704.80
	S.D.	7511.31	8.5	2.1	2.4	16.3	1732.17
Total	Mean	54638.90	23.8	18.0	95.6	69.6	3309.34
	S.D.	13150.86	8.9	2.9	3.6	14.9	3452.58

While Levene's Test for Equality of Variances (F-test) is only significant for income and total housing units (Table 2), the percent of residents ages 35 to 44 years, and percent white population deserve some additional consideration. The Independent Samples t-test highlights a significant difference for income and total housing units. Higher education and a more diverse population are also worthy of additional consideration. Middle-age and home ownership do not seem to correlate with the adoption of the Community Preservation Act in Massachusetts.

4.0 DISCUSSION

This research has identified some of the characteristics that may define communities that are more likely to support the CPA. Communities with a higher median household income and a larger housing stock appear to be more likely to adopt the CPA. These findings can be used to identify other communities that can be expected to adopt the CPA.

While higher income seems to correlate with communities that are more likely to adopt the CPA, the large standard deviation in this variable across communities (s.d. = \$15,000) indicates that towns with widely varying median incomes will adopt the CPA. Statewide, the average household income was \$68,437. Therefore our study may under-sample communities that have higher incomes.

Our sample may also misrepresent the educational attainment across Massachusetts. Approximately 33 percent of the state's population has a bachelor's degree or higher; the majority do not have a 4-year college degree. In our sample, the CPA communities had a larger percentage of college educated citizens

(26 percent compared to 21 percent in non-CPA communities) but this variable was not significant in our t-test.

Our cohort of 35 to 44 year olds is the modal group in the state – that is, 16.7 percent or >1,000,000 state residents are 35 to 44 years old. Future studies should consider the age characteristics of CPA versus non-CPA communities. For example would a community with a larger elderly population be more or less likely to support the CPA? Recall that in our case study, length of residence was inversely related to a preference for residential growth.

It appears that towns with a slightly more diverse population are more likely to vote for the CPA. One might speculate that this variable is actually a surrogate for an urban vs. rural measure: rural communities may be more likely to be more ethnically homogeneous.

Homeowners may be more willing to vote for the CPA according to our descriptive statistics, but this variable was not found to be significant in our t-test. However, there is less variation among the group of communities that had adopted the CPA. Massachusetts has recently lost population, in part, due to the high cost of living. While the CPA can provide for affordable housing, people who need affordable housing may not be around to vote for it.

Finally, our measure of population density was based on total household units. Large towns appear to be more willing to adopt the CPA, although there is a great variation (standard deviation) in the number of housing units in those communities. This may suggest, contrary to what Hamin et al. (2006) found, that

Table 2.—Independent samples test

	F	Sig.	t	df	Sig.
Median household income	7.40	0.009	3.06	48	0.004
% Bachelor's degree or higher	0.51	0.477	1.92	48	0.061
% Age 35-44 yr	3.25	0.078	-0.50	48	0.623
% White	3.31	0.075	-1.83	48	0.073
% Owner occupied	0.75	0.392	1.16	48	0.252
Total housing units	10.76	0.002	3.68	48	0.001

towns with fewer homes may not have the interest or motivation to vote on a measure to enhance open space since it may not be viewed as a priority.

Open space, as Benton MacKaye (1921) envisioned, provides a mechanism for smart growth to address urban sprawl, while enhancing needed habitat for wildlife. The M&M Trail found on the eastern edge of Southwick represents one such “dam” to encroaching urban sprawl. Additional greenways in the area would benefit the native wildlife. While some research suggests that statewide initiatives such as the CPA might have questionable value in mitigating sprawl, any proposal can yield some success (Anthony, 2004).

Given the rural nature of Southwick and many other New England communities, the potential conversion of farmlands to housing developments needs immediate attention. Protecting views is one possible tool since “farmscapes” are one of the factors that attract new people to the area.

Finally, Figure 2 shows one agricultural vista of the 180-acre Brzoska Farm along Coes Hills Road in Southwick. CPA funding provided the needed matching money to purchase an agricultural preservation restriction (APR) on the farm in 2003 thereby preserving this farmscape and the land’s agricultural character for future generations to enjoy. Such landscapes still exist even in Gottman’s Megalopolis.



Figure 2.—Brzoska Farm, Southwick. A viewshed protected by the CPA (Source: Author, June 2007).

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PUBLIC RECREATION AND NEIGHBORHOOD SENSE OF COMMUNITY: AN EXPLORATION OF A HYPOTHESIZED RELATIONSHIP

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Abstract.—This study explores the relationship between park attributes (perceived safety and perceived benefits) and their relationship to sense of community in urban neighborhoods. The study finds that the perception of benefits derived from park use has a direct relationship with sense of community, and that park safety is indirectly related to sense of community, with the perception of park benefits mediating the relationship between park safety and sense of community. Theoretical and practical considerations are discussed.

1.0 LITERATURE REVIEW

The review of literature introduces the concept of neighborhood sense of community (SOC), and then reviews its subcomponents and its relationship to parks, followed by discussion concerning the relationship between park benefits and park safety as attributes of parks.

1.1 Psychological Sense of Community

Our study is concerned with psychological sense of community. Although the concept of “sense of community” was originally introduced by Sarason

in 1974, it was not until McMillan and Chavis’ 1986 seminal work that community psychologists began researching SOC in earnest. McMillan and Chavis (1986) defined sense of community as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (p. 9).

Despite the extensive attention devoted to the sense of community construct (Sarason, 1974; Doolittle & MacDonald, 1978; Pooley et al., 2005), Hill (1996) concluded that researchers have not succeeded in reaching an operational definition of psychological SOC and that there is no universal agreement on the different dimensions that comprise this construct, thereby alluding to the notion that the construct is multidimensional.

1.2 Sense of Community and Benefits of Urban Parks

In urban environments, a natural substitute for serene suburban settings can be access to a park. The use of parks facilitates the establishment of closer social bonds within a neighborhood and the increase of personal satisfaction from participation in leisure activities, and in particular park use (Baldassare, 1992). Parks are widely understood to be places where most people desire to interact with other community members (Rivlin, 1982). Consequently, parks could have significant influence on the development of communities and more supportive neighboring (Cochrun, 1994).

The National Recreation and Park Association adopted the standard of park neighborhood “service areas,” which are defined as areas within a one-half mile radius around the park (Mutter & Westphal, 1986). The service area standards take into account the area of gravitation to a park unit based on park

usage patterns (Buttimer, 1972). Therefore, service-area radius represents a standard method of defining neighborhoods within the area of influence of a park and is the most suitable approach for exploring the impact that parks have on SOC in nearby neighborhoods. Recreation and public areas that facilitate recreation, along with trail systems that connect parks to neighborhoods have been shown by neighborhood developers to increase neighborliness and sense of community in neighborhoods (Palmer, 1995). The purpose of this research is to explore the perception of parks as contributors to safety.

2.0 METHODS

This study adapted the SOC instrument developed by John H. Schweitzer's Sense of Community in Lansing Neighborhoods Project at Michigan State University (see <http://www.msu.edu/user/socomm/>). Begun in 1995, the SOC Project developed and tested an instrument to measure SOC in neighborhoods. Neighborhoods were defined as "face blocks," that is, streets facing each other that are geographically determined by cross streets or dead ends. The advantage of using face blocks as the unit of analysis was articulated by Perkins et al. (1990) as: (a) clear boundaries; (b) cultural homogeneity; (c) high participation; and (d) effectiveness in community action. Through focus groups conducted in 1994 and 1995, the SOC team found that residents identified their face block as their neighborhood community.

This study was conducted in Norfolk, VA, in the fall 2004 and the fall of 2006 in neighborhoods surrounding five parks. The parks all had amenities that are conducive to social interaction (e.g., recreation areas, picnic/grilling areas, playground equipment, and in some cases public pools and community recreation centers). In addition, distance to the park was taken into account in the selection of the study blocks. Using Lund's (2003) suggestion, all selected blocks were within a one-quarter to one-half mile radius of a park because this distance is accepted in the planning literature as a comfortable walking distance for local residents.

This study utilized a mixed method approach. Two weeks prior to researching a block, fliers were left on the front doors of houses to notify prospective participants of our arrival in their neighborhood. Although the initial intention was to conduct face-to-face interviews in a random selection of weekend/weekday days and morning, afternoon, and evening times, the initial methodology was altered due to safety concerns on some of the blocks, and due to extremely uncooperative weather conditions. Additionally, most respondents preferred to self-administer the questionnaire. As such, the approach of the research team involved the following:

- Step 1: Upon initial contact, attempt to initiate a face-to-face interview;
- Step 2: If respondent is unwilling to sit for a face-to-face interview, or pressed for time, offer to (a) leave the survey and establish a time for "pick up"; or (b) leave the survey with a self-addressed stamped envelope.

Using, this two-step approach expedited the data collection process. However, responses from lower-income and mostly African American neighborhoods were difficult to obtain, even with the offer of face-to-face follow-ups. The number of houses on the included blocks was 450. Four residents refused to participate in the survey and 16 households were empty. Surveys were distributed to 430 households in 27 face blocks. A total of 119 usable surveys were collected. As of this writing, the response rate is 27.1 percent (this study will continue in the fall of 2007).

2.1 Measures of Sense of Community

The SOC scale developed by Schweitzer and his team of researchers (Crew et al., 1999; Mackin, 1997; Schweitzer et al., 1999) incorporated six dimensions that were found in the literature: (a) belonging (BEL); (b) connection (CONN); (c) empowerment (EMP); (d) participation (PART); (e) safety (SAFE); and (f) support (SUPP). The theoretical basis for the sense of community scale developed by Schweitzer's team most closely parallels contributions from McMillan and Chavis (1986) and Perkins et al. (1990). All items were measured on a Likert-type scale where

1 = strongly disagree, 2 = disagree, 3 = neutral/not sure/don't know, 4 = agree, and 5 = strongly agree (see <http://www.msu.edu/user/socomm/> for a sample of items, and click on "Data"). Two additional measures of safety ("compared to other neighborhoods, I feel this neighborhood is safe" and "criminal activity in this neighborhood is minimal") were added to the original SOC scale to increase the number of items to four for that dimension.

2.2 Measures of Park Attributes (PKAT)

Because there is no prior literature on a park attributes scale, we consulted the leisure and urban planning literature for guidance in developing one. We identified two subdimensions of PKAT: (a) perceived benefits derived from park use (PKBN); and (b) safety benefits derived from the parks (PKSF). The items reflecting the perceived benefits dimension have been used in previous research (Gómez, 2007) with a reported alpha of .81 for the perceived benefits subscale. The questions for perceived benefits involved items related to interaction, family, children, escape, relaxation, exercising, and open space with respect to parks. The questions for the safety dimension involved items related to feelings that parks make the neighborhood safer, decrease criminal activity, and decrease juvenile delinquency. All items had the same Likert-scale responses identified above. The hypothesis of the research is that safe parks help to create safe neighborhoods.

Thus our initial conceptual model (see Figure 1) was PKAT → SOC. PKAT is a construct consisting of two subscales – PKSF and PKBN. SOC is a construct consisting of six subscales – BEL, CONN, EMP, PART, SAFE, and SUPP.

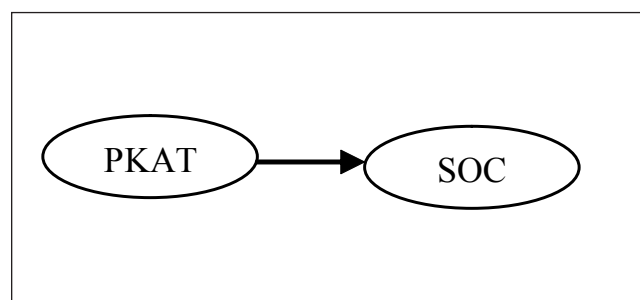


Figure 1.—Initial conceptual model.

3.0 RESULTS

3.1 General Descriptive Statistics

More than 66 percent of the 119 survey respondents were female. Respondents' ages ranged from 16 to 89 years old, and the average age was 51.8 years. The racial and ethnic background of the respondents was: White (Caucasian) 74 percent, Black (African American) 19.3 percent, Hispanic (Latino) 0.9 percent, and Native Americans 1.8 percent. The majority had either a baccalaureate degree (25 percent) or had completed some college (26.5 percent). Most (89 percent) owned their homes, and 52 percent were employed, while 33 percent were retired. Two-thirds of the participants (66 percent) were married.

3.2 Descriptive Statistics for Sense of Community

Almost one-third (31.4 percent) of the respondents, reported perceived overall neighborhood SOC as very good, 25 percent as excellent, 24 percent as good, 15 percent as fair, and only 4 percent as poor. These results indicated an overall positive SOC. A majority of respondents, 61 percent, reported the level of crime as lower in their neighborhood as compared to other neighborhoods. Nearly 70 percent of respondents held meetings within their neighborhood regularly and 58 percent reported that they socialized with neighbors. When respondents were asked "How many families/households in this neighborhood do you consider to be your friends?" only 10 percent declared that they are friends with most of their neighbors and 61 percent were friends with a few of their neighbors (this item was measured on a Likert-type scale where 1 = None/0 percent, 2 = Few/25 percent, 3 = Some/50 percent, 4 = Most/75 percent, and 5 = All/100 percent).

3.3 Descriptive Statistics for Park Use

The frequency of park use of respondents varied from almost never to daily, with an average value of 0.93, which equates to one visit to the park per month. Over half (55.8 percent) of the respondents reported that they never or almost never used their neighborhood parks, whereas 6 percent used the park daily. The walking time to the nearest neighborhood park ranged from 1 to 45 minutes, with an average of

7.5 minutes. About 45 percent of respondents said that their neighborhood parks were within a comfortable walking distance. Almost 43 percent of respondents described park access as excellent, 40 percent described it as very good or good, and only 7 percent described it as poor. A total of 27 percent of the respondents said that they would support the building of more parks in their neighborhood.

3.4 Inferential statistics

All analyses were performed using an alpha of .05 as our criterion. An exploratory factor analysis using Varimax Rotation was conducted to determine if the variables within the PKAT and SOC constructs were valid measures of the underlying constructs. According to Tabacknick and Fidell (1996), values of 0.60 for the Kaiser-Meyer-Olkin (KMO) and $p < 0.05$ for Bartlett's Test of Sphericity (BTS) is required for factor analysis. Prior to statistical analysis, the KMO measure of sampling adequacy was employed to evaluate the data. Guadagnoli and Velicer (1988) concluded that factors/constructs are well defined when they have factor loadings of 0.60 or higher.

An abridged version of the subscales is presented here. Sampling adequacy was confirmed using a KMO (> 0.60) and Bartlett's Test of Sphericity (BTS) ($p < 0.05$) on both the SOC subscales and the PKAT subscales. All scales met both the KMO and BTS criteria. Additionally, all subscales passed internal validity (factor analysis) and reliability (Cronbach's alpha) tests. The next step was to see if the subscales of PKSF and PKBN held together to form PKAT, and whether the subscales of BEL, CONN, EMP, PART, SAFE, and SUPP held together to form SOC.

The PKAT construct did not hold well together and as a result PKSF and PKBN had to be looked at separately as independent variables predicting SOC. The SOC subscales (Table 1) passed all validity (factor analysis) and reliability (Cronbach's alpha) tests. Table 1 illustrates that all factor loadings for the SOC subscales were above the 0.60 criterion and that Cronbach's alpha was 0.86 ($p < .05$). Figure 2 shows the revised conceptual model based on the validity and reliability analyses.

Table 1.—Subscales of SOC construct (N = 119)

Sense of Community Construct ($\alpha = 0.861$)			
Items	M	SD	h^a
Support component	3.78	0.76	0.85
Belonging component	3.77	0.80	0.88
Connection component	3.42	0.70	0.73
Participation component	3.46	1.00	0.85
Safety component	3.66	0.73	0.69

^aFactor Loading

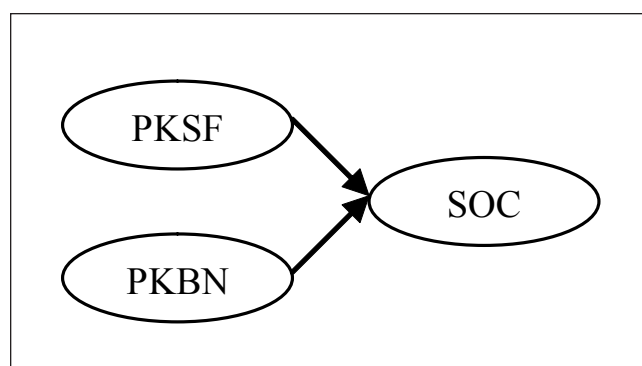


Figure 2.—Revised conceptual model.

A correlation analysis was conducted to investigate the association between the independent variables (PKSF, PKBN) and the dependent variable (SOC). The only variable significantly correlated with SOC was PKBN ($\beta = 0.26$, $r^2 = 0.07$, $p < .05$). Similarly, the only variable correlated with PKBN was PKSF ($\beta = 0.48$, $r^2 = 0.23$, $p < .0001$). As a result of the correlation/regression analysis, a new conceptual model emerged: $PKSF \rightarrow PKBN \rightarrow SOC$ (Fig. 3).

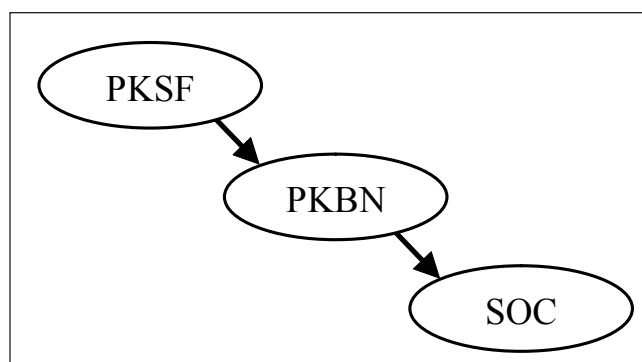


Figure 3.—Final conceptual model.

4.0 DISCUSSION AND CONCLUSIONS

The results indicate that PKAT, as a construct, was not a valid composite of PKSf and PKBN, but that these two subscales should be analyzed separately. PKBN had a direct correlation with SOC, whereas PKSf's association with SOC was indirect. The subscales related to SOC all held. From a theoretical perspective, we have provided support for a multidimensional measure of SOC, as was alluded to by Hill (1996). As Unger and Wandersman (1985) suggested, and McMillan and Chavis (1986) affirmed, SOC was incorporated the dimensions of support, safety, connection (including emotional connection and shared values), participation and belonging. Thus, the present study can be regarded as a confirmation of this structure from cross-sectional research in a specific municipal community.

More importantly, we found support for a direct relationship between the perception of park benefits and increased sense of community. However, park benefits are affected by the perception of safety at the parks. Thus, park safety was found to be a precursor to benefits derived from the use of the parks. From a practical perspective, this makes sense. Municipal recreation departments need to ensure that parks are safe in order for residents to receive benefits from them. Our study found that nearly 25 percent of the perceived benefits that respondents derived from park use can be explained by knowing their perceptions of safety. Partnerships between civic leagues or neighborhood organizations, community police officers, and municipal park leaders need to extend from the neighborhood to the park and vice versa in order to establish sense of community at the park as an extension of or as a precursor to sense of community in the neighborhoods. Additionally, extolling the benefits of parks and recreation outside of parks and recreation centers and into neighborhoods may increase use of the parks and sense of community.

Future studies should consider additional analyses. For example, is there a difference between those residing near a park and having easy access, versus those who do not reside near a park or have a barrier to the park

(e.g., a major road or not within walking distance)? To what extent do the perceived benefits of a park extend beyond the service area? Additionally, given that 56 percent of respondents in this study rarely use their neighborhood parks, the potential benefits of park use are not being maximized. Therefore, additional attention can be devoted to exploring how the recreational use of parks can be encouraged and how the barriers to park use can be minimized.

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SPECIALIZATION/MOTIVATIONS

QUESTIONING THE CONTINUUM: SPECIALIZATION IN ROCK CLIMBING

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Abstract.—Recreation specialization was originally conceived as a behavioral continuum ranging from general to more particular behaviors within an activity. It was assumed that an individual progressed from one subactivity to another in a hierarchical order. In recent years the practicality of such ordering has come under doubt; it may be possible to specialize in individual subactivities without progressing through a hierarchy. The objective of this research was to examine specialization in the activity of rock climbing by testing whether the arrangement of subactivities along a continuum was appropriate or whether an alternate conception of specialization should be employed. In the summer of 2006, a sample of rock climbers was surveyed on site at the Mohonk Preserve near New Paltz, NY. Climbers were asked to define their own style of climbing and to answer questions about their level(s) and type(s) of specialization based on length and frequency of participation in climbing, skill level, and commitment to climbing. Analysis of variance showed that specialization differed significantly between traditional climbers and top-rope climbers. Implications for specialization theory and rock climbing management are discussed.

1.0 INTRODUCTION

Specialization theory predicts that as recreationists progress in an activity, their attitudes and behaviors change in patterned ways. Different levels of specialization are expected to correspond to changes in motivation (Ewert, 1985), environmental

preference (Virden & Schreyer, 1988) and attitudes towards management (McIntyre & Pigram, 1992). Scott and Shafer (2001) suggest that specialization is characterized by “(a) a focusing of behavior; (b) the acquiring of skills and knowledge; and (c) a tendency to become committed to the activity such that it becomes a central life interest” (p. 326). This definition makes use of behavioral components, such as past experience and frequency of experience, but differs from that used by McIntyre and Pigram (1992) in the addition of skill and the inclusion of both side bets and affective attachment in commitment. Lee and Scott (2004) used a confirmatory factor analyses to show the validity of Scott and Shafer’s behavior, skill, and commitment framework among birdwatchers.

Past research has also found different styles corresponding to different levels of specialization in various recreational pursuits. Kuentzel and Heberlein (1997) found that novice sailors were less likely than expert sailors to participate in open-water cruising or overnight sailing. Miller and Graefe (2000) found that different types of hunters differed in their level of specialization; however, they used a composite index that included equipment as a measure, which may have contributed to increased specialization levels for some styles of hunting. Bryan (1977) posited that as recreationists specialized, they would tend toward a particular style of participation within an activity that was the end-product of the sport; in his research, this end was fly-fishing, the most specialized form of angling.

In other research, the hierarchy with a well defined end product is in doubt. Kuentzel (2001) proposed that there might be multiple trajectories to specialization, where recreationists specialize in behaviors traditionally associated with more general practice. Scott and Shafer (2001) increase the scope even further, suggesting that people may specialize in outdoor recreation as a whole, rather than in particular

activities. They also suggest that the very portrayal of specialization as a continuum with hierarchical styles of activities has become problematic (Scott & Shafer, 2001).

Knowing whether specialization functions across styles of activities or within them is important to specialization theory. To generate a complete understanding of specialization and the process of how recreationists specialize, it is necessary to understand the model that we are attempting to explain. Does specialization entail nonhierarchical horizontal differentiation where activity styles are all capable of reaching high degrees of specialization, or does it proceed by vertical differentiation in which a hierarchy can be identified for entry-level, transitional, and peak styles? Knowing these details is also important in practice. If specialization differentiates vertically, managers can identify specialization levels and corresponding preferences based on activity style. If it differentiates horizontally, visitors in different styles need to be managed in similar ways.

2.0 PURPOSE OF THE RESEARCH

This research focuses on the different styles of rock climbing that may be associated with different levels of specialization. The purposes of the research are twofold: 1) to investigate whether particular styles of an activity can be hierarchically placed on a specialization continuum; and 2) to give managers at the Mohonk Preserve and other recreational sites information about their rock-climbing visitors. Kuentzel (2001) and Scott and Shafer (2001) suggest that there may be multiple paths to specialization, while Bryan (1977) suggests a hierarchical continuum. Therefore the following hypothesis is proposed:

The variance of specialization components will not be significantly different across activity styles.

If the hypothesis is supported, it implies that specialization is nonhierarchical in nature. If it is rejected then specialization is hierarchical and styles can be arranged on a continuum according to their level of specialization.

3.0 METHODS

An on-site survey of climbers was conducted at the Mohonk Preserve on the Shawangunk Ridge, close to New Paltz, NY, from May 22 to August 13, 2006. To obtain a representative sample of users, sampling was conducted at multiple locations throughout the Preserve. Convenient on-site sampling has previously been effective in surveying the attitudes of climbers (Schuster et al., 2001).

Specialization was measured through questions about climbers' behaviors, skills, and commitment, following the method employed by Lee and Scott (2004). Behavioral measures included years and frequency of participation, both in general and at the Mohonk Preserve. Climbing skill was measured using self-reported ability on the Yosemite Decimal System (YDS) scale. YDS is an ordinal scale used to rate the difficulty of roped climbing done on routes. It currently ranges from 5.0 (easiest) to 5.15 (most difficult). For one style of climbing, bouldering, the widely accepted V-scale was used, which rates bouldering problems on a scale from V0 (easy) to V15 (hard). Commitment was measured on a seven point Likert-type scale through agreement or disagreement with statements adapted from Lee and Scott (2004). Attempts to define the specialization continuum were made by asking respondents to identify which style of climber they primarily considered themselves to be; possible climbing styles included top rope, bouldering, sport climbing, and traditional.

Skill level for each climbing style was changed into standardized scores. These values were then cross-referenced with climbers' self-selected climbing styles, yielding a standard score for skill level across types. Such transformations were necessary because of the difference in the scales used between boulderers (V Scale) and other climbers (Yosemite Decimal System).

Factor analyses were conducted on the 10 specialization items for each activity. Factors were extracted using principle components analysis (PCA) with varimax rotation. Extraction criteria were set at eigenvalues greater than or equal to one. Factors that

lacked cross loading, had a minimum of two items, and achieved a Cronbach's alpha of .50 or higher were retained. Individual items with loadings of less than .40 were dropped. For specialization, the individual raw scores were multiplied by the relevant factor loading coefficient and added together to form a composite index for each factor.

The hypothesis was tested using analysis of variance. Participants were sorted by climbing style. Variances for the specialization factors were compared between these categories to determine if there were significant differences. Differences in the variance would lead to a rejection of the hypothesis because it would mean that specialization factors differ according to activity style. Analysis of variance is dependent on equal variances in each category of the factor variable. Levene's Test for Homogeneity was used to test the variance. Tamhane's T2, which does not require equal variances, was used as a post hoc test to determine differences between climbing styles.

4.0 RESULTS

Responses related to climbing style are in Table 1. PCA conducted on the 10 specialization items for climbers identified three factors; this model accounted for 67.7 percent of the variance. All factors had Cronbach's alpha values greater than .60. This analysis isolated different components than was predicted in the literature. As discussed above, past research models have typically divide specialization into behavior, skills, and commitment (based on Scott & Shafer, 2001). However, PCA identified a different factor structure. Skill was combined with the number of days climbing in 2005, the percentage of those days spent at the Preserve, and the number of climbing areas visited. This mixed factor was named Skill/Days. The items for the total years of climbing experience and the number of years climbing at the Preserve were assigned their own factor, called Years. Table 2 displays the results of the factor analysis.

The specialization components obtained from the factor analysis were entered into an ANOVA as the dependent variables to test the hypothesis.

Table 1.—Climbers by style

Style	N	% of sample
Boulderer	26	8.4
Top-roper	62	20.1
Sport climber	18	5.8
Traditional climber	202	65.6

Table 2.—Factor analysis of climbing specialization

	Factor 1 "Commitment"	Factor 2 "Skill/Days"	Factor 3 "Years"
Years	—	—	.936
Days	—	.851	—
Days at Preserve	—	.554	—
Years at Preserve	—	—	.929
Skill	—	.675	—
Areas visited	—	.643	—
Lack of interest in other activities	.765	—	—
Unsure of how else to fill leisure time	.842	—	—
Loses friends if activity stopped	.751	—	—
Rather do activity than anything else	.730	—	—
% of variance	25.40	21.878	20.448
Cronbach's alpha	.849	.649	.932

Respondents were asked to identify their own style of climbing as top rope, bouldering, sport climbing, and traditional and these categories were used as the independent variables. The results of the ANOVA are displayed in Table 3. Because the factor of Skill/Days was a conglomerate of specialization factors that were used in hypotheses, Table 3 also displays the components of Skill/Days (total days of climbing, days of climbing at the Preserve, skill, and areas visited).

Traditional and top-ropings were always different from each other for each factor, with traditional climbers being a higher degree of specialization. Sport climbing

Table 3.—ANOVA for specialization

Climbing Factors	N	Mean [†]	Levene	df	F
Commitment			.95	304	12.42*
Boulder ^a	26	4.32			
Sport ^{ab}	18	1.38			
Top rope ^b	62	-2.32			
Traditional ^a	199	1.71			
Years			3.54*	298	8.72*
Boulder ^a	26	9.20			
Sport ^a	17	7.66			
Top rope ^a	58	11.08			
Traditional	198	21.03			
Skill/Days			1.17	279	43.94*
Boulder ^{ab}	24	9.74			
Sport ^a	16	8.14			
Top rope	58	5.72			
Traditional ^b	182	11.11			
Days			1.52	302	19.72*
Boulder ^a	26	5.39			
Sport ^a	18	4.89			
Top rope	59	2.93			
Traditional ^a	200	5.27			
Days at Preserve			2.23	302	26.58*
Boulder ^a	26	1.71			
Sport ^a	18	1.32			
Top rope ^a	59	1.61			
Traditional	200	3.05			
Skill			1.63	284	20.59*
Boulder ^a	24	.45			
Sport ^a	16	.00			
Top rope	61	-.57			
Traditional ^a	184	.12			
Areas Visited			9.44*	301	11.25*
Boulder ^{ab}	26	2.20			
Sport ^a	18	1.93			
Top rope ^a	58	1.75			
Traditional ^b	200	2.67			

*p<.05

[†]Means have been adjusted by factor analysis^aDifferent superscripts denote significant difference between groups

and bouldering showed no differences from each other. The research hypothesis is rejected based on these findings since there are specialization variables that are consistently significantly different across styles of climbing. However, it should be noted that the two categories of sport climbing ($N=26$) and bouldering ($N=18$) have less than 50 respondents in them.

5.0 DISCUSSION AND CONCLUSIONS

The factor analysis of specialization variables was inconsistent with theory. Scott and Shafer (2000) and Lee and Scott (2004) suggest that specialization consists of the components behavior, skill and knowledge, and commitment. In this analysis, variables that measured skill were found to load on the same factor as behavioral variables such as the number of different areas visited and the number of days spent climbing. Behavioral variables were also split from each other. Years of participation loaded strongly with years of participation at the Mohonk Preserve, but not with frequency of participation or frequency of participation at the Preserve. These findings suggest two points. The first is that studies that use only one behavioral variable are missing crucial information and that it cannot be assumed that length of participation is tied to frequency of participation. Second, since the site-specific indicators are not grouped with each other, it suggests that site-specific experience is less important than experience in general. This finding supports the work of Schreyer and Lime (1984) who found similar results.

Investigation of the framework of the specialization continuum was based on several premises. First, there is variation in the characteristics of a sample. For instance, respondents generally did not climb for an identical number of days. The second premise is that this variation can be grouped into categories; it can be partitioned into a hierarchy of high, medium, and low, or similar such groupings. The third premise is that these categories will not correspond to different styles of an activity; the styles will not fit the hierarchy. This premise was the basis for the hypothesis

The traditional climbing style had significantly higher specialization than top-rope style in each of the seven components analyzed. Bouldering and sport climbing were never significantly different from each other, but varied in whether they were different from top-ropers or traditional climbers. Sport climbers were only different from both traditional climbers and top-ropers in one component: the mixed factor of Skill/Days. The hypothesis was thus rejected; climbing styles can be arranged hierarchically.

This analysis suggests that traditional climbers and top-ropers can be seen as distinct segments of the climbing population. Bryan's (1977) initial conception of specialization is thus correct when only these groups are taken into account. Scott and Shafer (2001) questioned whether it was possible to specialize in outdoor recreation as a whole, and Kuentzel (2001) stated that it might be possible to specialize in styles of activities that are often considered less specialized. The current research does not support these notions. Specialization was not simply a description of commitment or skill, but indicated a change in style as well. However, it should be noted that this is only a general description of a population. It is entirely possible that someone who identifies himself or herself as a top-rope climber could still be highly specialized, but such an occurrence is not the norm. Nor does it mean that someone who commonly engages in highly specialized activities will never engage in styles associated with lower levels of specialization (Bryan, 1977; Dawson et al., 1992).

While the existence of a specialization hierarchy has been previously found in hunters (Miller & Graefe, 2000), this paper differs in important ways from past examinations. Miller and Graefe (2000) employed equipment as a measure of specialization, but other researchers (Ditton et al., 1992; McIntyre and Pigram, 1992) have questioned such use. In addition, the study of hunters measured specialization as a composite index, which Kuentzel and McDonald (1992) and Lee and Scott (2004) showed to be inferior to multidimensional measures. This research avoided both of these problems. All past studies on the hierarchical nature of specialization have examined whether styles or sub-activities of a particular activity can be arranged on a continuum. Future research may investigate whether such categorization is possible for each activity as a whole. For example, one might ask whether kayaking is more specialized than mountain biking. Such an investigation would require the development of new measurements in order to appropriately compare activities.

An important limitation to these findings is the low numbers of sport climbers ($N=18$) and boulderers ($N=26$) that were obtained in the sample. The validity of any conclusion regarding these groups is called into question because of the small sample size. Repeating the survey at a location, or several locations, that had more sport routes available could yield a bigger sample of climbers who use these styles.

The findings for the specialization continuum show that managers can predict specialization level from activity style in some cases. At the very least, they can tell that traditional climbers tend to be more committed and skilled, and participate more than top-ropers. They can also look to past studies on specialization to determine the likely preferences and motivations of top-ropers and traditional climbers. For instance, top-ropers are least specialized, and Ewert (1985) found that lower specialized recreationists tend to set activity-specific goals, whereas highly specialized recreationists have goals that are not specific to the activity. Thus, the goal of top-ropers may be to reach the top of a climb, while the goal of traditional climbers is to challenge themselves. Oh and Ditton (2006) found that highly specialized recreationists were more in favor of management practices aimed at conserving the resource they were dependent upon, even if this meant that success in the activity was harder to obtain. If this applies to specialization in all activities, then traditional climbers should be expected to favor management regulations that preserve resources, while top-ropers can be expected to disapprove of such rules.

This research has added to the body of knowledge on recreation specialization by showing quantitatively that the structure of specialization differentiates across activity styles in a way that was initially predicted by Bryan (1977). What still needs to be determined is whether specializations function hierarchically across multiple activities, rather than simply within them. For example, it might be possible that backpacking, skiing, angling, and climbing could be arranged on a specialization continuum. New measures would be needed to compare these activities.

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MODELING RECREATION PARTICIPANTS' WILLINGNESS TO SUBSTITUTE USING MULTI-ATTRIBUTE INDICATORS

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Abstract.— A logistic regression was used to predict anglers' resource-substitution decisions based on three dimensions of recreation specialization (behavior, skill and knowledge, and commitment), two dimensions of place attachment (place identity and place dependence), and three demographic indicators. Results indicated that place dependence was the most effective predictor. Also, boat ownership, level of activity importance, income, age, place identity, club membership, and gender were the next most effective predictors of willingness to substitute. Personal and behavioral commitment demonstrated different effects on willingness to make substitution decisions. Furthermore, male and higher income anglers showed a greater willingness to substitute.

1.0 INTRODUCTION

We used a logistic regression model of demographic characteristics, recreation specialization and place attachment to better understand resource substitution. Early resource substitution research focused on defining substitutable clusters or types of activities (Hendee & Burdge, 1974). Next, direct-question methods were used to describe and examine behavior choices made by recreationists (Shelby & Vaske, 1991). Recently, a transactional coping approach has been used to broaden the scope of substitutability research even further (Schuster et al., 2003). Cognitive (i.e., rationalization and product shift), and behavioral

(i.e., absolute displacement, temporal substitution, activity substitution, resource substitution, and direct action) coping mechanisms were identified by Schuster et al. To fully understand coping mechanisms, various elements and their attributes must be evaluated in combination.

2.0 VARIABLES AFFECTING WILLINGNESS TO SUBSTITUTE

Several variables are known to influence individuals' willingness to make resource substitutions. First, we would expect more specialized recreationists to have fewer substitutable alternatives available (Manfredo & Anderson, 1987). Second, the greater the attachment, the less likely an individual is to make a resource substitution (Williams et al., 1992). Third, people with different social and economic characteristics are affected differently by leisure constraints (Fedler & Ditton, 2001). Further understanding of resource substitution will clarify how people will react to constraints on their recreation behavior and demonstrate the benefit of using multi-attribute indicators.

2.1 Specialization

We expect specialized anglers to be less likely to identify other substitutable alternatives (Scott & Shafer, 2001). Salz et al. (2001) found that frequency of participation increases as specialization levels increase. They also found that more-specialized anglers were more interested in a qualitative overall experience, whereas less specialized anglers were most interested in the catch aspects of fishing.

While Scott and Shafer (2001) argued that recreational specialization involved skill development and the acquisition of knowledge and familiarity, they emphasized that these should not be confused with previous experience. As commitment to an activity

increases, susceptibility to other influences (e.g., participation in a new activity) decreases (Buchanan, 1985). Further, commitment may help provide a more comprehensive theoretical understanding of leisure and its influence on human behavior. This includes the personal and behavioral investments people make over time. Personal commitments include a strong affective attachment and “inner conviction that the activity is worth doing for its own sake” (Scott & Shafer, 2001). Personal commitment is likely to contribute to perceived self-determination because of the intrinsic rewards people accrue over time. With regard to behavioral commitment, Scott and Shafer (2001) suggested that behavioral commitment is associated with the “costs” of activity withdrawal as reflected in social ties to the activity. Examples of such investments include boat ownership and membership in a fishing club.

2.2 Place Attachment

Place attachment is conceptualized as the affective bond that associates individuals with a physical environment (Mesch & Manor, 1998; Milligan, 1998). Korpela (2001) indicated that resource users who have experienced a strong bond with resource places are reluctant to leave a “favorite” place for another. Willingness to substitute has been associated with lower place attachment scores (Williams et al., 1992). Place attachment is made up of place identity and place dependence (Williams & Roggenbuck, 1989). Place identity reflects the emotional aspect of the human-environment relationships (Williams et. al., 1992) while place dependence is the functional aspect (Stokols & Shumaker, 1981). In this paper, we sought to explore how individuals’ functional and emotional meanings connected to previous use of a setting influence their resource substitution decisionmaking.

2.3 Demographic Characteristics

Previous research suggests that anglers with lower incomes may be affected more by constraints related to the costs of fishing and are thus less likely to substitute. Likewise, age and gender have been found to be related to how constraints influence leisure behavior (Godbey, 1985). In addition, gender

influences on substitution decisionmaking are also a salient research topic due to the increasing fishing participation rates for females (Fedler & Ditton, 2001) and the potential for constraints on this group. The goal of this paper is to understand the multi-attributes of resource substitution using recreation specialization, place attachment and participants’ demographic characteristics.

3.0 METHODS

Data were derived from a 2005 statewide survey of 3,554 licensed anglers in Texas. Survey procedures followed a slightly modified version of those advocated by Dillman (1978). We did not include persons age 65 years and above as they were not included in this sampling frame. Completed surveys were received from 1,205 of the 3,554 license holders; 1,136 were returned usable for an effective response rate of 40 percent. A logistic regression method was used for nonresponse adjustment purposes (Fisher, 1996). The substitution question was only asked of freshwater anglers because of difficulties in identifying particular saltwater fishing sites compared to freshwater where water bodies are discrete. Thus, 683 freshwater records were used in the substitution data analysis.

3.1 Variables

3.1.1 Dependent variable: Resource Substitution

Substitution behavior was assessed by direct inquiry. A dichotomous YES/NO question was asked of anglers: “If you could not go fishing where you fish most often, is there another lake or water body that would provide you with the same fishing enjoyment and satisfaction at a similar cost?”

3.1.2 Independent variables

Predictors of substitution behavior included recreation specialization and demographics. A three-dimensional model (from Oh & Ditton, 2006) was used to determine level of recreation specialization. We used seven variables to represent the three dimensions of recreation specialization. They were: total fishing days in fresh water (TOTAL_DAY) for the *behavior*

dimension; a self-evaluation of skill (SKILL) and knowledge (KNOWLEDGE) for the *skill and knowledge dimension*; and, whether they own a boat (OWN_BOAT), the importance of fishing compared to other activities (IMPORTANT), whether they were a member of a fishing club or organization (CLUB), and three sub-commitment questions (COMMITMENT) for the *commitment dimension*. TOTAL_DAY was a sum of total days of fishing reported in all freshwater locations in the past 12 months. SKILL and KNOWLEDGE questions were three-level variables and asked as follows: “*how do you compare your fishing ability/knowledge to that of other freshwater anglers in general?*” OWN_BOAT and CLUB questions made use of dummy variables, scored 1 if *Yes*, 0 if *No*. IMPORTANT was ordinal, indicating the level of importance respondents attributed to fishing compared to other activities. It ranged from *just one of many* to their *most important* outdoor activity. COMMITMENT was an index variable incorporating three personal commitment variables used by Kim et al. (1997) (Cronbach’s alpha = .809). Next, we used seven items from Williams and Roggenbuck’s (1989) place attachment scale to measure place identity (Cronbach’s alpha = .883) and place dependence (Cronbach’s alpha = .803). Demographic variables used were age, gender, and household income. Household income was measured by 11 intervals from under \$10,000 to \$100,000 above.

3.2 Data Analysis

After data diagnostics, logistic regression was used to detect the effects of the independent variables on the odds of an angler having a substitute fishing location for where they fished most often. Interpretation of the fitted logistic regression model was based on the odds ratio, which is often used to describe the strength of effects (Hamilton, 1992). An odds ratio of greater than 1 indicates that the odds of substitution are a positive function of the independent variable whereas an odds ratio of less than 1 indicates that the odds of substitution are a negative function of the independent variable. The percent change in the odds ratios (Ω) is a useful way to interpret the effect of the 12 independent variables and is calculated as $(\Omega - 1) * 100$. To compare

the effects across independent variables, odds ratios were standardized on the X-variables and percent change was calculated as $(\Omega^*(x) - 1) * 100$.

4.0 RESULTS

Results of the logistic regression are displayed in Table 1. Of the three demographic variables tested, willingness to substitute was negatively related to age, positively related to household income, and greater for males than for females. For the specialization indicators, for anglers who own a boat, other things being equal, the odds of substitution increase by 33 percent; for anglers who are members of a fishing club or organization, other things being equal, the odds of substitution increase by 25 percent; for every additional increase in the level of importance of fishing compared to other activities, other things being equal, the odds of substitution increase by 11 percent.

For the place dependence dimension, for every additional increase in the level of place dependence, other things being equal, the odds of resource substitution decrease by 31 percent. For place identity dimensions, for every additional increase in the level of place identity, other things being equal, the odds of resource substitution decrease by 11 percent. When the effects of the two independent variables on resource substitution are compared, place dependence had a stronger effect ($\Omega^*(X) = -26.6$ percent) than place identity ($\Omega^*(X) = -8.8$ percent). In comparing the effect of selected independent variables on the dependent variable of substitution, the percent change in odds ratio standardized values indicated that place dependence, boat ownership, level of activity importance, income, age, place identity, club membership and gender were statistically significant independent. A Wald Test was used to check that the substitution logistic model was adequate.

5.0 DISCUSSION

Several resource substitution topics will be discussed involving recreation specialization, place attachment, and demographic characteristics. First, the analysis revealed that personal commitment and behavioral commitment work differently on willingness to

Table 1.—Results of the logistic regression analysis on willingness to substitute including: odds ratios (Ω), percent change and standardized odds ratios ($\Omega^*(X)$)

Variable	Coefficient	Std. deviation	z	P> z	Odds ratio Ω	Percent change in Ω	Percent change in $\Omega^*(X)$	X effect ranking
OWN_BOAT	.2878051	0.4955419	5.22	0.000*	1.333497	33.35%	15.33%	2
CLUB	.225592	0.3001672	2.32	0.020*	1.253064	25.31%	7.01%	7
LOG_TOTAL_DAY	.0354425	1.172335	1.45	0.146	1.036078	3.61%	4.24%	11
KNOWLEDGE	.0674655	0.6435239	1.05	0.294	1.069793	6.98%	4.44%	10
SKILL	.0740679	0.6465216	1.13	0.257	1.07688	7.69%	4.91%	9
COMMITMENT	-.0394555	0.8482048	-1.02	0.305	0.961313	-3.87%	-3.29%	12
PLACE IDENTITY	-.1125068	0.8177993	-2.12	0.034*	0.893591	-10.64%	-8.79%	6
PLACE DEPEND	-.3711237	0.8348881	-7.31	0.000*	0.689959	-31.00%	-26.64%	1
IMPORTANT	.1005324	1.260801	4.41	0.000*	1.105759	10.58%	13.51%	3
AGE	-.0082543	12.16695	-3.7	0.000*	0.99178	-0.82%	-9.56%	5
MALE	.1817608	0.357514	2.47	0.013*	1.199327	19.93%	6.71%	8
INCOME	.0415522	3.036341	4.55	0.000*	1.042428	4.24%	13.45%	4

*Indicates $p \leq 0.05$.

substitute. Behavioral commitments (i.e., club membership or boat ownership) generally increased the willingness to make resource substitutions while personal commitment was not a significant predictor of substitution. Sutton and Ditton (2005) similarly found that, notably, commitment was not a significant predictor of willingness to substitute another type of fishing. Behavioral commitment, rather than personal commitment, is more likely to contribute to a perception of diminished self-determination (Lee & Scott 2006). For example, anglers who purchased a powerboat or paid for a fishing club membership have substantial investments or “side bets” that contributes to maintaining their consistent recreation behavior. These side bet investments are emotional as well as financial (Ditton et al., 1992). Once significant amounts of money and time are invested, anglers are likely to fish more often and take more trips to other places. Thus, these investments not only keep them involved in fishing, but also increase their ability to fish elsewhere. This helps explain why anglers with powerboats or who are club members are more willing to make resource substitution decisions. Those without a behavioral commitment may choose freely to participate or not at locations other than where they fish most often. In conclusion, multidimensional approaches of commitment are more useful than

univariate measures for explaining resource substitution decisions.

Second, we found different survey design effects when a functional or emotional approach was used. As Bricker and Kerstetter (2000) noted, anglers who are highly experienced and knowledgeable are less likely to be dependent on one specific water body. They are more likely to have a repertoire of substitute water bodies and thus be less dependent on or rooted to any one particular place. Our results were unexpected, however, in light of Bricker and Kerstetter’s inference that anglers’ past experience, and level of knowledge and skill were significant predictors of resource substitution. This may have been due to how recreational settings were characterized in the survey questions. We asked for a broad, sweeping impression of alternative fishing sites (functional approach) instead of inquiring about specific recreation setting (emotional approach). Thus, we found place dependence and place identity were effective predictors for modeling resource substitution when a functional approach was used. Moreover, place dependence (functional attachment) is associated with the area’s physical characteristics and can increase when the resource is close by allowing for frequent visitation (Vaske & Kobrin, 2001).

Third, our results partially supported previous research on the importance of demographic characteristics on substitution decision making. While Ditton and Sutton (2004) reported that only age and education level contributed significantly to willingness to substitute other activities for recreational fishing, we found additional significant demographic variables. Our results reiterated those of Christensen and Yoesting (1977), in which the older adults were less willing to substitute the relatively few activities they participated in for other activities. Also, as reported previously by Fedler and Ditton (2001), anglers with more income were less constrained in leisure and thus more willing to make a substitution. Finally, our result examining gender and substitution supported previous findings by Ditton and Sutton (2004) that female anglers were less willing than male anglers to make substitutions.

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AN EXPLORATORY STUDY OF OHV RIDERS IN NEW YORK STATE: FINDINGS AND IMPLICATIONS FOR MANAGEMENT

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Abstract.—Objectives of this study were to determine demographic and experience characteristics of OHV riders, examine their motivations and resource attribute preferences, and to investigate the correlation between preferences and support for management actions and perception of potential problems. Findings showed that information and parking, rules and signs, and the natural setting were the most important resource attributes for riders. Riders were aware of potential problems related to the activity and supported all the management actions described. Management implications of these findings are briefly discussed.

1.0 INTRODUCTION

The U.S. Forest Service defines an off-highway vehicle (OHV) as any motor vehicle designed for, or capable of, cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (U.S. Forest Service, 2005). This research addresses the use of OHVs that are designed primarily for use over land and does not include snowmobiles. According to the National Survey of Recreation in the Environment (NSRE) (Cordell et al., 2005), recreational OHV riding has been one of the fastest growing recreational activities nationwide in the last 10 years. Managing OHV use has become a challenge for many public land-management agencies (U.S. Forest Service, 2006). As participation in the sport has grown, it has rapidly outstripped the available riding facilities. This has led

to illegal use and environmental damage on public and private lands.

The purpose of this paper is to provide managers with information that will aid in the development of programs, policies, and riding areas that meet the needs of OHV riders in an effective and sustainable manner by:

1. Identifying OHV users' motivations for riding
2. Identifying the resource attributes which are important to OHV riders
3. Examining the correlations between Resource Attribute Preferences (RAP) and motivations
4. Examining the correlations between RAP and support for management actions; and between RAP and the perception of potential problems

2.0 METHODS

The population for this study was OHV users in New York; a mail-back survey was used (Dillman, 2000). Due to state policy regarding privacy, it was not possible to obtain a mailing list of registered riders from the New York State Department of Motor Vehicles. OHV riding clubs were asked to volunteer mailing lists of club members. Mailing lists were obtained from 22 OHV riding clubs in New York and a draft version of the survey was pretested by 19 OHV club officers. The survey was mailed to 1,070 households during the summer and fall of 2006.

Data were analyzed using SPSS version 12.0. Principle Components Analyses (PCA), varimax rotation were used for the motivation and RAP items. Factor loadings greater than 0.4 and eigenvalues greater than 1.0 were required (Child, 1970; Mueller, 1978 as cited in Hou et al., 2005). Cross-loaded variables were rejected. All of the factors retained had acceptable alpha (Cronbach, 1951) values of 0.6 or higher (Cortina, 1993 as cited in Hou et al., 2005). Factors

were labeled on the general theme that the variables appeared to address.

Factor scores were computed by multiplying the individual item scores by the factor loading coefficients, adding these values together for all of the items within the factor, and then dividing by the number of items within the factor. Grand means were calculated by adding the responses to items within a factor and dividing by the number of items, without multiplying by factor loadings. The Pearson product moment correlation coefficient (PPMC) was used to determine the strength and direction of the relationship between the RAP factor scores and the motivation factor scores, management action items, and potential problem items (Bluman, 2006).

To reduce respondent burden, RAP items were split between two versions of the survey (Version A physical setting preferences and Version B social and managerial setting preferences). Significant differences were found between Version A and Version B for six of the 54 shared survey items. Because the differences were small and scattered among different survey sections, researchers felt that the two survey samples were similar enough to justify directly comparing the RAP items using descriptive statistics. All multivariate analyses were conducted separately for Versions A and B.

3.0 RESULTS

Of the 1,070 surveys mailed to valid addresses, 707 were returned for an adjusted response rate of 66 percent. Twenty-two of these surveys were unusable and removed from the sample because they were incomplete or completed by two people. The remaining 685 surveys were retained for data analysis.

The respondents to this survey were 92 percent male. The average age of respondents was 48 years. When asked to check a box representing their experience level (novice, intermediate, advanced, or experienced), a majority of respondents described themselves as being advanced (59 percent) or intermediate (24 percent) riders. The average length of riding

experience was 16 years. Eighty-one percent of respondents primarily ride quad ATVs, followed by off-highway motorcycles (OHMs) (9 percent), and 4-wheel-drive autos (8 percent).

3.1 Motivation and RAP Factors

Separate PCAs were conducted for the 12 motivation items, the 20 RAP items in Version A, and the 17 RAP items in Version B (Tables 1, 2, and 3). Each of these analyses resulted in selection of a four-factor model. A RAP item on Version B, the item *trails designed for children* did not load significantly on any of the factors, and so was dropped from the analysis. The relative importance of the factors indicate that Social Affiliation is an important motivation for riding, and that Information and Parking, Rules and Signs, and the Natural Setting are the most important resource attributes.

3.2 Support for Management Actions

Respondents were asked their level of support for five separate actions (Table 4). The most strongly supported management action was *Using funds from OHV registration fees to develop and maintain state*

Table 1.—Factors and variables for motivation items*

	Factor Loading	M	SD
Social Affiliation ($\alpha = .76$)		1.47	.623
Be with my friends	.774	1.72	.567
Be with my family	.632	1.45	.890
Be with my group or club	.825	1.41	.846
Meet new people	.797	1.31	.924
Adventure and Challenge ($\alpha = .77$)		1.11	.835
Experience new things	.760	1.41	.814
Experience excitement	.824	1.16	1.013
Master a challenge	.802	0.77	1.166
Equipment and Skill ($\alpha = .79$)		0.80	.917
Develop my skills	.715	1.17	1.009
Try my equipment	.856	0.70	1.136
Talk to others about my equipment	.848	0.52	1.127
Social Status ($\alpha = .76$)		-0.99	1.077
Push the limits	.821	-0.91	1.315
Impress others	.876	-1.07	1.126

*Measured on a scale from 2 (Strongly agree with the statement) to -2 (Strongly disagree).

Table 2.—Factors and variables for physical setting attributes*

	Factor Loading	M	SD
Natural Setting ($\alpha = .90$)		3.34	0.605
Scenic views	.824	3.47	0.746
Forested areas	.817	3.41	0.836
Streams, ponds, or lakes along trail	.801	3.34	0.865
Remote areas	.758	3.32	0.907
Riding in a natural setting	.737	3.29	0.960
Chance to see plants or wildlife	.806	3.20	1.007
Trail Design ($\alpha = .76$)		2.70	0.776
Long interconnected trails (20+ miles)	.529	3.23	1.086
Medium trails (10-20 miles)	.802	3.06	0.995
Point-to-point trails	.757	2.85	1.152
Short trails (less than 10 miles)	.748	2.69	1.152
Loop trails	.580	2.53	1.270
Flat trails (as opposed to hilly)	.458	1.85	1.213
Trail Condition ($\alpha = .70$)		2.00	1.015
Rough trail surface (as opposed to smooth)	.592	2.41	1.154
Trails that are muddy	.851	2.02	1.362
Trails that show signs of heavy OHV use (ruts, puddles, exposed rocks and roots)	.781	1.56	1.335
Trail Difficulty ($\alpha = .79$)		1.46	0.972
Steep slopes (as opposed to gradual)	.578	2.04	1.254
Trails that cut across slopes (as opposed to going directly up or down slopes)	.622	1.90	1.199
Designated play areas with jumps	.813	1.11	1.326
Tracks (short loop trails for racing)	.828	0.77	1.192

*Measured on a scale from 0 (Not at all Important) to 4 (Extremely Important).

Table 3.—Factors and variables for social and managerial setting attributes*

	Factor Loading	M	SD
Information and Parking ($\alpha = .68$)		3.41	0.686
Information /maps of trails available at trailheads	.630	3.43	0.847
Trailhead parking for autos and trailers	.652	3.42	0.860
Information /maps of trails available online	.742	3.37	0.927
Rules and Signs ($\alpha = .89$)		3.39	0.884
Rules for riding on trails	.895	3.46	0.909
Knowing that rules are enforced	.834	3.43	0.917
Speed limit signs and safety considerations	.843	3.27	1.082
Facilities and Access ($\alpha = .87$)		2.53	0.940
Access to communities from trails	.591	3.08	1.114
Trailhead loading /unloading facilities	.475	3.06	1.108
Road access to points along trails	.605	2.79	1.130
Camping at trailheads	.780	2.26	1.280
Bathrooms with running water	.738	2.25	1.293
Designated picnic areas	.844	2.19	1.236
Camping along trails	.807	2.10	1.299
Social Setting ($\alpha = .74$)		2.50	0.910
Opportunity to ride as a group	.680	2.93	1.030
Trails shared by other types of OHV users	.725	2.55	1.246
Interacting with riders not in my group	.774	2.28	1.140
Multiple-use trails shared by other types of users	.638	2.24	1.398

*Measured on a scale from 0 (Not at all Important) to 4 (Extremely Important).

Table 4.—Support for management actions*

	% Supporting (1 or 2)	% Neutral (0)	% Opposing (-1 or -2)	M
Using funds from OHV registration fees to develop and maintain state riding areas and trails	97.0	1.8	2.1	1.85
Limiting or closing access seasonally to reduce erosion	69.2	16.7	14.0	0.86
Charging fees at state riding areas to fund maintenance and development of trails and facilities	62.1	15.4	22.5	0.60
Setting limits on the number of riders at the area to reduce impacts to the natural resource	48.0	26.1	26.0	0.30
Setting limits on the number of riders at the area to reduce crowding	37.1	31.7	31.1	0.03

*Measured on a scale from -2 (Strongly Oppose) to 2 (Strongly Support).

riding areas and trails. The action of *Limiting or closing access seasonally to reduce erosion* was also well supported. The least supported management actions were *Setting limits on the number of riders in the area*.

3.3 Potential Problems Related to OHV Riding

A PCA, which is not summarized in this paper but which is discussed in the related thesis (Baker, 2007), of the 10 potential problem items was conducted to determine the different categories of problems. The categories found were problems related to Operator Behavior and problems affecting the Recreational Setting. The items within each factor are indicated by headings in Table 5, which summarizes the respondent's perception of the seriousness of the potential problems. Respondents to this survey considered the issues relating to operator behavior to be more problematical than the issues which affect the recreational setting.

3.4 Pearson Correlations

Pearson Correlations were used to compare the strength and direction of relationships between the RAP factors and Motivation factors, Management Actions, and Potential Problems (Table 6). Social Affiliation was correlated with all but one of the RAP factors, and Trail Condition was correlated with all of the Motivation factors. Social Status was negatively correlated with the three most important resource attribute factors. Significant correlations were also

Table 5.—Assessment of potential problems*

	% Selecting "An Extreme Problem" (4)	% Selecting "Not a Problem" (0)
Operator Behavior		
Lack of adult supervision of child riders	31.0	16.3
Riding in illegal areas	28.9	5.7
Property damage by riders	26.2	11.5
Reckless riding	24.3	8.4
Riding in streams and wetlands	12.1	16.8
Recreation Setting Effects		
Noise from OHVs	9.4	32.0
Trail erosion from OHVs	9.0	15.5
Effects of OHVs on other people in area	5.7	23.1
Effect of OHVs on plants	3.8	29.0
Effects of OHVs on wildlife	4.1	40.9

*Measured on a scale from 0, "Not a Problem", to 4, "an Extreme Problem"

found between several of the RAP factors and the Management Action items (Table 7). Rules and Signs resource attributes were correlated with support of all five of the management actions. A few significant correlations were found between the RAP factors and potential problems (Table 8). Social Setting resource attribute preferences were correlated with all of the items in the Operator Behavior factor of potential problems. To save space, in Table 8 only problems in the Operator Behavior factor are displayed. Only three significant relationships with Recreation Setting items were found.

Table 6.—Pearson correlations between RAP factors and motivation factors

	Social Affiliation	Adventure and Challenge	Equipment and Skills	Social Status
Information and parking	.227**		.193**	-.128*
Rules and signs	.327**		.140**	-.120*
Natural setting	.328**			-.164**
Trail design	.236**	.117*		
Social setting	.363**	.182**	.308**	
Facilities and access	.364**		.201**	
Trail difficulty		.413**	.166**	.390**
Trail condition	.245**	.237**	.217**	.231**

**Significant at 0.01

*Significant at 0.05 level

Table 7.—Pearson correlations between RAP factors and management actions

	Funding from registration fees	Funding from charging fees at areas	Seasonal closures/use limits to reduce erosion	Use limits to reduce impacts on resource	Use limits to reduce crowding
Information and parking		.140*		.161**	.114*
Rules and signs	.125*	.128*	.205**	.181**	.178**
Natural setting	.112*		.110*		
Trail design					
Social setting	.123*			.181**	.178*
Facilities and access					
Trail difficulty		.185**	-.117*		
Trail condition		.141*	-.141*		

**Significant at 0.01 level

*Significant at 0.05 level

Table 8.—Pearson correlations between RAP factors and operator behavior problems

	Riding in illegal areas	Reckless riding	Lack of supervision of child riders	Property damage by riders	Riding in streams and wetlands
Information and parking					
Rules and signs		.201**			
Natural setting					
Trail design					
Social setting	.182**	.192**	.203**	.137*	.163**
Facilities and access		.139*	.234**		.188*
Trail difficulty					
Trail condition					

**Significant at the 0.01 level

*Significant at the 0.05 level

4.0 DISCUSSION

Information and Parking was an important RAP. The need for accurate information about riding areas was positively correlated with Social Affiliation and Equipment and Skills motivations. Planning a ride with a group of people requires organization and a need for accurate information about the destination. Riders seeking to test their equipment or develop their skills may require specific information about the attributes of the setting to know whether the destination will meet their needs. The Information and Parking factor was negatively correlated with Social Status motivations. Riders motivated by impressing others and pushing the limits may not be as concerned about obtaining specific information in general.

Rules and Signs was the second most important RAP. Many respondents stated in the comments section of the survey that *a small number of irresponsible riders give OHV riders in general a bad name*. Clearly stated and enforced rules and signage along trails could help to curtail these problems. The Rules and Signs factor was positively correlated with Social Affiliation motivations. Rules and Signs provide a base for normative behavior at the area, making it easier for groups and individuals to interact with each other. These attributes also increase the safety of riding at the area.

5.0 CONCLUSION

The first objective of this research was *to identify OHV users' motivations for riding*. Findings show that social affiliation and adventure and challenge are two of the

strongest motivating factors. Facilities designed to accommodate groups would increase the attractiveness of a riding area; these include: large staging areas and frequent pull-outs along the trails, large permanent maps and small map-brochures at entry points, and group-friendly policies such as reduced rates for groups or families.

The second objective of this research was to *identify the resource attributes which are important to OHV riders*. The types of resource attributes that the riders felt were most important were Information and Parking, Rules and Signs, and the Natural Setting. Managers should distribute more information about areas where people can ride legally and develop and enforce rules that promote safe, nondestructive riding. Designation and management of additional public trails in natural settings may reduce illegal riding and make the impacts of this activity easier to manage.

The third objective of this research was to *examine the correlations between Resource Attribute Preferences and motivations*. The need for accurate information about riding areas was positively correlated with social motivations for riding. Planning a ride with a group of people requires organization and accurate information. In addition, logistical issues, such as adequate parking, also become more important. Similarly, the low number of legal and designated riding areas in New York requires riders to plan longer trips in order to participate in the activity. Coordinating trips to nonlocal areas requires more information and logistical support.

Importance of the Information and Parking factor was positively correlated with Equipment and Skills motivations. Riders seeking to test their equipment or develop their skills may require specific information about the attributes of the setting to know whether the destination will meet their needs. The Importance of the Information and Parking factor was negatively correlated with Social Status motivations. Riders motivated by impressing others and pushing the limits may not be as concerned about obtaining specific information about settings or legal riding opportunities.

The fourth objective of this research was to *examine the correlations between RAP and support for management actions; and between RAP and the perception of potential problems*. The Rules and Signs factor was correlated with support for all of the management actions and awareness of reckless riding as a problem, and Social Setting was correlated with support for use limits, as well as for awareness of all of the Operator Behavior potential problems. This shows that some riders are aware of the role of management in developing and enforcing rules and managing reckless behavior, and that some riders are sensitive to the effect of the behavior of others on the social setting. The sensitivities of these riders will influence the experience quality at the riding destination.

A limitation of this research is that it was conducted with a sample consisting of members of OHV clubs older than 18 years. Future research could focus on identifying and understanding other groups outside of club membership, particularly younger riders. A survey also could be conducted in other states where there are more riding opportunities in order to determine how much of the information gained here is unique to the circumstances of New York riders.

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WATER-BASED RECREATION

MANAGEMENT OF A RIVER RECREATION RESOURCE: THE LOWER KANANASKIS RIVER – A CASE STUDY

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Abstract.—This study examined recreational use of the Lower Kananaskis River in Southwestern Alberta, Canada. Surveys and participant observations helped develop a better understanding of current use levels and interviews with key policy leaders explored management issues and concerns. Users suggested the need for improvements to river infrastructure both on and off the river. Policy leaders were more critical of the current management structure of the river than users; they indicated that park management has shown low levels of understanding of – and has been unresponsive to – the expressed needs of both users and community leaders. With the continued growth of the area, new management demands can be expected in the future. To assist in the development of management capability, the research developed an adaptive outdoor recreation management framework.

1.0 INTRODUCTION

The Lower Kananaskis River, located in Kananaskis Country in southwestern Alberta, Canada, is recognized as a premiere whitewater paddling location provincially and nationally. The Lower Kananaskis River provides recreational opportunities for commercial guiding and instructional groups, outing clubs, and public recreation users. The river is also a major source of hydroelectric power for TransAlta Utilities which manages its flow. All of these uses are governed under the corporate umbrella of various governmental, not-for-profit, and commercial groups.

In the summer of 2000, Squires (2001a) undertook a recreational use research project along the Lower Kananaskis River to determine the social carrying capacity of the area. The research resulted in numerous recommendations including: reviewing policies pertaining to guiding and instructional activities; more clearly defining the role of the Lower Kananaskis River Users' Association in river planning and management; developing a comprehensive management plan for the river; and developing management strategies that address multiple goals (Squires, 2001b, pp. 18-23).

Since 2000, Alberta Parks' staff members have noticed increased recreational use of the river and increased pressure on the river resources and day-use facilities (Cockerton, 2005). The identified need for related management improvements led to this research; the purpose of the research was to build on existing management frameworks found in the literature to develop an all encompassing outdoor recreation management framework. Four research objectives guided the investigation of recreational use of the Lower Kananaskis River and its associated day use facilities:

- Review current river use to understand the timing and type of use.
- Understand the experiences that visitors seek in their activities on the Lower Kananaskis River and the ways in which varying uses impact these experiences.
- Determine whether or not the current permitting policy is appropriate.
- Develop management recommendations for managing recreational use of the Lower Kananaskis River in the future.

2.0 KANANASKIS COUNTRY BACKGROUND

Kananaskis Country is a 4,250 km² multi-use recreation area located in the Canadian Rocky Mountains on the western border of Alberta (Alberta Parks, 2004). It is known for its wide variety of vegetation and wildlife, geological formations, diverse terrain and breath-taking mountain scenery (Alberta Parks, 2004). The area has renewable and nonrenewable resources including timber, fisheries, oil and gas development, cattle grazing, and hydroelectric development (Alberta Parks, 2004).

Kananaskis Country attracts many visitors and is an international destination for a variety of outdoor recreational activities (Alberta Community Development, 2006). Due to its close proximity to the major metropolitan area of Calgary and the variety of recreational activities available to visitors, Alberta Parks staff state that the number of visitors coming to the area has nearly doubled in recent years; approximately 80 percent of current use is by day-users (Cockerton, 2005; Alberta Parks, 2004). The use pressure applied to the area's resources has led to a management debate concerning the appropriate amount of use, the protection of the natural environment, and the approach to management.

2.1 Bow Valley Provincial Park

Bow Valley Provincial Park is a 3,200 ha provincial park that serves as the gateway to the Canadian Rocky Mountains in Kananaskis Country (Alberta Community Development, 2002). The park contains many provincially significant natural landscapes and features along with a variety of recreational opportunities and interpretive and educational programs (Alberta Community Development, 2002). Bow Valley serves both day-users and overnight visitors due to its proximity to highways providing easy access to Calgary and Canmore (Alberta Community Development, 2002). The main focus of this research is the recreational use of the Lower Kananaskis River located in Bow Valley Provincial Park and the associated day-use sites of Canoe Meadows and Widow Maker.

2.2 The Lower Kananaskis River

The Kananaskis River flows northward for 84 km from Upper Kananaskis Lake to the Bow River (Bunt et al., 1999). This research occurred on the Lower Kananaskis, a 2-km stretch of the river in Bow Valley Provincial Park. TransAlta Utilities owns and operates three hydroelectric dams along the Kananaskis (TransAlta, 2005), including the Barrier Dam which provides the majority of outflow on the Lower Kananaskis. The controlled flow along the river provides year-round recreation opportunities for many groups, including commercial operators, private users, paddlers' clubs, and other organizations and instructional groups.

Three groups have played key roles in the development of the area and the decisionmaking: the Alberta Whitewater Association (AWA), the Lower Kananaskis River Users Association (LKRUA), and the Bow Valley Provincial Park. The AWA is a "...provincially recognized sport governing body for whitewater slalom, wild water/downriver, and freestyle [which] sets and maintains standards for instruction and development of these activities at all levels" (AWA, no date). LKRUA is a group composed of representatives from government, commercial industry, the recreation community, nonprofit groups, and academic institutions who are dedicated to establishing, maintaining and enhancing use of the water resources and facilities of the Lower Kananaskis River (LKRUA, no date). The third party is the Bow Valley Provincial Park. There is little published information available on the specific duties of each group. In discussions for this research, members of these groups said that it is difficult for the groups to find both monetary and human resources to make changes along the river and to maintain the river area. It has also been difficult for the different groups to come to agreement about specific things that need to be done to maintain the river. The existing river management plan simply states that,

The Widowmaker and Canoe Meadows facilities are very significant provincially and locally for teaching, training, competition, recreational paddling and commercial rafting.

Management concerns include congestion in parking areas, allocation of commercial and noncommercial use on the various sections of the river, maintaining safety and aesthetics. (Alberta Community Development, 2002, pp. 43)

There is no information in the management plan that outlines the institutional structure for managing river recreation activities.

3.0 METHODOLOGY

This study used a mixed-methods approach, combining qualitative and quantitative analysis (Creswell, 2003). The first phase of the research was a review of literature to develop a conceptual basis for the study of recreational use of the Lower Kananaskis River. The second phase involved surveying both commercial and private recreational river users and making on-site observations over a period of 3.5 months. The third phase was conducting interviews with key stakeholders involved in decisionmaking along the Lower Kananaskis River. Survey data were entered into a database and the interviews were transcribed prior to analysis.

River use observations took place between May 16 and September 4, 2006. The observations recorded the number of users (commercial and recreational) entering the area every 15 minutes and the activities in which they were participating. Additionally, surveys were conducted at points along the Lower Kananaskis River between May 28 and September 4, 2006. Of those completed, 262 surveys were deemed complete and usable (149 with recreational users, 113 with commercial users). During this time, seven structured interviews were held with key policy leaders connected to the river and its facilities.

4.0 RESEARCH FINDINGS: RIVER USERS

Most commercial use of the river occurred in July and August, while private recreational use was spread over a wider period from May through September. The majority of commercial users (97.3 percent) were rafting, while the majority of recreational users

(81.2 percent) were kayaking ($p < 0.05$). Commercial users typically went down the river only once (99.1 percent), while recreational users were more likely to make more than one pass (83.9 percent once and 14.8 percent twice) ($p < 0.05$). Commercial users (91.2 percent) were also more likely than recreational users (19.5 percent) to be first time users of the river ($p < 0.05$). The time each group spent on the river also differed; 99 percent of commercial users spent between 1 and 3 hours on the river while recreational use was more varied.

Commercial and recreational users differed significantly in their opinions about the amount of rafting occurring on the river. In general, commercial users focused more at the overall experience while recreational users focused on the river and its features. Commercial and recreational users also differed in how they ranked current management of services and facilities along the river. Both groups gave high marks to the river environment, commercial users emphasized the importance of launch areas, and the recreational users tended to mention the importance of parking. Areas that commercial users believed needed attention were the cleanliness and availability of washrooms, availability of garbage containers, and the availability of river information, maps and guides. Areas that recreational users believed needed attention were the availability of river information, the number of encounters with sport kayakers, the availability of maps/guides, and the number of overall encounters with users while on the river.

4.1 Research Findings: Policy Leaders

Analysis of the interviews with seven policy leaders provided information about a wide range of planning and management issues. The Lower Kananaskis area was recognized as a unique recreational resource with world class potential. Interviewees suggested that the current management regime was effective but outdated in a variety of ways.

Many policy leaders believed that the current recreational facilities were sufficient. Others predicted increasing problems if use levels increase in the future. Those existing problems identified were overall site

design and the need for more parking and washrooms. Other problems mentioned were congestion, high volume, and poor trails, suggesting that the site was experiencing both physical and social carrying capacity issues that needed to be addressed before the site became degraded.

There was also an identified need for more comprehensive and holistic site planning to deal with current and anticipated future problems. Several policy leaders suggested that the entire recreation system needed to be re-evaluated in terms of site planning, use flows, facilities, quotas, and permitting.

From the policy leaders' points of view, levels and types of interaction among the various users of the river were considered appropriate; they tended to think that individuals had adapted to one another and learned to work around each other but there was also some concern that increased future use could create problems that are beyond the capacity of the existing management institutions. There were differing opinions about the level of current use. Most policy leaders felt that the level of current use is acceptable. A few suggested that the use level could be increased, but only with appropriate planning. One felt that the current use level was too high and should be reduced. All of the policy leaders agreed that use level is likely to increase in the future, were concerned about the impacts of such an increase and felt that better planning and management would be necessary to ensure that increased use does not hinder people's experiences.

Several different themes emerged related to management responsibilities. There was a difference of opinion on the effectiveness of the current contracted washroom clearing and garbage collection services; some policy leaders felt that these contractors were doing a good job while others felt that the contractors were doing a bad job. There was general consensus that the provincial government had allocated insufficient funding for this aspect of provincial park management. One possible remedy is to introduce new use fees that would be used for cleaning services and facility maintenance.

There were also major concerns about management effectiveness but, in general, the interviewees were undecided about which management organization or combination of organizations should handle or coordinate different responsibilities. It was also clear that an overall management review is needed to address the many issues raised, including site design, use monitoring, quota enforcement, fees, finance, and policing powers. It is probable that an upgraded arrangement involving the current actor groups would be sufficient if it were established on a firm financial and legal basis. There is also a need to develop a much more effective and interactive system for issuing and monitoring quotas and permits. The implementation of such a system would require enhanced management capability.

Overall, the respondents expressed a guarded approval of the existing system. Discussion of the various identified problems led to the suggestion that a review of the entire management system (related to land, water, and all recreation activities) should be undertaken. However, the current lack of monitoring, the absence of staff, and the inability of policy leaders to point to a clear decisionmaking framework at this park suggests that the current park agency does not have sufficient capability to undertake such a review and to ensure the implementation of recommendations. There was consensus among policy leaders that change was desirable, which indicates a positive political atmosphere in which a full management review can be undertaken.

5.0 DISCUSSION

At a basic level, managers' tools and approaches should be geared towards "... (a) influencing visitor decision processes; (b) controlling visitor behavior; or (c) mitigating the impacts of visitors" (Eagles & McCool, 2002, pp.132). When individuals visit a recreational area or participate in recreational pursuits, managers should focus their attention on the provision of these pursuits and on the potential problems that may come about from these recreational endeavors (Eagles & McCool, 2002). This research found that users generally were satisfied with current

management. Policy leaders were more critical, pointing out many areas in need of improvement, including concern about a lack of management responsiveness and negative outcomes of future increases in use.

It is important to re-emphasize that few of Squires' (2001a) recommendations about the management of the Lower Kananaskis River were implemented; in the present study, policy leaders and some users expressed concern about this. The lack of improvement in management strategies in the intervening 5 years can be seen as an indication of the lack of management capability by the park agency. Therefore, if the recommendations of this current research are to be useful, there is need to improve the park's management framework.

Manning's Outdoor Recreation Management Structure (1999) was used in this research. This management structure has four stages: 1) inventory existing recreation conditions; 2) determine management objectives; 3) develop management prescriptions; and 4) monitor and evaluate success (Manning, 1999) (Fig. 1).

Manning's framework assumes that an organization has the capability to develop and implement management objectives, including monitoring. In this research, it was found that the management organization that did not have the capability to perform these tasks. Therefore, it became important to add an additional component to Manning's framework, a

method of assessing the organization's management capability.

For the purpose of this research, management capability is defined as the ability of an organization to reach its mission and goals; in particular, the organization needs capability in the following areas: 1) staff; 2) staff expertise; 3) budgetary resources; 4) legal effectiveness; and 5) management guidelines. Hockings et al. (2006) suggest that effective management of protected areas requires adequate resources in the areas of human capacity, facilities, information, operational money, and equipment. All organizations especially require sufficient human capacity including adequate numbers of well trained staff persons, both part time and full time (Eagles et al., 2002). Eagles (2003) also provides a list of seven competencies that are required for effective tourism management: 1) understanding the visitors' needs and wants; 2) service quality management; 3) leisure pricing policy; 4) leisure marketing; 5) tourism and resource economics; 6) finance; and 7) tourism management. Some of these competencies may occur centrally and be shared across a park agency while others may occur at the park level. Each situation would need to be evaluated to determine the appropriate amount and location of these competencies.

Appropriate governing structure is also an important prerequisite to good management. Agencies must have the capability to fully utilize the powers derived from the legislation. For example, a park agency must

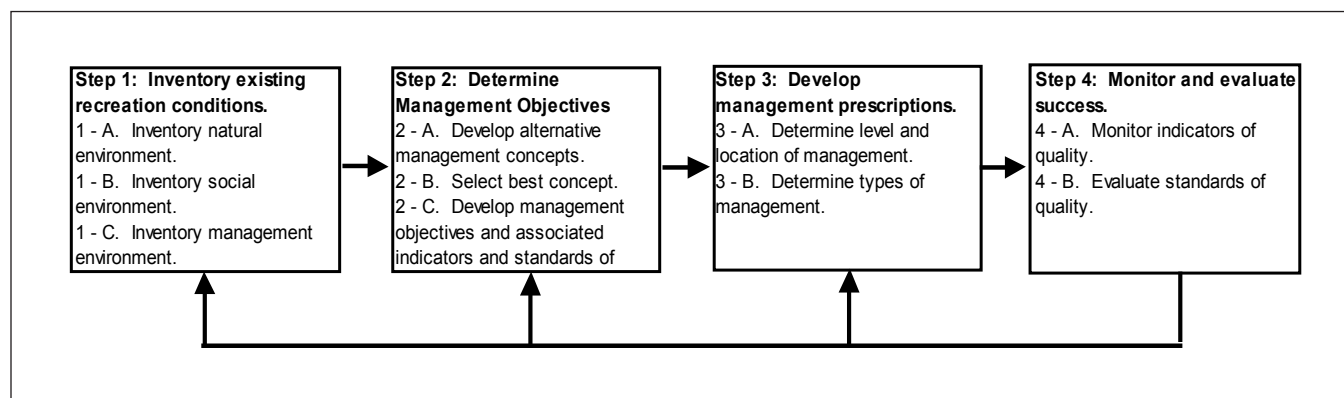


Figure 1.—Outdoor recreation management structure (Adapted from Manning, 1999)

have the power to implement all aspects of visitor and tourism management. A government agency should also have a stated vision that guides actions, perhaps in the form of a management plan. This is a common measure of management effectiveness (Hockings et al., 2006). Therefore, for an organization to have sufficient managerial capability, it requires sufficient numbers of appropriately trained staff, appropriate budgets, a competent legal structure, and a plan.

Realizing the enormous range of management capability occurring within a large agency, Hornback and Eagles (1999) proposed that there are five levels of effectiveness for public use programs. Similarly, we suggest five levels of management capability: 1) initial; 2) basic; 3) intermediate; 4) developed; and 5) advanced (Fig. 2). Within each level of management capability, the subcriteria of staff, staff expertise, budgetary resources, legal effectiveness, and management guidelines can be assessed.

The Bow Valley Provincial Park is currently at the initial level when it comes to staff expertise, budgetary resources, and at the basic level when it comes to staff numbers, legal effectiveness, and management guidelines (Fig. 2). This suggests that the management capability of Bow Valley Provincial Park needs to be upgraded in all five areas.

What might be the most appropriate level of management capability for Bow Valley Provincial Park? At a minimum, the park should have one full-time staff person devoted to recreation and tourism management. This would be capability level 4. This person should have specialized training in recreation and tourism management. This is capability level 5. Funding should be at level 4, which is an adequate amount of monetary resources assigned to the resource and the ability to gain further resources for management needs through the use of petitions. This research is unable to fully assess the legal competence

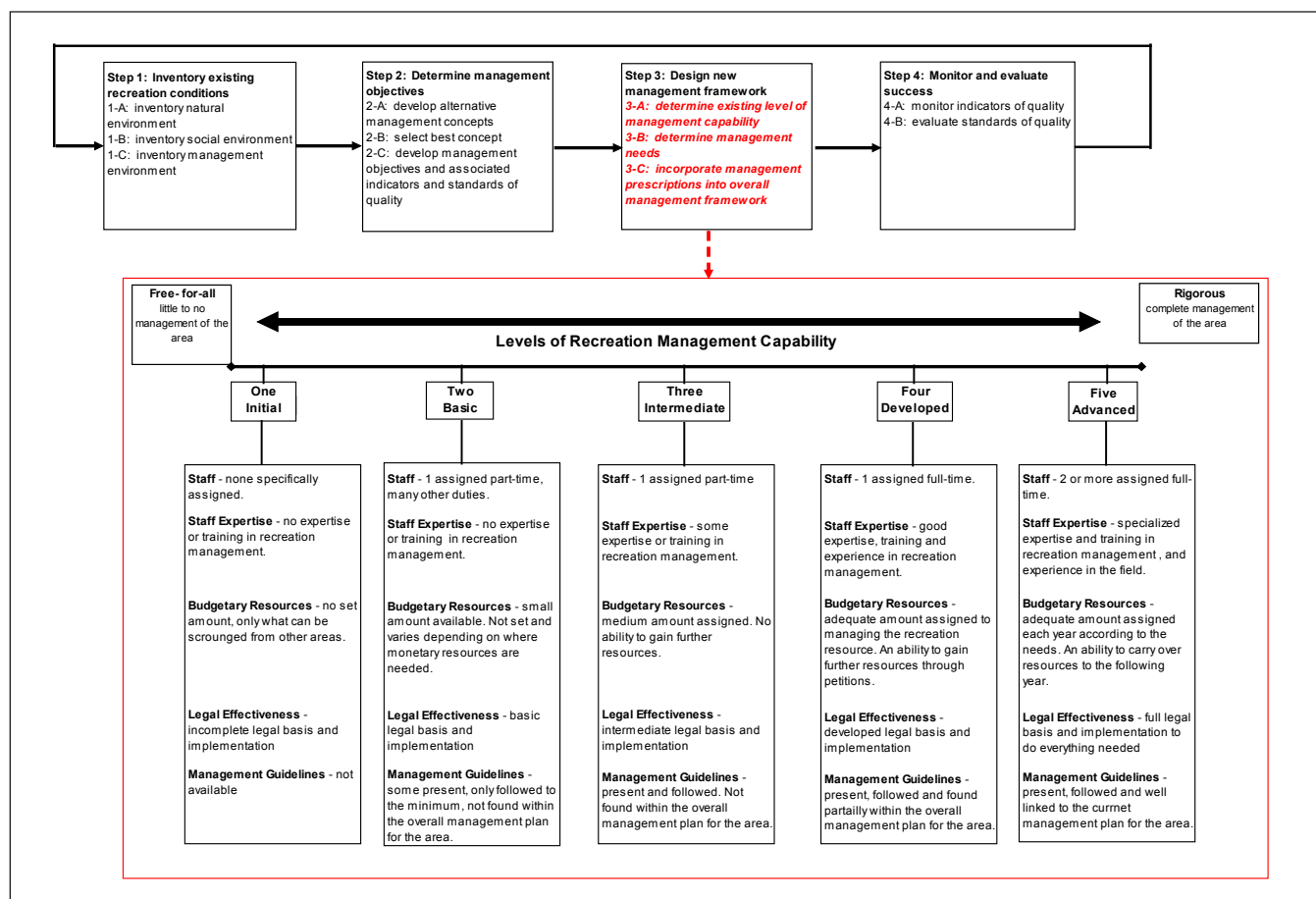


Figure 2.—Revised outdoor recreation management structure (adapted from Manning, 1999, and Hornbeck & Eagles, 1999)

of the Bow Valley Provincial Park but we predict that it is currently at level 5. The management capability for planning should be upgraded to Level 5. At present, the park management plan is deficient in both content and process with regards to visitor and tourism management. Therefore river-based management should be placed into the overall park management plan and should be fully linked to the overall goals of the plan. In this case, with a world class river recreation activity, level 3 is not sufficient; the site requires management capabilities at levels 4 or 5.

The addition of a management capability component to Manning's (1999) overall management framework produces a more comprehensive approach to outdoor recreation management. This new, adapted framework might be useful to other outdoor recreational resources and settings. Use of this framework helps ensure that any organization has the capability to meet the goals and objectives for recreation and tourism.

6.0 CONCLUSIONS

This research examined the type and amount of recreational use of the Lower Kananaskis River, the impact of recreational use on users' experiences, and the strengths and weaknesses of current management structure. Findings include recommendations for more effectively managing recreational use of the river and associated day-use sites in the future.

This research found that the two main user groups, commercial and recreational users, have generally adapted well to each other's activities. The users reported a high level of satisfaction with their experience and the river itself. However, it is anticipated that continued increases in use will begin to create problems with users' overall satisfaction with their experiences. Users recognize the need for better infrastructure both on and off the river. Changes were needed in the parking areas to accommodate all of the vehicles and users, work was needed at the put-ins and take-outs to accommodate the increase in users, and changes were necessary on the river features and at the day use sites.

In interviews, policy leaders emphasized several well known management issues and highlighted problems with the current management structure. Policy leaders were more critical than users of the current management structure; the critical comments from the policy leaders were expected, as they are more aware of the management issues than recreational users. The policy leaders made many insightful comments about the need for management changes; they generally recognized that management has not been responding to the needs of the users and has not implemented recommendations that emerged from previous research.

The major theoretical contribution of this research is the addition of levels of recreation management capability to Manning's (1999) Outdoor Recreation Management Framework. This was done by adapting Hornback and Eagles' (1999) approach of using five levels of public use measurement, in an attempt to develop a tool for assessing and improving management capability.

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WILD PLACES

TRANSCONTINENTAL WILDERNESS SURVEY: COMPARING PERCEPTIONS BETWEEN WILDERNESS USERS IN THE EASTERN AND WESTERN UNITED STATES

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Abstract.—This study explores the differences in perceptions of wilderness between recreationists in the Eastern United States and those from the West, with a focus on definitions of wilderness areas and factors that may decrease enjoyment of the wilderness experience. The few studies performed on this comparison over the past 25 years have produced inconsistent results and there is a need for more research. We conducted a survey of recreationists at wilderness areas in the Allegheny National Forest in Pennsylvania, the Mt. Hood National Forest in Oregon, and through a snowball sample of Alaskan and Californian wilderness users. There were 102 respondents: 47 Eastern users and 55 Western users. Results indicate that there are few differences between Eastern and Western wilderness users in perceptions of wilderness, and that Eastern users actually have somewhat stricter interpretations of wilderness.

1.0 INTRODUCTION

Wilderness areas in the Eastern United States are generally different from those in the West. Eastern wilderness areas tend to be smaller, since the region is much more densely developed and much of the land is privately owned. Eastern wilderness areas also have

largely been disturbed in the past through farming or timber operations, while many in the West still retain much of their pristine state. Additionally, Eastern wilderness areas tend to be closer to population centers, are thus more accessible than many Western areas, and receive higher numbers of visitors as a result. High visitation rates in smaller areas may lead to congestion in Eastern wilderness areas (Roggenbuck & Watson, 1989).

As there are clearly differences in the size and physical features of Eastern and Western Wilderness areas, are there also differences in the visitation patterns and visitor perceptions? If Eastern wilderness areas are more congested than Western wilderness areas, are Eastern users more tolerant of encountering other people in the wilderness? Are visitors to Western wilderness areas more discerning about the pristine condition of the areas they visit? Some research has been examined these questions in the past, particularly in the late 1970s and early 80s, but it was largely inconclusive. Studies by Boteler (1981), Lucas (1980), and Roggenbuck (1980), found that there are few differences between users from the East and those from the West in terms of demographics such as age, income, and education. However, Donnelly et al. (1981), found that there were some differences in perceptions, motivations, and preferences, especially towards crowding. Little if any research has been performed on this topic since the early 1980s, and the lack of a consensus suggests a need for further study. Although demographic data can indeed be useful to wildland managers, understanding how visitors view wilderness and what might detract from their visits is arguably more useful in planning, and thus was the focus of this study. Findings from this study could help in the formation of management goals for wilderness areas based on the regional preferences of users in different parts of the nation.

The goal of this study was to determine the differences in wilderness perceptions (if any) between recreationists who use Eastern wilderness areas and those who use Western ones. The hypothesis of the research is that there will be a significant difference in wilderness perceptions and preferences between Eastern users and Western ones related to differences in the wilderness areas in the two regions. Western users are expected to have stricter interpretations of the definition of wilderness. They are also expected to prefer attributes of Western wilderness areas like less development, a pristine environment without any prior human disturbance, and fewer trails and signs. Eastern wilderness area users are expected to favor Congressional designation of wilderness areas as a way of officially designating them as “wild” and are expected to be stronger advocates for protection of wilderness areas than their Western counterparts.

2.0 METHODS

A survey was designed and administered in conjunction with the 2005 and 2006 National Visitor Use Monitoring (NVUM) Survey conducted by the U.S. Forest Service in the Allegheny National Forest. NVUM is administered every 5 years on each National Forest; it is designed to elicit information about visitor demographics, types of activities recreationists are doing in the forest, and lengths of their visits or stays. Respondents were intercepted at trailheads and canoe pull-outs as they were finishing their recreational experiences and preparing to leave the site. Survey days were randomly assigned to those locations by the Forest Service. Interviewees were self-identified wilderness users, and were further screened to ensure that they had indeed visited a wilderness area.

As Alaskan wilderness areas are far larger, more isolated, and experience more dispersed visitation, a snowball sample (Goodman, 1961) was used to gather responses from this area. The survey was first distributed to U.S. Forest Service personnel in the Tongass National Forest; 39 completed surveys were returned from wilderness users in Alaska, Washington, Oregon, and California.

2.1 Study Areas

The first part of this study was conducted at the wilderness areas in the Allegheny National Forest in north-central Pennsylvania in the summer of 2005. This forest was established in 1923 after most of the area had been denuded of trees, and as a result is comprised almost entirely of second-growth forest (Allegheny National Forest, 2005). One Congressionally designated wilderness area surveyed in the Allegheny was Hickory Creek. This area was designated in 1984 and includes 8,633 acres of previously clearcut land. Its borders are delineated by a paved state-maintained road and a gravel Forest Service road. It is adjacent to Heart’s Content Scenic Area, which also serves as a trailhead. Heart’s Content has proven in the past to be an effective location from which to study Hickory Creek Wilderness visitors (Graefe et al., 2000). However, for this study, additional screening became necessary when it was observed very early on that many visitors believed they had been in the designated wilderness area when in fact they been in an adjacent nonwilderness area.

The second wilderness area studied was the Allegheny Islands Wilderness Area. Like Hickory Creek, it too was established in 1984. It is made up of 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 one of the smallest wilderness reserves in the United States (Allegheny National Forest, 2005). Numerous farms, roads, and towns lie west of the river near the islands. U.S. Route 62 parallels the river to the east, and traffic counts conducted as part of the NVUM survey indicated that an average of about 2000 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 area 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. 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 can see no development on either side of the river or at least hear the traffic on Route 62. Hickory Creek is quieter due its more secluded location and large size, but contains the remains of an old World War II-era artillery range and other signs of former use.

The second part of this study was conducted in the Mt. Hood National Forest in Oregon in 2006. Mt. Hood NF has 189,200 acres of wilderness distributed between five units, the smallest of which is approximately 24,000 acres. Mount Hood was chosen as a study site because of the size and extent of these wilderness areas which contrast greatly with the small areas in the Allegheny. Some of the wilderness in the Mt. Hood NF has been previously clearcut, while the rest is old growth forest or alpine terrain. There is also variation in the proximity to development and roads amongst the five wilderness areas, with some being relatively close to highways and towns while others are on more isolated tracts of the forest (Mt. Hood National Forest, 2007).

2.2 Survey Design

The first part of the survey contained six statements about wilderness areas. Respondents were asked to identify on a 5-point Likert-type scale – with 1 being strongly disagree, 3 being neutral, and 5 being strongly agree – how much they agreed with each in a series of statements. These statements were devised to reflect ideas codified in the Wilderness Act of 1964 (Wilderness Society, 2005), and to focus on some conditions of the features of Eastern wilderness areas that may be different from those in the West, such as visible prior development.

The second part of the survey was designed to determine how encountering certain situations in a wilderness area might detract from that user's experience. This was also measured on a Likert-type scale of 1 to 5, where 1 meant "no bother," 3 being neutral, and 5 being "major annoyance." Again, many of these situations were selected based on conditions

that may vary between East and West wilderness areas, such as congestion along trails (Roggenbuck and Watson, 1988) and distances from population centers. Many of these potentially detrimental conditions were also based on factors examined in previous studies, such as encountering campfire rings in the wilderness (Roggenbuck & Watson, 1993) and hearing noise from passing aircraft while in a wilderness (Fidell et al., 1996; Tarrant et al., 1995).

3.0 RESULTS

A total of 102 surveys were completed, 47 by Eastern wilderness users and 55 by Western users. Of the 17 items in the survey, independent samples t-tests showed only four with significant differences between Eastern and Western users. Easterners felt more strongly that wilderness areas need to be free of human disturbance, with a mean of 4.69 as opposed to 4.26 for Westerners (two-tailed significance of .002). They also felt that wilderness areas are places where nature is primarily in control, with a mean of 4.77 versus 4.21 for Westerners (two-tailed significance of .001), and that a wilderness area needs to be designated as such by the U.S. Congress for them to feel that it is indeed wilderness (mean of 2.85 as opposed to 2.37, two-tailed significance of .038). Easterners also showed a greater preference for trails than Westerners, with a mean score of 1.27 for the former group and 1.58 for the latter (two-tailed significance of .045). These results are summarized in Table 1.

Combined results from both Easterners and Westerners showed a general consensus on many items, but disagreement on others. Most users said that seeing items left behind by other people strongly detracted from their experience in wilderness areas (mean of 4.84 with a standard deviation of 0.482), while trails did not (mean of 1.46 with a std. dev. of 0.875). There was some disagreement about whether or not wilderness areas have to have always been free of human disturbance (SD=1.484), whether or not wilderness areas are dangerous places (SD=1.24), and whether or not hearing aircraft overhead (SD=1.417) and encountering dogs (SD=1.403) detracted from the wilderness experience. These results are summarized in Table 2.

Table 1.—Comparison of Eastern and Western wilderness user responses

Dimension	Mean ^a		2-tailed sig.
	East	West	
A wilderness area is one that is free of human disturbance	4.69	4.26	.002*
A wilderness area is one that has always been free of human disturbance	3.60	3.50	.064
A wilderness area is a place where nature is primarily in control	4.77	4.21	.001*
A wilderness area is a place that needs to be specifically designated as such by Congress	2.85	2.37	.038*
A wilderness area is a difficult place to access	2.93	2.71	.485
A wilderness area is a dangerous place	2.35	1.82	.338
Detriment of:			
Seeing other people	2.75	2.90	.436
Hearing other people	3.31	3.40	.518
Seeing development outside of the wilderness area from within	4.08	3.84	.584
Hearing sounds of development outside the wilderness area from within	4.40	4.30	.833
Seeing trails	1.27	1.58	.045*
Seeing fire pits	1.92	2.34	.080
Seeing items left behind by others	4.85	4.81	.879
Seeing aircraft overhead	2.56	2.37	.804
Hearing aircraft overhead	2.81	2.53	.771
Seeing dogs	2.04	2.61	.143
Seeing horses	2.15	2.34	.172

^a1 = strong disagreement/no detriment; 3 = neutral/no opinion; 5 = strong agreement/extreme detriment

*Significant at the .05 level.

Table 2.—Combined results of Eastern and Western Wilderness users.

Dimension	Mean ^a	Std. Dev.
A wilderness area is one that is free of human disturbance	4.37	0.954
A wilderness area is one that has always been free of human disturbance	3.32	1.484
A wilderness area is a place where nature is primarily in control	4.47	0.909
A wilderness area is a place that needs to be specifically designated as such by Congress	2.56	1.480
A wilderness area is a difficult place to access	2.89	1.151
A wilderness area is a dangerous place	2.26	1.240
Detriment of:		
Seeing other people	2.86	1.152
Hearing other people	3.42	1.164
Seeing development outside of the wilderness area from within	3.99	1.247
Hearing sounds of development outside the wilderness area from within	4.28	0.965
Seeing trails	1.46	0.875
Seeing fire pits	2.13	1.248
Seeing items left behind by others	4.84	0.482
Seeing aircraft overhead	2.59	1.308
Hearing aircraft overhead	2.86	1.417
Seeing dogs	2.28	1.403
Seeing horses	2.36	1.311

^a1 = strong disagreement/ no detriment; 3 = neutral/no opinion; 5 = strong agreement/extreme detriment

4.0 CONCLUSIONS

The findings largely did not support the hypotheses. There was little difference between Eastern and Western users with regard to most preferences about wilderness areas, and Eastern users actually preferred some more primitive and pristine conditions than their Western counterparts. The only hypotheses that were supported were that Eastern users would be more likely to favor designation by Congress for them to feel that an area is wilderness and that Western users prefer trails less than Eastern users.

There are several possible reasons for these results. First, the preference of Eastern users for stricter development-free attitudes toward wilderness may stem from the fact that Eastern users have less opportunity to experience such conditions and therefore come to value these qualities more. Instead of being more complacent in their acceptance of Eastern wilderness areas as being more disturbed, as was hypothesized, these users may be aware of the better qualities that can be found in the West and wish for those same qualities at Eastern areas. Likewise, it might be possible that Western users have come to be used to their more pristine wilderness areas and could be taking these qualities for granted.

There are several possible explanations for the general lack of differences between Eastern and Western wilderness users. First, those who prefer to recreate in wilderness areas may share a set of preferences and values that transcend geographic differences. Although not included in the formal study data, on-site conversations with respondents support this idea that key values are shared by wilderness users in different parts of the country. Many wilderness visitors in the East and West had similar clothing, demographics, and even vehicles. Second, analysis of zip codes showed that the vast majority of wilderness users surveyed in this study were from suburban areas. It is possible that suburban areas in different parts of the country offer similar experiences and encourage universal desires for wilderness “escape” experiences.

4.1 Implications

Managers of wilderness areas basically face the same perceptions of wilderness in different parts of the country despite the different attributes of the wilderness areas themselves. Eastern users want more wilderness areas to be designated, and there is more demand in eastern areas for some of the pristine qualities found in the West. Future wilderness designations or expansions should seek to include areas with such qualities in the East, if they can be found. Additionally, Eastern areas under wilderness designation study status should minimize usage that can cause appearances of disturbance. Additional research could help to make this study more robust by increasing the sample size of this survey and including more regions such as the Southeast and Southwest. Further research could also examine variables that were not in this study. Understanding visitors’ perceptions of additional characteristics of wilderness areas, such as size, distance from population centers and main roads, quality/abundance of trail markings, and requirements for wilderness permits, could prove to be useful.

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METHODS

ANALYSIS OF STRENGTH-OF-PREFERENCE MEASURES IN DICHOTOMOUS CHOICE MODELS

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Abstract.—Choice models are becoming increasingly useful for soliciting and analyzing multiple objective decisions faced by recreation managers and others interested in decisions involving natural resources. Choice models are used to estimate relative values for multiple aspects of natural resource management, not individually but within the context of other relevant decision attributes. They are especially useful for understanding and evaluating acceptable tradeoffs for decision attributes that do not have market prices. Choice models often use a paired-comparison dichotomous choice format for soliciting preferences from stakeholders. We explore the use and analytics involved in incorporating a strength-of-preference scale within this format. An ordered logit model that includes a strength-of-preference scale is compared to a commonly used dichotomous choice logit specification. A case study of back country wilderness users in Yosemite National Park is used as an illustrative example.

1.0 INTRODUCTION

Managers of recreation areas must make decisions that balance diverse desires and preferences of users while ensuring long-term integrity and sustainability of ecological systems entrusted to their care. National

Park managers are charged with protecting important cultural and natural resources as well as providing a high quality visitor experience to the public (Runte, 1997). This dual mission often requires tradeoffs. For example, visitors often seek solitude in pristine conditions but also may want freedom from management constraints and regulation.

Choice or conjoint models are becoming increasingly useful for soliciting and analyzing multiple objective decisions faced by recreation managers and others interested in decisions involving natural resources. Choice models are used to estimate relative values for multiple aspects of natural resource management, not individually, but within the context of other relevant decision attributes. They are especially useful in understanding and evaluating acceptable tradeoffs for decision attributes that do not have market prices. Choice models often employ a paired-comparison dichotomous choice format for soliciting preferences from stakeholders. We explore the use and analytics involved in incorporating a strength-of-preference scale within this format. An ordered logit model that incorporates a strength-of-preference scale is compared to a commonly used dichotomous choice logit specification. A case study of back country wilderness users in Yosemite National Park is used as an illustrative example.

2.0 METHODS

Conjoint analysis, a form of choice modeling, is a technique for measuring psychological judgments and is frequently used in marketing research to measure consumer preferences (Green et al., 1988). Participants 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 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 recreation management and planning that frequently entail tradeoffs between costs and benefits that are not represented efficiently in market transactions.

This study uses a paired-comparison choice (conjoint) model to solicit and analyze user preferences for and acceptable tradeoffs among six attributes of the wilderness experience in Yosemite National Park. The attributes are: number of groups encountered per day while hiking (Hike), opportunity to camp out of sight and sound of other groups (S&S), signs of human use at campsites as depicted by photos (Site), encountering stock or signs of stock use (Stk), regulation of camping (Reg), and probability of receiving an overnight back-country permit under different use levels (Per). Respondents chose between scenarios comprised of varying levels for each of the six attributes listed above. Table 1 lists the range of levels for each attribute.

The paired scenarios were chosen using an orthogonal fractional design and were organized into four blocks of nine comparisons (Green & Srinivasan, 1978; Louviere, Hensher & Swait, 2000; Seiden 1954).

Seven-hundred and twelve park users participated in a survey that included nine paired scenario choices. Respondents indicated their strength of preference for one alternative over another on a scale that included 10 intervals ranging from a strong preference for alternative A to a strong preference for alternative B for each of the nine pairs. The sample analyzed here includes 6,258 paired comparisons. Some respondents failed to complete the paired comparison portion of the user survey and a few others did not choose an alternative for one or more of the comparisons. There were 150 missing values out of a possible 6,408 comparisons.

A random utility model that describes the preference structures of respondents was estimated using an ordered logit model (McKelvey & Zavonia 1975; Swallow, Opaluch & Weaver, 2000) and a simple dichotomous choice logit model. For the ordered logit model, the dependent variable was coded 10 if the respondent strongly preferred alternative A and 1 if alternative B was strongly preferred. Middle ratings indicated weak or moderate preference for one alternative over the other. The dependent variable was coded 1 if alternative A was preferred (any level) and 0 if B was preferred for the simple logit specification. The independent variables for both models were

Table 1. Attribute levels

Attribute	Attribute levels
Number of other groups encountered per day	1. Fewer than 5 other groups per day while hiking 2. 5 to 15 other groups per day while hiking 3. More than 15 other groups per day while hiking
Opportunity to camp out of sight and sound of other groups	1. All nights 2. A majority of nights 3. A minority of nights
Campsite condition	Three levels of campsite condition depicted by photos with signs of use increasing from photo 1 to photo 3
Chance of receiving an overnight back-country permit	1. Most visitors able to get permit for preferred trip 2. Most visitors able to get permit for at least second choice trip 3. Only a minority of visitors able to get a back-country permit
Campsite regulation	1. Allowed to camp anywhere 2. Allowed to camp anywhere in a specified zone 3. Required to camp in an assigned site in a specified zone
Encountering signs of stock or stock use	1. Never 2. Minority of days 3. Majority of days

the effects coded contrasts between each of the six attribute levels for each paired comparison.

3.0 RESULTS AND DISCUSSION

Among other considerations, such as respondent characteristics, two questions are of interest when analyzing respondent preferences and selecting a desired management strategy or mix of attribute levels: What are the preferred levels of each attribute, and how important are the attributes relative to one another? It is important to consider both aspects of preference when formulating a management strategy or when considering a change in the levels provided.

The parameter estimates (partial utilities) for the ordered logit and simple logit models (also reported in Newman et al., 2005) are shown in Table 2. Each coefficient estimates the partial utility or the contribution of a particular attribute level to the total utility of an alternative. The total utility or preference score for any alternative can be computed as the sum of the individual partial utilities associated with the attribute levels. The effect of a change in an attribute can be determined by varying its level while holding the others constant and examining the resulting change in overall utility or preference.

Direct comparison of the partial utilities between the two models is not particularly useful because utility is scaled differently within each specification. To determine differences between the model estimates, it is necessary to examine the relative nature of the estimates within each model. Figure 1 shows the relative importance of each attribute to overall

preference. The importance scores were computed by dividing the utility range for a particular attribute by the sum of the utility ranges for all of the attributes. Differences between models in the relative importance of each attribute to overall preference for an alternative were small and substantive conclusions are similar. However, the relative importance of the attributes appears slightly exaggerated for the attributes of highest and lowest importance (campsite condition and opportunity to camp out of the sight and sound of other campers, respectively).

Differences in the partial utility estimates were minor. However, there was one notable difference in preferences for campsite condition. The partial utilities estimated for increasing levels of evidence of human use at campsites are shown in Figure 2. Both specifications indicate high dissatisfaction with level 3, the most degraded campsite. The simple logit estimates suggest that respondents were indifferent between levels 1 and 2, while the additional information available provided by the strength of preference rating indicates reduced preference for level 2 (some evidence of human use) over level 1 (a more pristine campsite). Standard errors were smaller across all attributes for the ordered logit specification.

4.0 CONCLUSIONS

Respondents in dichotomous choice surveys often desire to express their preferences in a more detailed manner than a simple choice of alternative. Providing respondents with a means to express their strength-of-preference for one alternative over another in dichotomous choice surveys permits them to more

Table 2.—Parameter estimates for ordered logit and simple logit specifications

Attribute	Level 1		Level 2		Level 3	
	Ordered logit	Simple logit	Ordered logit	Simple logit	Ordered logit	Simple logit
Encounters per day	0.317	0.380	0.037	0.020	−0.354	−0.400
Camp out of sight & sound	0.147	0.123	0.235	0.044	−0.171	−0.183
Campsite condition	0.332	0.351	0.228	0.348	−0.560	−0.700
Chance of permit	0.145	0.143	0.024	0.040	−0.170	−0.183
Campsite regulation	0.122	0.135	0.153	0.152	−0.276	−0.287
Encountering stock	0.319	0.331	−0.087	−0.084	−0.232	−0.247

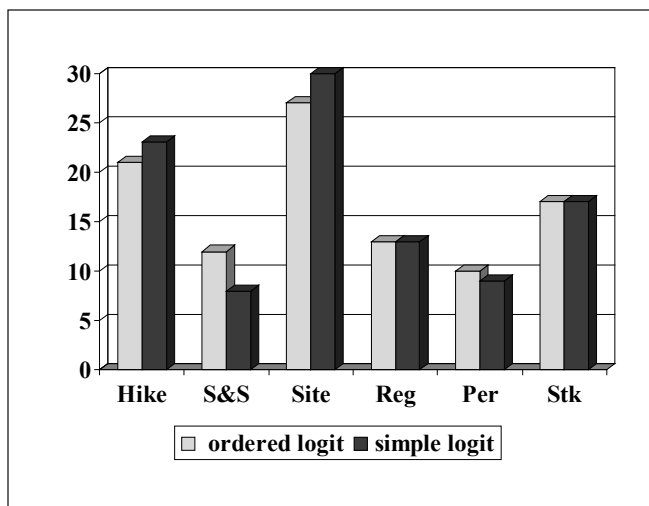


Figure 1.—Relative importance of attribute.

accurately express their preferences and may lead to improved results. By explicitly recognizing the difference between strongly and weakly preferred alternatives, analysts have more information to use in model estimation. Swallow et al. (2000) suggest that this will generally result in smaller standard errors and improved likelihood of achieving statistically significant results with smaller sample sizes, often a limiting factor in choice surveys. Although the Yosemite sample was quite large, the smaller standard errors obtained using the strength-of-preference information (ordered logit specification) support this notion.

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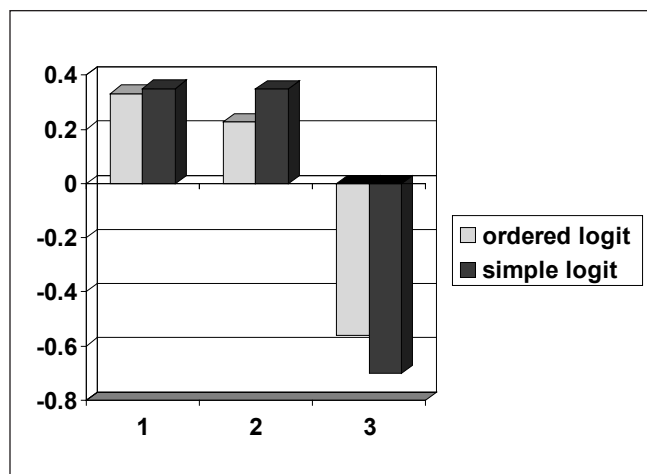


Figure 2.—Partial utilities with increasing levels of campsite degradation as depicted by photos.

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Abstract.—Most if not all recreation researchers are also recreationists. This paper explores the possibility that recreation researchers could use their own recreation experiences as a source of insight into the phenomena they are trying to understand. Such a strategy of “first-person science” is embraced by practitioners of phenomenological psychology, experiential psychology, action research, heuristic research, and others. Phenomenological and experiential methods could be used to develop what I call experiential theories in the field of recreation and leisure research. I illustrate these ideas using the example of an experiential theory of being on vacation.

1.0 INTRODUCTION

We commonly do not remember that it is, after all, always the first person that is speaking. I should not talk so much about myself if there were anybody else whom I knew as well. Unfortunately, I am confined to this theme by the narrowness of my experience (Thoreau, 1989, p. 107).

Most if not all recreation researchers are also recreationists. Many of us who do recreation research enjoy participating in the same activities and visiting the same kinds of places that we study in our research. Our research may in fact have been motivated by how important these activities and places are to us personally. This raises an interesting question: What role does our own personal experience of the activities,

environments, and issues that we study play in our research?

A positivist scientist might say that a researcher should keep their personal experiences separate from their research to avoid bias and maintain the objectivity of the research. A scientist with a more postmodern viewpoint, however, might claim that a researcher’s experience of the area they are studying inevitably plays a role in the process of doing science, and that we should openly acknowledge the subjective aspect of our research. We could go even further than that, however. Rather than just acknowledging how our personal perspective influences our research, we could actually use our own experiences as a primary source of knowledge about the topics we research. We could call that “first-person research.”

2.0 FIRST-PERSON RESEARCH

Social science methods fall on a continuum from first-person research, where we look into our own first-hand experience, to second-person research, where we interact with and listen to other people to learn about their experiences, to third-person research, where we observe people, things, or systems without necessarily being concerned about what they are experiencing (Table 1). All of these are valid approaches to science, and all have a useful role to play in recreation research.

The idea of first-person research is not new. In fact, psychology began as a first-person science in the introspectionist laboratories of Wundt and Titchener. In 1890, William James, the founder of American psychology, asserted that introspective observation was the primary tool for doing psychological research: “*Introspective Observation is what we have to rely on first and foremost and always.* The word introspection need hardly be defined – it means, of course, the looking into our own minds and reporting what we there discover” (James, 1950, p. 185).

Table 1.—Summary of three approaches to recreation research

Research Approach	Basis of Knowledge	Examples
First-person	Observation and reflection upon the researcher's own first-hand experience.	Phenomenological description of the researcher's recreation experiences.
Second-person	Interaction with other people to learn about their experiences.	Interviews or surveys about people's recreation experiences.
Third-person	Observation of other people, things, or systems without concern for their experience.	Observation of recreation behavior. Measurement of physiological responses during recreation.

First-person methods fell out of favor in psychology with the advent of behaviorism, and most social science research now employs second-person methods such as surveys and interviews. There is, however, a renewed interest in first-person research methods in several areas today. Phenomenological psychology advocates an approach to science based upon first-person observation, reflection, and interpretation of experience (Shapiro, 1985). Experiential psychologists have developed first-person practices for constructing theories (Hendricks, 2004), and have issued a call for development of a publicly recognized, first-person science (Gendlin & Johnson, 2004). Heuristic research combines first- and second-person approaches, and regards the researcher's personal involvement with the topic of study as the essential core of a research project (Moustakas, 1990). The field of action research stresses the importance of blending first-, second-, and third-person research approaches to study the functioning of organizations and social systems (Reason & Torbert, 2001). In cultural anthropology and sociology, a method called autoethnography has emerged, in which investigators write themselves into their ethnographic accounts of a culture (Ellis & Bochner, 2000). Interest in first-person methods, including phenomenology and introspection, has also recently arisen in the field of cognitive science (Varela & Shear, 1999).

3.0 FIRST-PERSON METHODS IN RECREATION AND LEISURE RESEARCH

A recent special issue of *Leisure Sciences* on creative analytical practice (Henderson & Bialeschki, 2007) features several articles that adopt first-person perspectives and methods. In fact, recreation and leisure research may be an ideal area in which to pursue the use of first-person methods. Recreation and leisure are highly experiential phenomena; it is hard to even define what they are without making some reference to the experience of the person who engages in them. Since recreation researchers often participate in the kinds of recreation that they study, there is a wealth of first-person experience to draw on in this field. As recreation researchers who are also recreationists, most of us presumably have had some of the kinds of experiences that recreation research tries to understand. A systematic examination of our own recreation experiences could be a useful addition to our repertoire of research methods.

The actual process of doing first-person research is not as straightforward as it might appear at first glance, however. There are important aspects of our experience that may escape our notice, remaining in the background or on the fringe of awareness. It may take a special kind of attention to bring these aspects into the foreground where we can observe them. Even then, it might still be very difficult to express them adequately in words. First-person methods and

practices developed in the fields of phenomenology and experiential psychology can be used to bring such implicit or ineffable aspects of experience into the foreground of awareness, to gain insight into their meaning, and to find ways of conveying them in language. These research methods could be especially valuable for exploring facets of recreation experience that often seem to evade our attempts at putting them into words, such as sense of place or spiritual values of nature.

4.0 A THEORY OF BEING ON VACATION

As an example of a first-person approach to research, I will now briefly recount an impromptu exercise in first-person research, in which I formulated a “theory of being on vacation.” This occurred about a year ago, while I was on a break from work. After a couple of days I realized that, even though I was away from the office and not working, I didn’t really feel like I was on vacation. I was preoccupied with a situation I had been dealing with at work, and was unable to relax and enjoy the time I had off. It was as if my whole experience was filled by this preoccupation and I was unable to separate myself from it. Although I could not yet put into words what would constitute an experience of “being on vacation” for me, I could feel distinctly that my preoccupation with work was preventing me from having that experience.

Using a technique from experiential psychology called focusing (Gendlin, 1981), I was finally able to detach myself a bit from this preoccupation, to get a felt sense of the whole situation, and to pose the question of what it would take for me to really feel like I was on vacation. The word that popped into my mind at that point was “freedom.” That word brought a sudden shift in my experience. The preoccupation with work seemed to shrink and withdraw, and the whole space of my experience opened up and took on a new quality of freedom, so that now I really did feel like I was on vacation.

When I reflected on what had happened, I was struck by the fact that the change in my experience

corresponded closely with the etymology of the word vacation. “Vacation” comes from the verb “vacate,” which means “to cease to occupy” or “to empty of occupants” (Morris, 1969, p.1412). What had just happened was that my experiential space had been vacated by the preoccupation that had been filling it. This interpretation of my experience became the starting point for some playful theorizing about what it means to be on vacation. In doing this, I drew on methods developed by Shapiro (1985) in phenomenological psychology and Gendlin & Hendricks (2004) in experiential psychology.

Shapiro’s method, which he calls “forming,” is a reflective practice for first sensing and then diagramming the structure of a phenomenon or experience. Gendlin and Hendricks’ method, which they call “Thinking at the Edge” (TAE), is a process for constructing theories that speak from an implicit, felt sense of an area of interest. Both methods involve attending to one’s bodily felt sense of a situation or subject and developing a structural description of that area of experience. Shapiro’s technique leads to schematic diagrams and metaphorical descriptions of the structure of an experienced phenomenon. Gendlin and Hendricks’ TAE practice culminates in a theoretical framework consisting of novel, logically interconnected conceptual terms.

The theory that I devised from my experience of being on vacation begins with the observation that my *self* at any moment is situated in an *experiential space*. This is not a physical space, but a felt sense of space – a kind of virtual space that embodies how the self is able to move and act in a given situation. That space is usually not empty; it can be occupied by things like concerns, activities, or tasks. I call these *occupiers*. An occupier has a sense of presence within my experiential space and lends a certain character to the space – it affects the way the space feels. An occupier has a *valence*, by which I mean that it has a particular way of inviting or pulling the self into *engaging* with it (Fig. 1). The felt quality of an occupier and its valence can be either positive or negative.

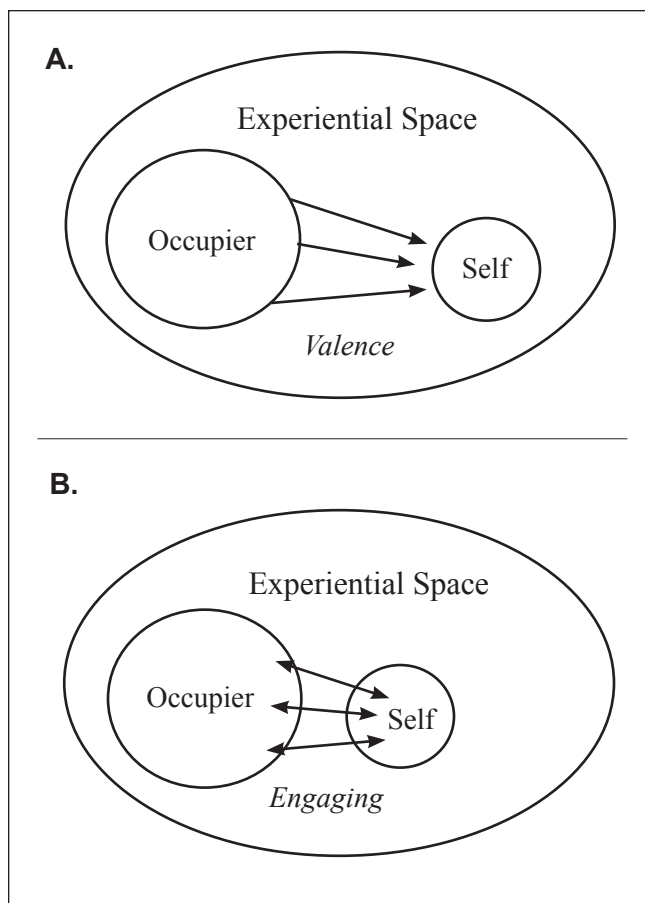


Figure 1.—The valence (A) of an occupier draws the self into engaging (B) with it.

Once the self takes up the invitation to engage with an occupier, it can do so from a relatively detached position, or it can be pulled into a more immersive form of engagement. As the self engages with the occupier, the occupier imparts a *form* or structure to experiential space, which affects how the self is able to move and act. An *external form* is what I call a form that compels or constrains the self to act in ways that are contrary to the self's intrinsic inclinations (Figure 2). When an occupier imposes an external form on the self, the experiential space feels constricted and cramped, filled with tension and resistance.

In the terms of this theory, I can say that *to be on vacation is to be in a vacated space—an experiential space that is free of occupiers that impose external forms on the self*. This is a space in which the self has freedom to move in its own way, a space that feels open, free, and relaxed.

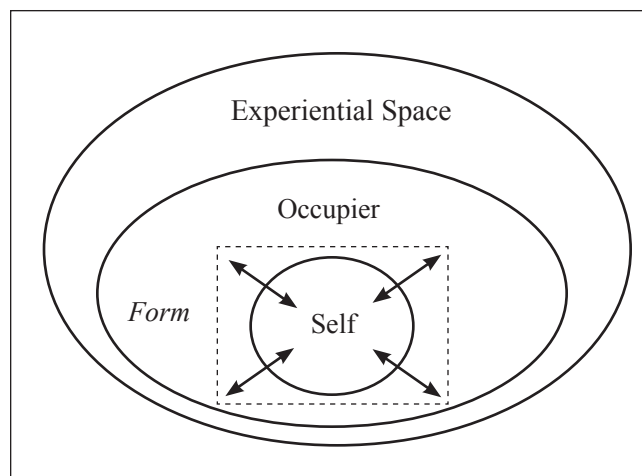


Figure 2.—An occupier imposes an external form on the self.

This example represents some rudimentary first steps toward a theory of the experience of being on vacation, based on my first-person awareness of that experience (or its absence). Many further developments and elaborations of these first theoretical steps are possible. For example, I could introduce additional terms and linkages to explore how the experience of being on vacation is related to the physical or social environment I am in and the activities I do there.

5.0 EXPERIENTIAL THEORIES

The theory sketched above is an example of what I call an “experiential theory.” This kind of theory differs from a conventional scientific theory in several important ways. The terms in an experiential theory – words like *occupier*, *valence*, and *form* – emerge from and refer directly to aspects of the researcher's first-person experience. They take their precise meaning from that experience, and do not necessarily carry the same meaning as they would in a more conventional context. To understand what these terms mean in the context of the theory, you have to try them on, so to speak, and sense how they function in relation to your own experience of whatever the theory is about.

An experiential theory does not just describe an experience; it also changes the experience in a particular way. After going through the process of formulating my theory of being on vacation, for example, I not only had a more precise conceptual

understanding of how that experience occurs for me, but I also had a more vivid and distinct first-hand awareness of the experience itself. The way in which an experiential theory evokes, resonates with, and carries forward the experience it is about is an important indicator of the validity of the theory.

In an experiential theory, the researcher's experience changes and unfolds in response to the theory; the theory itself may then need to be developed further to speak for new aspects of the experience that have emerged. An experiential theory is therefore never a completely finished product. There will always be "edges" where the theory and the experience can continue to unfold and carry each other forward (Gendlin & Hendricks, 2004). Thus, an experiential theory cannot be separated from the experience that it is about. If the terms of the theory lose their interactive contact with the actual experience, then the theory no longer functions as an experiential theory.

In addition to deepening our theoretical understanding of the nature of recreation and leisure experiences, experiential theories might also lend themselves to the development of practices to help individuals gain insights and make choices that enhance their enjoyment of recreation. My theory of being on vacation, simple as it is, proved to have such practical value for me. On several occasions it enabled me to see why and how I was missing out on the experience of being on vacation, and helped me to find my way back into that experience.

6.0 BEYOND THE FIRST PERSON

One criticism that can be leveled against a first-person approach to research is that it necessarily involves an N of 1, and is not generalizable beyond the person who developed it. A first-person researcher might seem to be unavoidably trapped within the narrowness of their own experience. But while it is true that an experiential theory starts out being about just one person's experience, it does not necessarily have to stay that way. Once a first-person theory has been formulated, it can be communicated, so that other people can apply it to their own experience and see

what happens. Where it does not fit, they can modify or extend it, or come up with an alternative theory. Through a process of mutual dialog and listening, experiential theories could be shared among a group of co-researchers, leading toward a jointly-held understanding that still embraces the uniqueness of each individual's experience. In this way, first-person research begins to merge into a second-person style of research, which transcends and broadens the perspective of the individual researcher.

There are many ways in which first-person approaches can interface with second-person and third-person research methods. An experiential theory might become the basis for a conventional scientific theory that could be tested by standard second- or third-person research methods. A conventional scientific theory could also be the starting point for an exercise in experiential theorizing, which might open up new directions for extending and elaborating the original theory. It is not a question of choosing one method over another as the "right" way to do recreation research. First-, second-, and third-person research methods can interact and inform each other in a variety of ways to create a richer and deeper understanding of recreation than any one approach could achieve by itself.

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PILOT TESTING A METHODOLOGY TO MEASURE THE MARGINAL INCREASE IN ECONOMIC IMPACT OF RURAL TOURISM SITES

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Abstract.—Rural tourism is a rapidly expanding industry which holds some promise of improving the economy in small towns and farming regions. However, rural communities have limited funding available for promotional efforts. To understand if limited funds are effective in producing the desired economic impacts, it is important that rural communities evaluate their promotional efforts to insure the future viability of the tourism market in their area. To this end, the purpose of this project was to conduct a pilot study to test a method for measuring the marginal increase in economic impact resulting from the promotional campaign of the HomegrownHandmade program in North Carolina. In addition to presenting the formula used to test this methodology and the results of applying it to HomegrownHandmade, discussion will focus on potential difficulties with sampling and data collection at rural tourism destinations.

1.0 INTRODUCTION

Since 2003, the HomegrownHandmade (HGHM) program has been developing and maintaining a website featuring a network of trails that encourage visitors to experience the arts and agricultural venues in rural North Carolina. These are not actual trails per se, but are virtual trails themed around geographical and artistic venues. Currently, sites in 72 counties are

being showcased through this Internet promotional effort including farms, art galleries, retail stores, restaurants, and lodging venues, among others.

To determine how effective this promotional effort has been, the Golden LEAF (Long-term Economic Advancement Foundation) funded an economic analysis project to create and test a model to measure the outcomes and benefits of this ongoing effort. The project was designed to measure the economic impact of the HGHM website promotion within North Carolina, to provide preliminary estimates of what those impacts could be, to address the utility of the model, and to investigate how the model could be improved and implemented for future uses.

Specific research questions were:

1. Do visitors to the website fulfill their online investigation with actual site visits?
2. Is there an increase in tourism or economic growth in communities featured on the website?
3. Do venues represented on the website receive direct benefits, such as increased income or visitors?
4. Is there a relationship between program participants and other community cultural assets?

2.0 METHODOLOGY

The data gathered through this project provide information about visitors' direct, indirect, and induced expenditures within the region. Data were collected through a combination of on-site interviews, follow-up mail-back questionnaires completed by visitors to HGHM sites, and a Internet survey completed by self-selected visitors to the HGHM website. Data collection took place during a 25-week period from June through November, 2006.

2.1 On-site Survey and Follow-up Mail-back Questionnaire

Three HGHM sites were used to collect on-site survey data and follow-up mail-back questionnaire data. Those sites were Mike's Strawberry Farm in Onslow County, the Imperial Center for Arts and Sciences in Rocky Mount, and the NC Arts Incubator in Siler City. Research assistants conducted brief on-site interviews with visitors. Data gathered at this stage included demographic information, visitors' points of origin, and names and addresses. Respondents were also given a self-administered follow-up survey to complete after their trip and mail back to the researchers. The follow-up questionnaire was designed to collect more in-depth information regarding visitors' expenditure patterns and characteristics. To maximize the response rate, additional copies of the questionnaire along with a cover letter were sent to visitors who had not responded within an appropriate time after their initial interviews. This methodology is based on the Dillman (1978) Total Design Method, and yielded an overall response rate of 53 percent for the on-site survey and the follow-up mail-back questionnaire.

2.2 Website Survey

In addition to the on-site interviews and mail-back surveys, an online survey was offered to individuals who visited the HGHM website during the study period. Site administrators provided the research team with 105 valid email addresses of self selected individuals who had visited the website. We sent potential respondents an introductory email with a link to the survey and an invitation to participate, and two follow-up emails with reminders to complete the survey. As an added incentive to participate, all respondents were placed into a drawing for a sampling of NC products. This method produced a total of 53 respondents for a 51 percent response rate. The primary purpose of the online survey was to determine whether or not HGHM website users actually visited real-world places promoted on the website.

3.0 RESULTS

3.1 Results of the On-site Survey and Follow-up Mail-back Questionnaire

We had initially intended to interview visitors at four real-world sites but encountered some difficulties. Some of the sites had very low visitation rates and researchers could find few or no visitors to interview. On occasions when more visitors were expected, one site proprietor requested that interviewing be postponed so that the interviews would not interfere with visitors' shopping behavior. The project's limited time frame also did not allow for multiple repeated site visits over a long period of time to increase sample size. The result was that we reduced the number of target sites to three and ended up with far fewer completed surveys than anticipated. Although the original sampling goals were not met, the project yielded enough completed surveys to adequately test the model. Table 1 provides a summary of the surveys completed for this project.

One of the first steps in analyzing the data was to create a profile of visitors to the HGHM sites. Table 2 provides a summary of demographic variables about the visitors to the sites, which were later used as independent variables in comparing expenditure data. There was quite a bit of variance in visitors' demographic characteristics. Notably, there were more than twice as many females as males. The average age was 45 years old and there were very few visitors under the age of 23 (less than 3 percent). The majority of visitors attended the sites in groups of 2-4 people and reported that they were repeat visitors. Almost 90 percent of the visitors were residents of North Carolina who had traveled an average of 62 miles to the site where they were surveyed.

Table 1.—Data collection and response rate

Site	On-Site Surveys	Mail Back Surveys	Mail Back Response Rate
Mike's Strawberry Farm	56	28	50%
Rocky Mount Arts Center	31	19	61%
NC Arts Incubator	17	8	47%
Total	104	55	53%

Table 2.—Visitor sample profile

Age	N	%	State of residence	N	%
18-22	1	2.4	North Carolina	92	88.5
23-30	7	17.1	Virginia	1	1.0
31-40	10	24.4	Other	11	10.5
41-50	8	19.5			
51-60	11	26.8	Travel distance	N	%
>60	4	9.8	>20	43	42.3
Mean age = 45			20-60	43	42.1
			61-120	8	7.9
Gender	N	%	121-180	1	1
Male	30	29.1	181-240	1	1
Female	73	70.9	241-300	2	2
			301-360	0	0
Group size	N	%	>360	4	4
By self	12	11.5	Mean travel distance = 62.13		
2 people	26	25.0			
3-4 people	31	29.8	First-time visitor	N	%
5-6 people	17	16.4	Yes	47	45.6
>6 people	18	17.3	No	55	53.4
Mean Group Size = 4.79					

Another important component of the study was determining whether or not visiting the HGHM site was the primary purpose of the trip. Table 3 provides the results of this question for all three HGHM sites.

Overall, 86 percent of respondents indicated that their visit to the HGHM site was the primary purpose of their trip. This suggests that, in general, the HGHM sites are acting as true visitor destinations rather than just stopovers or ancillary targets for people who happen to be in the area or are just passing through. However, this finding was not uniform across all three sites. Although 96 percent of visitors to Mike's Strawberry Farm indicated that their visit to the site was the primary purpose for their trip, this was true of only 65 percent of NC Arts Incubator visitors.

Based on a review of relevant literature, we developed a list of questions regarding visitors' spending

characteristics and incorporated them into the survey instrument. These questions were designed to determine the amount of money visitors to HGHM sites spent in the region during their trip (direct impacts) in different expenditure categories such as food, accommodations, gas, souvenirs, etc. We asked participants to estimate the spending of their entire traveling party including expenses that were directly related to the site where they were interviewed and expenses that they incurred on the rest of their trip to the region that were not directly related to the interview site.

The responses for the entire traveling party were then divided by the number of people in each traveling party to calculate a per person visitor expenditure summarized in Tables 4 and 5. On average, each visitor to HGHM sites spent \$10.79 at the HGHM site and an additional \$37.35 on the rest of their trip to the region.

Table 3.—Was HGHM site primary purpose of trip

	Mikes Strawberry Farm		Rocky Mount		NC Arts Incubator		Total	
Visit to PFS site was primary purpose	N	%	N	%	N	%	N	%
Yes	53	96.4	25	80.6	11	64.7	89	86.4
No	2	3.6	5	16.1	6	35.3	13	12.6
Total	63	100	237	100	31	100	331	100

Table 4.—Per-person visitor expenditures directly related to site where interviewed

Types of expenditures	Average expenditures
Food and beverage (includes restaurants, taverns, groceries, etc)	\$6.34
Shopping (includes clothing, personal items, souvenirs, etc)	\$2.02
Lodging (includes hotels, motels, B&Bs, etc)	\$.36
Transportation (includes parking fees, gasoline, etc)	\$1.53
Entertainment and recreation	\$.53
All other expenses related to your visit	\$.01
Total	\$10.79

Table 5.—Per-person visitor expenditures not directly related to site but incurred during the trip

Types of expenditures	Average expenditures
Food and beverage (includes restaurants, taverns, groceries, etc)	\$7.03
Shopping (includes clothing, personal items, souvenirs, etc)	\$5.25
Lodging (includes hotels, motels, B&Bs, etc)	\$20.98
Transportation (includes parking fees, gasoline, etc)	\$2.89
Entertainment and recreation	\$1.07
All other expenses related to your visit	\$.13
Total	\$37.35

3.2 Results of the Website Survey

The primary purpose of this project was to determine the economic impacts of the website promotion, rather than total economic impact of HGHM sites. Therefore, we used the online survey to estimate the influence of the website on the number of visitors to the real-world sites. In a series of questions, we asked respondents whether or not the website had influenced their travel behavior (see Table 6). Almost 56 percent reported that the website *did* influence their travel plans. They were asked a series of follow-up questions to ascertain *how* the website influenced their plans (Table 7). Notably, 54 percent reported that the website had influenced them to visit a region *that they would otherwise not have traveled to*.

Table 6.—Influence of visit to the HomegrownHandmade.com website on travel plans

Did Visit influence Travel Plans	Number	Percentage
Yes	29	55.8
No	23	44.2
Total	52	100

Data provided by the HGHM website administrators indicates that the site averages 273 hits per day or about 100,000 hits per year. Extrapolating from the online survey findings, if the website influenced the travel plans of 56 percent of website visitors (more than 55,000 people per year), and 54 percent of them

Table 7.—Type of influence on travel

How did the website influence your travel plans?	Yes		No		Total	
	n	%	n	%	n	%
The website introduced sites/activities to me that I was previously unaware of	28	93.3	2	6.7	30	100
I used the website to find out more information about sites/activities that I was already interested in	26	89.7	3	10.3	29	100
I used the website to help me choose between two or more regions that I was already thinking about visiting	15	53.6	13	46.4	28	100
The website influenced me to visit a region that I otherwise would not have visited	15	53.6	13	46.4	28	100
The website influenced me to visit an individual site/business that I otherwise would not have visited	24	82.8	5	17.2	29	100

changed their travel plans, the website could end up attracting almost 30,000 additional people per year to real-world HGHM sites. Further extrapolating from the on-site interview questions about visitors' spending habits discussed above, we can estimate that 30,000 additional visitors would spend more than \$300,000 per year at HGHM sites plus more than \$1.1 million in incidental expenses during their trips to the region. Of course, these estimates are very rough and the calculations assume that (1) each hit to the website represents a new person who has not been to the site before; and (2) that visitors to the website will follow the travel behavior and spending patterns of our survey respondents and interview participants. Nonetheless, the implication is that the website has the potential to influence people's behavior in a way that could translate into substantial positive economic impacts for the region.

For this project, the indirect and induced impacts, as well as the number of new jobs created through economic activity, were calculated through the Implan® software package. This software incorporates an input/output social matrix model that takes into account the types of industries within a region and estimates indirect, induced, and employment impacts due to increases in demand for locally produced products and services. Tables 8 and 9 provide a summary of the total economic impacts resulting from the increase in visits due to the presence of the HGHM website.

As Tables 8 and 9 indicate, total economic impacts directly related to HGHM site visits by website-converted visitors are estimated at \$489,822.37 with the creation of 7.4 new on-site jobs. An additional \$1,558,882.05 of impacts and 22.5 off-site jobs are expected to be generated by trips to the region taken by website-converted visitors. While these numbers are not 100 percent attributable to the website promotion, we expect that promotional information can be successfully conveyed on the website and will translate into real-world economic impacts at promoted sites.

Table 8.—Total economic impacts directly related to visits to HGHM sites

Impact type	Economic	Jobs created
Direct	\$321,574.37	5.7
Indirect	\$87,796	.8
Induced	\$80,452	.9
Total	\$489,822.37	7.4

Table 9.—Total economic impacts not directly related to site but incurred during visit

Impact type	Economic	Jobs created
Direct	\$1,113,142.05	17.9
Indirect	\$167,310	1.5
Induced	\$278,430	3.1
Total	\$1,558,882.05	22.5

4.0 DISCUSSION AND RECOMMENDATIONS

The purpose of this project was to test a model for measuring the economic impact of a website promotion and to provide some preliminary estimates of what these impacts may be. Because nearly all economic impact studies produce inexact figures regarding expenditures, these figures need to be regarded as estimates based on the best available data. However, the average spending figures that are extrapolated to the entire population of visitors are based on mean spending data provided by visitors, and nearly always have very high standard deviations. Secondly, it is very difficult for any model of this type to capture an increase in spending at a specific venue that can be attributed to a single event. Thus, while we stand behind the model as a measuring tool to estimate regional impacts attributed to the website, it cannot be used to estimate the website's economic impacts on a specific real-world site.

The largest problem that we encountered with testing the model was achieving data collection goals. The most frequent problem associated with the data collection was that in the rural areas where HGHM sites are located, visitation rates are very low. When

researchers were on site, there were often few or no visitors, and when researchers were not at the sites there was sometimes increased visitation. One possible solution to this problem is to have the HGHM site management distribute surveys to the visitors on a continuing basis. Daily distribution of mail back surveys coupled with on-site surveys conducted by the project manager could lead to a more complete picture of visitation at these sites. However, this requires a strong commitment on the part of the site proprietors who may have concerns about inconveniencing their customers or not having well trained employees to carry out the survey tasks.

During the data collection, the researchers found varying degrees of awareness about the HomegrownHandmade website. Despite the fact that a tool kit for participating sites and materials for site visitors are available, these resources were not evident during the researchers' site visits. Employees and visitors at the various sites were very interested in learning more about HGHM. Site proprietors may need to be reminded periodically to replenish the marketing materials and to encourage employees to distribute available brochures and promotional items.

We also suggest using a different method to obtain email addresses from website visitors. While the current method of asking visitors to voluntarily submit their email addresses provided an ample number of respondents to pilot test the instrument, it did not produce enough addresses to adequately represent the entire population of website visitors. The voluntary submission of addresses also creates questions about nonresponse bias and about how well the sample represents the target population.

For future users of this model, we would also recommend some changes to the data collection instruments. To more accurately measure where expenditures are taking place, we suggest that respondents should be asked to classify their trip expenditures as either at home, enroute, or on-site.

In summary, the method developed and tested through this project can be used to estimate increases in economic impact resulting from specific internet based promotional efforts. However, the success of future implementation of the method depends on several issues:

- A much larger sample of both on-site and website visitors is needed. We suggest that a minimum of 1,000 individuals for each sample would greatly increase the accuracy of the method in estimating the economic impacts.
- The mail-back instrument should be adjusted to collect more detailed information about where expenditures are occurring.
- A larger number of HGHM venues should be chosen as data collection sites. We suggest surveying at least 30 sites.
- Participating sites should receive information about research requirements before the research team's visit in order to enlist proprietors' and employees' help in getting a large sample size.

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*RECREATION RESOURCE
ALLOCATION*

METHODOLOGICAL INNOVATIONS FOR MEASURING ECONOMIC IMPACTS OF LONG-DISTANCE RECREATION TRAILS

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Abstract.—Rural communities are increasingly interested in understanding the economic impacts of visitors drawn to their region for recreational opportunities. Economic impact assessments often rely on input-output (I/O) modeling software, which requires estimates of visitation rates and visitor expenditures. Collecting sufficient data for I/O models is relatively straightforward in a traditional park with staffed entrance stations and relatively high volumes of users. However, for geographically dispersed trails and waterways with low use intensity in many locations and multiple access points, there are significant logistical and financial challenges to collecting adequate visitation and expenditure data. Using recent research conducted on the Northern Forest Canoe Trail (NFCT) as a case study, this paper presents a modification of existing methodologies that may help researchers overcome the barriers to conducting economic impact assessments in these types of settings.

1.0 INTRODUCTION

Long distance recreational trails are frequently promoted as a tool for economic development in rural communities. In this “advocacy platform” (Gartner, 1996), providing recreational opportunities and services for visitors is seen as a method of diversifying local economies. Specifically, trail systems are expected to attract visitors, who then patronize local restaurants, motels, gas stations, and other stores. These expenditures lead to increased personal income for residents, more tax revenue for local governments, and additional job opportunities in the community (Blakely & Bradshaw, 2002). This approach to economic development is promoted by state agencies, local chambers of commerce, and other advocacy groups (Ramaswamy & Kuentzel, 2005).

Economic impact studies provide a tool for estimating the impact of visitor spending on a local economy. However, measuring the economic impacts of long distance recreational trails is a challenging undertaking due to their dispersed, linear nature, poor use records, multiple access points, and great variation in users and visitation rates (Moore & Barthlow, 1998). This paper provides a conceptual foundation for understanding monetary flows within a local economy, outlines the critical data needs and challenges for estimating economic impact, and illustrates a modified methodology for collecting these data using the Northern Forest Canoe Trail as a case study.

1.1 Conceptualizing Economic Impacts

Power’s (1996) “Modified Economic Base Model” is a useful tool for conceptualizing local economies. Economic activity is derived from the power of industries exporting goods and services to other communities. Expenditures by tourists have the similar effect of bringing “new money” into the local community. Money enters the local economy then recirculates among local businesses before leaving

as businesses and individuals purchase goods and services that the community does not produce (Figure 1).

1.2 Input-output Modeling

Input-output modeling combines user expenditure data with regional, industry-specific multipliers to estimate monetary flows within a local economy (Blakely & Bradshaw, 2002). It quantifies indirect and induced impacts by calculating the “multiplier effect,” or the degree of monetary recirculation.

Several input-output models have been developed for economic impact studies of trails and parks. MGM2, developed by the National Park Service, is a spreadsheet-based program that includes generic multipliers that control for the study area’s geographical and demographic characteristics (Moore & Barthlow, 1998). IMPLAN, developed by the United States Department of Agriculture Forest Service, segments the economy into 582 sectors, and uses county-level multipliers to estimate total impacts. Privately developed multipliers, such as the Southern Ontario multiplier (Schutt, 1997), have also been developed to estimate regional induced and indirect impacts. Each model also estimates the number of jobs and personal income supported by the visitor expenditures. Input-output models require both an estimate of visitation rates and visitor expenditures, data which can be difficult to measure for long distance trail systems.

1.3 Visitation Rate Data

A range of methods has been developed for estimating visitation rates in recreation areas. Stynes et al. (2000) utilized park registration data in their economic impact analysis of a range of National Parks, as did Moore and Barthlow (1998), who assessed the Overmountain Victory Trail. Yet this approach is not feasible for trail systems that are situated outside of traditional park systems and do not require registration.

Direct observation is another approach for estimating visitation rates. Bowker et al. (2004) conducted in-person observations of users on the Virginia Creeper Trail on randomly selected days throughout the year. Anderson et al. (1999) used a similar approach in their assessment of Kickapoo River paddlers. Blank and Simonson (1982) combined direct observations made during aerial flyovers of the Crow River with data collected by area outfitters. While effective, this approach is time- and personnel-intensive and is ill-suited for trails or waterways that are geographically dispersed or are lightly used.

Other researchers have developed techniques specifically for geographically dispersed areas. Thigpen et al. (2001) combined the results of a statewide survey with a travel-demand allocation model to estimate visitation of paddlers to North Carolina’s coastal plains. Schutt (1997) installed registration kiosks at access points along the Bruce Trail, Ontario, and made in-person observations

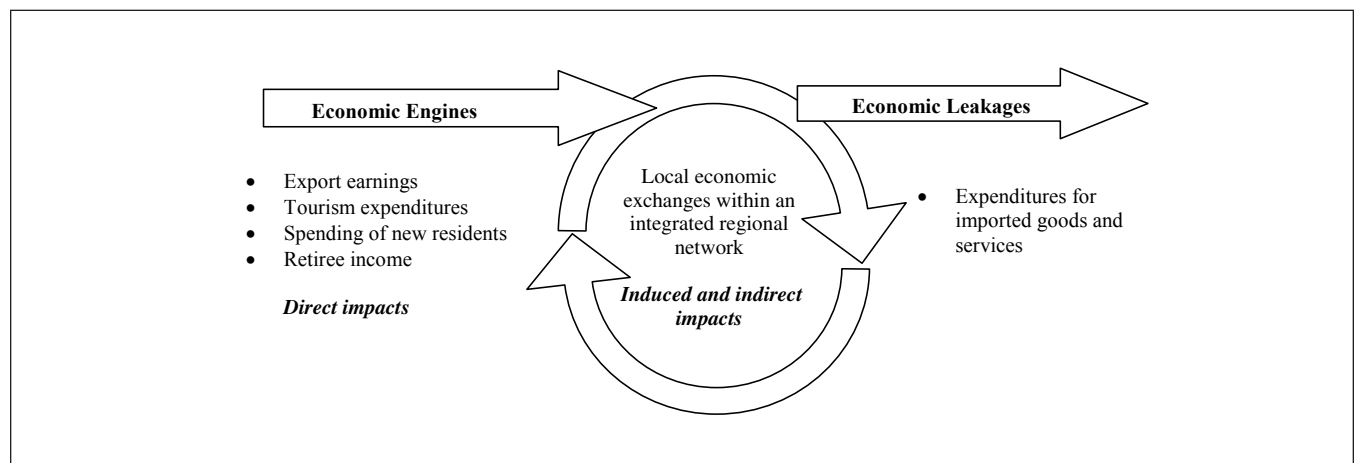


Figure 1.—Modified economic base model (Adapted from Power 1996).

to assess registration rates. This tactic requires significantly less staff time and resources than other methods, and appears appropriate for long distance trails and waterways used by visitors who are already accustomed to signing register books at trailheads.

1.4 Visitor Expenditures

Input-output modeling requires estimates of visitor spending within local economies. Visitor surveys are the standard method for obtaining this data. Mail surveys can be conducted when a representative list exists of the study population. As examples, Elvans (1995) contacted members of the Vermont Association of Snowmobile Travelers (VAST) to estimate the economic impacts of snowmobile use, and the Minnesota Department of Natural Resources utilized kayak registrations to sample resident paddlers (LSWT, 2001). Yet for many trail networks, no representative list exists for the study population. In these cases, visitor intercept surveys are considered the most appropriate sampling approach (Dillman, 2000).

Several researchers (Thigpen et al. 2001, Anderson et al. 1999) followed up on brief contacts with visitors in the field by mailing an additional survey. While this methodology allows for a more extensive survey instrument, it can lead to poor response rates, a particular concern in areas with low use intensities. Other researchers (Schutt, 1997; Omohundro, 2002) have relied entirely on in-person surveys. While this approach achieves high response rates, it can necessitate extensive surveying through the season to obtain an adequate sample size, a challenge in geographically dispersed areas.

2.0 THE NORTHERN FOREST CANOE TRAIL ECONOMIC IMPACT STUDY APPROACH

A recent study (Pollock, 2007) that examined the economic impacts of paddler tourism and recreation along six sections of the Northern Forest Canoe Trail offers a new approach for collecting data critical for assessing economic impacts. The NFCT is a 740-mile canoe route that traverses New York, Vermont, New Hampshire, and Maine (Fig. 2). Following waterways

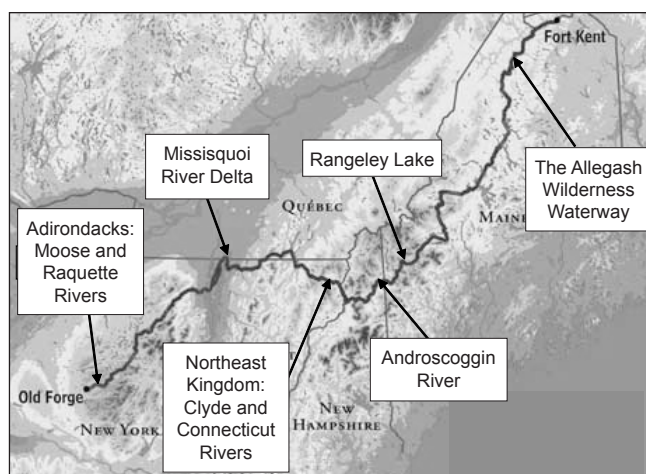


Figure 2.—Study regions on the Northern Forest Canoe Trail.

historically used by Native Americans and early settlers, it passes through 45 towns and includes 22 rivers and streams, 56 lakes and ponds, and 62 carries. The input-output modeling software MGM2 was used for the analysis. Key elements of this study's methodology included registration kiosks with surveys for estimating visitation rates and expenditure data, periodic direct observation, surveys of nonregistering groups, interviews with area lodge managers, and survey weighting. In this combination, it represents a modification to past approaches.

2.1 Registration Kiosks

A system of registration kiosks was used to distribute paddler intercept surveys, which included questions on group demographics and trip characteristics. Respondents were also asked to estimate how much money their group would spend within 25 miles of the waterway during the trip. As paddler groups were intercepted mid-trip, they were asked to include what they expected to pay before leaving the region.

Seventeen kiosks were installed at all unstaffed public boat launches in each study region. A display contained information on the research study and the canoe trail, as well as a posted paddler map. During the 2006 season (June through October), paddlers using the kiosks completed 885 usable surveys.

To estimate registration rates, boat launches were observed on 25 days throughout the paddling season. Observations were made on both weekdays and weekends. Monitoring was conducted proportional to use patterns and levels, and each boat launch was observed for one to three days. All groups returning from a paddling trip were asked if they had completed the survey. The registration rate was estimated to be 35 percent (n=78). All surveys were checked for completeness. Attempts were made to contact respondents to clarify responses with inconsistencies relating to trip expense estimates.

2.2 Nonresponse Bias

As paddlers completing the survey through the registration kiosks were self-selecting, analyses were conducted to determine nonresponse biases. A nonresponse sample was taken by approaching and surveying nonregistering groups during kiosk observations. All nonregistering groups were also asked to complete a survey, administered by the researchers, with a 98 percent response rate (n=54). For key variables, responses were compared between self-registering and nonregistering groups.

No significant differences were found between mean total trip expenses, group sizes, travel times, or median household income levels. However, self-registering groups ranked their knowledge of the NFCT higher (n=968, $p < .01$), and were twice as likely to report the NFCT as a reason for their trip (n=968, $p < .01$). For these variables, in-person responses were assigned weights equal to the inverse of the response rate multiplied by the ratio of self-registering surveys to in-person surveys.

Surveys gathered in registration kiosks were the primary instrument for estimating visitor use. The formula for calculating total user days was as follows:

$$\text{Total group-days: } (\sum_{(R,u)} d_i * n_i) * (1/r) * (1/v_{(R,u)}) * (1/o_{(R)}),$$

where:

R = Study region

u = User type

d = Number of days in region

i = Survey element (each survey response)

n = Number of paddling trips to the region in season, on average

r = Estimated response rate

v = Percent valid responses

o = Percent operational kiosks

V (percent valid responses) is the percentage of completed surveys that had the necessary responses to conduct this analysis. O (percent operational kiosks) is a region-specific calculation for the percent of the season that kiosks were fully operational; vandalism, pen theft, and weather damage reduced the percentage of operational days for each kiosk. Kiosks were also installed and removed on different days. This variable factored in those discrepancies.

2.3 Lodging and campground manager interviews

In several of the study regions, paddlers stay in lodging establishments and campgrounds situated on the waterway. As paddlers staying in these locations do not use the public boat launches with the survey kiosks, use data was collected primarily through in-person surveys of the managers of lodging establishments and campgrounds with waterway access in each study region. Follow-up phone calls and mail-back questionnaires were used to obtain end-of-the-season use data as needed. Forty-eight lodging establishments and six campgrounds were approached, resulting in 37 lodging and campground surveys completed, with a response rate of 77 percent and 100 percent, respectively.

The methodology to derive a use estimate was customized based on the data availability of each establishment. Several cabin rental establishments had detailed records and knowledge of every group registered to stay at their facility for the summer season. In these situations, an establishment-specific estimate was calculated by simply adding up the number of paddler groups registered. At other lodging establishments, such as motels, this approach was not feasible. Instead, the following formula was used to calculate an estimate:

$T = \sum_{(s)} N * O_s * L_s * P_s / A_s$, where:

T = Total paddler groups, per establishment

S = Season (summer or fall)

N = Number of rooms and cabins

O = Average occupancy rate (percentage of rooms occupied)

L = Length of the season (days)

P = Percentage of groups that are paddlers

A = Average length of stay

For campgrounds, estimates of total paddler groups were obtained by multiplying staff estimates of the proportion of campers and day users that are paddler groups with the number of camping and day user groups recorded using the facility over the course of the 2006 season. Finally, total group days for each region, per user type were estimated using the following formula:

$G = (\sum_i T) / o * a$, where:

G = Total group days, per region, per user type

T = Total groups, per establishment

i = Survey elements (each lodge or campground)

o = The percentage of lodges or campgrounds successfully surveyed

a = Average trip length for lodging/cabin renters or campground campers for the region, obtained through the paddler survey

2.4 Weighting

As surveys were primarily administered at boat launches, hotel/cabin renters and campground campers were underrepresented. Furthermore, in some regions, sampling was not proportionate to actual use. The Allagash study region, for example, was under-sampled relative to other regions. In economic impact studies, weighting survey results is often necessary to avoid biased estimates of key variables due to sampling procedures (Wilton & Nickerson, 2006). To correct for these biases, a system of weights was assigned to each user group within each region by first dividing the total number of estimated groups by the number of groups in the sample, and then rescaling these values to reflect the actual sample size.

3.0 RESULTS AND CONCLUSIONS

This research approach allowed for efficient sampling of a geographically dispersed trail with relatively low use intensities. An estimated 22,074 groups (89,399 users) paddled the waterways in the six study areas. The median paddler group spent about \$215 per trip, primarily at lodging establishments, restaurants, grocery stores, and service stations. Nonlocals spent a mean of \$414-\$498, or \$46 per person per day. An estimated \$8.8 million was spent in local economies by paddlers in the six study regions. After accounting for multiplier effects, these expenditures created an estimated \$12 million in total economic impacts, \$6.6 million in value added to the local economy, \$4.1 million in personal income, and 283 jobs.

Collecting the requisite data on visitation rates and expenditures necessary to complete an economic impact assessment of a long distance trail can be a challenging undertaking, particularly given limited staff time and budgetary resources. This research presented a modification of existing methodology to meet the unique circumstances of the Northern Forest Canoe Trail. By combining brief surveys completed at registration kiosks with periodic in-person observations and nonresponse surveys, along with interviews with area lodging establishments and campground managers, sufficient data were collected for input-output modeling while efficiently utilizing staff and budgetary resources.

This approach is not without its limitations. As visitors had not completed their trip at the time of the survey, their expenditure data is based on their projections. In addition, careful screening is critical to check for errors in responses collected through the registration kiosks, particularly for questions relating to expenditures. Finally, estimates of visitation achieved through campground and lodging establishment interviews must be considered approximations.

Despite its limitations, this methodological approach appears sufficient for collecting data necessary for modeling the economic impacts of visitor spending. Its use of both in-person observation and surveys

of non-registering groups addresses concerns of understanding response rates and potential non-response bias, problems inherent in studies that utilize only a self-selected sample. Ultimately, this methodology may be most useful for researchers and managers with limited staff and budgetary resources seeking to assess the economic impacts of visitors to geographically dispersed trails and waterways with low use intensities and a variety of access points.

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PUBLIC ATTITUDES ABOUT FINANCING MUNICIPAL RECREATION

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Abstract.—Communities constantly seek creative financing for public services like recreation. Property tax remains central for financing, but user fees, grants, sales taxes, sponsorship, and bond issues have increased. This paper examines preferences for alternative funding mechanisms in a survey of Hartford, VT residents. Public support for municipal facilities and programs varied with use, age, income and employment. Residents opposed additional taxes, favoring grants, sponsorships, and user fees instead. But a substantial block of “swing” voters determine proposal success or failure.

1.0 INTRODUCTION

Although municipal resources provide crucial public recreation services, financing them has always been difficult. With mid-twentieth century prosperity, neighborhood parks and recreation facilities became integral community resources. But that prosperity began fading in the 1970s with pressures from inflation, increases in costs for liability insurance and municipal employees’ benefits, globalization, technological development, and immigration (More, 1999). Middle class anger crystallized in the property tax revolt, necessitating new ways of funding municipal services and creating a more entrepreneurial approach to park and recreation management (Crompton, 1999). While property taxes remain

critical, today’s managers make greater use of local sales taxes, foundation grants, corporate sponsorships and user fees to fund daily operations (Crompton, 1999). Major capital improvements are often funded through special bond issues. This case study examines public preferences for alternative strategies for funding public recreation in Hartford, VT.

1.1 Setting and Background

Hartford, a small city on the Connecticut River in eastern Vermont, is an amalgam of five villages ranging in prosperity from an old mill town on the river to a high-end destination resort village that attracts second-home buyers and tourists. In 2000, Hartford’s population was 10,367 (U.S. Census Bureau, 2007). The community was 52.7 percent female, 97 percent white, and two-thirds of residents (66.6 percent) lived in owner-occupied dwellings. The median age was 40, the median household income was \$42,990 (1999 dollars), 67.8 percent of those over age 16 were employed, and 5 percent of families and 8 percent of individuals fell below the poverty line. Relative to the entire U.S. population, Hartford’s population tends to be older, more female, more Caucasian, and more affluent than many other U.S. communities.

The Hartford Parks and Recreation Department manages 12 municipal parks and other facilities, and runs recreation programs throughout the year. The department has an annual operating budget of \$670,676 and 6.5 employees including a professional director. In 2005, the town proposed a \$1.7 million municipal bond issue to finance repairs and expansion of a municipal arena attached to the existing high school. The arena, originally built in 1975, provides winter skating opportunities, summer programs, and is used throughout the year by the school district. The building needed exterior repairs, electrical system upgrades, suitable bathroom and shower facilities for sports events, and upgrades to comply with federal

accessibility requirements. The Parks and Recreation Department also sought to increase capacity for team sports and other events.

Voters ultimately rejected the bond issue by more than a 2-to-1 margin, and the community's Recreation Board wanted to learn why. Consequently, this study sought more information about Hartford residents' attitudes about the bond issue, about their existing recreation use patterns, their desires for future development, and their attitudes about alternative funding mechanisms.

2.0 METHODS

The Hartford Parks and Recreation Department designed and implemented a resident survey in April, 2006. The questionnaire contained 29 questions on four pages following Dillman's (1978) procedures. Initial questions concerned residents' use of, and satisfaction with, municipal parks and facilities during 2005. The second section inquired about desires for new programs and facilities and the third section asked about program registration problems. The fourth section focused on the bond vote, residents' willingness to support a new bond vote, and possible alternative funding strategies. Standard socio-economic and demographic characteristics made up the final section.

The questionnaire was mailed to a random sample of 710 Hartford residents from the town's grand list. However, to increase the response, questionnaires also were distributed through the elementary schools and community offices, ultimately creating a purposive sample. A total of 263 completed and usable surveys were collected. Survey respondents in general tended to be slightly older and definitely better educated than Hartford's general population (as described by the 2000 U.S. Census data). The questionnaire also asked how respondents had voted on the previous bond issue (which had been defeated by a 2-to-1 margin). Survey respondents had been more supportive of the bond than the general population, possibly indicating more favorable attitudes toward local parks and recreation. Thus, the results should be treated cautiously, as

the results may not represent the views of Hartford residents in general.

3.0 RESULTS

Results are presented with regard to facility use, satisfaction, and preferences, and financing new facilities and programs. Columns and rows in tables may not total 100 percent due to rounding.

3.1 Facility Use

The Hartford Park and Recreation Department currently manages 12 sites including pools, athletic fields, and conservation areas. The survey asked how frequently respondents had used (visited) each site in the preceding 12 months. Each respondent's answers were summed to create a variable representing people's total recreation site use for analysis. Total annual sites visits per respondent ranged from 0 (10.3 percent of the sample) to 90 (0.4 percent of the sample). Chi-square analysis found that use varied significantly with both age ($p < 0.01$) and employment status ($p < 0.05$). Age groups ranged from 18 to 25 years to 65+ years. Use declined steadily with age: 92 percent of the respondents age 35 years and younger made moderate or heavy use of public facilities; this declined to 54 percent of people 65 years and older (Table 1). Use was lowest for retired or semi-retired individuals. Use did not vary significantly by income,

Table 1.—Total public facility use by age categories

Age (n)	Total Use ^a of Facilities and Parks		
	Low Use %	Moderate Use %	High Use %
< 35 years old ^b (26)	7.7	23.1	69.2
35 to 44 years old (74)	2.7	29.7	67.6
45 to 54 years old (49)	22.4	30.6	46.9
55 to 64 years old (36)	30.6	33.3	36.1
65 years or older (37)	45.9	32.4	21.6

Chi square(8) = 42.922, $p < .001$

Somers' d = -.345, $p = .000$

^aLow Use = 0 to 2 visits in the last 12 months;

Moderate = 3 to 10 visits; High = >11 visits

^bCombines two age categories, 18 to 25 years and 25 to 34 years

although people with incomes above \$75,000 used public facilities less than people in the middle or lower income brackets.

Lack of time was most frequently cited constraint (29 percent) against more frequent use of municipal facilities. Unfamiliarity/lack of knowledge was mentioned as a constraint by 25 percent, while 18 percent were uninterested, and 10 percent said the facilities were too far from their homes. Other potential constraints – hours of operation, fees, security, etc. – had only small effects on usage.

Respondents were very satisfied with facility maintenance: 84 percent rated maintenance as good or excellent, while less than 1 percent said that maintenance was poor. The respondents were also satisfied with the existing facilities (Table 2). Facilities receiving the highest satisfaction ratings were parks (83 percent of respondents were either satisfied or very satisfied), outdoor recreation facilities (74 percent), playgrounds (70 percent), trails (66 percent), bandstands (61 percent), and multiple use areas (55 percent). Lowest satisfaction was expressed with indoor recreation (29 percent), and tennis (40 percent).

3.2 Program and Facility Preferences

Recreation programming by the Park and Recreation Department supplements the physical facilities. When asked about their programming preferences, 37 percent of respondents wanted more fitness programs, 36

percent wanted more after school programs, and 32 percent wanted more nature programs (Table 3). Least interest was expressed for pick-up games (11 percent), computer education (13 percent) and cultural programs (16 percent).

Among preferences for future facility development, an indoor pool was most preferred (39 percent); least preferred were a new senior center (7 percent), and a replacement for the current municipal arena (8 percent).

3.3 Financing New Facilities and Programs

Some financing techniques are controversial among survey respondents. As shown in Table 4, to finance future community recreation development, respondents strongly preferred fund-raising initiatives (53 percent) and grants (51 percent). User fees were favored by 32 percent. The least popular finance methods were property tax increases (13 percent) and bond initiatives (22 percent). However, 16 percent were unsure about financing alternatives, suggesting a block of swing voters who may respond more enthusiastically to proposal specifics.

Taxes also proved unpopular to finance new construction (Table 5). Far more residents preferred fund raising (55 percent), pay-per-use (46 percent), or real estate development fees (38 percent). Again, public support may depend on proposal specifics.

Table 2.—Satisfaction with town recreation facilities

Facilities	N	Not sure (%)	Very dissatisfied (%)	Dissatisfied (%)	Satisfied (%)	Very satisfied (%)
Indoor recreation facilities	215	33.0	12.1	25.6	26.5	2.8
Outdoor recreation facilities	216	19.4	1.9	4.6	59.3	14.8
Parks	218	15.1	0.5	1.8	61.0	21.6
Trails	217	30.4	0.0	4.1	53.5	12.0
Multi-use athletic fields	210	33.3	3.3	8.1	48.1	7.1
Baseball/softball diamonds	207	42.5	1.0	8.7	43.5	4.3
Tennis courts	210	43.8	2.4	13.8	36.7	3.3
Playgrounds	213	21.1	1.4	7.0	57.3	13.1
Boating/fishing access	214	42.5	2.3	7.0	44.4	3.7
Bandstand/live music venues	217	30.0	0.9	7.8	50.2	11.1

Table 3.—Percent of respondents expressing preferences for future programs

	N=263
Fitness & wellness programs	37.3%
After school programs	36.5%
Nature & outdoor programs	32.3%
Summer programs	25.5%
Teen programs	25.1%
Art & craft programs	22.8%
Adventure programs	20.2%
Cultural programs	16.0%
Senior programs	15.6%
Computer & technology programs	13.3%
Individual & team sports	10.6%
Less-structured “pick-up” games	10.6%
None of these	7.5%
Other	4.9%

Among survey respondents, 28 percent had supported the 2004 bond proposal to fund the new arena, 24 percent had opposed it, and 48 percent had not voted. Those who had voted “no” expressed greatest concern about taxes (16 percent) and project cost (14 percent). Most (95 percent) indicated that they had received sufficient information to make a decision at the time. Asked if they would support a new bond issue to fund the arena, 43 percent of respondents indicated support, 12 percent opposed, but 34 percent were unsure. Again, the large percentage of “unsure” responses suggests swing voters who focus on project details. Using chi-square, we found response to the reintroduction of the bond varied significantly with age ($p<0.05$) and employment ($p<0.05$); the youngest age group was most supportive and the retired or semi-retired showed greatest opposition.

Respondents overwhelmingly opposed additional taxes to fund programs and facilities: only 5 percent of respondents favored a local option sales tax and just 12 percent favored paying through property taxes. More preferred financing options included fund raising (55 percent), pay-per-use fees at public facilities (46 percent) and real estate development fees (38 percent). Most respondents (81 percent) believed that current facility use fees were average; 14 percent thought they were too low and 4 percent thought they were too high.

Table 4.—Percent of respondents expressing preferences for ways to finance improvement/development of existing/new facilities

Financing Strategy	N=263
Fund raising	53.2%
Grants	50.6%
Increased use fees	32.3%
Bond vote	22.4%
Not sure	16.3%
Tax increase	12.9%

Table 5.—Respondents’ preferences for how Hartford should pay for construction of new recreation facilities

Funding Strategy	N=263
Fund raising	55.1%
Pay-per-use fees	46.0%
Real estate development fees	37.6%
New property taxes	12.5%
Local option sales tax	5.3%

Resistance to tax increases may be a general response while reactions to a specific proposal or specific dollar amounts may depend on project particulars. For example, nearly half the respondents indicated they would be willing to pay (WTP) \$1 to \$50 more in property taxes to support parks and recreation programs, while 20 percent supported an increase of between \$50 and \$100. But tax resistance is strong: 32 percent said they would not pay any more taxes. Support for additional taxes increased significantly with use ($p<0.01$) (Table 6). Income was the best indicator of WTP. Analysis of variance indicated that middle income people were most WTP while upper income people were the least (Table 7). Lower income people may lack the capacity to absorb more taxes, while upper income people are less dependent on public facilities and programs. Willingness to pay also varied significantly with age ($p<0.01$). Those least WTP were in the 65+ age bracket, while those most willing were in the 35-44 age range.

Table 6.—Percent willing to pay additional taxes for increased recreational opportunities by total use frequency

Additional Tax for Recreation	Total Use ^a of Facilities and Parks		
	Low use (n=70) %	Moderate use (n=71) %	High use (n=68) %
None	52.9	18.3	28.8
\$1 to \$5	14.3	9.9	10.6
\$6 to \$15	7.1	12.7	18.2
\$16 to \$25	5.7	16.9	13.6
\$26 to \$50	10.0	18.3	3.0
\$51 to \$75	5.7	4.2	9.1
\$76 to \$100	1.4	11.3	13.6
>\$100	2.9	8.5	3.0

Chi square(14) = 39.517, $p < .001$

Somers' d = .170, $p = .01$

^aLow Use = 0 to 2 visits in previous 12 months;
Moderate = 3 to 10 visits; High = >11 visits

Table 7.—Percent willing to pay additional taxes for increased recreational opportunities in Hartford by income

Additional Tax for Recreation	Income ^a		
	<\$35,000 (n=37) %	\$35,000- \$74,999 (n=87) %	\$75,000+ (n=45) %
None	59.5	24.1	24.4
\$1 to \$5	13.5	6.9	10.6
\$6 to \$15	13.5	18.4	8.9
\$16 to \$25	2.7	17.3	6.7
\$26 to \$50	5.4	9.2	15.6
\$51 to \$75	5.4	10.3	22.2
\$76 to \$100	0.0	8.0	6.7
>\$100	0.0	5.7	0.0

Chi square(14) = 37.109, $p < .01$

Somers' d = .247, $p = .001$

^aIncome categories collapsed from <\$25,000, \$25,000 to \$34,999, \$35,000 to \$49,999, \$50,000 to \$74,000, \$75,000 to \$99,999, and \$100,000+

4.0 CONCLUSIONS

Our results suggest that support for municipal recreation was greatest among fully employed, early middle-aged, middle income recreation users. Public facilities may be important to these people and their families, especially if they have school-aged children. Retired or semi-retired older respondents were least supportive. But our analyses continually pointed to a block of swing voters in late middle age or early retirement who can determine bond issue outcomes. People between the ages of 45 and 60 may make limited use of public facilities, but are often those who hold the bulk of political power in a community (Howard and Crompton, 1984). Their concerns differ from those of other community members. They are typically at peak earning power, but their children are grown or in college, so they no longer need many of the municipal sports facilities or children's programs. They may be saving for retirement, paying for college, or traveling frequently for pleasure. In some cases, they are sufficiently affluent to have private-sector alternatives. These people form a critical block of voters within a community who can determine the success or failure of a bond issue like the one defeated in Hartford.

It can be difficult for municipal recreation departments to appeal to diverse voters in a community. Since program preferences vary across the life cycle, one approach is to appeal to self-interest, catering to specific needs of particular groups. For example, those aged 34 years or younger in the Hartford survey were most interested in fitness, summer, adventure, and after-school programs; they were least interested in senior, computer, and teen programs and in team sports and pick-up games. This pattern is consistent with what we would expect from young singles or people with very young children. For people in the 35 to 44 year age bracket, preferences shifted to fitness, summer, adventure, and after school programs; they were least interested in team sports, cultural and senior programs. The 45- to 54-year-olds preferred fitness, after school, nature, and teen programs but saw the least need for team sports, cultural and senior programs. They wanted to keep their older teenagers busy. In the 55 to 64 year age bracket, use frequency declined compared to the 45- to-54-year-olds suggesting that those older people who are moderately committed to public facilities begin dropping out. Respondents in this age range were most interested in nature and fitness programs, least interested in team

sports and arts and crafts, and they were generally opposed to adding new programs. They are “empty nesters” concerned about finances as they pay for college or save for retirement and personal travel, and they may have access to private recreation alternatives. Finally, those over 65 were the most likely to want no new programs. They were interested in senior and nature programs, but also expressed interest in after-school and teen programming. They may desire to keep children occupied in supervised activities, or they may be grandparents seeking an alternative to caring for grandchildren while parents are at work. The 65+ group had the least interest in team sports, adventure programs, and summer programs.

Fitness was a primary community concern for people of all ages. People wanted fitness programs, an indoor pool, and walking/hiking trails, all of which reflect a desire for adult fitness which may be a crucial health concern of late middle-aged Americans. Similarly, the approval of buying land for recreation could be interpreted as a desire for greater walking/fitness opportunities. Older residents may find a bond issue supporting such activities more appealing than one emphasizing youth sports. Hartford’s bond issue may have failed because its association with team sports programs had a narrow constituency in the larger community.

Appeals to community may be effective with swing voters, too. Crompton (1999) suggests that municipal recreation departments should “reposition” to change goals and community perceptions by aligning with

a few critical community goals like economic development. Local parks, recreation facilities, and programs can attract both footloose industries seeking relocation and retirees; coordinating department goals with the economic development agency could benefit both agencies.

In sum, funding depends upon making local parks and recreation salient to a larger block of voters; this may be especially challenging in places where competing public programs (e.g. after-school activities) or private facilities (e.g. health clubs) are available. In the northeast, community populations are aging. While many continue to use public facilities well into retirement, interest shifts with age. Successful funding requires careful tailoring to meet community expectations.

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*ENVIRONMENTAL EDUCATION
AND INTERPRETATION*

THE EFFECTIVENESS OF A FOUR-HOUR CHALLENGE COURSE ON LEADERSHIP EFFICACY AND WORK EFFICACY

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Abstract.—This study examines the effects of participation in a 4-hour challenge course on leadership efficacy and work efficacy of college students. The findings of this research indicate that both leadership and work efficacy increased significantly after participation in a challenge course and that increased levels of the participants' self-efficacy remained 6 weeks after the completion of the challenge course.

1.0 LITERATURE REVIEW

Adventure-based programs have become increasingly popular for groups that want a different and unique way of achieving specific goals. Some of the goals of these programs include building confidence, becoming more assertive, developing problem-solving skills, increasing motivation, and improving leadership skills (Long et al., 2003). Personal benefits include an increase of work and leadership efficacy, enhancing personal growth, particularly in the areas of increasing one's sense of self-competence and risk taking (Paxton, 1998; Snow, 1992).

Although participation in these activities is growing, research in this area remains limited. Of the research

found with respect to challenge courses, most researchers have explored longer programs (e.g., 3 days or more) (Glass, 1999; Hart & Silka, 1994; Wu, 2004) rather than the shorter, half-day program. In addition, research needs to address how the benefits of these programs have an impact on an individual's view of themselves through their leadership efficacy and work efficacy.

1.1 Self-Efficacy

Bandura (1994) developed the self-efficacy theory in 1977. Self-efficacy was defined as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p. 81). The theory states that an individual's self-efficacy level is based on information derived from internal or external sources. The self-efficacy level then influences future mastery attempts through choice, effort, and persistence (Paxton, 1998). These perceptions of self-efficacy levels are central to the motivational process.

According to Bandura (1994), there are four ways to influence or develop perceptions of self-efficacy. The first is through enactive mastery experiences. These are experiences related to an individual's past successful performances. A second influence is vicarious experiences, which are observations of someone similar to themselves being successful. A third way of creating and strengthening self-beliefs of efficacy is through verbal persuasive messages, which are defined as positive support from people the individual feels are credible in that area. The final influence is physiological and affective states, which are the last sources of information where performance is optimal. This also includes an increase in awareness and ability to respond in certain situations.

Leadership efficacy is defined as an individual's belief in his or her abilities to take on the role of a

leader within a group or setting and to be successful in that role. Self-efficacy has been found to assist in understanding the leadership development process because competency, efficacy, and judgment were considered important prerequisites for leadership (Cain & McAvoy, 1990; Green, 1990). Eden (1992) argued that leadership was the mechanism through which managers raised performance expectations and enhanced self-efficacy which, in turn, increased performance. An increase of performance can also be related to work efficacy, which is defined as people's beliefs about their capabilities to work. "Work efficacy partly determines how well one develops the basic cognitive, self-management, and interpersonal skills on which occupational careers are founded. Beliefs concerning one's capabilities are influential determinants of the vocational life paths that are chosen," (Bandura, 1994, p.79). When faced with a difficult challenge related to work, individuals with a greater sense of self-efficacy exerted greater effort to master that challenge (Bandura, 1986; Schunk, 1984).

1.2 Challenge courses

Challenge courses are components of outdoor programs that use the natural environment to create new experiences which challenge participants – emotionally, physically, and socially (Ewert, 1989). Many people envision a challenge course as a type of "obstacle course" (Gillis & Gass, 1993) that is designed to foster team-building, community development, and personal growth through a progression of activities on the course. These courses can consist of group challenges, role-playing and imagery techniques, and usually have low ropes and/or high ropes versions.

1.3 Transference

One of the most important elements in challenge courses is emphasizing the transference of key elements of the activity to daily lives. In this study, transference is defined as taking what one learned about himself or herself in a challenge course and applying it to other aspects of one's life. The three types of transference are specific transfer, nonspecific transfer, and metaphoric transfer (Paxton, 1998).

Transference was included as part of the model that Kolb created in 1984, the Experiential Learning Cycle. This cycle starts with a concrete experience (such as participation in a challenge course). Observation and reflection follow, which is where the debriefing of the activity takes place. After that, the formation of abstract concept and generalization occurs, where the individual starts to connect the experience to other experiences they might have. The next step is for the individual to actually use the information gained from the concrete experience and by transferring it to a separate, new situation. The Experiential Learning Cycle (Kolb, 1984) can explain how one learns during a challenge course. Transferring the experience itself and the benefits gained from the experience into a participant's daily life can be an important and lasting outcome of challenge courses.

2.0 METHODS

This research utilized a quasi-experimental research design and was presented as a pretest/post-test format. A followup test was given 6 weeks after the course. It was a quantitative study and convenience sampling was used.

2.1 Sample

The target population was Old Dominion University students who had registered for the challenge course through Recreational Sports Department's Outdoor Adventure Program in the fall semester of 2006. Data were collected from course participants on three separate dates for each participant: a pretest (before the course was completed), a post-test (immediately after course completion) and a followup 6 weeks later. Participation was voluntary and all responses were anonymous.

The survey instrument used to conduct this research was retrieved from Paxton's (1998) dissertation, entitled "Self-efficacy and outdoor adventure programs: A quantitative and qualitative analysis." This instrument has been reviewed for content validity by a panel of experts at the University of Minnesota and at Old Dominion University. The Cronbach's alpha reliability for the survey instrument used in this study is .90.

All challenge course activities were kept consistent for all three data collection dates. The activities were the same, presented in a similar manner each time, and debriefed by using the same questions and same debriefing technique. To remain consistent, one facilitator was used for all three dates. In addition, an impartial observer was present to ensure that the facilitator was using similar debriefing techniques at each of the three separate data collection dates. The facilitator also was given an outline of activities included in the challenge course.

The challenge course activities included the Noodle Walk, TP Shuffle, Ping Pong Ball Pass, Whale Watch, Mohawk Walk, Spider Web, and Group Lap Sit. The activities were geared toward building one's work efficacy by allowing the team to work together to solve a problem and complete a common task. Leadership efficacy was encouraged in the tasks because a leader was needed to step forward and direct the group in what needed to be done.

After the data were collected, *t*-tests were used to analyze and screen it and outliers were removed. Leadership efficacy and work efficacy were analyzed separately. Descriptive statistics were examined and a point-biserial correlation coefficient was calculated.

3.0 RESULTS

3.1 Descriptive Statistics

Forty-three surveys were collected from three separate data collection event dates. Of the 43 respondents surveyed, 72 percent were female. Respondents ranged in age from 18 to 36 years, with an average age of 21 years. About 65 percent of participants had no prior experience with any type of challenge course. Of those that had completed a challenge course previously, 23 percent participated in a half-day course (4 hours), 10 percent participated in a whole day course (8 hours), and one person had participated in a challenge course that was more than 1 day. About 44 percent of participants reported that they were not currently in a leadership role in their lives, while 56 percent were involved as leaders of a student, religious, or outside

group. Three of the participants were working full time in addition to attending the university, 62 percent were working part time, and 31 percent were not employed at the time of the data collection. All participants were going to college; 16 percent of the participants were sophomores, 42 percent were juniors, 35 percent were seniors, and 7 percent were graduate students.

3.2 Statistical Procedures

Data were analyzed using the independent and paired samples *t*-test. All statistical analyses were evaluated at $p < .05$ (see Table 1). The data were entered, checked for inaccurate entries, and screened for univariate outliers (none found) using SPSS 14.0. All participants completed pretest and post-test surveys. All tests conducted were two-tailed tests.

4.0 DISCUSSION AND CONCLUSIONS

Overall, most participants experienced an increase in leadership efficacy and work efficacy from participation in the 4-hour challenge course. The independent variable (challenge course), when applied to the quasi-experimental group, was associated with a significant increase in leadership and work efficacy at the .001 level. These findings compliment what many other researchers have already found: self-efficacy levels do increase after participation in a challenge course (Ewert, 1989; Paxton, 1998). However, past studies were involved challenge courses with a longer time frame. This study indicates that not only can a 4-hour course significantly increase self efficacy, but also the effects last for at least 6 weeks after.

Leadership efficacy scores significantly increased from pretest to post-test and leadership efficacy scores had a larger increase than work efficacy scores. In challenge courses, activities are geared to stimulate group cohesion and growth. In many of the activities, a leader is needed to step forward to assist the group in reaching a common goal. Having a variety of challenge activities causes different people in the group to act as leaders. Individuals who took on leadership roles during the course had noticeable increases in their leadership efficacy scores.

Table 1.—Paired samples t-test for leadership and work efficacy from pretest to post-test and post-test to follow-up test

Variable	Group	Mean	Standard deviation	Sample size	<i>p</i>
Leadership efficacy	Pretest	.73	.13	43	.002*
	Post-test	.81	.16	43	
	Difference (pre-post)	-.07	.14		
	Follow-up test	.78	.14	20	
	Difference (post-follow-up)	-.01	.05		
Work efficacy	Pretest	.81	.14	43	.001*
	Post-test	.86	.11	43	
	Difference (pre-post)	-.04	.07		
	Follow-up test	.86	.11	20	
	Difference (post-follow-up)	-.01	.05		

**p* < .05

Work efficacy scores also significantly increased from pretest to post-test. While leadership efficacy had a larger increase from pretest to post-test, the proportion of variance accounted for shows that work efficacy had a larger effect on the participants than leadership efficacy. Upon closer examination of the statistics, this could be attributed to the leadership efficacy standard deviation being larger (.16) than the work efficacy standard deviation (.11). The results also show that the levels of work efficacy from post-test to followup test were maintained 6 weeks after the event.

4.1 Limitations

This study was limited to registered students at Old Dominion University in the fall semester of 2006 and because of the small sample size is not generalizable to either the whole university population or the larger general population. The findings also do not generalize to a larger population of challenge course participants since this study focused on a 4-hour challenge course and many other challenge courses are of significantly longer length and complexity. In addition, the inclusion of a comparison group in the analysis could improve confidence that the gain in the dependent variable was due to the independent variable. Future research should consider the use of a comparison group. The short time span between the pretest and the post-test may also have influenced participants' responses.

4.2 Implications

The finding that a 4-hour challenge course can significantly increase the participants' levels of leadership and work efficacy and that these gains are retained for at least 6 weeks has many implications for managers and participants in challenge courses, adventure programs, and other forms of outdoor recreation as a whole. Current challenge course practitioners and managers can use this information to emphasize the benefits of a shorter program to potential future participants who may think that only a longer course has positive benefits. The data can be used as a marketing tool to get new course participants, and can be used by those interested in constructing a challenge course. In addition, the specific information on leadership efficacy and work efficacy benefits can be used to target prospective participants who are looking for these benefits from another type of training program.

This study also contributes to the knowledge base on outdoor recreation and education. Many outdoor recreation programs are being encouraged to offer "benefits-based programming," where the program coordinator needs to make a connection between participation in an activity and the benefits gained from that participation. As outdoor education and adventure programs become more popular, more research on these topics will be needed.

4.3 Recommendations

Based on the findings of this study, the following recommendations for future research are suggested. More studies on 4-hour challenge courses are needed to validate the findings about self-efficacy reported here and to determine other benefits of participation. Since this research focused on college students, it would be beneficial to determine if self-efficacy benefits also are found in other populations of participants like working adults, older people, teenagers, or people who belong to special interest clubs. In addition, a comparison group and/or triangulation could be used to better support the findings about efficacy gains.

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ENVIRONMENTAL EDUCATION AS A CATALYST FOR BEHAVIOR CHANGE: A STUDY OF THE EFFECTS OF *COASTWATCH* MAGAZINE ON SUBSCRIBER ENVIRONMENTAL KNOWLEDGE AND BEHAVIOR

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Abstract.—Environmental degradation resulting from human habits and behaviors has become an increasingly important issue in contemporary society. One organization working to encourage coastal environmental sustainability is North Carolina Sea Grant, which publishes the educational magazine *Coastwatch*. It is NC Sea Grant's desire that coast-related environmental information in *Coastwatch* will encourage behaviors favoring sustainability. During the summer of 2006, researchers at East Carolina University conducted a survey with 800 *Coastwatch* subscribers. This study examined reader characteristics and preferences as well as levels of reported increased knowledge and behavior change among subscribers. The results of this study show a positive relationship between increases in knowledge and changes in behavior regarding 11 separate coastal issues.

1.0 INTRODUCTION

Environmental degradation resulting from human habits and behaviors has become an increasingly important issue in contemporary society. Negative environmental impacts of human development and behavior may include depletion of plant and animal life and deterioration of land, air, and water resources. As many people in America and in the global community place a high value on these resources, environmental protection and sustainability have become important topics of government policy and

legislation. This can be seen through numerous laws and regulations mandating protection of wildlife, habitats, and the natural environment. Unfortunately, while various legislative acts have been successful in protecting certain specific resources, environmental degradation continues as a result of the public's actions and behaviors (e.g. loss of habitat resulting from overdevelopment or destructive recreational habits, litter/pollution, introduction of invasive species). In response to this degradation, some organizations have started to encourage the general public to adopt sustainable habits and behaviors. One such organization is North Carolina Sea Grant, which attempts to educate the public on a variety of coastal issues through its outreach publication, *Coastwatch*.

The NC Sea Grant outreach mission states that "the sustainable use of coastal and marine resources benefits all citizens of North Carolina" (NC Sea Grant, 2007). In order to encourage sustainable use of coastal resources, NC Sea Grant publishes six issues of *Coastwatch* per year. Each issue covers a variety of topics including commercial and recreational fisheries and habitats, seafood technology, community and people profiles, coastal laws and legislation, development issues, water quality issues, and marine science. It is NC Sea Grant's desire that educating the public on these issues will encourage positive behavior change among *Coastwatch* readers and others interacting with the coastal environment.

Much existing literature supports the assumption that increases in environmental knowledge will lead to changes in behavior that favor sustainability (Maibach, 1993; Milfont et al., 2006; Schnelle et al., 1980). However, linkages between reported awareness and behavior change have been stronger in some studies and contexts than others. For example, Milfont et al. found that information about different types of

environmental concerns may affect different cultural groups in different ways. Therefore, knowledge of the audience is an important factor to consider when choosing between strategies for encouraging behavioral changes that favors sustainability.

The purposes of this study were to identify characteristics of *Coastwatch* subscribers, examine subscriber preferences for different article formats, examine the extent to which *Coastwatch* creates awareness among its subscribers, and examine the relationship between perceived increased awareness and behavioral changes that focuses on greater environmental sustainability.

2.0 METHODS

NC Sea Grant provided researchers at East Carolina University with a list of 1400 *Coastwatch* subscribers and their contact information. From this list, a random sample of 800 subscribers was selected for this study. During the summer of 2006, mail-back questionnaires were sent to the 800 subscribers using a modified Dillman total design method (Dillman, 1978). A total of 513 questionnaires were returned (64 percent response rate).

Subscribers included in the sample were asked numerous questions in order to gain an understanding of reader characteristics. These questions included whether or not they own property along the NC coast, how often they visit the NC coast during different seasons, and birth year, sex, and education level of primary reader.

To gain an understanding of subscriber preferences for article types, participants were asked to indicate how often they read various types of articles on a scale from 1 (I never read them) to 5 (I always read them). The types of articles included in this line of questioning include Book Market, Editor's Letter, Legal Tides, How-to features, People Profiles, Seafood and Recipes, Coastal/Marine Recreation, Coastal Tidings (Briefs), Places/Community Profiles, History, Nature, Science, and Coastal Issues and Controversies.

NC Sea Grant also wanted to understand how *Coastwatch* articles have increased subscribers' knowledge on a variety of issues. To measure increased understanding of coastal issues, participants were asked to rate their own level of increased understanding of various environmental issues on a scale from 1 (little or no increased understanding) to 3 (considerable increased understanding). Participants were asked to rate their level of increased understanding on 11 issues including NC Sea Grant outreach, NC Sea Grant research, legal and policy issues, seafood safety and product development, fisheries, aquaculture, coastal water quality issues, coastal communities and heritage, coastal development issues, coastal ecosystems and habitats, and coastal erosion and storm effects.

In a very similar line of questioning, participants were asked to rate their level of behavior change regarding the same 11 coastal issues. Again, a scale from 1 (little or no behavior change) to 3 (considerable behavior change) was provided to allow respondents to rate how much *Coastwatch* has encouraged them to take action or change their behavior regarding coastal issues. As *Coastwatch* articles favor sustainable habits and behaviors, reported behavior change is assumed to be positive for the environment, a possible limitation of this study.

3.0 RESULTS

3.1 Subscriber Characteristics

Many of the subscribers had extensive experience within the NC coastal plain. In fact, 63 percent indicated that they owned property along the NC coast. Respondents who did not report owning property along the NC coast indicated that they typically visited the NC coast an average of 8.15 times per year (Range = 75, median = 4). Not surprisingly, the most popular seasons of visitation were summer and fall. The average birth year of respondents was 1943, indicating that the average respondent was about 64 years old. About 74 percent of the respondents were male and 26 percent were female. The average number of years of completed schooling was 16.5 years; 90 percent of respondents indicated that they had completed 13 years of schooling or more.

3.2 Subscriber Preferences for Article Types

To gain an understanding of the popularity of various types of articles, participants were asked to indicate how frequently they read different types of articles presented in *Coastwatch* on a scale from 1 (I never read them) to 5 (I always read them). The results of this line of questioning are presented in Table 1.

As Table 1 depicts, all of the average rankings for the various article types are above 3, indicating that the average subscriber at least reads stories within each category sometimes. The results show that the four most-read categories are coastal issues/controversies, science, nature, and history with average rankings of 4.4, 4.3, 4.3, and 4.3 respectively. The least-read category was book market with an average ranking of 3.3. However, the differences in the averages between these categories are not great, and all of the averages fall between 3.3 and 4.4 on the scale.

3.3 Increased Understanding of Coastal Issues

Subscribers were given a set of 11 issues that are covered in *Coastwatch* articles, and asked to rate how much *Coastwatch* has improved their understanding of each issues on a scale of 1 (little or no increased understanding) to 3 (considerable increased

understanding). The results of these questions are presented in Table 2.

The average response for each issue was between 2 and 3, indicating that the average respondent improved his or her understanding of each issue by a moderate and considerable amount as a result of reading *Coastwatch*. The issues with the highest reported amounts of increased understanding were coastal erosion and storm effects, coastal ecosystems and habitats, coastal development issues, and coastal communities and heritage.

3.4 Changes in Behavior Regarding Coastal Issues

Subscribers were then given the same set of 11 issues that are covered in *Coastwatch* articles and asked to rate how much *Coastwatch* has encouraged them to take action or change their behavior regarding each issue on a scale of 1 (little or no behavior change) to 3 (considerable behavior change). The results of these questions are presented in Table 3.

The average response for each issue with respect to behavioral changes was between 1 and 2, indicating that the average respondent was encouraged to take action and/or change their behavior on each issue between a small or nonexistent amount and a moderate

Table 1.—Popularity of article types

I read the following stories:	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always	Avg
Book market	5.9%	17.8%	33.0%	22.9%	20.4%	3.3
Editor's letter	3.1%	11.4%	30.4%	25.9%	29.2%	3.7
Legal tides	3.9%	9.2%	27.2%	30.6%	29.1%	3.7
How-to features	1.5%	8.4%	25.9%	34.3%	29.9%	3.8
People profiles	1.0%	6.0%	26.0%	37.1%	29.8%	3.9
Seafood and recipes	2.4%	8.0%	20.4%	27.6%	41.6%	4.0
Coastal/marine recreation	1.0%	2.9%	19.1%	37.8%	39.2%	4.1
Coastal tidings (briefs)	1.0%	2.7%	15.1%	39.0%	42.1%	4.2
Places/community profiles	1.0%	2.7%	12.6%	44.7%	39.1%	4.2
History	1.2%	2.5%	12.7%	37.2%	46.4%	4.3
Nature	0.4%	2.5%	10.4%	38.7%	48.1%	4.3
Science	0.6%	2.1%	14.7%	36.0%	46.6%	4.3
Coastal issues/controversies	0.6%	1.2%	8.4%	40.1%	49.7%	4.4

Table 2.—Increased understanding of coastal issues

Issue	1 Little or no understanding	2 Moderate understanding	3 Considerable understanding	Avg
NC Sea Grant outreach	13.4%	50.2%	36.4%	2.23
Legal and policy issues	8.6%	55.8%	35.6%	2.27
NC Sea Grant research	10.0%	50.1%	39.9%	2.30
Seafood safety and product development	4.3%	49.7%	46.1%	2.42
Aquaculture	4.0%	46.5%	49.5%	2.45
Fisheries	2.1%	47.7%	50.2%	2.48
Coastal water quality issues	1.3%	41.6%	57.1%	2.56
Coastal communities and heritage	1.9%	39.0%	59.1%	2.57
Coastal development issues	2.1%	33.9%	64.0%	2.62
Coastal ecosystems and habitats	2.1%	33.8%	64.1%	2.62
Coastal erosion and storm effects	1.9%	31.5%	66.7%	2.65

Table 3.—Behavior change regarding coastal issues

Issue	1 Little or no behavior change	2 Moderate behavior change	3 Considerable behavior change	Avg
NC Sea Grant outreach	68.2%	26.7%	5.1%	1.37
NC Sea Grant research	65.2%	27.9%	6.9%	1.42
Aquaculture	60.0%	30.7%	9.3%	1.49
Legal and policy issues	59.8%	28.7%	11.5%	1.52
Fisheries	55.0%	31.8%	13.2%	1.58
Seafood safety and product development	49.1%	36.6%	14.4%	1.65
Coastal communities and heritage	46.9%	38.2%	14.9%	1.68
Coastal water quality issues	38.9%	41.9%	19.2%	1.80
Coastal development issues	39.7%	38.8%	21.5%	1.82
Coastal ecosystems and habitats	39.7%	37.9%	22.4%	1.83
Coastal erosion and storm effects	39.8%	35.8%	24.4%	1.85

amount as a result of reading *Coastwatch*. Like the previous line of questioning, the issue with the highest average response was coastal erosion and storm effects, followed by coastal ecosystems and habitats, coastal development issues, and coastal water quality issues.

3.5 Relationship between Understanding and Behavior

The relationship between reported increased understanding/awareness and behavior change was examined using both Pearson *r* correlation and one-way ANOVA with Scheffé post hoc tests. Positive correlations existed between increased understanding

and behavior change for each of the 11 issues examined. All correlations fell between .2 and .4 and were significant at the .005 level. Mean scores for increased understanding and behavior change were compared for each coastal issue using one-way ANOVA tests. The results of these comparisons are presented in Table 4.

Mean behavior change scores of respondents who indicated experiencing a considerable increase in awareness of a coastal issue were significantly higher than mean behavior change scores of respondents who indicated experiencing little or no increased awareness of the issue. In other words, those indicating a higher

Table 4.—One-way ANOVA results

Behavioral item	Awareness Change			f	Significance
	Little or no awareness	Moderate awareness	Considerable awareness		
	Mean Behavior Change Scores				
Fisheries	1.11	1.37	1.83*	25.12	.000
Aquaculture	1.07	1.30	1.71*	24.379	.000
Coastal development issues	1.29	1.58	1.96#	14.134	.000
Erosion and storm effects	1.00	1.60	2.00*	16.956	.000
Seafood safety and product development	1.15	1.50	1.90*	21.774	.000
NC Sea Grant research	1.07*	1.32*	1.62*	19.998	.000
NC Sea Grant outreach	1.04*	1.28*	1.62*	27.255	.000
Coastal communities and heritage	1.25	1.46	1.86#	17.460	.000
Legal and policy issues	1.06*	1.39*	1.87*	34.002	.000
Water quality issues	1.00	1.56	2.02*	25.498	.000
Ecosystems and habitats	1.10	1.46	2.06*	38.814	.000

*mean is statistically different then both other categories at .05 level

#mean is statistically different than only moderate awareness category at .05 level

level of increased awareness were more likely to report changes in behavior than those indicating a lower level of increased awareness.

4.0 DISCUSSION AND CONCLUSIONS

The results of this study support the assumption that environmental knowledge is a precursor, or at least a correlate, to environmental behavior change. While the results did show a significant positive relationship between increases in knowledge and changes in behavior, the mean scores for behavior change were substantially lower than the mean scores for increased understanding: respondents indicated that they increased their knowledge between a moderate to considerable amount on all coastal issues, while they indicated changing their behavior on these same issues between a nonexistent to moderate amount. One possible explanation for this difference may have to do with the sample. As *Coastwatch* is a product that subscribers must pay for, it is likely that many subscribers had a pre-existing interest or investment in coastal resource management and sustainability. As a result, it may be likely that these subscribers already had knowledge of sustainable coastal practices and exhibited positive coastal behaviors prior to their

subscription dates. Thus, a large change in behavior as a result of reading *Coastwatch* may not be a realistic outcome of the magazine for readers with a previous interest in coastal sustainability.

Subscribers were most likely to read articles on coastal controversies, science, nature, history, and community profiles. As might be expected, the coastal issues with the highest reported amounts of increased knowledge and behavior change seem to fall under the umbrella of these same categories (erosion and storm effects, ecosystems and habitats, development issues, water quality issues, and coastal communities and heritage). These results suggest that people may be more likely to learn about and change their behavior regarding issues that are most interesting or appealing to them.

Further research focusing on the relationship between environmental knowledge and behavior might be enhanced by refining and better developing instruments to measure both baseline and subsequent behavior changes. Longitudinal research using panel data on this subject might provide a better understanding of cause and effect relationships.

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UNDERSTANDING RECREATIONAL EVENTS AND RESTORATIVE CHARACTER AT THE U.S. COAST GUARD ACADEMY

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Abstract.—Students at the United States Coast Guard Academy have responsibilities and stressors beyond those of traditional university students. However, no data exist to identify what type of stress students recognize in themselves, and, once assessed, what restorative techniques they use to effectively mitigate those stressors. To help understand the phenomenology of stress and its mitigation, students were asked to identify their stressors and evaluate their restorative experiences based on both the factors of the Attention Restoration Theory and psychological benefits of recreation. Results of a factor analysis of benefits related to highly restorative events provided support for the theoretical factors of Attention Restoration Theory. Suggestions to incorporate Attention Restoration Theory in U.S. Coast Guard training are provided.

1.0 INTRODUCTION

The ability to “Lead Self” is one of the four major categories in the U.S. Coast Guard’s (USCG) leadership development framework. Included in this competency is the ability to manage one’s overall health, well-being, and stress. In training future leaders, the U.S. Coast Guard Academy (CGA) promotes stress management but has not historically implemented any programs that focus on psychological restoration to improve health. Adding to this, CGA students are continually being pulled in multiple directions both as high-achieving students and as military officer candidates (Gold & Friedman, 2000). Combined, these two roles can lead to increased levels of stress. It is not known how students manage

this stress and yet effective stress management is vital to their success as future leaders.

Many courses conducted at the CGA focus on stress management and encourage students to learn and practice stress-reducing techniques. However, no data exist to identify what type of stress students recognize in themselves, and, once assessed, what restorative techniques they use to effectively mitigate those stressors, a significant gap in the literature.

In an effort to better understand the phenomenology of stress and its mitigation in students of the Officer Candidate School, data were collected from students during the winter and spring of 2007. This paper will focus on one aspect of the larger study: restoration. Specifically, this paper sought to answer the following questions:

- What stressors do students recognize?
- What are the most effective restorative techniques utilized by students?
- What is the role of activity and setting in restoration?
- What is the relationship between psychological benefits of restoration and efficacious restorative experiences?

2.0 LITERATURE REVIEW

Officer candidates at the CGA have responsibilities beyond those of traditional university students. In addition to academic rigor, Gold and Freeman (2000) identify several unique and significant stressors that CGA students routinely face: rigorous physical fitness requirements, disciplined compliance to authority, and a highly regimented lifestyle. Military academies support a healthy lifestyle (Cannon-Bowers & Salas, 1988) to help students cope with these additional stressors.

Hans Selye (1956), founder of the scientific study of stress, proposed that, if not mitigated through enjoyable recreational and leisure activities, stress could cause irreparable physical and psychological damage. Accordingly, research on stress-coping strategies employed by students of military academies identified that well-being activities (nutrition and physical activity) had the strongest relationship to positive stress management (Gibson and Myers, 2000). Additionally, the director of counseling at the Center for Counseling and Development at the CGA suggests that many stress-reduction tactics are geared toward physical activity, e.g., exercise, playing sports, and sleeping (Murray, personal communication, Aug 14, 2007). However, Fredrick Law Olmstead suggested the physical or exertive qualities of activities alone may not be sufficient to alleviate stress:

“All forms of recreation may, in the first place, be conveniently arranged under two general heads. One will include all of which the predominating influence is to stimulate exertion of any part or parts needing it; the other, all which cause us to receive pleasure without conscious exertion. Games chiefly of mental skill, as chess, or athletic sports, as baseball, are examples of means of recreation of the first class, which may be termed that of exertive recreation, music and the fine arts generally of the second or receptive division” (Sutton, 1971, p. 73).

Why would Olmstead note this distinction between exertive and receptive forms of recreation? This answer may be found in the definition of recreation. Hammit (2005) challenges us to re-examine the definition of the term. The word has been traditionally interpreted as a ‘re-creation’ of something lost in a person but may be better represented through its etymological roots of ‘restoration or recovery’. In this light, recreation is metaphorically similar to sharpening a dull pencil rather than destroying the pencil and creating a new one. This metaphor refers to information transfer between a person and their environment. As more attention is directed toward something, more burden is placed on information

processing and mental fatigue sets in (i.e., the pencil becomes dull). It is only through the involuntary attention of events that we have a reprise from the taxing burden of directed attention and can recover (i.e., sharpening the pencil).

Attention Restoration Theory (ART) suggests certain that experiences afford restoration more than others (Kaplan, 1995). Unlike the physiological manifestations of stress as described by Selye’s (1956) General Adaptive Syndrome, ART focuses on the factors leading to the stress response, not the response itself. In particular, the focus is on the role of the perceptual system as it pertains to performance. With extended periods of directed attention, performance decreases as the body tries to cope with the perceptual strain. Restorative experiences occur with periods of undirected attention, allowing for recovery from this strain, resulting in optimal performance opportunities.

Kaplan (1995) identified four components of ART: being away, extent, fascination, and compatibility. The most basic consideration, ‘being away’ can occur physically, by geographically moving, or conceptually, through a wandering mind. However, as Kaplan et al. (1998) point out, being away is not enough and can contribute to mental fatigue (e.g., attending a conference with coworkers even if the location is desirable). The experience needs to have ‘extent’, i.e., be of a sufficient scope to be perceived as holistically new and allow for exploration. Extent can be physically created through environmental design or psychologically created as when absorbed in a book. The experience should involve ‘fascination’, or include interesting places or things that afford thinking and wondering. Lastly, to be restorative, an experience needs compatibility. There should be connection between what the environment offers and the expectations of the recreationist. For example, if an individual wants to complete a project but a critical piece is missing, hindering its completion, or if someone wishes to relax outdoors but there are mosquitoes, they will have less effective restorative experiences because their goals are blocked and there is a disconnect between expectation and experience.

2.1 The Restorative Event

The focus on directed attention and restoration is based on recreational experiences. The Recreation Production Process (Driver & Brown, 1978) states that the immediate output of recreation is an experience which leads to any number of psychological, health, environmental, social, personal, or economic benefits. Conversely, the experience and corresponding benefit(s) are dependent on two inputs: activities and settings. Based on economic principles, the Production Process promotes managing these inputs for the desired outcomes.

The literature is mixed regarding the value of the activity versus the value of the setting with regard to restoration (Bodin & Hartig, 2003, Hull & Michael, 1995). In a meta-analysis of activity and setting-based benefits, Pierskalla et al. (2004) identified four categories of benefit attainment: (1) activity-based benefits; (2) setting-based benefits; (3) activity and setting-based benefits; and (4) elusive benefits (those benefits that were not significantly linked with activity and setting). They proposed a new class of inputs combining activities and setting together as “events” through the use of a preposition. For example, rather than managing for an activity (e.g., jogging) or setting (Academy grounds) alone, they suggest that capturing whole event, e.g., jogging *around* the Academy grounds, may be more valuable. Using the restorative definition of recreation, this research sought to understand the perceived recreational events related to restoration and their relationship to the psychological benefits of these events.

3.0 METHODOLOGY

During the winter of 2006-2007 and spring of 2007, two classes incorporating 137 officer candidates at the CGA were asked to complete a survey about the factors that contributed to their stress at CGA and what they did to help alleviate the stress they identified. Students were asked to create a list of (maximum 10) current life stressors based on a modified version of the Subjective Units of Disturbance Scale (SUDS; Wolpe, 1990), e.g., ‘too much homework’, ‘argument with a sibling’, ‘friend is sick’, etc. Students then rated the amount of mental distress that these stressors

caused on a scale from 1 (very little stress) to 100 (extremely stressful).

Next, students were asked a series of questions about the activities and settings they employed to help relieve stress. To quantify these restorative events, students utilized the activity-preposition-setting format as described by Pierskalla et al., (2004), by listing a maximum of three of their most common restorative events. Examples of common restorative events included: jogging *around* the Academy grounds, reading *in* the library, sleeping *on* my bed, and praying *inside* the chapel. This method of describing recreational events allows for a systematic manner of data collection, a common unit of analysis, and an understanding of context (given that real-time assessments were not used).

After each restorative event, students provided a qualitative narrative about why they specifically chose to partake in that event to reduce stress. They then answered a series of questions about the specific components of restorative character based on its theoretical factors as described by Laumann et al., (2001):

- I feel I am in a different setting than usual (Novelty-physically being away)
- I feel I am away from my obligations (Escape-psychologically being away)
- I feel I am in a whole other world (Extent)
- I feel I am absorbed in these surroundings (Fascination)
- There is congruence between what I like to do and these surroundings (Compatibility)

Next, to further understand why they engaged in a particular restorative event, students were asked to rate the benefits of the experience based on the list of benefits suggested by Driver and Cooksey (1980). Finally, to help validate the role of events as a recreational input, students were asked, while participating in the restorative event, which was more important in providing stress relief: the activity, the setting, or the activity and setting combined (the event).

4.0 RESULTS

4.1 Student Characteristics

Officer candidates were the population of study at the CGA. Upon entrance to Officer Candidate School, officer candidates, usually recent college graduates, begin a highly restricted military lifestyle. They are kept on a supervised diet and physical wellness program, are vigorously reprimanded when they err in military bearing or behavior, and have limited contact with family prior to graduation which occurs 17 weeks after entrance into the program. Upon graduation, they are commissioned officers in the USCG. Students were predominantly male (76 percent, n=96), Caucasian (71 percent, n=89), and in their mid-20s (Mean=26.5, SD=3.0 years old).

4.2 Stressors

Students identified a number of stressors that inhibit their daily routine as they train to become officers. Multiple stressors were sometimes added to the same category; for example “studying for tests” and “too much homework” were categorized under “Academic concerns”. The most common stressors were academic concerns (e.g., too much homework; 69 percent, n=94), being away from friends and family (45 percent, n=61), personal/family concerns (e.g., going through a divorce; 42 percent, n=57), and stress related to transferring (e.g., what their first assignment as a Coast Guard Officer would be like; 35 percent, n=48). Regarding magnitude of stress, the length of Officer Candidate School (OCS) was the most distressing (Mean=81.7, SD=17.2), followed by being away from friends and family (Mean=67.7, SD=24.1), OCS staff concerns (Mean=66.4, SD=20.2), fatigue (Mean=66.2, SD=19.1), time management (35.9, SD=22.0), and lack of privacy (Mean=64.7, SD=23.2).

4.3 Restorative Events

Noting the varied categories of stressors, students reported a myriad of stress mitigation techniques. These mitigation techniques were divided into three categories: techniques where the activity was more important than the setting (activity), techniques in which the setting was more important than the activity (setting), and techniques where both were equally

important (event). As seen in Figure 1, just over half of all stress mitigation techniques were dependent on the activity itself, regardless of where it was performed. The setting was more important than the activity in nearly 10 percent of the techniques and both setting and activity (event) were equally important in about 40 percent of all stress mitigation techniques.

After creating a composite score of restoration by averaging the five factors of ART, overall psychological restoration was compared across the recreation inputs using a one-way ANOVA with the Scheffé post hoc test (Figure 2). Stress management

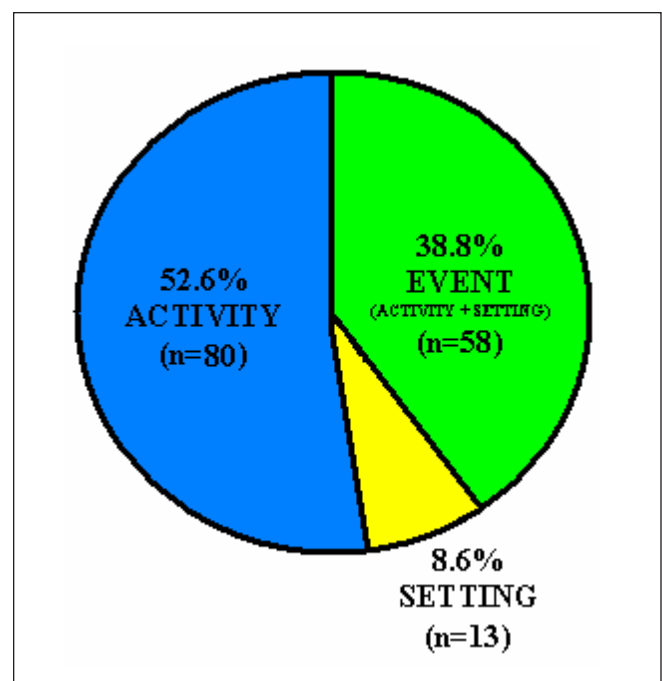


Figure 1.— Distribution of recreational inputs.

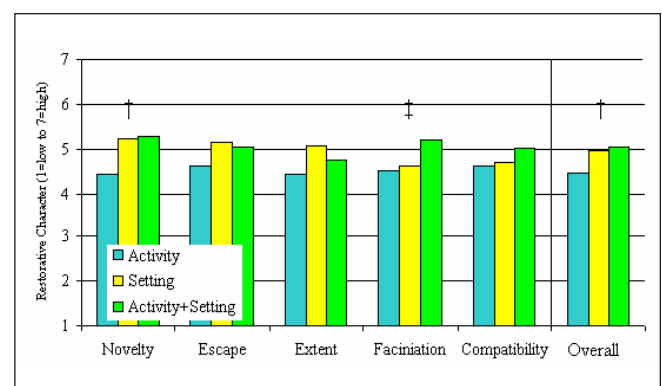


Figure 2.— Restorative character of recreational inputs.

† p<0.005, setting and event (activity and setting) > activity
‡ p<0.005, event (activity and setting) > activity and setting

techniques that were dependent on the setting (either setting alone or an activity performed at specific setting) tended to have a higher degree of restoration than stress mitigation techniques based solely on the activity with no regard to the setting. Specifically, setting and event-based restorative experiences were rated significantly higher on the ART factor of novelty (being physically away from the stressor, $F(2,149)=4.7$, $p=0.010$). Additionally, event-based experiences were rated significantly more fascinating (experiences that involve interesting places or things that afford thinking and wondering) than experiences that were based solely on the activity or setting alone ($F(2,148)=3.7$, $p=0.026$). Collectively, this suggests that activities done for the sake of the activity alone to reduce stress are not as effective as activities done at a specific place.

Since events were fairly prevalent and tended to elicit the highest restorative response from students, they were used as the unit of analysis for the next steps of the analysis. Dividing overall restorative character into highly restorative (items scored rather much, very much, and completely restorative) and slightly restorative (items scored rather little, very little, and not at all restorative), less than one-third of all restorative events were identified as highly restorative (28 percent, $n=27$). Proportionally, praying elicited the highest number of high restorative experiences (38 percent, $n=3$), particularly when the activity took place in the chapel. The highest *frequency* of restorative experiences, 27 percent ($n=7$) was jogging/running, particularly when performed outside the Academy grounds. All sleeping experiences took place in the students' beds though few were reported to have high restorative value (24 percent, $n=3$). Finally, 13 percent ($n=3$) of students reported high restorative experiences while exercising/working out. Exercising outside of the Academy was considered to be more restorative (50 percent, $n=1$) than exercising in the Academy gymnasium (10 percent, $n=20$).

Students also reported many other restorative experiences, including communicating (talking or joking with friends and family), listening to music, having personal time, playing sports, and reading.

They also reported attempting to relieve stress by sitting in a car, swimming in a pool, and watching movies in a theater. These events were not commonly utilized by students, but they were effective at reducing stress; nearly half of these events were rated as having high restorative value (44 percent, $n=8$). These data suggest that the most effective restorative events tend to be personalized and take place in familiar and enjoyable places distinct from the source of the stressor.

4.4 Factor Analysis of Psychological Benefits of Highly Restorative Events

An exploratory factor analysis identified three distinct characteristics of highly restorative events: fascination, escape, and interaction. These factors were overlaid onto a two-dimensional representation of the benefits using multidimensional scaling (Figure 3). As expected from ART, highly restorative events should afford fascination. In the context of psychological benefits, fascination refers to physically or psychologically fixating on a task. Psychological benefits related to this domain included achievement (factor loading=0.80), learning/discovery (0.80), nostalgia (0.80), exercise (0.72), seeking stimulation (0.67), creativity (0.60), and a lack of physical rest (-0.60). One example comes from a student who found restoration while talking on a cell phone in the Academy's Robert Crown Park: "It feels like I am in another place; not OCS. Sitting under the trees and watching the water is so serene." This component explained 36 percent of the total variance with an eigenvalue of 8.6.

Another fundamental concept of ART is that restorative events afford escape by removing the person, either physically or mentally, from the source of distress. Explaining 12 percent of variance (eigenvalue = 2.9), the psychological benefits related to this factor included escaping daily routine (factor loading=0.91), privacy (0.88), escaping role overloads (0.77), slowing down mentally (0.56), introspection (0.55), and escaping physical pressures (0.50). This factor tended to have the highest ratings of restoration and student comments supported this finding. One student said about watching a movie at a theatre (an event of high restorative value) "[I can] escape and

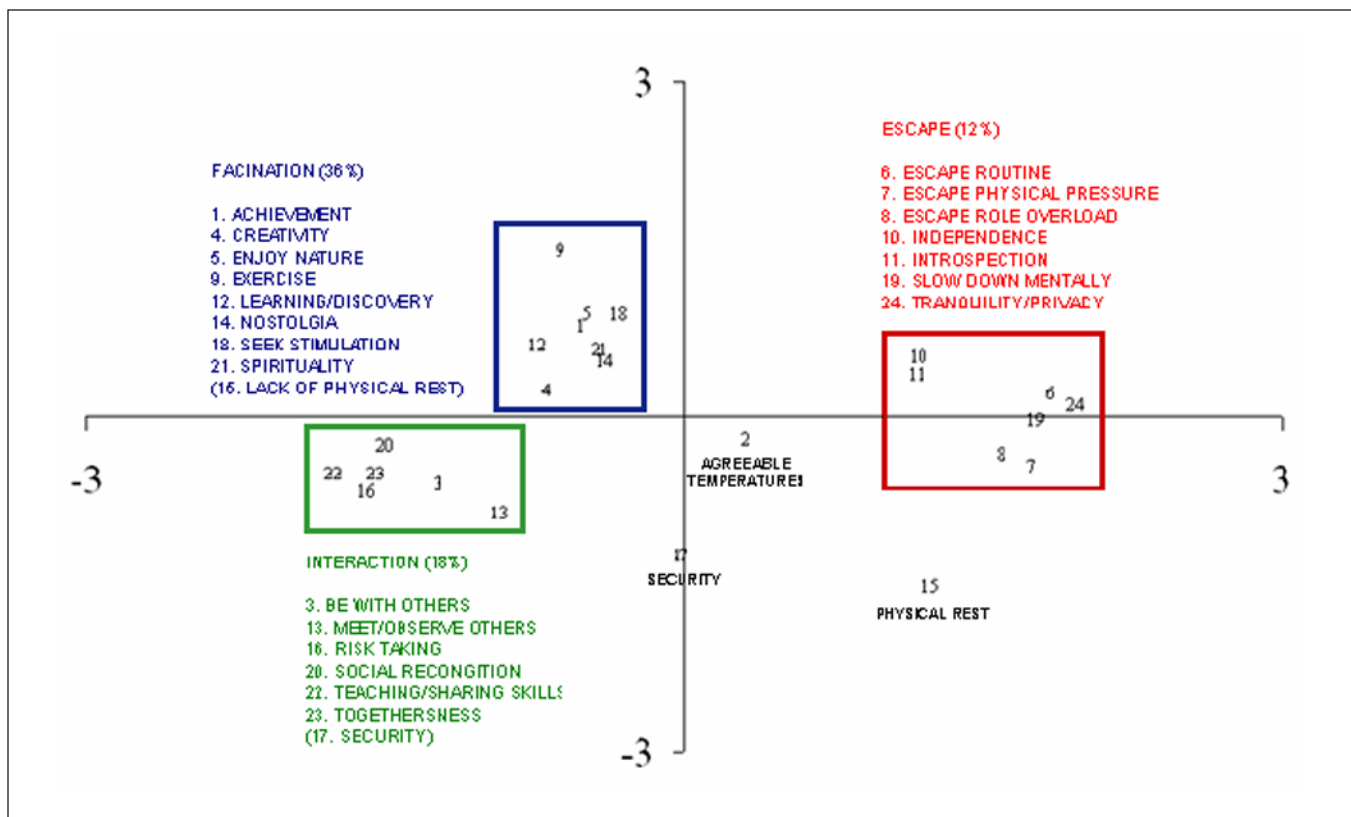


Figure 3.— Relationships among psychological benefits of highly restorative events. Note: Percents are the amount of variance explained in the three factor model based on a factor analysis with VARIMAX rotation. Benefits in parentheses are items derived from the factor analysis but not congruent to the two dimensional multidimensional scaling output (though they may be related in higher dimensions).

usually if I am in a mood, it improves.” Another student indicated that while driving, they could be away from the pressures of the Academy: “My car is the one place I can go, and I know I can get escape from here for a while. I can be me again and I love to drive.” Lastly, several students mentioned the value of jogging off campus. “Takes me away from the CGA campus and allows me to clear my head while getting a good workout”. Escaping a stressor does not have to happen off campus, however. Praying in the chapel was a common means of escape at the Academy: “It keeps my spirituality alive, and helps me get away from the stress and strain of OCS”. Psychological escape was also achieved by reading in one’s bed: “Reading and quiet reflection time to help me make sense of the seemingly ridiculous environment I find myself in, what I am doing, and where I am going.”

Lastly, and surprisingly, several highly restorative events were related to social interaction (18 percent of variance, eigenvalue = 4.3). These included being with other people (factor loading=0.93), togetherness (0.93), social recognition (0.75), sharing skills (0.74), and meeting other people (0.68). Many students utilized communication as a tool for restoration: “It allows for me to relate with shipmates and provide guidance which is relaxing and stimulating,” and, “It relaxes me, knowing my kids and wife are doing fine”. This factor is not present in ART but may be an artifact of the military environment where students have limited temporal and spatial freedoms to engage in recreation, particularly off-campus recreation, as a coping strategy. Instead, many must rely on each other, and to a limited extent, outside friends and family, to talk, laugh, get social support, and commiserate in an effort to relieve stress.

5.0 DISCUSSION

Officer candidates understand that stress is an integral part of their training. As new officers on active duty, they will be faced with a range of stressful situations and their experiences in OCS will help prepare them to handle the unknown. By being taken to their breaking point and surviving, students gain insights about themselves and their capabilities, and gain confidence to face future adverse situations by reflecting on the difficulties faced during their training.

However, too much stress, e.g., reaching the ‘breaking point’, can cause both physiological harm and mental fatigue, neither of which supports high performance. If a goal of training is to push students to the edge and later have them reflect on this achievement, time should be invested to help them along the journey by allowing them to realize what their stressors are, understand how they react under pressure, and determine what restorative events are effective.

These results suggest that the traditional military notion of relying heavily on either exercise or sleep (i.e. activities) to reduce stress, may not be the most effective strategy. Most of the restorative experiences reported by the students in this study included specific settings, which suggests that recreational events should be encouraged as a means of reducing stress. This study also provides additional evidence supporting the theoretical components of ART. Two of the three factors that emerged from a factor analysis of the psychological benefits of highly restorative events were directly related to the ART factors “being away” and “fascination.” The third factor, “social interaction”, is likely an artifact of the CGA students’ regimented lifestyle.

To help effectively help mitigate stress, there should be opportunities for students to physically leave the site of the stressor and become actively engaged in a “hands-on” learning experience. Academy scheduling should also allow for and encourage social interaction between students in a non-stressful environment, which can also promote social cohesion, teamwork, and collaboration.

Lastly, these data suggest that events (rather than activities and settings by themselves) are the appropriate unit of analysis for measuring restoration. Over one-third of the stress-mitigation strategies identified by students in this study incorporated both the activity and setting. In addition, encouraging students to use narratives to describe restorative experiences allowed them to provide more information about the context and the effects of the experience.

6.0 CONCLUSIONS

At the CGA, improving everyday health and well-being is a vital part of developing future leaders. CGA students should be cognizant of what stress reduction events work best for them in order to make the best use of their limited free time. One suggestion is that the CGA could use facilitated workshops to make students aware of stress and time management techniques. These could include ART, meditation, and mental imagery. Similar programs would also benefit students at nonmilitary institutions seeking to improve their overall academic performance and psychological well-being. Additional research should be conducted to help further understand the nuances of ART as a tool for stress management at the Academy and nonmilitary institutions.

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TRAVEL AND TOURISM II

CONSIDERATION OF HISTORICAL AUTHENTICITY IN HERITAGE TOURISM PLANNING AND DEVELOPMENT

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Abstract.— A review of heritage tourism literature reveals a fundamental tension over the use, function, and degree of authenticity of historic resources used for tourism development. Using a case study approach, this paper explores how stakeholder beliefs regarding historical authenticity influence the heritage tourism products, services, and experiences created for visitors and the value of historical authenticity to community stakeholders relative to other factors involved with heritage tourism development. Heritage tourism stakeholders in Manistee and Ludington, Michigan consider historic preservation and historical authenticity to be important components of heritage tourism development; however, other factors, such as providing an engaging and entertaining experience, have resulted in the creation of inauthentic contexts, stories, and experiences at some sites. Enhanced development of interpretive services is suggested as a way to preserve authenticity while also providing a more engaging experience.

1.0 INTRODUCTION

Recognizing the current and potential economic benefits of tourism, both heritage resource managers and economic development professionals have advocated collaborative partnerships to develop historic resources for heritage tourism. Despite the intent to work together, philosophical tensions regarding the nature and function of historic resources have hampered collaboration. There is evidence in the

heritage tourism literature of a fundamental tension over the use, function, and authenticity of historic resources; this tension is especially evident regarding the use of historic resources as a commodity within the tourism industry (Ashworth, 1994; Garrod & Fyall, 2000; McKercher & du Cros, 2002). By using history to create experiences for tourists, the history of a site can be altered and, in some cases, recreated into something completely false (Cohen, 1988; Herbert, 1995).

1.1 Defining History and Authenticity

During the past century, there have been changes in methods of historical research, and some have questioned the motivation and purpose for history to be written at all. The notion of objective truth or reality has been challenged by the idea that historians, and the sources of historical information with which they work, have inherent biases that influence what can be known about the past. Despite claims to objectivity, the previous domination of historical narratives from a white, male, heroic perspective is seen to have served more as a nation-building, identity-creating or status quo-preserving device than as an objective source of information about how things occurred in the past (Loewen, 1995; Lowenthal, 1998). As a result, considerable effort has been made by historians under the social constructivist philosophy to study less powerful, disadvantaged, and exploited members and groups within society (Iggers, 1997). This definitional and conceptual debate also presents a quandary for heritage tourism planners and developers: Which resources, stories, events, and perspectives accurately present a community's history and associated culture? Which should be developed and presented to tourists?

Heritage resource organizations that have advocated partnerships with heritage tourism have been explicit in their calls for authenticity. The National Trust for Historic Preservation (Green, 1993), for example,

cites authenticity as a way to promote the *true story* of an area by giving the destination *real value* and *appeal*. While she does not explicitly define authenticity, Hargrove (1999, 2002) describes it in terms of objective truth, a *significant* or *distinctive* asset, something *real* and *tangible* that visitors can experience and that is supported by *historical fact*. Visitors to heritage sites across the United States, she argues, have come to value and expect authenticity as part of a meaningful, quality educational experience. In calling for a focus on authenticity, McKercher and du Cros (2002) clarify this point by saying, “the days have well and truly passed where low-quality experiences can satisfy the gullible tourist” (p.127).

Within the context of heritage tourism, Wang (1999) provides an important differentiation between the competing definitions of authenticity. Authenticity in tourism can be applied to both the visitor experience (activity-related authenticity) and the toured objects themselves (object-related authenticity). Where Wang’s existential definition of authenticity deals with the activities or experience of the visitor, both objective and constructive definitions of authenticity focus more on objects, or the heritage tourism product that has been developed. Because the goal of this study is to better understand the role of authenticity in the heritage tourism development process (creating objects or products for consumption), Wang’s objective and constructive definitions of object-related authenticity are used as the basis for exploring stakeholder beliefs and opinions.

1.2 Heritage Tourism and Authenticity

While historians are becoming more apt to recognize the limits of objective truth in their field, some are nonetheless critical of the heritage industry as presenting false and untrue stories. “Heritage,” argues Lowenthal (1998), which is based more on faith than on fact, “passes on exclusive myths of origin and continuance, endowing a select group with prestige and common purpose” (p. 128). Ashworth (1994) suggests that this is the result of a selective process between competing messages. The end result of this process, he argues, is a heritage product that

has a meaning specific only to its intended audience and separate from its actual, tangible artifacts. This meaning can be manipulated in endless ways to cater to any potential audience, turning history into a commodity rather than a source of objective truth. In this sense, generating revenue and providing entertainment value could be considered more important than accurately representing history in its authentic context.

Several studies have shown a link between planning decisions and a lack of authenticity in the heritage tourism products and experiences created for visitors. Tilley (1997) showed how the Wala Island Tourist Resort in Malekula, Vanuatu (located off the coast of Australia), selectively chose portions of the historical record that would best attract their target market tourists from neighboring islands. Similarly, Waitt (2000) described how deliberate decisions were made by heritage tourism developers in Sydney, Australia, to select parts of the historical record that would avoid issues of conflict, oppression, and racism that were authentic to the area in order to attract a certain type of tourist. Barthel-Bouchier (2001) also described how the Amana Colonies (Iowa, U.S.) deliberately ignored authentic aspects of their history, as well as recommendations of historic preservationists, to develop a commercialized ‘German’ product to attract more tourists rather than tell the authentic story of their culture.

2.0 PURPOSE OF STUDY

The purposes of this study are: 1) to explore how stakeholder beliefs regarding historical authenticity influence heritage tourism products, services and experiences created for visitors; and 2) to explore the value of historical authenticity relative to other factors involved with heritage tourism planning and development. The following major questions guided the research:

- How is heritage tourism represented in the communities and how do stakeholders define historical authenticity?
- Do stakeholders use objective reality to help shape heritage tourism products, or is history

considered a commodity that is molded to fit their target audiences?

- Is authenticity a lower priority than attracting visitors, generating revenue, or providing an entertaining experience?

3.0 RESEARCH METHODS

Following expert consultation with Bill Anderson, Director of the Michigan Department of History, Arts and Libraries (HAL), the Michigan communities of Manistee and Ludington (see Fig. 1) were selected as case study sites for this research. Manistee and Ludington were part of the HAL Cultural Tourism Visitor Experience Pilot Project because of their demonstrated commitment to creative partnerships for developing historic resources by both heritage resource managers and economic development professionals. Manistee and Ludington are independent communities, but they have used similar economic development strategies through heritage tourism. They are examined in this research as a single case because they function as a single collaborative entity for regional product development and promotion in the HAL Pilot Project.

The primary sources of data for this case study were 13 individual in-depth interviews with stakeholders involved in the heritage tourism development process, including six heritage resource managers, five economic development professionals and two other participants identified through a snowball sampling technique. This was supplemented by a document review, including primary and secondary sources of historical information, planning documents, marketing and promotional materials and other relevant secondary sources such as newspapers, magazines and electronic media. In addition, tour guide training manuals, historical markers, and exhibit texts were documented by the researcher to assess the existing heritage tourism landscape and provide context for the comments of the interviewees.

Interviews were audio recorded using a tape recorder and then transcribed by the researcher for later analysis. Three hundred seven images of historical markers and exhibit text were also transcribed, along



Figure 1.—Location of case studies.

with marketing and promotional materials. Analysis primarily involved thematic text analysis using text coding as described by Crabtree and Miller (1992), with the goal of organizing the large volume of text from the interviews into categories of meaning.

4.0 RESULTS FROM PRIMARY DATA

Interview participants primarily defined historical authenticity as objective reality, emphasizing the importance of original buildings, historic homes, and tangible artifacts. The sights, smells, and sounds of a cruise aboard the Lake Michigan carferry *S.S. Badger* or the Victorian flair of the National Register Historic District in downtown Manistee are examples of this objective definition. The perception of historical authenticity as objective reality is related to an overall appreciation for historic resources among participants, an appreciation that puts value on preservation and restoration efforts. In the case of the Ramsdell Theater in Manistee, for example, the intangible benefits of preserving the theater outweighed the economic costs of the project. “There is absolutely no way that the Ramsdell Theater, by virtue of the improvements that

we have made, will ever have an increase in revenue to compensate for the dollars being dumped in,” explained one participant, “but it was important to this community that that theater be preserved.”

While interview participants felt that historical authenticity was important, there were limits to its importance when considered against other factors such as providing a fun and engaging visitor experience. More than half of the interview participants mentioned the importance of the visitor experience when developing heritage tourism products, illustrating the struggle to balance authenticity as objective reality with the need to create revenue-generating experiences for tourists. “It’s not like a history class,” explained one participant. “People are there to be entertained; they are there for an experience.” While some participants did state that embellishing stories to create an engaging context was acceptable, inappropriately altering a building to improve the visitor experience was not. “We’re willing to make some changes as long as it doesn’t affect the character of the building,” explained one participant. “In other words, we don’t want to destroy one of the staircases – the main staircases – to put in an elevator because it’s one of the key design elements of the building.”

4.1 Collaborative Process

Heritage tourism development began in Manistee with the Uniqueness Committee, an arm of the Manistee Chamber of Commerce, that coordinated efforts between community members, civic organizations, museum members, and local churches to identify, promote, and preserve Manistee’s historic resources. Beginning during an economic downturn in the 1980s, the Uniqueness Committee helped to integrate historic preservation efforts with tourism as part of an alternative economic development strategy. One outgrowth of these efforts is an annual preservation recognition award given to local homeowners in the Manistee historic district. The city of Manistee also has chosen to refurbish existing government buildings, such as the firehouse and city hall, rather than tear them down to build new ones. This preservation ethic was apparent among participants, and is likely a

direct outgrowth of the successful early efforts of the Uniqueness Committee.

Mutual respect for the skills, priorities, and perspectives of the two primary stakeholder groups represented in this study – heritage resource managers and economic development professionals – is evident in study results. Economic development professionals believe in the value and importance of historians and other experts in the heritage tourism development process, and heritage resource managers demonstrate a clear understanding of the fiscal realities of their organizations within the heritage tourism landscape. Therefore, in the case of Manistee and Ludington, the relationship between heritage resource managers and economic development professionals appears less adverse than in other cases described in the literature.

4.2 The Visitor Experience

Although this research did not assess the experiences of visitors from their point of view, study participants expressed clear views on the importance of creating an engaging visitor experience as part of the tourism development process. One participant shared ideas about a lumber museum concept in which visitors could experience walking on logs that simulated floating them down the Manistee River, or could breathe in the smells of a bunkhouse filled with sweaty lumberjacks. Some participant comments indicated a belief that authentic history was not fun or engaging and that some license was needed to make visitor experiences more desirable. “In order to attract people to the historical story being told, it has to be made as entertaining as possible,” explained one participant, “and that means there is certain embroidery that has to go on.” For example, examples of ghost stories were shared by stakeholders and several stories were told about the lunettes (architectural feature of a vaulted ceiling) in the lobby of the Ramsdell Theater that were not authentic, according to the local historians. At the same time, several participants implied that a fun and engaging experience was somehow different than an authentic one. “You need to engage them somehow,” explained one participant, “and sometimes you’re not going to engage them with the pure authentic form.”

The need for balance between authenticity and the visitor experience often resulted in compromise and was apparent in decisions made at individual heritage tourism sites. In the case of Manistee and Ludington, there was an appreciation for the physical remains of history that transcended the visitor experience. For example, putting in a larger bed and carpet in the captain's quarters of the *S.S. City of Milwaukee* would make overnight visitors more comfortable, but would not permanently alter the ship or run counter to its National Historic Landmark status. Therefore, such modifications were deemed reasonable and justified. On the other hand, modifications that destroy historic character or resources are considered inappropriate. As an example, ongoing restoration efforts at the First Congregational Church of Christ in Manistee are done in consultation with a historic preservation expert. Possible alterations are considered only if the initial design of the building is preserved. In this case, a suitable location had been found for a new elevator to provide improved access for all visitors to the magnificent view from the sanctuary's balcony.

5.0 RESULTS FROM SECONDARY DATA

Despite the coordinated regional efforts of Manistee and Ludington, more could be done to enhance the visitor experience through interpretive services. Some interpretive messages are outdated, and some interpretive signs present historical topics that are not promoted as they once were. Ludington is one of several communities to claim the "exact spot" where Father Jacques Marquette died in the 17th century. Despite recent publications on this topic by local authors, the Father Marquette story is not part of the current theme developed for tourists and is noticeably absent from current promotional materials, even though multiple sites were built in the 1950s to commemorate him. These sites and monuments are easily accessible by tourists, with one monument prominently displayed in the Ludington marina. The memorial erected in his honor has enduring qualities beyond the scope of tourism, so is justified in that way. However, when this and other older sites may be considered as tourism attractions,

challenges to presentation of authentic stories and images may become problematic. Some of the sites contain outdated and inaccurate messages, and some use language that could be considered offensive or politically incorrect to current audiences. As Loewen (1999) suggests, some of these historical markers and interpretive texts could either be re-interpreted in a modern context, or simply stored in a museum as part of the historical record.

There was also evidence of a lack of coordination between some entities and the region's coordinated heritage tourism development efforts. One of the local gift shops, for example, displays a unique set of murals covering the entire length of the store adjacent to the street. Despite their artistic merits, the murals depict scenes of the American West, including several of Native Americans that are not authentic to the eastern shore of Lake Michigan. As with outdated historical markers, these murals could have value in other contexts, but as tourist attractions attempting to portray an authentic image and story about the region's history, they fail. More coordination among planners, tourism businesses, and other stakeholders is needed to present authentic messages that would enhance local historic themes and topics identified as important to the development and portrayal of the region's heritage.

In some cases, interpretation at sites related to the developed topics and themes of the region simply doesn't exist. The Udell Rollways, for example, is a site where lumber was rolled several hundred feet and then into the Manistee River so it could be floated down river to the lumber mills. The location was promoted in the early 20th century as a picnic site and still provides a picnic pavilion today. However, there are no historical markers or interpretive services at the site, and the historic context of its original purpose would likely be missed by most visitors. Another site in a park south of Manistee contains two large rocks with the inscription "be kind to animals." According to a local historian, these used to contain water for horses and other small animals to drink. The park used to be the home of a gazebo and was a popular site for concerts, picnics and events during Manistee's early

history. Again, without interpretive signage, these facilities and historic events are easily lost among the modern playground equipment currently at the site.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Manistee and Ludington were chosen as a case study for this research because of their history of collaborative heritage tourism development efforts among diverse stakeholders. This process began independently in the two cities and has grown into a collaborative regional effort. As stated above, the primary tension between authenticity and heritage tourism identified by participants is created as a result of wanting to provide a “fun and engaging visitor experience” and to enhance economic gain. Despite the desire among some participants to provide amusement park theatrics to visitors, significant progress could be made by more fully and appropriately developing interpretive services at heritage tourism sites.

The following improvements to interpretation could improve the visitor experience in Manistee and Ludington:

- More coordinated organization of themes around historical topics, at individual sites and especially between venues across the region
- Improved signage that links more clearly to the historical topics and developed themes of the region
- Guided experiences led by trained volunteers or Certified Interpretive Guides
- Development of multi-sensory, participatory visitor experiences.

In Manistee and Ludington, the tension between authenticity and other factors has resulted in compromise, but not at the cost of the physical historical remains in the region. Tangible, historical artifacts and buildings were identified as a primary link to the past by interview participants. Despite continued economic difficulties in the region, an ethic of historic preservation continues to thrive and is an integral part of the region’s heritage tourism and economic development decisionmaking.

In both cities there is evidence of both Wang’s (1999) objective and constructive definitions of authenticity. An emphasis on historic preservation and presentation of tangible, authentic artifacts to visitors demonstrate the objective realm, while creating stories and fabricating inauthentic contexts represent the constructive realm. As in other cases in the literature (Barthel-Bouchier, 2001; Tilley, 1997; Waitt, 2000), history has been developed as a commodity in what Lowenthal (1998, p.128) calls a “creative commingling of fact with fiction.”

Primarily defining authenticity as objective reality based on actual buildings and historical artifacts is a natural fit with historic preservation efforts. In the case of Manistee and Ludington, there seems to be a direct relationship between the success of historic preservation and heritage tourism development. At the same time, creating inaccurate stories could actually have negative impacts on the quality of the visitor experience and visitors’ perceptions of the heritage tourism venue (Hargrove, 1999; McKercher & Du Cros, 2002). Additional research should focus on the elements of a fun and engaging experience and the impact of embroidered or inaccurate stories on visitors’ perceptions of experience quality and value, and on their understanding of the region’s history.

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***OUTDOOR RECREATION
MANAGEMENT***

MANAGEMENT PERCEPTIONS OF OFF-HIGHWAY VEHICLE USE ON NATIONAL FOREST SYSTEM LANDS IN APPALACHIA

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Abstract.—In 2005, the U.S. Forest Service (USFS) issued new standards for dealing with unmanaged recreation. All National Forest System units are to develop travel management plans by 2009. The purpose of this study was to determine differences in perceptions between USFS managers of national forests in Appalachia with low and high levels of off-highway vehicle (OHV) use regarding OHV-related issues and management tactics. This information will help managers in this region make informed decisions about OHV management when developing travel plans. Managers with high levels of OHV use reported more physical impacts, safety issues, and use of more management tactics. It is recommended that managers weigh the costs, benefits, and resource impacts of OHV use prior to designating additional areas for OHV recreation.

1.0. INTRODUCTION

In 2005, the USDA Forest Service (USFS) updated the Code of Federal Regulations to provide consistent standards for managing motorized vehicle use on National Forest System (NFS) lands. This new travel management rule requires NFS units to complete

an inventory of all authorized and unauthorized (e.g., “social”) roads and trails. From that inventory, they are to develop a travel atlas consisting of maps indicating all designated roads and trails on that unit. Additionally, each unit is to create a motor vehicle use map showing where both on- and off-road travel are permitted. All NFS units are to complete these travel management plans by 2009.

For managers to make decisions regarding off-highway vehicle (OHV) recreation opportunities, it is important for them to have up-to-date information about the ramifications of different management strategies. There are currently considerable gaps in the OHV literature. Most studies that describe successful techniques for OHV management have been based in the western United States. Ecosystem, social, and climatic differences can make it difficult to apply these results successfully to east coast sites. Because this study takes place on the east coast, it will help address this gap in the OHV literature.

The purpose of this study is to determine differences in perceptions of OHV-related activity and interest, related physical and social issues, and preferred management tactics among District Rangers (DRs) on NFS units in the Appalachian Region. For the purposes of this study, an OHV is defined as any three- or four-wheel all-terrain vehicle or off-road motorcycle used for recreational purposes.

2.0 LITERATURE REVIEW

2.1. Conceptual Framework

This research was based on a study by Chavez and Knap (described in an unpublished 2004 report and in a 2006 Research Paper), in which they surveyed DRs in California about OHV-related issues and management tactics. Chavez and Knap organized the wide variety of concepts and issues in their study according to the framework of the Recreational

Opportunity Spectrum (ROS) created by Clark and Stankey (1979). The ROS helps resource managers classify different sections of large sites based on the recreation experiences likely to be generated there. Recreation opportunity classes are established based on a set of criteria weighing physical, social, and managerial settings appropriate to that area. In discussing OHV-related issues and management tactics in this literature review, we will address them within the contexts of the physical, social, and managerial settings of the ROS.

2.2 OHV-Related Physical Impacts

According to Meyer (2002), “Few OHV trails are planned trails where a full range of environmental considerations was carefully weighed before construction. In fact, few trails are specifically constructed for OHV use” (p. 8). Such unplanned trails frequently cross areas that are not suitable for OHV recreation at current use levels (Marion & Leung, 2004). OHV use on improperly designed, -constructed, and -maintained trails has been found to cause soil erosion and compaction, introduction of exotic plant species, and damage to soil biota and vegetation – and to cause this damage more rapidly than other forms of recreation (Meyer, 2002; Chin et al., 2004; Leung & Marion, 2000).

2.3 OHV-Related Social Issues

The primary social issue related to OHV recreation is user conflict. The recreation conflict literature indicates that some conflict between mechanized and nonmechanized recreationists is related to the rate of speed at which their preferred activities take place and the noise generated by recreation machines (Krumpe & Lucas, 1986; Vittersø et al., 2004). Conflict between mechanized and nonmechanized recreationists tends to be asymmetrical; that is, nonmotorized recreationists tend to experience goal interference from mechanized or motorized recreationists more than their mechanized or motorized counterparts experience from them (Krumpe & Lucas, 1986). Examples of nonmechanized versus mechanized conflict include studies of cross-country skiers and snowmobilers (Knopp & Tyger, 1973; Vittersø et al., 2004), hikers

and mountain bikers (Carothers et al., 2001; Heer et al., 2003), hikers and OHV users (Behan et al., 2001; Shultis, 2001), and canoeists and motorboaters (Ivy et al., 1992).

2.4. OHV-Related Management Tactics

Resource managers have a variety of available tactics for managing various types of recreation. Management tactics can be divided into four categories: direct, indirect, resource hardening, and collaborative. Direct tactics involve the immediate presence or action of a resource manager, and may include monitoring and limiting what recreationists do in a given area. Indirect tactics are used in situations where resource managers wish to influence recreationist behavior without having to be present themselves. Resource hardening consists of building facilities or manipulating trails or other surfaces by natural or artificial means in order to increase the durability of the recreation site. Collaborative tactics involve one or more stakeholders or stakeholder groups in decisionmaking about how an area is to be managed (Brooks & Champ, 2006; Chavez, 1996; Manning, 1999).

3.0 METHODS

3.1 Study Region

The Appalachian Regional Commission (2003) defined the Appalachian Region as the portion of the Appalachian Range extending through southern New York, most of Pennsylvania, southeastern Ohio, all of West Virginia, eastern Kentucky, western Virginia, eastern Tennessee, western North Carolina, northeastern Mississippi, and northern Alabama, Georgia, and South Carolina (Fig. 1). All national forests in the Appalachian Region were surveyed. Because the national forest in New York is not in this region and because there are no national forests in Maryland, those states were not included in the study.

3.2. Instrumentation and Sampling

The survey instrument was based on the research of Chavez and Knap (2004), and modified with input from academic experts on OHV use and USFS DRs and Recreation Staff Officers. The instrument was



Figure 1.— The Appalachian Region (from Appalachian Regional Commission, 2002).

pretested at West Virginia University (WVU) and at the Oregon Dunes National Recreation Area in USFS Region 6.

This study was intended to be a census of all 42 DRs on the 14 national forests in the Appalachian Region. Data were collected using a modified Dillman (2000) method. A prenotification email was sent from the USFS National OHV Program Manager. A week later, the survey instrument was mailed along with a cover letter, survey instructions, and a postage-paid return envelope. After 90 days a followup letter was sent to nonrespondents along with another survey instrument, instructions, and return envelope. Thirty-one responses were received; 29 instruments were usable yielding a 69.0 percent modified response rate

3.3. Treatment of Data

Because the data violated assumptions for parametric analysis, Mann-Whitney comparisons of independent samples were used to examine any item-by-item differences. The independent variable was the level of OHV recreation opportunity available, operationalized as high (above the median ratio of trails open and closed to OHV use, 12.16 percent) and low (below the median ratio of trails open and closed to OHV

use, 12.16 percent). Dependent variables were perceptions of OHV activity and interest, perceptions of physical impacts, perceptions of social issues, and preferred management tactics. Kendall's tau-b was used to perform correlation analyses using any overall tendencies between the independent and dependent variables in each category.

4.0. RESULTS

4.1. Perceptions of OHV-related Activity and Interest

Of these 42 items, there were few significant differences between DRs with high and low levels of OHV recreation opportunities on their Districts. DRs with high levels of OHV recreation opportunities were more likely to report that they charged fees ($U = 37.50, p < .05$). They were also more likely to report that in the past year OHV users had volunteered to maintain trails ($U = 29.50, p < .05$). DRs with low levels of OHV recreation opportunities were more likely to report that in the last year OHV users had not volunteered to monitor or maintain trails ($U = 17.00, p < .01$). There was a small to moderate positive correlation between the level of trail opportunity provided on a District and positive views of personal contacts with OHV users ($\tau_{23} = .363, p < .05$); in other words, as the level of OHV opportunity on a ranger district increased, DRs viewed personal contacts with OHV users more positively.

4.2. Perceptions of OHV-related Physical Impacts

Thirteen items measured physical impacts that respondents had seen or received reports about in the past year. There were no significant differences found on an item-by-item basis between DRs with high and low levels of OHV recreation opportunities on their districts ($p > .05$, in all cases). There was a small to moderate positive correlation between the level of OHV recreation opportunities and the total number of impacts reported ($\tau_{26} = .327, p < .05$); the level of OHV recreation opportunity on a ranger district increased, the number of physical impacts reported also increased.

4.3. Perceptions of OHV-related Social Issues

For 10 of the 12 social issue-related items, there were no significant differences between respondents with low and high levels of OHV recreation opportunities on their districts ($p > .05$). DRs with high levels of OHV recreation opportunities were more likely to report two safety-related issues: lack of safetywear ($U = 42.00, p < .05$) and inexperienced drivers in difficult terrain ($U = 34.50, p < .01$). There was no significant difference found between the level of OHV recreation opportunity on a Ranger District and the total number of social issues reported ($p > .05$).

4.4. Preferred OHV-related Management Tactics

Respondents were asked to select from 39 different direct, indirect, resource-hardening, and collaborative management tactics. There were several significant differences in the types and numbers of management tactics DRs used, depending on the level of OHV recreation opportunity their district provided. DRs with high levels of OHV recreation opportunities were more likely to prefer two direct tactics: seasonal trail closures ($U = 34.00, p < .01$) and relocating or redesignating trails ($U = 46.50, p < .05$). They were also more likely to use indirect management tactics like posters or signs ($U = 46.50, p < .05$), maps ($U = 41.50, p < .05$), brochures ($U = 41.00, p < .05$), and trail use recommendations ($U = 40.50, p < .05$). The only resource-hardening management tactic DRs reported using was drain dips: DRs with a high level of OHV recreation opportunities were more likely to report using this tactic ($U = 34.50, p < .01$). DRs with a high level of OHV recreation opportunities were more likely to report using one collaborative management tactic: personal contacts ($U = 48.50, p < .05$). Overall, DRs with a high level of OHV recreation opportunities were more likely to report using a greater number of management tactics than DRs with a low level of OHV recreation opportunities ($U = 36.00, p < .01$), perhaps due to the larger number of physical impacts they reported.

5.0 DISCUSSION AND RECOMMENDATIONS

DRs with high levels of OHV recreation opportunities tended to have more positive direct encounters and a greater amount of volunteerism among OHV users, but they also tended to have a greater number of physical and social impacts related to OHV use on their districts. Along with the increased number of impacts reported by the DRs with high levels of OHV use, those DRs reported that they used more varied management tactics than the tactics employed by DRs with low levels of OHV recreational opportunities. Possibly in an attempt to counter the increased costs related to the number of management tactics employed, DRs with high levels of OHV recreation opportunities were more likely to charge fees for OHV recreation on their districts.

As managers on national forests near the deadline to develop their new travel management plans, DRs in Appalachia who are considering increasing the amount of OHV recreational opportunities on their districts will need to weigh these costs and benefits. Unauthorized and illegal use do not seem to decrease when more trails are added, so expanding recreation opportunities for OHV users may not necessarily decrease the number of user-created trails or issues with riders leaving designated areas. Overall, adding more OHV trail opportunities may have other drawbacks for managers. More trails may increase the costs of personnel and trail management, necessitate the implementation of a fee system, and/or may necessitate using more varied management tactics to deal with OHV-related impacts. Managers who add more OHVs in their Districts, however, may experience an increase in volunteerism by OHV users and an increase in positive encounters with those users.

Increasing the amount of OHV-related recreational opportunities should not be predicated upon whether more trail budget money might become available or whether OHV users might be more likely to volunteer. Choosing to add or open more OHV trails should be based on the suitability of the resource for such trails

on the resource's capacity; and on the district's ability to support and maintain the trails over time. When these conditions cannot be met, providing additional trail opportunities may have more drawbacks than benefits.

5.1 Future Research

This study, like Chavez's and Knap's (2004, 2006), was geographically limited. A nationwide study would provide more general information about management perceptions and tactics. Further region-specific studies, however, would also be helpful to provide information about regionalized issues. Future study is also necessary to determine how recreationists (motorized/nonmotorized) and DRs perceive management issues. This issue was raised by Brooks and Champ (2006) in a study of unmanaged recreation in the Rocky Mountains, where they found that users and managers differed both in their definitions of the problems and the solutions for unmanaged recreation.

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AN EXPLORATION OF SELF-EFFICACY AS A MOTIVATION FOR ROCK CLIMBING AND ITS IMPACT ON FREQUENCY OF CLIMBS

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Abstract.—This study utilizes the theoretical framework of self-efficacy to explore the role it plays in rock climbing. Data were gathered from on-site self-administered surveys to rock-climbers in three different locations (N=72). A conceptual model was developed to consider the relationship between self-efficacy and frequency of rock climbing. The initial factor of self-efficacy did not hold, thus allowing us to reconceptualize the nature of the self-efficacy variables in relation to frequency of rock climbing. A discussion of how the results from this study support viewing self-efficacy as a stepwise process and how viewing self-efficacy in this manner can be useful to practitioners for programmatic purposes follows.

1.0 LITERATURE REVIEW

Sports that involve a potential for injury, or even death, have become increasingly popular around the world. These so-called “extreme sports” include mountaineering, canyoning, bungee jumping, BASE jumping, parachuting, hang gliding, sky diving, and rock climbing (Palmer, 2002; Slanger & Rudestam, 1997). The essence of extreme sports is that they take you higher, faster, and further; thus, these sports often

have elements of sensation seeking and risk (Koerner, 1997; Slanger & Rudestam, 1997).

Although some researchers have maintained that sensation seeking and risk taking are the key elements of motivation to participate in rock climbing (Palmer, 2002), others have researched characteristics that are unique to rock climbers and set the rock climbing community apart from the other extreme sports (Kiewa, 2001; Slanger & Rudestam, 1997).

In order to investigate this notion of uniqueness, we sought to explore self-efficacy, a relatively unexplored motivation for rock climbing. The significance of this study is twofold: (a) self-efficacy as a construct has not been empirically tested; and (b) self-efficacy has not been specifically explored in rock climbers. Thus, the objectives of this study are to determine the underlying structure of self-efficacy (validity and reliability) and the relationship between self-efficacy and rock climbing.

1.1 Introduction to Rock Climbing

People have been rock climbing since prehistoric times but rock climbing was not recognized as a recreation activity until the 1970s (Feher et al., 1998; Li et al., 2001). Over the past 15 years, the number of rock climbers in the United States has increased fourfold (Schuster et al., 2001). Currently, there are more than 400,000 active climbers in the United States and that number is expected to continue to increase (Schuster et al., 2001). As the numbers of rock climbing participants grow, there is a need for natural resource managers to understand the motivations of rock climbers in order to implement appropriate management strategies.

Schuster et al.'s (2001) seminal study looked at attitudinal differences toward management among different types of rock climbers. The study measured

the differences between traditional and sport rock climbers and focused on their perceptions of attitudes toward natural resource management. However, they did not consider the possible management implications of climbers' motivations.

This study is part of a larger study that looked at six motivational subscales: (a) escape; (b) competition; (c) control; (d) self-efficacy; (e) sensation-seeking; and (f) socializing (Ackerman, 2006). The focus of our study is on the self-efficacy subscale.

1.2 Self-Efficacy

Self-efficacy as a theoretical framework was developed by Bandura (1977) who described self-efficacy as an individual's belief that he or she can complete a task that tests his or her ability, while experiencing risk. A person's level of self-efficacy derives itself from four areas: (a) mastery experience; (b) vicarious experience; (c) verbal persuasion; and (d) physiological states (Bandura, 1997). The construct of self-efficacy in this study contains items that address each of these areas.

Slanger and Rudestam (1997) concluded that the factor most responsible for the disinhibitions associated with risk taking appeared to be perceptions of self-efficacy (p. 366). By definition, self-efficacy is the notion that "the kinds of outcomes people anticipate depend on their judgments of how well they will be able to perform" (Slanger & Rudestam, 1997, p. 356; Bandura, 1997). One could argue that rock climbing by nature is a recreational activity that may be highly influenced by mastery of attempts and, thus, explained by self-efficacy.

2.0 METHODS

The instrument used for this study was an on-site self-administered survey. It was pilot tested at both The Rock Gym in Virginia Beach, VA, and Old Dominion University's Rock Climbing Club in Norfolk, VA. Forty pilot surveys were used to assess face validity, wording, and sequencing. Feedback from respondents was incorporated and slight modifications were made to the survey; the pilot surveys were excluded from analyses. Additionally, given Schuster's prior work

with rock climbers, his expert opinion was sought as an additional check on face validity.

From the spring to the fall of 2006, data were collected on-site at two indoor rock climbing centers (Rockreation, CA and Prime Climb, CT) and one outdoor rock climbing area (New River Gorge, WV) in the United States using a convenience sample approach. This entailed face-to-face interviews with climbers at a climbing area, and distribution of surveys at indoor climbing gyms. Each participant in the study was given a brief description of the purpose of the study and had the opportunity to give verbal consent prior to survey administration. For purposes of confidentiality, all responses were kept anonymous and respondents were never asked to give their name or any other identifying information.

The variables of interest for this study were those measuring self-efficacy and rock climbing. Self-efficacy was operationalized by asking respondents to answer this question: "A reason for participating in rock climbing as compared to other sports is that it allows me to ..." This was then followed by five variables measuring self-efficacy (SE): (a) "to achieve a goal" (ACHV); (b) "to try harder next time" (HARD); (c) "to overcome a fear of failure" (OVCM); (d) "to be confident" (CONF); and (e) "to attempt climbs above my ability level," (LEVL). One additional non-self-efficacy variable was also included: (f) "to have a partner that motivates me" (PTNR). Answers were given on a seven-point scale, ranging from 'Not At All Like Me,' coded as "1" to 'A Lot Like Me,' coded as "7." The dependent variable (rock climbing) was an open-ended question operationalized by asking "How many days a month do you go climbing (CLMB)?" Thus our initial conceptual model was $SE \rightarrow CLMB$, where SE is a construct consisting of six variables (Fig. 1).

3.0 RESULTS

3.1 Descriptive Statistics

A total of 72 surveys were collected; 62 percent of respondents were male. Respondents ranged in age from 18 to 67 years, with an average of 30.4 years. Rock climbing respondents were 86 percent White,

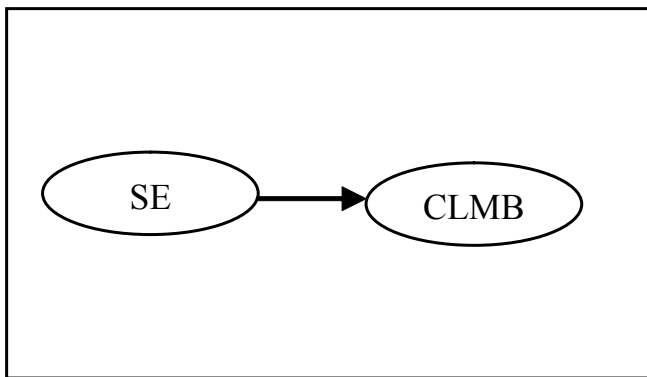


Figure 1.—Initial conceptual model.

6 percent Multi-Ethnic/Mixed Race, 3 percent Latino/Hispanic, 1 percent Asian, and 4 percent other. Participants were generally well-educated, with 25 percent having some college, 45 percent holding a Bachelor's degree, and 4 percent having completed some graduate school. The highest percentage of rock climbers (54 percent) claimed a total household income of under \$24,000. Fifty-four percent were single, 40 percent married, 3 percent separated or divorced, and 5 percent were other. Participants climbed anywhere from zero to 30 times per month, averaging 8.11 times per month. The average years of experience was 5.8 years; 30 percent of the participants had one year or less of rock climbing experience.

3.2 Inferential Statistics

All analyses were performed using an alpha of .05 as our criterion. An exploratory factor analysis using Varimax Rotation was conducted to determine if the variables within the SE construct were valid measures of the underlying construct. Prior to statistical analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was employed to evaluate the data. Sampling adequacy was confirmed using a KMO (>0.60) and Bartlett's Test of Sphericity ($p < 0.05$) on the SE construct.

According to Tabacknick and Fidell (1996), values of 0.60 for the KMO, and $p < 0.05$ for Bartlett's Test of Sphericity (BTS) is required for factor analysis. Additionally, reliability analyses were performed on each component to determine the deletion of any items that would decrease scale reliability. Due to the

low N of 72, items with reliability coefficients below 0.60 (i.e., $\alpha < 0.60$) were not retained. Guadagnoli and Velicer (1988) concluded that factors/constructs are well defined when they have factor loadings of 0.60 or higher. In summary, the criteria used for retention of components and variables/items were a KMO (>0.60), Bartlett's Test of Sphericity (BTS) ($p < 0.05$), factor loadings (>0.60), and an overall component reliability ($\alpha < 0.60$).

Initial Varimax rotation led to two dimensions of self-efficacy. As we were looking for a unidimensional fit, we deleted the two most problematic variables (LEVL and PTNR) and achieved unidimensionality with ACHV, HARD, OVCM, and CONF. Although BTS was adequate ($p < 0.0001$), the KMO alpha was less than 0.60 ($\alpha = .58$). Thus, we had to look at these four as individual variables, rather than as one composite variable. We then turned to a correlation analysis to investigate the association between the independent variables (OVCM, ACHV, HARD, CONF) and the dependent variable (CLMB).

The only variable significantly correlated with CLMB was CONF ($\beta = 0.33$, $r^2 = .11$, $p < .05$). Similarly, the only variable correlated with CONF was HARD ($\beta = 0.40$, $r^2 = .16$, $p < .05$). Lastly, the only variable correlated with HARD was OVCM ($\beta = 0.46$, $r^2 = .21$, $p < .05$). ACHV did not correlate with any of the variables and was removed from the analysis. As a result of the correlation analysis, a new conceptual model emerged (Fig. 2): OVCM (.33) $\rightarrow$ HARD (.40) $\rightarrow$ CONF (.46) $\rightarrow$ CLMB.

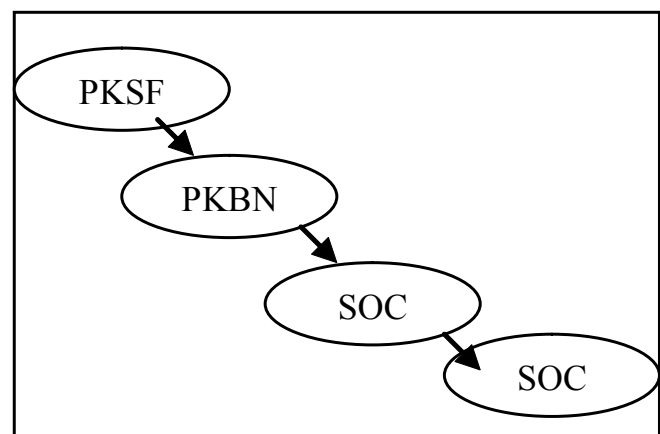


Figure 2.—Final conceptual model.

The reader should note that in a causal model, where there is only one preceding predictor variable for another variable in the path (e.g., OVCM only is associated with/predicting HARD), the correlation associated with the variables is equivalent to the standardized beta weight. Furthermore, once correlations/beta weights are found to be significant, the beta weight can be squared (regression coefficient) to determine percent of variance explained or causality. Also, because we are looking at beta weights, we can compare the relative impact that the variables have on each other. Thus, one can see that as the causal chain continues, the relationship amongst consequent variables have more “weight,” where the strongest relationship is between confidence and climbing, relative to the other relationships in the revised model.

4.0 DISCUSSION AND CONCLUSIONS

The results indicate that self-efficacy, as a construct, was not unidimensional, nor was it a valid construct for these individuals. However, three variables (OVCM, HARD, and CONF) originally hypothesized as indicators of SE did prove useful in the analysis of motivations.

The correlation analysis suggests that overcoming one’s fears highly influences one’s ability to try harder the next time, and that this in turn causes one to be confident and consequently participate in rock climbing more frequently.

Overcoming fear directly parallels two of the four sources of SE (enactive mastery and physiological/affective states). Furthermore, once an individual tries harder (e.g., exerts more effort during a previously failed attempt on a route) and becomes more confident, he or she is more likely to continue rock climbing. Confidence is one of the cornerstones of SE, and it was the only variable to have a direct impact on frequency of rock climbing. Rather than these variables working together in tandem, our analysis indicates that a progression of “self-efficacy steps” lead to actual rock climbing.

This information clarifies the conceptual nature of SE and practitioners can use it to their advantage. For example, knowing that fear is a critical factor to overcome, trainers or programmers should work to alleviate any fears that most people have about rock climbing. This could be done by creating an informational flyer of the “common misconceptions of rock climbing,” or “how to take the fear out of rock climbing,” or “successful steps for becoming a rock climbing pro” prior to, or in the initial stages of, participation in rock climbing. Making the brochure available dispels myths and more importantly creates goodwill among prospective participants.

When the individual feels comfortable enough, programming should incorporate a “development of skills” component to master more difficult or technical aspects of rock climbing. Progression through these skill sets can culminate in a “test” of knowledge of skills. This test or certification can act as a catalyst for confidence, which this study supports and which will then encourage more rock climbing.

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