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Contemporary Issues in Recreation



A COMPARISON OF WILDERNESS PRIVACY WITHIN TWO NEW YORK STATE WILDERNESS ENVIRONMENTS

Cathy L. Fuller

Graduate student, State University of New York, College of
Environmental Science and Forestry, 1 Forestry Drive,
Syracuse, NY 13210

Chad P. Dawson

Professor, State University of New York, College of
Environmental Science and Forestry, 1 Forestry Drive,
Syracuse, NY 13210

Abstract: The concept of privacy in a natural environment, where users have control over interactions with others and freedom of choice over the type and amount of information that must be processed, may be more appropriate and useful to measure than previous studies of user-user encounters and solitude. A study of watercraft users in the St. Regis Canoe Area was conducted to replicate tests of the Cognitive Dimensions of Privacy scale developed by Hammitt and used in another study of Adirondack Forest Preserve hikers. The privacy scale study results in the St. Regis Canoe Area were very similar, in rank order of items and factor analysis dimensions, to other reported study results using the same 16 items.

Introduction

Solitude and opportunities for solitude in wilderness experiences are a major component of The Wilderness Act of 1964 (U.S. Public Law 88-577). It calls upon managers to provide "outstanding opportunities for solitude or a primitive and unconfined type of recreation" (Roggenbuck et al., 1993). In many people, the term wilderness stirs up various images of pristine nature, extraordinary scenery, wildlife habitat, and solitude. The lone backpacker silhouetted along a ridge line epitomizes the wilderness image of solitude (Stankey, 1989). The stereotype of a lone backpacker is rare; since most users in a wilderness area travel in small "social groups" (Hammitt, 1982). Due to the "small group" attitude, not all visitors are sensitive to the number of other parties encountered. In addition, the type and location of the encounters is often more important than the number of encounters (Manning, 1985).

Wagar (1966) put forth the assumption that the quality of a recreation experience is defined by the number of encounters with other users. Yet studies done from 1973 to 1995 (Stankey, 1973; Shelby, 1976; Roggenbuck and Dawson, 1979; Lucas, 1985; Fedler and Kuss, 1985; Ewert, 1985; Patterson and Hammitt, 1990; Heywood, 1991; Watson et al., 1992; Watson, 1993; Marion et al., 1993; Cole et al., 1995) show that encounters do not determine crowding perceptions.

According to Sherrod and Cohen (1978), crowding measures deal with the psychological perceptions of users. It is a perceived relationship between the wilderness user and the environment, between the privacy states and the spatial properties dealing with territory, and between the opportunities for wilderness solitude and the user's expectations. Hammitt (1982) determined when wilderness users refer to solitude, they may really be seeking one or several of the forms of privacy and its' freedom of choice. It may not matter to wilderness users what the density of human use is in some wilderness areas, so long as an environmental setting remains that preserves their right to freedom of choice and privacy. Wilderness solitude is not so much isolation as it is a form of privacy in a natural environment where users have control and choice over the type and amount of information that must be processed.

Privacy is defined as "the individual's or group's prerogative to determine for themselves when, how and to what extent information is communicated to or from them by others" (Westin, 1967). In Westin's text, *Privacy and Freedom*, he states four basic dimensions of privacy: (1) Solitude - complete isolation from being observed by the group or others; (2) Intimacy - individual acts as part of a small unit to develop close personal relationships with one or more persons of the group; (3) Anonymity - being in a public setting but still maintains freedom from identification, surveillance, and social roles; and (4) Reserve - individual creates a psychological barrier against unwanted intrusion and reserves the right not to reveal information about themselves.

Utilizing the privacy dimensions, Hammitt (1982) and Hammitt and Brown (1984) developed the Cognitive Dimensions of Privacy Scale and the Functions of Privacy Scale. Both scales have been field tested in a limited number of settings with some success (Hammitt and Madden, 1989; Priest and Bugg, 1991; Hammitt 1994; Dawson and Hammitt, 1996). The purpose of this study was a comparison of the Cognitive Dimensions of Privacy Scale results to measure dimensions of privacy in two Adirondack wilderness environments in New York State.

For over a century, the Adirondack Mountains have been one of the nation's favorite resort areas for hiking and small-boat or canoe trips. This region, a paradise of waters, was described by W. H. H. (Adirondac) Murray in his *Adirondack Tales* (1897). By 1885, New York State had passed the Forest Preserve Law and added further protection through the State Constitution. In 1972, the State of New York passed the Adirondack Park Agency Act. The purpose of the APA was to draw up the Adirondack Park State Land Master Plan (APSLMP) and include both public and private land use policy. By 1989, the state owned 2.3 million acres, about 40%, in what has become known as the Adirondack Park.

According to the Adirondack Park State Land Master Plan (State of New York 1989), state lands are classified into four categories based on wilderness characteristics:

Wilderness: "A wilderness area, in contrast with those areas where man and his works dominate the landscape, is an area where the earth and its community of life are untrammelled by man - where man himself is a visitor who does not remain. A wilderness area is further defined to mean an area of state land or water having primeval character, without significant improvement or human habitation, which is protected and managed so as to preserve, enhance, and store, where necessary, its national conditions."

Primitive: "(1) Essentially wilderness in character but, (a) contains structures, improvements, or uses that are inconsistent with wilderness, as defined, and whose removal, though a long term objective, cannot be provided for by a fixed deadline, and/or, (b) contains, or is contiguous to, private lands that are of a size and influence to prevent wilderness designation; or (2) of a size and character not meeting wilderness standards, but where the fragility of the resource or other factors require wilderness management."

Canoe Area: "An area where the water courses or the number and proximity of lakes and ponds make possible a remote and unconfined type of water-oriented recreation in an essentially wilderness setting."

Wild Forest: "An area where the resources permit a somewhat higher degree of human use than in wilderness, primitive or canoe areas, while retaining an essentially wild character. A wild forest is further defined as an area that frequently lacks the sense of remote wilderness primitive or canoe areas and that permits a wide variety of outdoor recreation."

All state land within the Adirondack Park is managed by the New York State Department of Environmental Conservation (DEC). Within the Forest Preserve Lands, 57 management units deal with wild forest, wilderness, and primitive areas while only one, the St. Regis Canoe Area, deals with providing a water oriented recreation experience in a wilderness setting (Table 1). At present, only one previous survey has been conducted by the DEC on the St. Regis Canoe Area in 1987 (State of New York, 1987).

Table 1. New York State Adirondack Forest Preserve Land Acreage (State of New York, 1989)

Forest Preserve Area	Management Units	Acreage
Wild Forest areas	17	1,200,000
Wilderness areas	16	1,017,000
Primitive areas	24	61,400
Canoe area	1	18,400
TOTAL	58	2,296,800

Methods

Entry into the St. Regis Canoe Area is mainly through two major boat launches (Little Clear Pond and Long Pond) and three portages (Bog/Bear, Turtle, and Long Pond). In the spring of 1997, these five entry points were chosen for

interview sites because they represented all the main access points to watercraft users. There is a hiking trail up St. Regis Mountain, but since the emphasis of the study was on watercraft user activities, this entrance was not sampled. In the summer of 1997, field interviews were conducted with watercraft users from May 1 to September 15 at the entry points of the St. Regis Canoe Area. All watercraft users interviewed were sent a mail survey. The mail survey was constructed to collect a variety of data, including the cognitive dimensions of wilderness-related use. The Cognitive Dimensions of Wilderness Privacy Scale was based on the 16-item scale used by Dawson and Hammitt (1996) in the survey conducted with hikers during the summer of 1993 throughout the Adirondack Forest Preserve lands.

An exploratory factor analysis was conducted on the data using orthogonal varimax rotation to reduce the 16 items down to meaningful factors to describe the data set. The criteria established for inclusion were: (1) factor loadings had to be 0.40 or greater to include the individual item under a factor because the square of the loading is the amount of the variable's total variance accounted for by the factor, (2) factors had to have an eigenvalue of 1.0 or greater to be retained because any individual factor should account for the variance of at least one variable, and (3) the internal reliability of each factor had to have a Cronbach's alpha of greater than 0.60 for it to be retained because as a "rule of thumb" any solution should account for at least 60 percent of the total variance (Dawson and Hammitt, 1996).

Results and Discussion

On-site interviews were conducted for 61 days at the five access sites on a random basis with each site being sampled at least 12 times. During this time period, 341 watercraft users were contacted to participate. Although 580 individuals were seen at the sites during the sampling periods, the interviewer could only contact one person at a time. Of those approached, 96% agreed to an interview and provided a mailing address. A mail survey was sent out to 328 individuals during the summer, approximately 10 days after they were interviewed. Of those mailed, 244 or 75% were returned after an initial mailing, a reminder, or a follow-up letter with another copy of the survey. An analysis of the interview and survey data produced the following results. Of those individuals interviewed, 59% were from New York State, 13% were Adirondack Park Residents, 28% were from the Northeastern United States, 6% were from across the United States, 6% were from Canada (e.g., Quebec and Ontario), and 1% were from foreign countries.

Participants were asked to rank the 16 items on the Dimension of Privacy Scale based upon their experience in the St. Regis Canoe Area in the summer of 1997. A 5-point scale was utilized with 1 being not important to 5 being extremely important. The three most important items, when ranked according to their mean score (Table 2), are related to the natural environment. When compared against the ranking by the Adirondack hikers in a study by

Dawson and Hammitt (1996), the three most important and three least important were the same. The other 10 items were similarly ranked between the two studies. Small differences were found, but not large enough to suggest a trend. The St. Regis Canoe Area (SRCA) watercraft users did rank an isolated experience by yourself lower than the Adirondack hiker. This could be due to previous knowledge about the two different areas. The Adirondack wilderness is approximately 1,017,000 acres, whereas the St. Regis Canoe Area is only 18,400 acres. Within the St. Regis Canoe Area, linear travel is somewhat set due to the nature of the waterways. A watercraft user must use the ponds and portages as they exist unlike the terrestrial Adirondack wilderness user where a hiker can travel off the trail. Also, being smaller in size, SRCA users do not expect to have an isolated experience by themselves without encounters from other users.

The factor analysis of the 16 items of the Cognitive Dimensions of Wilderness Privacy Scale produced four factors (Table 3). All items and factors met the factor loading and reliability criteria stated earlier. The four factors, Natural Environment, Cognitive Freedom, Intimacy, and Individualism, ranked in accordance to importance, were similar to those produced in the Hammitt (1982) study with college students, the Great Smoky Mountain National Park study (Hammitt and Brown, 1984), and the Adirondack hiker study (Dawson and Hammitt, 1996).

The Natural Environment factor includes five items, two of which were the highest ranked items (Table 2): the tranquility & peacefulness of the remote environment and an environment free of man-made noise. The items within this factor support the definition of wilderness as originally written by both NYS and US legislation. One of the most important aspects of the wilderness experience is the user's ability to be involved or interact with the natural environment. An additional item loaded onto this factor - an isolated experience by yourself - that was not reported in this factor by Dawson and Hammitt (1996). This item in the past has loaded onto the Intimacy factor. The intimacy dimension permits wilderness users to withdraw from complex social environments by allowing the users to limit the amount of communication and with whom they communicate. Users desire a certain amount of social interaction within their immediate group, but need a degree of privacy from outside groups (Hammitt, 1994). The item an isolated experience by yourself, by loading on the natural environment factor in this study, suggests that SRCA watercraft users expect the combination of the watercraft configuration and the environment to provide some of the isolation experience by limiting the number of intrusions from outside users (i.e., single or multiple watercraft in a group may avoid other watercraft user groups more than do hikers on a trail).

The three items which loaded on the factor Cognitive Freedom indicate a freedom of choice in terms of the

information a wilderness user must process and the behavior expected of the user in a natural setting. It is proposed that a remote natural environment promotes the freedom and cognitive control to focus on what users find inherently fascinating which results in tranquillity and peace of mind (Kaplan and Kaplan, 1978). The freedom of choice relates to the human need to escape from the pressures and tension associated with identification, surveillance and societal roles. Cognitive freedom operates on two levels - an individual level and a social level (Hammitt and Madden, 1989). The individual level deals with freedom of choice as to actions, use of time, and limiting attention to whatever is chosen. The social level deals with control over the pressures and tensions of everyday life. The SRCA watercraft users ranked the social cognitive freedom somewhat higher (4.0) than the individual cognitive freedoms (3.9 and 3.9, respectively). This may relate to the location of the SRCA which is less than a days drive from several million urban residents. It may be more important for those users to have an area where they are free from the expectations of others and the thought processes of everyday society. Once the social cognitive freedom is achieved then individual cognitive freedoms can be exercised at the individual's discretion.

The Intimacy dimension involves the individual's attempt at achieving a close personal relationship between two or more members of the group. Three of the five items that loaded on this factor illustrate this need. Sixty-eight percent of the SRCA watercraft users were in groups of one to three people in size. In smaller groups, the freedom to choose when and to what extent you have to speak and interact with others is easier to achieve. Typically brief communication with other parties does not appear to detract from the privacy desired (Hammitt, 1982). One additional item loaded on to this factor - being yourself, free from the expectations of others - that was not reported in this factor by Dawson and Hammitt (1996).. This item in the past study loaded on to the Cognitive Freedom factor which deals with anonymity or the wilderness user's need for freedom from identification, pressures of social duties, and control of others (Hammitt, 1982). Being yourself and being free from the expectations of others may reflect back to the preference of wilderness users to participate within a small groups of friends whose behavior is predictable because of past affiliation, thus allowing an individual to be themselves instead of their larger societal role.

Although ranked last, Individualism is important because it concerns privacy from observations and obligations of society. An individual must be allowed to determine their actions and behavior in experiencing tranquillity and solitude. The wilderness users must be able to determine their role identity free from the rules and regulations of society. Individualism should not be confused with isolation of the individual. Studies have shown there is little support for complete isolation. Items concerned with isolation in one form or another tend to rate the lowest in importance (Hammitt, 1994).

Table 2. Mean importance of 16 individual items in Cognitive Dimensions of Wilderness Privacy Scale for the St. Regis Canoe Area respondents in 1997 as compared with the Adirondack Forest Preserve respondents (Dawson & Hammitt, 1996) rank order.

St. Regis Canoe Area Rank	Adirondack Study Rank	Questionnaire Items	Mean Rating ^a	Standard Deviation
1	1	The tranquility & peacefulness of the remote environment	4.7	0.57
2	2	An environment free of man-made noise	4.5	0.74
3	3	Being in a completely natural environment	4.5	0.85
4	6	An environment free of man-made intrusions	4.3	0.86
5	4	Control over the pressures and tensions of everyday life	4.0	1.07
6	7	Privacy from most people, yet a personal relationship with my family or friends	4.0	1.14
7	5	Freedom to limit your attention to whatever you choose	3.9	1.11
8	8	Freedom of choice as to actions and use of time	3.9	1.16
9	10	A small, intimate group experience, isolated from all others	3.7	1.14
10	13	Opportunity to socialize with friends & family without being interrupted by others	3.6	1.24
11	11	Freedom to choose when & to what extent you have to speak & interact with others	3.6	1.27
12	9	Being yourself, free from the expectations of others	3.5	1.37
13	12	An isolated experience by yourself	3.5	1.36
14	15	Free from observation by all other people	2.9	1.35
15	14	Being relieved from rules & constraints of society	2.9	1.44
16	16	An environment where I can assume an anonymous identity	2.5	1.41

^aMean ratings based on a 5-point scale from not important (1) to extremely important (5).

Table 3. Cognitive Dimensions of Wilderness Privacy Scale based on factor analysis of 16 individual items for the St Regis Canoe Area respondents in 1997.

Factors and Questionnaire Items	Factor Loadings	Mean Ratings ^a	Factor Mean	Factor Alpha Value (Cronbach's)
Natural Environment			4.3	0.75
The tranquility & peacefulness of the remote environment	0.68	4.7		
An environment free of man-made noises	0.71	4.5		
Being in a completely natural environment	0.80	4.5		
An environment free of man-made intrusions	0.74	4.3		
An isolated experience by yourself	0.59	3.5		
Cognitive Freedom			3.9	0.79
Control over the pressures and tensions of everyday life	0.53	4.0		
Freedom to limit your attention to whatever you choose	0.86	3.9		
Freedom of choice as to actions and use of time	0.85	3.9		
Intimacy			3.7	0.77
Privacy from most people, yet a personal relationship with my family or friends	0.70	4.0		
A small, intimate group experience, isolated from all others	0.58	3.7		
Opportunity to socialize with friends & family without being interrupted by others	0.82	3.6		
Freedom to choose when & to what extent you have to speak & interact with others	0.65	3.6		
Being yourself, free from the expectations of others	0.45	3.5		
Individualism			2.7	0.77
Free from observation by all other people	0.74	2.9		
Being relieved from rules & constraints of society	0.78	2.9		
An environment where I can assume an anonymous identity	0.76	2.5		

^aMean ratings based on a 5-point scale from not important (1) to extremely important (5).

Conclusions

According to Hammitt (1982) wilderness solitude is a complex psychological concept beyond that of being alone or even being alone with others. Wilderness solitude is not so much individual isolation as it is a form of privacy in a specific environmental setting where an individual experiences a degree of control and choice over the type and amount of information processed. Nash (1982) developed an association between wilderness and the American mind. Perhaps the real value of wilderness does deal with the human mind and the cognitive freedom on both the individual and social levels.

This study of watercraft users in the SRCA produced results (i.e., Cognitive Dimensions of Wilderness Privacy Scale) similar to those found in the Adirondack Forest Preserve land study of hikers by Dawson and Hammitt (1996). The SRCA watercraft users, like the Adirondack Forest Preserve hikers, represent a variety of user types, residence backgrounds, and activity interests. Unlike the Forest Preserve lands, the SRCA represents a small scale aquatic wilderness environment similar to the Boundary Waters Canoe Area Wilderness. The natural environment elements (tranquillity & peacefulness of the remote environment, an environment free of man-made noise or intrusions, and being in a completely natural environment) were ranked highly by the St. Regis Canoe Area watercraft users and the Adirondack Forest preserve users (Table 2). In factoring all 16 items, the four items ranked the highest by the St. Regis Canoe Area watercraft users formed the strongest cluster in measuring privacy - Natural Environment. The rank order of importance was the same for the four common dimensions in the studies. A high alpha factor indicates an internal consistency among the items as a measure of each of the four dimensions (or factors).

The comparison between the SRCA and Adirondack Forest Preserve users, show that wilderness users in similar wilderness environments will produce similar statistical outcomes. This suggests that dimensions of solitude and privacy are important to certain aspects of the wilderness experience and that the Cognitive Dimension of Privacy Scale may be a good measure of wilderness experiences. The privacy scale could be used to assess what experience the wilderness user is seeking within a certain wilderness area. The privacy scale combined with other measures of use could be helpful to wilderness managers. Examples of what wilderness management activities could be helped by this information in the SRCA are: the development of an informational program (e.g., a map showing the campsites, pamphlet explaining wilderness), wilderness management activities (e.g., rehabilitate portages and campsites), and user regulations (e.g., no cellular phones) to enhance the wilderness user privacy and solitude. Further testing of the Cognitive Dimension of Privacy Scale should be done with other populations in similar or different settings to further validate the existing scale and to allow further confirmation of the concept of privacy.

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RECREATION SPECIALIZATION, AMATEUR/PROFESSIONAL LEISURE, AND LEVEL OF DEVELOPMENT: APPLYING OUTDOOR RECREATION AND SPORT CONCEPTS TO QUILTMAKERS

Sharon L. Todd

Assistant Professor of Recreation & Leisure Studies,
SUNY Cortland, P.O. Box 2000, Cortland, NY 13045.

Abstract: This study extended current theories of specialization beyond outdoor recreation, and amateurism beyond sports, by focusing on the leisure activity of quilting. Eleven indices were created to measure factors related to level of quilting development. The first five measured equipment, knowledge, experience, perceived skill, and participation while the last six measured various aspects of commitment to quilting. Although level of development was not strongly related to age, it was significantly related to each of the 11 indices. In all cases, mean scores increased at each level of development from "beginner" to "truly elite" master and declined for "over-the-hill" master. Researchers of future studies could be reasonably confident that asking respondents to self-select level of development would accurately reflect measures of equipment, knowledge, experience, perceived skill, participation, and commitment.

Introduction

In creating his theory of specialization, Bryan (1979) believed that people approach hobbies differently depending on their stages of development. At each level, distinctly different preferences, attitudes, values, and behaviors emerge. These stages can be arranged on a continuum ranging from novice to specialist based on amount of experience and commitment. Degree of specialization is therefore defined as a function of one's time, money, equipment, skill, and psychic commitment to an activity.

While specialization is usually applied to outdoor recreation activities with measures relying heavily on amount of experience, Stebbins (1979, 1992) applied the commitment component more thoroughly in his study of "serious leisure" and amateurism in art, entertainment, science, and sport. As a beginner, a person may just be a "dabbler," concentrating on learning the activity but retaining a high degree of playfulness and a low degree of commitment. As the participant develops, he or she becomes a "novice" who consistently pursues the activity, "but who ha[s] yet to grow sufficiently proficient and knowledgeable to lay claim to the identity of amateur or professional" (Stebbins, 1992, p. 43). The novice then progresses to "amateur" as the activity becomes more important to him or her. While amateur "participants" are moderately serious about their avocation, amateur "devotees" are highly dedicated and commit relatively more

time to the activity. Eventually one may become a "professional." Stebbins (1992) also described the amateur's development in terms of stages of progression/retrogression: beginning, development, establishment, maintenance, and decline. As a result of this final stage, one may become a "post-professional" who has abandoned the activity as a profession but still participates on a part-time basis.

Stebbins' (1992) recognition of retrogression, a fifth category labeled "decline," and the existence of a "post-professional" suggests that Bryan's (1979) continuum of specialization does not account for what eventually happens to specialists once their levels of skill and commitment begin to deteriorate. Two things could happen. First, one might expect that while *cumulative* measures of equipment owned, knowledge, and experience levels would increase with level of development, other measures could vary across time. Specifically, commitment, skill level, and frequency of participation could actually decrease. Second, the participant may adjust his/her repertoire of leisure activities by quitting, adding, or replacing them. While "development" naturally suggests the participant ages with time and progresses/retrogresses through the stages, it is important to note that one can begin a new activity at any point in life, not just childhood or youth (Iso-Ahola et al., 1994). Level of development should therefore be correlated with age *within an individual*, but not *across individuals* within an activity.

Purpose of the Study

The purpose of this study was to validate self-identified indicators of developmental level. Cumulative measures of equipment owned, knowledge, and experience level were expected to be positively correlated with level of development. On the other hand, measures of perceived skill, participation, and commitment were hypothesized to increase from the beginning stage to the "truly elite" master stage, but decline in the "over-the-hill" master stage of development. Secondly, level of development was hypothesized to *not* be related to age across individuals within quilting.

In theory, the hypothesized relationships should be applicable to any leisure activity. Like the study of bridge players conducted by Scott and Godbey (1994), this study intended to extend current theories of amateurism beyond sports, and specialization beyond outdoor recreation, by focusing on the leisure activity of quilting. Quiltmakers have not been the subject of many investigations and little is documented concerning their social-psychological perceptions or behaviors. As an exception, Roach (1986) used folkloristic and anthropological perspectives to study the daily, seasonal, and life rhythms of quiltmakers. Both she and Jabbour (1981), who studied old-time fiddlers, tied their stages of skill development of a folk art to specific ages (and intervening time commitments related to stages of life). In doing so, both neglected to emphasize the possibility of a universal learning process. While one could presumably learn to quilt or fiddle at any point in life, what would most

likely differ would be the presence or absence of various types of internal and external constraints associated with that life stage inhibiting participation and growth. Due to the uniqueness of the proposed study, partial funding for this research was obtained from a grant awarded by The National Quilting Association, Inc.

Methods

A convenience sample was used to gather data from a wide range of quiltmakers representing all levels of development. Written surveys were collected using five primary sources of active quiltmakers (quilt guilds, quilt shops, informal quilting groups/clubs, nationally known quiltmakers, and individual references from study participants) and three sources of potentially inactive quiltmakers (former guild members, references from survey respondents, and a request for references on an internet quilting bulletin board). Quiltmakers were contacted over a wide geographic range during a period of five months (May through September 1996) through various points of distribution (at quilt guild/club meetings, in quilt shops, and by mail).

Level of development was self-determined by each participant in response to the following question: "How would you characterize your stage of development as a quiltmaker?" Six responses were provided to reflect *beginner* ("beginner"), *intermediate developer* ("advanced beginner"), *advanced establisher* ("intermediate"), *maintaining expert* ("advanced"), *truly elite master* ("expert - mastering perfection"), and *over-the-hill master* ("post-expert - not the expert I once was").

Eleven indices were created to measure factors related to development. Five factors (equipment, knowledge, experience, perceived skill, and participation) were measured by one index apiece, while six indices were created to measure various aspects of commitment. Because the first five indices and one commitment index (general commitment) consisted of items all measured on different scales, each item in these indices was converted to a standardized score (z-score) before being combined into an average index score. The items for the other five commitment indices (identity salience, social commitment, attraction, self-expression, and centrality) were all measured on a consistent 7-point agreement scale, eliminating the need to convert these responses to z-scores. The first two commitment scales were replicating research done by Shamir (1992) while the latter three were based on work by McIntyre and Pigram (1992). At the suggestion of quilting critiquers, a few items were dropped due to lack of relevance to quilting; in other cases a few items were added and/or words were changed slightly to reflect the activity of quilting instead of running or camping. The investigator then used Cronbach's alpha to test for inter-item reliability for each index. Discretion was used in deleting items from some indices; if the increases to the alpha were negligible and the alpha was already at an acceptably high level, or if the item had theoretical importance (e.g., "prizes won" was theoretically important

in distinguishing high skill level), then the item in question was not removed. Average index scores were calculated for each index for each respondent.

To test the hypothesized relationships, one-way analysis of variance was used to determine differences among mean index scores and mean age for quiltmakers with different levels of development. Scheffe's test was applied as a post hoc test for any significant F-value ($p < .05$).

Results

Total response rate for this 9-page mailback questionnaire was 75 percent (459 out of 615). Although 97 percent of the 459 respondents were female, a wide range of quiltmakers was sampled when broken down by place of residence, age, and level of development. Due to the convenience sampling technique used, a majority of respondents resided in Pennsylvania (235 respondents or 51 percent) with another 27 percent residing in New York (122 respondents) and 9 percent in Arizona (42 respondents). However, 23 additional states and 4 foreign countries were also represented. The mean age was 53 years, but respondents' ages ranged from 23 to 93, with half of the respondents falling between the ages of 44 and 61. Nearly half of the respondents (214) described themselves as "intermediate" quiltmakers while another fourth (128) chose "advanced." Only 5 percent (23 respondents) marked "beginner," and 12 percent (57) marked "advanced beginner." Less than 4 percent (17) classified themselves as "expert" and just 8 respondents chose "post-expert." The remaining 12 cases had missing data and could not be classified by level of development.

As shown in Table 1, a total of eleven indices were created to measure factors related to level of quilting development. The lowest number of items included in an index was 3 (equipment), and the most was 10 (perceived skill). The perceived skill index had the highest reliability with an alpha of .88. Every index measuring commitment had an alpha coefficient of at least .75, with self-expression and centrality highest at .86. The least reliable scales were experience (.56), equipment (.58), and participation (.66). The following discussion highlights the items that were included in the final versions of each index.

The equipment index (alpha=.58) was composed of three items: number of quilting tools owned or planned for purchase in the next twelve months, amount of money invested in quilting, and number of quilt-related magazine subscriptions held. Five items were included in the knowledge index (alpha=.75). Two items focused on specialized quilting knowledge (number of nationally known quiltmakers and designer lines of fabric respondents could name.) Demonstration of knowledge was measured by a third item, total number of classes/workshops instructed and lectures/demonstrations given. A fourth item summed the number of quilt-related articles and books respondents had written, and the final item determined whether participants listed quilting as the leisure activity in which they had the most knowledge.

Table 1 Summary Table: Indices Measuring Factors Related to Level of Development

Index	Number of		Alpha	Mean	sd	Minimum	Maximum	Valid n
	Items							
Equipment*	3		.58	0	0.7	-2.03	4.39	459
Knowledge*	5		.75	0	0.7	-0.81	3.30	459
Experience*	4		.56	0	0.7	-1.13	3.33	459
Perceived Skill*	10		.88	0	0.7	-1.82	3.06	454
Participation*	4		.66	0	0.7	-0.98	3.33	446
Commitment:								
General Commitment*	9		.75	0	0.6	-2.03	1.18	447
Identity Salience**	6		.79	4.9	1.1	1.8	7.0	444
Social Commitment**	5		.81	4.9	1.4	1.0	7.0	445
Attraction**	5		.84	6.1	1.0	1.8	7.0	447
Self-expression**	4		.86	4.8	1.3	1.0	7.0	444
Centrality**	9		.86	4.1	1.3	1.0	7.0	445

* Items converted to z-scores.

** Items based on a 7-point scale.

Four items were included in the experience index (alpha=.56): number of years participated in quilting, number of quilting classes/workshops taken and lectures/demonstrations attended, total projects produced, and whether quilting was listed as the leisure activity in which they had the most experience. A total of 10 items were combined for the perceived skill index (alpha=.88). Besides categorizing themselves by skill level, respondents

also critiqued their quilting skills using typical judging standards which resulted in five additional variables (appearance, design and use of color, construction, quilting, and finishing). Respondents also provided information on the leisure activity at which they were most skilled, total number of quilt shows/exhibitions/competitions entered, number of juried shows entered, and number of prizes won.

Table 2 Summary Statistics: One-way Analysis of Variance Using Index Scores of Quiltmakers with Different Levels of Development

Index	Level of Development						F	p	Number of Differences Detected
	Beginner (n=23)	Intermediate Developer (n=57)	Advanced Establisher (n=214)	Maintaining Expert (n=128)	"Truly Elite" Master (n=17)	"Over-the-hill" Master (n=8)			
Equipment	-.60 ^a	-.49 ^a	0 ^b	.27 ^c	.91 ^d	-.30 ^{abc}	20.56	.01	10
Knowledge	-.47 ^{ab}	-.42 ^a	-.12 ^b	.30 ^c	1.38 ^d	.16 ^{abc}	34.87	.01	9
Experience	-.71 ^a	-.48 ^a	-.07 ^b	.31 ^{cd}	1.03	.54 ^{bde}	38.57	.01	11
Perceived Skill	-.80 ^a	-.64 ^a	-.16 ^b	.49 ^c	1.38 ^d	.42 ^{bc}	93.29	.01	12
Participation	-.58 ^a	-.53 ^a	-.06 ^b	.35 ^{cd}	.88 ^c	-.05 ^{abd}	25.49	.01	9
Commitment:									
General	-.51 ^a	-.28 ^a	-.01 ^b	.24 ^c	.49 ^c	-.59 ^a	17.75	.01	10
Commitment									
Identity Salience*	3.90 ^a	4.26 ^a	4.80 ^b	5.41 ^c	5.86 ^c	4.79 ^{abc}	19.38	.01	8
Social	3.24 ^a	3.71 ^{ad}	4.82 ^{bd}	5.57 ^{cd}	5.91 ^{cd}	5.24 ^d	30.18	.01	9
Commitment*									
Attraction*	4.76 ^a	5.47 ^a	6.07 ^b	6.52 ^c	6.96 ^c	5.34 ^{ab}	27.33	.01	10
Self-expression*	4.04 ^a	4.34 ^a	4.64 ^a	5.34 ^b	6.52 ^c	4.66 ^{ab}	13.85	.01	8
Centrality*	2.70 ^a	3.48 ^{ab}	4.05 ^{bd}	4.67 ^{cd}	5.03 ^d	4.28 ^{ad}	16.21	.01	6

Means with different superscripts are significantly different at the .05 level.

*Values are mean scores on a 7-point agreement scale ranging from strongly disagree (1) to strongly agree (7). All other scales are based on z-scores.

The participation index (alpha=.66) included four items: hours per week involved in quilting, whether quilting was the leisure activity participated in most

frequently, extent of participation in quilt guilds, and membership in other quilting organizations. Nine items were developed for the index measuring general

commitment to quilting (alpha=.75). These items included desired level of quilting in the future, chances of involvement in quilting in three years, extent to which quilting gives life meaning, quilting orientation, quilting as the primary leisure activity, quilting replacing other activities, whether quilting was listed as the leisure activity to which they were most committed, level of commitment, and recent change in commitment level.

The remaining five indices were measured on seven-point agreement scales ranging from 1 (strongly disagree) to 7 (strongly agree). The identity salience index (alpha=.79) consisted of six items, typified by the following statement: "Quilting contributes to my self-esteem." The social commitment index (alpha=.81) consisted of five items, such as "Many people think of me in terms of being a quilter." Five items were included in the attraction index (alpha=.84), including "Quilting is very important to me." The self-expression index (alpha=.86) was composed of four items (e.g., "Quilting says a lot about who I am"), and the centrality index (alpha=.86) consisted of 9 items (e.g., "I find that a lot of my life is organized around quilting.")

As a whole, respondents varied across a wide range of scores on each factor. As shown in Table 1, participants tended to be above average in their commitment to quilting, averaging greater than 4 on a 7-point scale for the identity salience, social commitment, attraction, self-expression, and centrality indices. Attraction had the highest mean score of 6.1, while centrality was lowest with 4.1. The other six indices were composed of z-scores, so the means and standard deviations hovered closely to 0 and 1 for each index. The range of scores for these indices tended to cover a 4.5-point spread, although the equipment index covered a range of nearly 6.5.

The first hypothesis in this study was designed to validate level of development as self-defined by respondents. As previously noted, it was proposed that as level of development increased, cumulative measures of equipment owned, knowledge, and experience level would increase. However, it was expected that measures of perceived skill level, participation, and commitment would increase from the beginning stage to the "truly elite" master stage, but decline in the "over-the-hill" master stage. As shown in Table 2, initial support was found for this hypothesis. One-way analysis of variance yielded significant differences among the mean scores of all 11 indices for quilters based on level of development. F-values ranged from 16.21 for the centrality index to 93.29 for the perceived skill index, where $p < .01$ for all 11 indices.

Scheffe's method was then applied to each index as a post hoc test to distinguish differences among the six levels of development. A significance level of .05 was used in each case. When mean equipment, knowledge, and experience index scores were compared among the six levels of development, the hypothesis was partially supported. In each case, mean index scores increased from "beginner" to

"truly elite" master" as predicted, but instead of continuing to rise for the "over-the-hill" masters, scores actually declined for this level in each index. Although not all developmental levels differed significantly from each other, this pattern was exactly the same for all three indices. A total of 10 significant differences were detected among mean equipment index scores, 9 differences among mean knowledge index scores, and 11 among mean experience index scores for the 6 levels of development (see Table 2).

As hypothesized, mean index scores for the remaining eight indices (perceived skill, participation, and six commitment indices) increased from "beginner" to "truly elite" master" and then declined for "over-the-hill" master." Again, significant differences were not detected among each level of development (see Table 2), but the general pattern was the same for all eight indices. The perceived skill index uncovered 12 significant differences among the six levels of development; 10 differences were found using the general commitment and attraction indices, 9 for the participation and social commitment indices, 8 for the identity salience and self-expression indices, and 6 using the centrality index.

As shown in the preceding discussion, level of development was related to measures of equipment, knowledge, experience, perceived skill, participation, and commitment. In all cases, mean scores increased at each level of development from "beginner" to "truly elite" master" and declined for "over-the-hill" master." Because this latter group was so small ($n=8$), not many significant differences were statistically documented, but the same trend did exist for all 11 indices. The relative decline in the score also varied slightly from index to index. Additionally, the first two stages ("beginners" and "intermediate developers") never differed significantly from each other. However, all indices detected at least 6 significant differences among levels of development, with the perceived skill index uncovering the most with 12. The first hypothesis was thus partially supported; instead of only the perceived skill, participation, and commitment indices declining for the "over-the-hill" master" scores, all indices displayed this tendency.

Figures 1 and 2 graphically display mean index scores by level of quilting development. Figure 1 groups the first six indices together, which were all measured by z-scores; Figure 2 displays the five commitment indices which were measured on a 7-point scale. Pearson product moment correlations were also computed to examine the relationships of the 11 indices to each other and to level of development. Although the r-values ranged from .23 to .74, every single correlation was significant ($p < .01$), showing that each index was not only highly correlated to level of development, but also strongly related to each other. Because the relationships between all 11 indices and self-determined level of development were so strong, the use of the single item category selected by respondents could be used as a reasonable indicator of level of development.

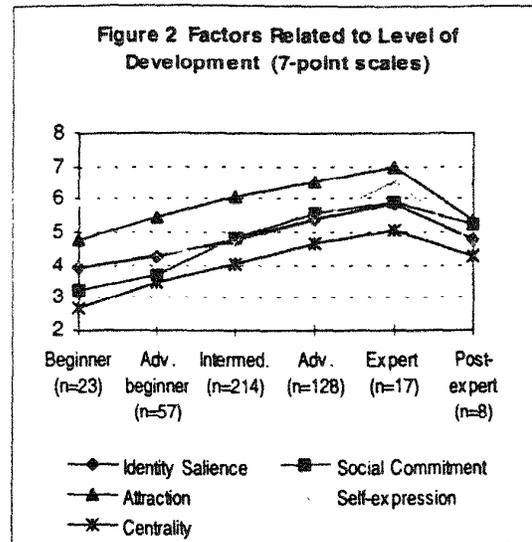
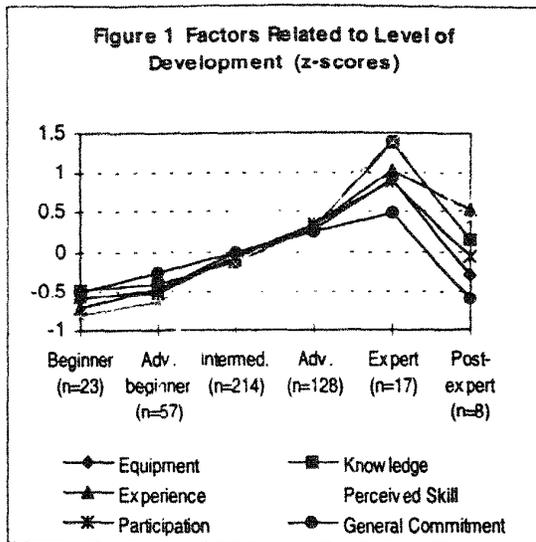


Table 3 Summary Statistics: One-way Analysis of Variance Using Mean Age of Quiltmakers with Different Levels of Development

Level of Development	n	Mean	sd	Minimum	Maximum	Range
Beginner	22	48.5	15.1	25	76	51
Intermediate Developer	50	50	11.7	27	73	46
Advanced Establisher	201	52.2	11.6	23	93	70
Maintaining Expert	117	55.2	11.4	25	83	58
"Truly Elite" Master	16	53.4	7.8	39	65	26
"Over-the-hill" Master	8	62.9	17.1	36	82	46
F	3.42		p	.01		

It was hypothesized that age would not be related to level of quiltmaking development. As shown in Table 3, the F-value of 3.42 was significant ($p < .01$). However, when Scheffe's method was applied as a post hoc test, no significant differences were detected among mean ages of different levels of development ($p < .05$). A trend did exist where mean age increased as level of development increased, but the range of ages in each age group was quite large. As shown in Table 3, the range varied from a 26-year difference in the "truly elite" master" stage to a 70-year difference in the "advanced establisher" stage. Standard deviations also ranged from 7.8 to 17.1, showing high variability in each level of development. Because the F-value was significant, this hypothesis was therefore not supported, but the evidence against it was rather weak.

Conclusions and Implications

Based upon the findings and within the limitations of this study, level of quiltmaking development is related to many factors, but age is not necessarily one of them. Equipment owned, knowledge, experience level, perceived skill, participation, and commitment tend to increase with level of development through a series of five phases, which can

be described as "beginner," "intermediate developer," "advanced establisher," "maintaining expert," and "truly elite" master." Furthermore, a final phase of quiltmaking development occurs where each of these factors decreases in magnitude, creating an "over-the-hill" master" class. On the other hand, although age increases as one progresses through the stages over time, age is not necessarily a predictor of level of development: one can start quiltmaking at any age.

By documenting the differences among quiltmakers at different levels of development, both Bryan's theory of specialization (1979) and Stebbins' theory of amateurism (1979) were supported and extended to an activity beyond outdoor recreation, sports, science, and entertainment. At each stage, quiltmakers exhibited different patterns of equipment, knowledge, experience, skill, participation, and commitment to the activity. Based on comments about its seductive and addicting qualities, quiltmaking had the potential to consume a person's leisure time and become a professional pursuit. Also true to Stebbins' framework, the results of this study detected a period of decline that may appear at the end of the developmental process, where the

term "over-the-hill" seemed to appropriately describe what graphically occurred in terms of the behaviors and commitments linked to the quiltmaker's stage of development. However, Stebbins hypothesized that only some aspects of development should decline (mainly the physical factors), not appreciation for or knowledge of the activity. Instead of using the term "over-the-hill," which many tend to associate purely with age, perhaps a better name for this group would be "zen masters."

This concern for the final stage of development also points to another limitation of the data. Because this was a cross-sectional study, not a longitudinal one, the claims that quiltmakers progress or move through the various stages cannot be proven. It is not known whether members of the "over-the-hill" group actually were "truly elite" masters" at one point in time. By definition, very few people would ever reach "truly elite" status. Therefore, while this terminology seems to create a progression/retrogression based on social comparison with all quiltmakers, perhaps another type of developmental curve should be studied as well. This second model could be an individualized curve for those who reach their own personal peak of development and then maintain this level or decline. For instance, a person who has reached his/her potential, has become the best that he/she could possibly be, may not measure up to the standards of "perfection" exhibited by the "truly elite" as determined by society. This person may actually level off or simply maintain level of development, e.g., sustain the factors characteristic of the "maintaining expert" stage. Based on Figures 1 and 2, removing the "truly elite" peaks would tend to show that the "over-the-hill" group has simply leveled off in terms of development rather than followed a distinct decline.

Unlike Roach's (1986) study of quiltmakers and Jabbour's (1981) study of fiddlers, this study of quiltmakers showed that age is not necessarily a characteristic that defines level of development. Indeed, respondents began quiltmaking at many different ages, and in fact only 8 percent of the respondents learned to quilt from an older relative when they were young. Instead of passing skills and techniques on from one generation to the next, a majority of quiltmakers take classes or learn through the thousands of publications now available to them. New methods and techniques have made quiltmaking much more attractive to persons of any age in today's fast-paced society, and greater visibility has elevated quiltmaking from practical craft to visionary art.

This study has important implications for researchers interested in studying levels of development. Investigators of future studies could be reasonably confident that asking respondents to self-select level of development would accurately reflect measures of equipment, knowledge, experience, perceived skill, participation, and commitment. However, instead of offering six levels to choose from, this study provided evidence that combining the first two levels into a single category would be warranted. "Beginners"

and "intermediate developers" never differed significantly from each other on any measure.

Knowledge of developmental level could have important implications for participants, instructors, and managers. By keeping level of development in perspective, participants may be able to find higher degrees of satisfaction with each endeavor. Once individual goals are known, instructors and managers could successfully facilitate participants' progress through the stages of development. Awareness of potential constraints could also help instructors and managers be more effective in alleviating or compensating for participants' setbacks in their progress. For instance, separating quiltmakers by level may be beneficial: beginners could avoid being overwhelmed or discouraged by inappropriately high standards of more expert quilters, and experts who prefer not to quilt with others who produce "substandard" or "careless" work could avoid annoyance. However, the benefits of learning from each other may be worth these costs. As a whole, quiltmakers already seem to recognize the importance of sharing and supporting each other through their successes and setbacks. It seems as if organizers and participants in other leisure activities could learn effective methods and strategies that quiltmakers individually and collectively already utilize.

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A RAIL STRUCTURE DISPOSITION PROCESS FOR PENNSYLVANIA'S RAIL-TRAILS

Andrew J. Mowen

Ph.D. Candidate in Leisure Studies,
201 Mateer Building, The Pennsylvania State University,
University Park, PA 16802-1307.

Gary L. Gittings

Research Associate,
201 Research Office Building,
The Pennsylvania State University,
University Park, PA 16802.

Alan R. Graefe

Associate Professor of Leisure Studies,
201 Mateer Building, The Pennsylvania State University,
University Park, PA 16802-1307.

Abstract: The reuse of abandoned rail structures for recreational trails continues to be a challenging policy issue for state agencies, local municipalities, and non-profit trail groups in Pennsylvania. This paper highlights a process designed by an interagency task force which considers relevant funding, ownership, future maintenance, and safety issues in the settlement of rail structure reuse. Public feedback on this process is presented and insights for researchers and managers working on similar multi-agency, multi-level planning initiatives are given.

Introduction

Across the United States, rail-trails have experienced tremendous growth as popular settings for a variety of recreation uses. These settings also provide valuable transportation and economic linkages between the communities (Moore, Graefe, Gitelson, & Porter, 1992). According to the Rails-To-Trails Conservancy, the number of rail-trails have increased from 75 trails in 1986 to 982 trails in 1997 (Rails-To-Trails Conservancy, 1998). Unfortunately, such rapid growth over this short time has placed a strain on public agencies at the state and local level as they learn to work with non-profit trail organizations and as they grapple with their rail-trail planning and development policies.

No place are these difficulties more evident than in the Commonwealth of Pennsylvania where the reuse of rail structures (bridges) for trail purposes has caused government officials, non-profit trail organizations, and state legislators to rethink existing structure disposition (or settlement) methods and outcomes. The reuse of rail structures is a critical issue for many Pennsylvania rail-trail initiatives because such structures help maintain corridor connectivity while keeping trail users safely separated from

the motoring public. When old rail structures are demolished, the trail often must cross the roadway at-grade or must have a new, more expensive structure to take its place. In some cases, the removal of old rail structures has seriously compromised the development of certain rail-trail linkages in the Commonwealth.

There are numerous circumstances which make the reuse of rail structures to be the key rail-trail planning issue in Pennsylvania. First, due to topography Pennsylvania rail lines have a large number of grade-separated highway crossings, probably more than any other state. Each such crossing on a potential rail-trail presents a varied combination of engineering design, safety, financial, and organizational circumstances. To address the issues and find satisfactory solutions, other than structure demolition often requires enormous energy and commitment from largely volunteer trail organizations and state agencies.

Second, until recently, the Commonwealth did not have a policy nor process that gave balanced recognition to the multitude of issues involved in a rail structure disposition. Consequently, agencies with disposition jurisdiction were left to pursue their individual, and arguably more narrow, agendas. Trail advocates claimed this situation generally produced a nearly exclusive focus on highway user safety. In this decision making environment, little consideration was given to the consequence of structure removal on trail users forced to cross highways at-grade or to the impact on trail development and attractiveness. Similarly, the cultural and historical significance of the structure were not weighed in the decision.

Third, there has been a shortage of organizations willing and eligible to assume future maintenance responsibilities for structures that might remain in place on rail-trails. Under existing Pennsylvania statutes, the Pennsylvania Public Utility Commission (PUC) must abolish rail-highway crossings on abandoned rail lines. In the course of this abolishment, the PUC has authority to assign responsibility for future maintenance to willing public agencies, municipal corporations, or public utilities. Unfortunately, most rail-trail development in Pennsylvania is conducted by non-profit, private organizations, who although willing to assume maintenance responsibility, are not eligible under current law. Thus frequently, structures are removed despite rail-trail interest because local governments have been reluctant to assume maintenance responsibilities, especially in those instances where the trail group has not been able to establish a good working relationship with local government, adjacent landowners, and the general public. For years, non-profit trail organizations that sponsor a trail have had to accept that structures on their trail will be removed and that alternative trail planning will be needed.

The rigid adherence to new structure and highway design criteria is the fourth factor which makes structure reuse a critical issue in Pennsylvania's rail-trail effort. Since many rail structures were built in the early 1900s, they usually do not meet current, new bridge/highway design criteria. Trail organizations are asking the public agencies to consider the circumstances of each structure on a case-by-case basis and

have asked that reasonable design guidelines be used to evaluate the highway safety consequences of retaining structures.

Finally, the PUC, as well as the Pennsylvania Department of Transportation (PennDOT) in many cases, have a financial incentive for removing abandoned structures. The PUC has authority during the structure abolition to assign structure removal costs to the abandoning railroad. Once the abolishment is completed as per the PUC order, there is no further recourse to the railroads for any subsequent structure or crossing expenses. Thus, if a structure remains in place following abolition but a need to remove it arises, then the expense of the removal will have to be borne solely by public agencies, often PennDOT.

New Solutions for Rail-Trail Structures

Together, the aforementioned conditions have hampered the conversion of rail bridges for trail use in specific and the development of rail-trails in general. However, in October 1996, Pennsylvania Governor Tom Ridge announced a new rail-trail initiative that promotes rail structure preservation and conversion to trail use. This policy creates the need for new solutions to rail structure disposition. In response, PennDOT and DCNR collaborated on a process designed to evaluate structure settlement issues in order to mitigate the problems previously cited in this paper. Furthermore, these agencies contracted the Pennsylvania Transportation Institute at the Pennsylvania State University to evaluate and solicit public feedback regarding their process. This paper briefly outlines the steps of this process, presents non-profit stakeholder evaluations, and, based on the authors' experience working with public agencies on this initiative, draws insights and implications for other states who may be conducting similar outdoor recreation policy planning initiatives.

The Structure Disposition Process: A Settlement Procedure for Pennsylvania's Rail Structures.

The Structure Disposition Process is designed to be a step-by-step procedure whereby its participants consider and resolve all salient structure issues in preparation for the PUC hearings which determine the final outcome of the structure. This process is designed to balance safety and operating needs of trail and highway users, as well as to consider the cultural, historic, ownership, maintenance, and financial issues surrounding structure settlement.

The major steps in the Structure Disposition Process are:

1. Determine if the structure is on a "priority trail."
2. Determine an eligible structure owner,
3. Evaluate existing highway user, trail user, and structural safety conditions at the site,
4. Based on information gathered at the third step, develop a comprehensive safety solution that sufficiently accounts for all major safety issues.
5. Determine funding sources for this solution, including railroad contribution, and,
6. Present the evidence gathered and provide a recommendation for either removal or retention at the PUC hearing.

The full Structure Disposition Process is presented in Figure 1 and includes the parties who are responsible for supervising each step.

Trail priority is defined broadly. This step is accomplished if a viable trail organization expresses interest in developing a rail corridor and its structures. If no trail group expresses an interest, but a state agency feels the corridor has significant merit as a potential trail, that agency's statement of justification is sufficient. If a trail achieves priority status, the sponsor of the rail-trail initiative then determines if it (the sponsor) meets the requirements for an eligible structure owner and caretaker. If not, the sponsor must identify and establish an eligible owner who is willing and who is legally allowed to assume responsibility for the structure. In Pennsylvania, eligible structure owners are public entities such as state government agencies, local municipalities, and public utility companies.

The evaluation of safety conditions at the site is the most involved phase in the Process. This evaluation includes data collection and analysis of three basic safety issues: highway user, trail user, and structural safety. The analysis considers safety criteria such as crossing sight distances, vertical and horizontal clearances, and structural cracking.

Once the safety analysis has been completed, a comprehensive safety solution should be devised to mitigate any safety deficiencies. It is this solution that is presented to the PUC at the hearing. If highway user, trail user, and structural safety needs are not met with this solution, PennDOT and DCNR will recommend structure removal at the hearing. Because safety mitigation measures can be costly, the trail sponsor will estimate safety mitigation costs and will determine potential funding sources. Finally, based on the resolution or the non-resolution of steps in the process, DCNR and PennDOT will either recommend structure retention or removal at the PUC hearing.

Evaluating the Structure Disposition Process

The Pennsylvania Transportation Institute (PTI) was contracted to solicit trail stakeholder reactions to the Process. This feedback was ascertained in order to 1) identify and improve Process problem areas and 2) create a manual that guides relevant stakeholders through this step-by-step process while discussing the critical issues. The PTI research team consisted of both engineering and public policy experts. Public input was collected from the 1997 Governor's Greenway Conference session transcripts, an open ended mail survey to trail organizations, and depth interviews with four representative trail organizations. Approximately 60 key stakeholders were reached with this public evaluation effort. Common reactions, suggestions and themes across these three sources were identified and presented to the sponsoring agencies. A summary of their reactions follows with insights for other agencies developing outdoor recreation planning mechanisms.

Reactions to the Structure Disposition Process: The Non-Profit Trail Organizations' Perspective.

Overall reaction to the Structure Disposition Process was positive because trail organizations felt that more

formalized attention to this issue was a step in the right direction. More specifically, trail groups appreciated the balanced consideration that trail safety would receive according to the layout of this Process. These same trail organizations, however, felt that the process could be improved. First, they suggested that the process should have more flexible timelines.

For example, if a step in the Process (i.e., funding) is not completed in a timely fashion, they felt that certain time extensions should be granted before the final decision on structure removal/retention. Trail groups felt that flexible timelines would help to preserve trail initiatives that are good, but are experiencing difficulty working out solutions in one or two steps of the Process.

Second, trail organizations expressed a need for more creative funding arrangements, especially for structure maintenance and/or insurance purposes. Specifically, they indicated that the establishment of a statewide bridge fund could resolve issues concerning a non-profit trail organization's ability to cover the costs of structure maintenance and repair. Some respondents suggested that this fund be established by contributions from the railroad companies abandoning corridors.

Third, there was an expressed desire to see PennDOT and the PUC consider reasonable safety guidelines rather than strictly using new bridge design criteria for items such as horizontal and vertical clearances. In other words, if a particular structure does not meet one of the new design criteria, this should be weighed against other highway and trail user safety criteria and should not necessarily be an automatic decision for removal. Stakeholders felt that professional engineering judgement should be used to determine when a structure is still safe using a set of more flexible, rail-structure specific guidelines.

Traditionally, the PUC hearing had been the forum for settling disputes over the future of potential rail-trail structures. This hearing, designed as an adversarial procedure, is a costly and conflict-laden process for all parties involved. Trail stakeholders believed that some other mechanism that encourages cooperation and the generation of solutions should be used. Mediation was one alternative dispute resolution mechanism that may address this issue. As a result, it will likely be incorporated into the Structure Disposition Process as a possible alternative to the PUC hearing.

Finally, trail stakeholders (many of whom belonged to non-profit trail organizations) felt that the PUC should be able to recognize non-profits as a legal and viable entity to assume structure maintenance responsibility. They suggested that if a trail organization has a good operating track record and can show, through an audited financial statement, that it has the resources to meet reasonable maintenance and liability expenses, it should be allowed to assume structure responsibility. The Pennsylvania state legislature is now acting on this concern and has proposed an amendment to the Pennsylvania State Code which will establish non-profit organizations as eligible entities to assume structure responsibility.

Some Concluding Thoughts

Beyond the direct suggestions for improving the Structure Disposition Process, several lessons were learned while participating in this policy initiative. These insights may be valuable to other outdoor recreation researchers who find themselves working within similar multi-agency, multi-level planning and decision making initiatives. The most obvious observation from our experiences is that inter (and sometimes even intra) agency cooperation can take a long period of time to gain momentum and achieve results. Indeed, it has taken over five years to identify and gather the relevant parties and to get them to work collaboratively on common points of agreement for structure disposition. State agencies, local governments, railroads, and non-profit trail organizations have different mandates, cultures, and ways of conducting their business. Therefore, any inter-agency cooperation that has been established is fragile and the parties must be careful not to offend others when explaining their viewpoint. Collaborative efforts must stay focused on issues, not positions, to find acceptable position. Also, inter-agency cooperation is greatly enhanced when an initiative is supported at the highest and most powerful levels of leadership. Governor Ridge's open support and involvement with the Pennsylvania rail-trail effort has had a major impact on the positive cooperation between state agencies and on their motivation to develop new solutions to the rail structure issue.

Not only is interagency cooperation between state agencies important to the resolution of structure issues, but cooperation between non-profit trail organizations and local governments also greatly enhance the success rate of structure retention or crossing safety efforts. Here, early and frequent contact with the local constituency by rail-trail organizations may demonstrate to the local government decision makers that structure preservation is a strong enough issue to devote precious resources toward.

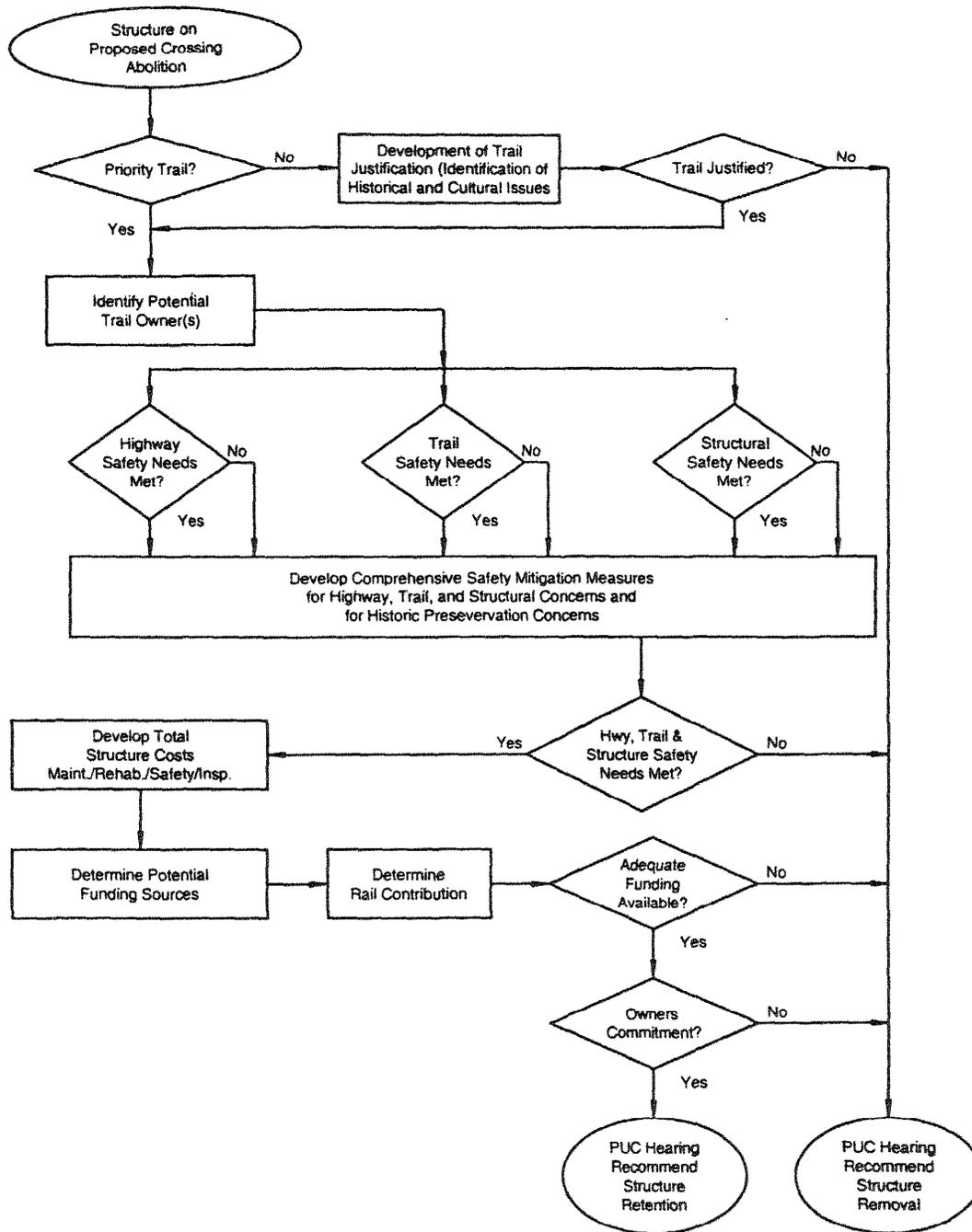
Finally, any type of planning process must maintain a degree of flexibility and should be used with professional judgement. Just as well known outdoor recreation management frameworks (i.e., VIM and VERP) are not to be rigidly prescribed and are to consider the range of acceptable conditions, so too the Structure Disposition Process requires this same flexibility on the part of structural and highway engineers who participate in the process. Hopefully, continued education and cooperative efforts, combined with legislative action, will begin to preserve rail structures for recreation and transportation purposes so that Commonwealth citizens can enjoy the full benefits of safe highway and rail-trail usage.

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Figure 1. Structure Disposition Flowchart



SNOWMOBILERS' PERCEPTIONS OF DANGER AND THEIR RELATIONSHIP TO FATAL ACCIDENTS

Joel A. Lynch

Ph. D. Student in Department of Park, Recreation and Tourism Resources
Michigan State University, East Lansing, Michigan 48824

Charles M. Nelson

Associate Professor in Department of Park, Recreation and Tourism Resources
Michigan State University, East Lansing, Michigan 48824

Abstract: In 1997, Michigan snowmobilers' perceptions of danger and knowledge about factors associated with snowmobile accidents were elicited through a mail questionnaire. This information is compared with police reports of 146 snowmobile fatalities in Michigan over the past four winters. This research suggests that snowmobilers' perceptions of safety in operating on roadways are overly optimistic.

Introduction

While the technological characteristics of snowmobiles have changed markedly since their introduction in 1960, the development of front and rear suspension in the early 1990's is considered to be its most significant innovation. This not only improved the ease of handling, but also the stability and comfort of snowmobiles. Today's snowmobiles also have more powerful engines than their predecessors, giving them quicker acceleration and the capacity to attain considerable speeds. Besides improvements to snowmobiles, designated trail opportunities have also increased. There is now an extensive network connecting to communities providing services. Increasingly, snowmobilers' trips last several days and can cover significant distances.

However, these changes have also been accompanied with an increased number of snowmobiling fatalities. In Michigan, during the winters of 1995-96 and 1996-97, more than 40 snowmobiling fatalities were recorded, nearly doubling the previous winters' totals. While previous studies have distinguished factors associated with snowmobile accidents, no research has been conducted on the snowmobilers' perceptions of dangers related to behaviors and situations they encounter while snowmobiling.

Methods

In Michigan, snowmobilers are required to purchase trail permits for each snowmobile operated on public land or water for purposes other than ice fishing. A systematic

sample of 3,325 permit purchasers were surveyed using a mail questionnaire in 1997. Respondents were asked to rate the level of danger from selected snowmobile behaviors and situations likely to be encountered while snowmobiling. In addition, they provided their perceptions of factors involved in the most recent personal injury or fatal snowmobile accident of which they were aware. This data was compared with police records of 146 known Michigan snowmobiling fatalities from winter 1993-94 through 1996-97.

Results

The results indicated that snowmobilers perceived that operating snowmobiles while intoxicated, drivers lacking skill in operating their machines, and high levels of speed were the most dangerous behaviors or situations. Perceived as least dangerous were snowmobiling on county or state roads, public trail conditions and the design of public trails. They perceived that the factors most commonly involved in a personal injury or fatal accidents were excessive speed, use of alcohol, and lack of driver skill. Least likely to be involved were non-snowmobilers on trails, fatigue and snowmobiling on state and county roads.

Police accident reports reveal that the largest proportion of fatal accidents occurred on state or county roads, with smaller percentages on snowmobile trails, lakes, private lands, and road shoulders. While most accidents were single machine incidents where the operator lost control, incidents on roadways often involved cars, trucks or snowplows. Alcohol was reported as a factor in more than half of the incidents, but often test results of blood alcohol content were lacking. Speed, poor visibility and fatigue were rarely reported as factors. However, in many instances, credible witness were lacking and techniques to assess speed of the machine, state of alertness of the operator and the visibility at the time of the accident are poorly developed.

Discussion

This research suggests that snowmobilers have a false sense of security about operating on state or county roads. Such situations are likely to increase as existing roadway corridors are used to connect trails with towns and as riders seek out the amenities offered by communities. Better education, increased enforcement targeted around establishments serving alcohol and trails that bring snowmobilers to services without using roadways are some of the ways to reduce dangerous situations created by riding on roadways.

A second implication of the data is that, for some snowmobilers, alcohol is viewed as an integral part of snowmobiling. Resolving such an issue is challenging. Managers and law enforcement personnel are going to need to explore creative ways to reduce alcohol use during snowmobiling. Options include adding points to a snowmobiler's driving records for operating a snowmobile under the influence, requiring mandatory personal liability insurance for snowmobiling and eliminating, for a set time

period, other motorized recreational privileges (e.g. boating, off-road vehicle riding) or other outdoor activities (e.g. hunting and fishing) if convicted of operating a snowmobile under the influence of alcohol.

Thirdly, this research suggests that snowmobilers involved in fatal accidents are perhaps operating their snowmobiles beyond their driving abilities or in a manner inappropriate to ice/road/trail conditions. Suggestions to lessen this hazard include, mandatory training for all first operators and implementing an enforceable speed limit on the entire trail system, or at least at dangerous areas, such as near towns.

Lastly, accurate and timely information regarding fatal snowmobile accidents is needed. This is hampered by shortcomings pertaining to the use of automobile accidents forms, which are not suited to reporting on snowmobile accidents. Another problem is information omitted by the reporting officer, such as blood alcohol level and accurate locational information. Managers need to develop an addendum to reporting forms to collect additional snowmobile oriented information as well as explore the use of global positioning systems (GPS) to provide accurate accident coordinates, especially on trails with no designated house numbering system.



Heritage and Cultural Tourism



MUSEUMS AND CULTURAL INSTITUTIONS IN MICHIGAN: A FOUNDATION FOR HERITAGE TOURISM

Gail A. Vander Stoep

Associate Professor, Department of Park, Recreation and
Tourism Resources, Michigan State University, 131
Natural Resources Building, East Lansing, MI 48824-1222.

Abstract: Heritage tourism is gaining more attention by the tourism industry. Now, the museum industry is wanting to partner actively with tourism professionals. A census mail survey of Michigan museums and cultural institutions identifies the opportunities and challenges for developing these partnerships.

Introduction

National and International Contexts for Heritage Tourism.

Since the early 1990s, increasing attention has been given nationally and world wide to heritage and cultural tourism. Shifts have occurred in tourism markets and traveler preferences/demands. While much travel through the 1980s was influenced heavily by a desire for escape and relaxation, travel motivations in the 1990s has expanded to include more interest in education and enrichment. Not only has the tourism industry recognized the shift and the important role of historic and cultural resources in serving this demand, the museum industry increasingly is recognizing and taking advantage of that role. (For details, see Vander Stoep, 1998.) Additionally, research repeatedly indicates that heritage tourists tend to have more money, stay longer and lodge in hotels, and shop more than the "average" tourist, making them an "attractive" target market, having strong economic impact and increased "heads in beds".

However, it should be remembered that the "heritage tourism" market is not clearly defined. Tourist motives for visiting historic sites and participating in cultural activities range from the heritage opportunity being the "primary motivator" to "accidental" cultural experiences. Thus, museums choosing to be involved with tourism must decide whether to reach all types or to focus on the "more serious" cultural tourists.

Michigan Context and Purpose of Study.

In 1997, Michigan Museums Association (MMA) produced a white paper on tourism in Michigan, subtitled "Discover the Stories and Faces of Michigan." The paper was resulted from discussions among MMA members about the underdeveloped and potential future contribution of Michigan museums and other cultural institutions to the State's tourism industry. While Michigan is blessed with a wealth of cultural and other heritage sites, as well as a diverse and interesting history, the state is perceived by tourists, from both in- and out-of-state, as primarily an outdoor recreation resource-based tourism destination (Vander Stoep, 1998). Traditionally the State's tourism promotional image has focused on themes of lakes, forests,

and snow. Responding to the discrepancy between perception and reality related to the cultural resources of Michigan, the white paper served as a springboard for a program of MMA actions to further develop and promote Michigan's cultural and heritage resources as tourism opportunities.

The MMA Board commissioned a survey of all known Michigan museums and cultural institutions to determine the potential contribution of such sites as tourism products and experiences. While other studies (e.g., a telephone household survey conducted by Michigan State University's Travel, Tourism and Recreation Resource Center [TTRRC]) have focused on the "demand" side of the tourism economic equation, the MMA study focused on the "supply" side. Thus, the purposes of the study were to determine the current operational context of Michigan museums (annual visitation, methods of tracking visitation, staffing profiles, annual operating budgets, and capital outlay expenditures) and the current level and type of involvement of museums with tourism industry activity within the State. Additionally, museum directors were asked if their institutions were willing to work more closely with the tourism industry. The results are being used to determine the museum industry's "readiness" to be more actively involved with tourism, to identify potential challenges to increased tourism involvement, and begin discussions about the potential impacts of cultural tourism on communities, the museums themselves, and the State economy. Results of this survey provide a picture of current activities and opportunities engaged in by Michigan's cultural institutions related to tourism.

To be consistent with the premise of the MMA white paper on Michigan heritage tourism, and with the "museum classification systems" used by the American Association of Museums (AAM), the following definition of heritage tourism was used:

"heritage tourism" is defined as travel motivated by interest in any aspect of the lifestyle and character of a location. Heritage tourism incorporates museums of all types, zoos, art and nature centers, performing arts, crafts, festivals and special events, and similar attractions. Heritage tourism also includes hotels, restaurants, shops and other structures whose owners seek to preserve in their current facility or service a traditional character of place.

White Paper on Tourism in Michigan
MMA, 1997, page 1

Methods

Development of Census Mailing List.

Based on the American Association of Museums' (AAM) classification scheme for "museums," the following institution types were included in the mailing list for the MMA survey: museums of all types, halls of fame, nature centers, zoos, aquaria, historic homes and sites, battlefields and other military sites. The final mailing list contained 501 institutions, based on merging and culling of several different lists by MMA.

Development of Survey Instrument.

Based on discussions with MMA representatives, the scope

of the survey was narrowed to focus on specific information related to current museum operations and service level, the existing and potential role of museums in the tourism industry, and museum interest in tourism involvement. Draft questions were developed by Michigan State University (MSU) research staff, then reviewed by the MMA project team. After revision, a draft survey instrument was distributed to MMA board members for input. Final revisions were made prior to printing and mailing of the survey. The five sections of the survey are:

- A Descriptive information about museums
- B Museum visitation and visitor tracking
- C Museum staffing
- D Museum expenditures (annual budget, previous and projected capital outlay)
- E Museum links with tourism industry

Survey Process.

The survey was conducted using a modified version of Dillman's (1978) Total Design Method, which included initial and follow-up mailings (reminder postcard, second complete mailing) as well as follow-up phone calls. A letter from the MMA President, in addition to the MSU cover letter that explained the purpose and process of the survey, was included with each mailing. As an incentive to respond, each survey packet included a "thank you" postcard. It requested correct organization contact information and the director's name. Returned thank you cards were entered in a drawing for one of two incentive awards provided by MMA: 1) \$50 off the 1998 MMA Conference registration, 2) choice of a one-year individual membership (\$30) or up to \$50 off a one-year institution membership in 1998.

Limitation.

Because the survey was conducted during the fall/winter season, some institutions (presumed to be fairly small, often operated by volunteer staff) were closed and no responses were received. Efforts were made to contact them by phone, but persistent non-response will contribute to results not reflecting all the small institutions. This contributes to research bias, but probably is not relevant to MMA objectives for expanding museum operations to service tourists. As indicated by responses received, small museums likely are unable to serve tourists to any great extent.

Results

Results are presented by the five survey instrument categories. Presented results are based on percentages of responding institutions.

Survey Response.

Some duplication of institutions still existed in the initial mailing list. Also, some surveys were undeliverable, resulting in a sample size of 489. Responses were received from 333 institutions (overall response rate of 68%). Of these, some were duplicate responses, some were from organizations not meeting the AAM definition, and some from museums not yet open (total of 40 institutions in these three categories). This provided an actual working sample size of 449. Of this total, 293 surveys were returned, representing a response rate of 65%.

A: Descriptive information about museums.

The first set of questions asked for information about the type of museum and the organizational structure, affiliation, and location. Based on the AAM discipline list for classifying museums, more than half of the institutions (53%) are either history museums or historic houses/sites. An additional 14% describe themselves as "general" (having collections representing two or more disciplines) and 10% are nature centers. The remaining 23% are distributed among all the other disciplines. Almost 8% indicate some type of specialization, with maritime museums being the most predominant (n=8). Other specialized disciplines include railroad, aircraft or military, geology/natural history, hall of fame, automobile, land surveying, plant conservatory, hunting/fishing, music and living farm.

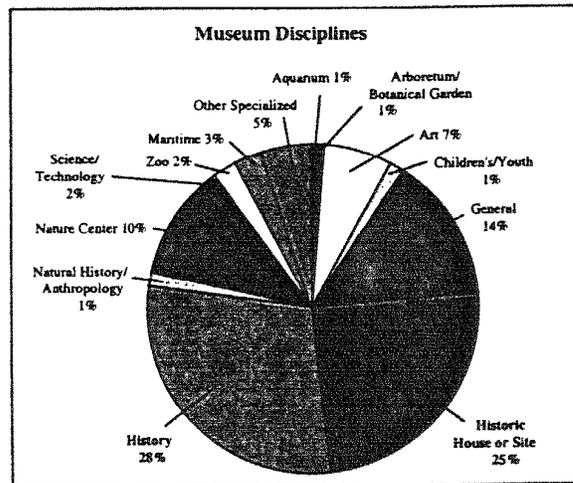


Figure 1. Disciplines of Michigan museums based on American Association of Museums classification system.

The American Association of Museums places museums into one of three size categories based on their annual operating budgets. However, each museum discipline uses slightly different budget figures to determine which institutions are "small, medium or large." Because Michigan has fewer than 500 cultural institutions, more than half of which are historic sites, houses or history museums, it is impractical to use a variety of size classification systems. Therefore, for this study, size categories are defined by annual operating budgets as follows:

Small	less than or equal to \$250,000
Medium	between \$250,000 and \$1 million
Large	\$1 million or more

By far, the vast majority of Michigan museums are in the "small" category — at least 75%. Medium-sized museums make up 15% of responding institutions and 9% are considered "large." For most museum disciplines, the majority fall within the "small" size category. The exceptions are zoos (most of which are "large"), art (just

under 50% are "small"), and arboretums and aquaria (none of which are "small").

The majority of Michigan museums are private nonprofit organizations, with only three of those responding being private for-profit organizations (56%). The rest (43%) are public institutions. Of these, the majority are associated with city or other local government entities. Thirty-three sites (26% of public institutions) are operated by a State of Michigan agency, while only five (4%) are federally operated. The rest are city/local (56%) or county (14%) operated. A total of 23 institutions are associated with universities.

Museum distribution across the state is irregular, with stronger presence (both in total number of museums and size of museums) clustered in urban areas and three areas of the Upper Peninsula traditionally perceived as strong tourism attraction areas.

B: Museum visitation and visitor tracking.

To understand current visitation patterns and begin to project possible impacts of museums on tourism, tracking visitor and program participation numbers is critical. Respondents were allowed to check more than one response. Of responding museums, 95% track visitation in some way. However, many of the numbers are generated using techniques that probably are not very accurate. For example, 60% indicated that voluntary visitor sign-in is at least one of the tracking techniques. Almost 25% indicated that they use "guesstimates." About one quarter use each of the following: ticket sales, program registrations, hand-held counters. Twenty-two museums use ticket sales in combination with recording visitor zip codes.

Most museums use more than one strategy. It is unknown whether numbers based on automatic counters are adjusted for multiple entries of a single person during a visit (in/out movement patterns), for museum staff and/or delivery people traffic, or (for automatic parking lot counters) for number of axles/vehicle or an average number of persons per vehicle. Attendance/ participation numbers do not distinguish between tourist and local visitation.

About three quarters (3/4) of small museums use voluntary visitor sign-in while about half of medium-sized museums and only 15% of large museums use voluntary sign-in to keep track of visitor numbers. Between 20% and 30% of museums of all sizes use "guesstimates" as part of their visitor tracking strategy. The more accurate methods (using ticket sales, with or without zip code recording) are used much more extensively by medium and large museums. Ticket sales are used by 63% of medium-sized museums and by 48% of large museums. Ticket sales accompanied by zip code tracking are used by 41% of large museums, but this drops to 18% of medium-sized and 2% of small museums.

Respondents were asked to indicate the total number of visitors or participants for each of several types of institution-sponsored activities, including touring the museum or site. Additionally, they were asked to indicate the total number of visitors and participants serviced in

1996. Of responding institutions, 19 did not complete any of the visitation/participation items. Based on surveys having these items completed, the sum of responses for all the individual activity categories indicated a total museum visitation of 13,822,550. Based on summing the responses indicated in the "total" item, 12,974,141 visits is indicated. However, five museums reported visitation only for the "total" item. Therefore, the sum of these five responses were added to the sum of the individual activity sums, which results in a total visitation/participation number of 14,360,621.

Thus, the estimated number of people serviced in 1996 by responding museums ranges between 13 and 15 million visitors. See Table 1 for details. Of this total, about 10 million people either tour the museum/site or participate in festivals and special events. About 20% of that 10 million are attendees of festivals and special events. About 1.5 million visits are by youth when the visit or participate as members of organized school or other youth groups.

Table 1. Michigan museum visitation/participation in 1996 by activity/program type.

Participation	N
Touring the museum	7,995,788
Participating in festivals or special events	1,998,309
Participating in school or youth group programs	1,459,441
Participating in adult, family or other group programs	364,435
Participating in off-site outreach programs	753,387
Use by groups renting facilities after hours	312,282
Other types of visits	938,909
TOTAL (based on sum of individual activity responses)	13,822,550
TOTAL (based on sum of "total" responses)	12,974,141
Sum of 5 museums reporting "total" item only	1,286,480
TOTAL (sum of "individual" plus 5 reporting "total" only)	14,360,621

C: Museum staff.

The number and seasonality of staff can affect a museum's ability to service tourists in addition to local visitors. Section C of the survey was included to determine the number of paid and unpaid staff, the number of part time and full time staff, and the number of summer seasonal staff in each of the other categories.

In general, museums appear to rely heavily on unpaid part time staff, both year-round and for the summer season.

- Summer seasonal plus year-round *unpaid* full time staff totals about 160.
- Summer seasonal plus year-round *unpaid* staff (full and part time) totals about 8,700.

In contrast:

- Summer seasonal plus year-round *paid* full time staff totals nearly 2,000.
- Summer seasonal plus year-round *paid* part time staff totals just over 2,550.

Nearly 30% of the museums are operated entirely by volunteers. All fall within the "small" size category (having an annual budget of \$250,000 or less). Seventy percent of all small museums have no year-round paid full time staff. Of all small museums, none has more than six (6) year-round full time paid staff. Of all museums having no year-round full time paid staff, 99% are "small." Fewer than half of responding museums have year-round full time paid staff.

The pattern of staffing numbers for year-round part time paid staff closely mirrors that for year-round full time paid staff. One large museum hires over 800 year round part time paid staff. One large museum also uses over 900 part time year-round unpaid staff. During the summer season, staff numbers across all categories increase with the addition of paid and unpaid seasonal staff. Despite this additional staffing, 225 museums (80%) do not hire additional full time paid staff during the summer. The greatest staff increase occurs in use of unpaid part time staff during the summer.

About 3/4 of paid staff and almost 3/4 of unpaid staff work year-round, but almost all of the unpaid staff are part time while the percent of full time and part time paid staff are comparable (34% and 41% respectively). Nearly all summer seasonal unpaid staff are also part time. In comparing year-round and summer staff percentages, between 64% and 67% of each are part time unpaid staff. The percents of part time paid staff are comparable for year-round and summer seasonal staff. However, a greater percent of full time *year-round* staff are paid than *are* summer seasonal full time staff.

D: Museum expenditures.

To understand museum expenditures and investment, questions were asked about gross annual operating budgets for 1996, the total amount of capital outlay for the past three years, and the anticipated total capital outlay over the next three years.

Because of concern about museum staff reluctance to divulging specific annual budget and capital outlay figures, a set of monetary ranges was provided for each question. The ranges for capital outlay were slightly different than for the annual operating budget. While this strategy increases the response rate for budget questions, it makes it impossible to determine precise total expenditures for museums. Therefore, to calculate an estimate of total annual operating budgets and capital outlays, the midpoint for each category was used to calculate a final figure. Based on using midpoints of expenditure ranges, the following expenditure totals were calculated (based on 289 museums responding to this question):

Total annual operating budget for 1996	\$286,720,000
Total capital outlay for the past three years	\$198,700,000

Total capital outlay for the next three years	\$201,150,000
Total spent on tourism advertising in 1996	\$2,680,527

Figures 2 and 3 illustrate the percent of museums having annual budgets and capital outlay expenditures within various dollar ranges. Note that each category covers an increasingly large range of dollars as the dollar amount increases. Projected capital outlay patterns for the next three years is similar to that of the past three years.

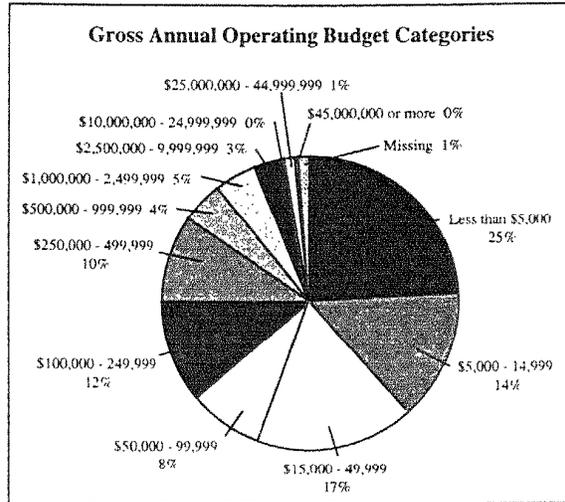


Figure 2. Percent of museums indicating a gross annual operating budget for 1996 within each of the budget range categories.

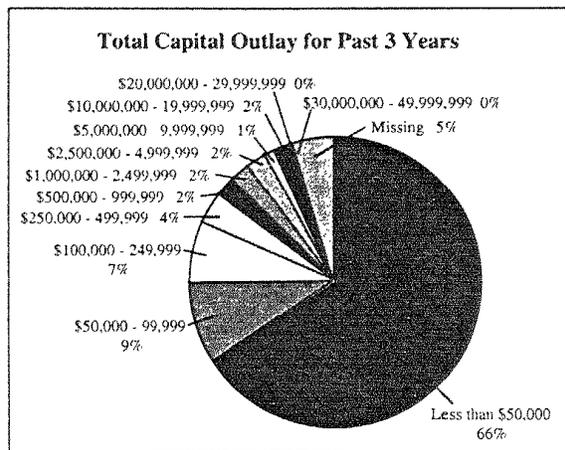


Figure 3. Percent of museums indicating total capital outlay for the past three years within each of the budget range categories.

While the total amount spent on tourism advertising (\$2,680,527) is about 9% of the 1996 total gross annual operating budget for all responding museums, 135 museums did not spend anything on tourism advertising.

another 140 spent 5% or less of their annual budget on tourism advertising, 19 spent between 5% and 20%, and two spent about 20%. Two museums indicated spending more than their annual gross operating budget, but it is not possible to determine which of the reported figures is incorrect. Another 16 museums did not provide responses to this question.

E: Museum links with tourism industry.

The final set of questions dealt with the extent to which (and in what ways) museums currently are working with the tourism industry. Of the 293 museums responding, 94% (276) said they currently engage in some type of activity with the tourism industry. In responding about specific activities, only 280 of these museums identified one or more specific activities.

By far the most often mentioned tourism link is the distribution of brochures: in the local area (220), in Michigan Welcome Centers (155), and developing regional brochures with other institutions (97). The total number of brochures distributed by 233 museums that used brochures in 1996 was 8,918,928. Nearly 3/4 (149 of 205 responding) of small museums distributed 10,000 or fewer brochures. An additional 18% (37) did not distribute any brochures. The fewest brochures distributed by a large museum was 2,000 while about 75% of large museums distributed 21,000 or more. Only two museums distributed one million or more brochures. While 12% of all responding museums did not use brochures at all, and nearly 68% of all museums used one to three different types of promotional brochures, the number of different brochures ranged to 30.

Other primary channels for tourism promotion include newspaper (232), radio (150), other tourism publications (141), television (131), and magazines (112). A variety of other channels are used by a few institutions: internet, newsletters, billboards, local Convention and Visitors Bureau, and posters.

The other tourism-link activities were used by relatively few museums: working with local Convention and Visitors Bureaus (9), working with local schools (8), using Michigan Welcome Center display cases (3), and working with Travel Michigan (3).

While nearly all museums currently are involved to some degree in tourism activities, 62% percent indicated that they are willing to work more closely with tourism industry professionals and to promote their sites and/or activities to tourists. This willingness increases as the size of the museum increases. All large museums (annual operating budget of at least \$1 million), in contrast with only 48% of those with annual operating budgets of less than \$5,000, are willing to be involved.

Discussion and Management Implications

“Readiness” of museums for increased tourism activity. Based on results of the study, it appears that the Michigan museum community is variably prepared to continue or expand involvement as tourism destinations and providers of tourism experiences. Some museums, primarily the larger ones, already are actively involved in serving tourists

as well as local and other Michigan residents. These institutions are well staffed (paid and unpaid, full time and part time, year-round and seasonal), have relatively large budgets, are actively involved in tourism promotion, work with Convention and Visitor Bureaus, and work with other institutions to develop tourism “packages,” both structured and perceptual. Many of them also are developing creative ways to establish links with tourism professionals and provide heritage experiences for tourists.

The combined 1996 gross annual operating budget for 289 museums reporting was nearly \$300,000,000. Of this amount, just over \$2 million were spent on tourism advertising. Reports by the same number of museums indicate a combined capital outlay of approximately \$200,000,000 for the past three years and about the same amount projected for the next three years.

Based on the range of disciplines represented in the “museum mix,” there certainly is no lack of interesting history and culture in Michigan. All museum disciplines identified by the American Association of Museums (AAM) are represented, though by far the greatest number (53%) are either history museums or historic houses and sites. There are 13 additional specialized museums available in Michigan, the most abundant of which are maritime museums. Thus, the existing and potential development of heritage tourism opportunities in Michigan is obvious and feasible.

Nevertheless, a substantial number of museums probably are not ready (and may not choose to be) for expanded or even minimal involvement in tourism beyond serving the occasional wandering tourist who might happen to appear at their doors. About 35% of identified museums did not respond. It was not possible to check for bias of non-respondents because the vast majority of those not responding could not be reached by phone. It is assumed (based on answering machine messages, inability to find phone numbers, and the list of organizational names) that most of these are small organizations that are open only during the summer season, on some other limited schedule, or by appointment only.

Willingness to be involved with tourism.

While 94% of museums responding stated that they currently are working in some way with the tourism industry (mostly through promotional brochures), fewer are interested in expanding their efforts. About 50% of “small” museums are willing to become more actively involved, though some indicate uncertainty as to how to do so. Of those unwilling to work more actively with the tourism industry, 91% are from the “small” category.

While specific reasons for unwillingness to be more involved with tourism were not requested in the questionnaire, hand-written comments on the survey and informal interaction with museum staff in other settings indicate the following as possible reasons:

- lack of financial and/or staff resources makes it unfeasible to promote to or adequately service tourists;
- sites and facilities are not designed to handle increased numbers (e.g., limited parking space, inadequate space for bus access);
- sites are minimally developed while an organization’s

emphasis may be on research, genealogy or other community interest;

- the organization's mission may preclude serving tourists; and
- sensitive natural or cultural resources could be threatened with increased visitation (by tourists or others).

It is also possible that many simply are not aware of how to become involved in tourism.

Potential challenges to increased tourism involvement. Several other factors may discourage involvement of cultural institutions with the tourism industry. The first is simply a lack of awareness about what to do and how to approach tourism professionals, especially when the two industry "languages," philosophies and "bottom lines" seem so different. This is evident in many of the open-ended responses to the question about *how* the museums would be willing to work more closely with MMA and the travel industry: Examples are listed below:

- "However you would need our help."
- "In any way we could."
- "Uncertain at this time; some degree of cooperation."
- "Whatever you suggest."
- "Don't know at this time."
- "Any way that does not cost very much."

Another issue that became clear during the survey process was that it is challenging to simply develop a comprehensive list of cultural institutions. Thus, coordinated efforts among institutions and with tourism professionals would have to address a variety of challenges. Most museums do not have very accurate systems for tracking visitor numbers or getting additional information about them. Without accurate visitor numbers, it is impossible to conduct an adequate feasibility analysis, a cost/benefit analysis, or any other tourism planning effort. Without additional information about current museum visitors and profiles of potential tourists, it is difficult to implement a marketing strategy or develop a promotional plan.

Limited and/or irregular hours of operation present an additional challenge to serving tourists, who tend to be "on demand" visitors. While no questions about operational hours were specifically included in the questionnaire, the high number of unreachable institutions indicates that a large portion of them would not be available for spontaneous tourist visitation. Also, professionals in other states have indicated limited or irregular hours as a serious deterrent to serving tourists.

The distribution of museums throughout the state is irregular. Not surprisingly, the largest museums and the largest clusters of museums are located in the metropolitan areas, primarily the counties surrounding Detroit, Lansing, Kalamazoo/Battle Creek, and Grand Rapids. Other strong heritage attraction areas include the counties surrounding Mackinac Straits and Sault Ste. Marie, Traverse City, Flin/Saginaw and Marquette. Such clustering makes it easier to develop travel packages and promote "areas with lots of things to do" than for institutions existing in isolation. This is true partly because it takes into

consideration how tourists perceive, plan and travel: it meets the tourist travel behavior pattern of engaging in "experience bundles." Clusters also make it easier for institutions to work collaboratively and to develop a unique theme or image for the area, though it is still possible for the more isolated and smaller institutions to work with both cultural institutions and other tourism attractions and services.

Choosing to become involved in tourism.

Museums that choose *not* to participate in tourism (due to mission constraints, facility and other physical constraints, staff and financial constraints) should be respected for those decisions. However, if they desire to become involved, it is possible to develop appropriate and feasible ways and levels for their involvement. Regardless of current tourism contributions and readiness, decisions about future tourism involvement should be thoughtful and considered, with each institution determining its level of readiness (fiscally, physically, programatically, and philosophically) and developing an implementation plan that considers the impact of tourists on the structure and/or site itself, on the staff and other programs, and on the community within which it exists. Plans should include careful marketing research, financial planning, partnering among cultural institutions, and partnering with tourism industry professionals. Strategies to share development costs, create structured and informal travel packages and experiences, develop a tourism region or experience image/theme, and create joint promotional campaigns can increase the potential for success. Michigan certainly has the history, the cultural diversity, and the institutions to develop and offer heritage tourism opportunities for visitors, both in- and out-of-state.

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THE IMPORTANCE OF HISTORY IN RECREATION RESEARCH

Karl Roenke

Forest Archaeologist, White Mountain National Forest, 719 Main St., Laconia, NH 03246

Abstract: Terrestrial recreation activities occur on lands with a rich and varied history and prehistory. This paper will discuss the importance of land use history in creating or influencing environments as well as the recreation experiences people seek in those environments. It seeks to demonstrate the value of the recreation history of an area in understanding current and future expectations of recreation users.

Introduction:

The 1997 Northeast Recreation Research (NERR) keynote address by Donald Field focused on the place of people in nature. Several points were made which may have a major influence upon recreation, as well as other natural resource managers and researchers in the coming years.

- It is time to think differently about people and how they interact as a part of nature.
- Recreation will benefit when we revise our view of people as outsiders, temporary visitors, and clients.
- Recreation managers need to understand a fairly large landscape and the people's history and role within it.
- Today land managing agencies manage people not resources. The resources take care of themselves for the most part.
- We need Environmental History. It is perhaps the most important study to bring into recreation research.

(Field 1997)

Environmental History:

I suspect the study of environmental history will become common as natural resource and recreation resource managers as well as researchers come to appreciate its value to their work. It is the prehistory and history of a natural landscape that provides a factual basis upon which sound, defensible management plans can be developed. Environmental history also reeducates us on the importance and necessity of understanding humans as an integral part of nature, not separate from it.

Prehistory and history tells us that human beings have played a valuable part in nature and the environmental development of North America for over 12,000 years. Thus natural history is also human history.

Environmental Myth:

A popular myth is that America, prior to European contact, was an impenetrable wilderness consisting of relatively uniform ancient forests (MacCleery 1996:6). When

Europeans arrived to settle in North America most of them believed, and some recorded, that they encountered such a pristine wilderness. In fact, they encountered Native American managed landscapes containing created mosaics of timber stand types, ages, and conditions as well as open grasslands (Burdette 1997:35).

"Rather than balance-in-nature, disturbance and change are really the only ecosystem constants"

(Kay 1994).

It is the time for land managers to reevaluate their perceptions of the history of the lands they manage. Previous plans to return portions of the land base to something called "pristine wilderness" is not based in fact, but in myth. The importance of accurate environmental history cannot be overstated given our present situation of challenges to public land management approaches and priorities. If we base our actions on myth, or erroneous history we are on a course destined to fail. If we base decisions on environmental historical facts we can defend our actions, gain public understanding and trust, and perhaps avoid some legal battles.

If we have not accurately understood the Native American role in environmental history, it is time to review our understanding of the role of Euro-Americans in the history of environments. There is a tendency today to focus on human actions we deplore and amplify them without looking at the broader environmental perspective. For instance, the timber harvesting practices in New Hampshire at the end of the 19th century were predominantly focused on maximizing short-term profits without a vision for the future. There was, however, one example of wise logging techniques, which did use cutting practices, which had a view to the future. The Sawyer River Logging Railroad (1877-1937) of Daniel Saunders followed a continuous policy of selective cutting (Belcher 1980:54). Why was this one example using a sustained yield approach when others were not? How does the timber resource in that area compare with those in areas cut over extensively? What impact might this have on recreation values and experiences?

Recreation History:

As we plan for recreation activities, development, and research it may be just as important to base that planning on environmental history as it is for any other natural resource management program. Do past environmental occurrences produce the conditions that attract us for recreational development? The long-term management approaches of the White Mountain National Forest must build from the conditions created by the short term logging management objectives of the past.

The rich recreational history of the White Mountains spans over 175 years. Can recreational history over this period of time offer opportunities for researchers to understand some recreational trends and perhaps better plan for the future by using these historical facts? How extensively do the results of prehistoric and historic human activities help create the recreational resource we see today? Is our recreational

infrastructure predominantly the result of the Public Works Program of the 1930's when huge numbers of workers changed the public forest dramatically and made it accessible to many more members of the public?

Conclusion:

Environmental history can provide much of the information managers seek to make informed, defensible decisions which are understood by the public.

It tells the story of the evolution of all actions such as timber harvest, hurricanes, and recreation upon the land. This can provide recreation managers and others insight into past recreation trends as well as current public desires. It may be an important factor to help us determine which paths to take to the future.

"All landscapes are constructed. Garden, forest, city, and wilderness are shaped by rivers and rain, plants and animals, human hands and minds. They are phenomena of nature and products of culture."
(Spim 1996:113).

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Environmental Concerns in Recreation



SIZE OF PLACE OF RESIDENCE AND ENCOUNTERS WITH THE ADVERSE CONSEQUENCES OF AND SUPPORT FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT

Robert A. Robertson

Department of Resource Economics and Development,
University of New Hampshire, James Hall, Durham, NH
03824

Rabel J. Burdge

Department of Sociology, Western Washington University:
Bellingham, WA

Abstract: This study examines the influence of size of place of residence and encounters with the adverse consequences of commercial/industrial development on a persons level of support for commercial and industrial development (CID). Of specific interest is whether recreational visitors from communities with lower populations densities are more likely to support development than visitors from communities with higher population densities and whether encounters with the adverse consequences of CID effects the level of support. Data were obtained from a sample of 757 recreational visitors to the Illinois & Michigan Canal National Heritage Corridor in Northeastern Illinois. Results show that rural/non-farm and metro places of residence were each less likely to favor tax support for CID than persons living on farms, small towns, and small cities. The data show that respondents who encountered problems related to CID were more likely to oppose the allocation of tax dollars for CID. Additional analyses revealed that the effect of encounters with CID on support for CID varied across residential location types.

Introduction

Navigable waterways and contiguous lands include some of the most valuable natural, cultural, economic, and recreational resources in North America. Residents of urban and rural communities adjacent to these waterways have ready access to many of these resources and opportunities. In recent years, there has been a growing interest in the promotion and development of both the commercial/industrial and recreational opportunities associated with navigable waterways. Our study examines the relationships between support for commercial/industrial development (CID), size of place of residence, and encounters with the adverse consequences of present CID for a sample of recreational visitors to the Illinois & Michigan Canal National Heritage Corridor in Northeastern Illinois. This study examines the hypothesis that people may be more receptive to policies aimed at developing or promoting river resources depending upon the size of community in which they live, and the extent to which they have experienced the negative impacts of CID within the river corridor.

Theoretical Background

The utility of the size of place of residence (urban-rural) variable in understanding differences in attitudes toward

community and rural development continues in the literature (see Lowe and Peek, 1974). Recent regional economic development programs have renewed interest in understanding preferences of mass publics for various economic growth alternatives (Falk and Lyson, 1991). Martinson and Schulman (1977) for example, suggest that not all residents of rural areas are enthusiastic supporters of the pro-growth policies for regional development, and support for a growth policy is tempered by the perceived impact of the policy on the local community as well as by the needs and interests of the target populations. Along these same lines, Marsh and Christianson (1977) found specific support for industrial development to be greatest for among those living in rural areas with support decreasing as size of place of residence increases, except that support for development was greatest amongst those who lived near or in towns of less than 10,000. Zuiches and Fuguitt (1976) found higher levels of support for rural development programs among rural persons who preferred to live in either cities or suburbs then in their present locations. Previous research suggests that the size of place of residence variable may be important examining the determinants of support for CID.

The size of place of residence variable has also been used to explore differences in support for environmental protection (Buttel and Flinn, 1974; Lowe and Pinhey, 1982; Tremblay and Dunlap, 1978). People's attitudes towards commercial & industrial development can be considered a subset of environmental concern, in that CID represents an issue that has clear implications for the quality of the natural environment. Connerly (1987) provides some support for our rationale by suggesting environmentalists and anti-growth advocates are not distinguishable in terms of their general ideological preferences. Marsh and Christianson (1977) found that the structure of support for both environmental control and opposition to economic development are quite similar (i.e., persons who support environmental protection are similar to those persons who oppose commercial & industrial development). Thus the research on the relationship between size of place of residence and support for environmental protection provides a comparison from which to develop an understanding of the relationship between size of place of residence and support for CID.

Research on the relationship between size of place of residence and level of support for environmental protection has generally identified a positive association between the degree of urban residence and support for environmental protection (Buttel, 1979; Lowe and Pinhey, 1982; Marsh and Christianson, 1977; Van Liere and Dunlap, 1980). Other studies report that persons from urban locations were generally found to be more concerned about environmental problems than those from rural residential locations (Tremblay and Dunlap, 1978; Buttel and Flinn, 1978).

Reasons for rural-urban differences in support for environmental protection include the notion that the lower levels of support for environmental protection found in rural areas maybe a result of differences in the occupational structure (Hendee, 1969); the pro-growth orientation of residents of small towns and rural areas (Buttel and Flinn,

1976; Murdock and Schriener, 1977); place of socialization (Buttel and Flinn, 1977; Lowe and Pinhey, 1982); and urban-rural differences in the level of exposure to environmental problems (Tremblay and Dunlap, 1978; Lowe and Pinhey, 1982). Some of the research reported above was based on the premise that support for environmental protection is related to the actual level of pollution and degradation that person is exposed to or encounters on a daily basis (DeGroot, 1967; Dillman and Christianson, 1975; Lowe and Pinhey, 1982; Tremblay and Dunlap, 1978); and that rural residents tend to have more utilitarian attitudes the natural environment (Tremblay and Dunlap, 1978). This literature also suggests that urban people are the most exposed to environmental problems and are therefore more likely to support initiatives designed to correct such conditions. Rural residents on the other hand, are more likely to be employed in occupations that profit from the alteration of natural resources and are therefore less likely to be concerned with environmental quality.

Hypotheses

On the basis of the foregoing discussion, we hypothesize that:

1. The level of support for allocating resources to CID will differ by size of place of residence, with persons from smaller sized areas being the most supportive;
2. Persons who encounter problems associated with CID will be less likely to support CID; and
3. The influence of encounters with problems associated with CID on support for CID will vary across residential location types (e.g., persons from urban residential who encountered problems will be less likely support CID than persons from rural residential locations who encounter problems).

Our research provides a different empirical setting to the investigation of the relationships between support for CID, size of place of residence, and exposure to adverse consequences of CID. We have a sample population from both urban and rural areas who are likely to experience both the positive and negative effects of CID (recreational visitors to the Illinois & Michigan Canal National Heritage Corridor, and a means with which to evaluate the influence of exposure to problems associated with CID on support for CID (recreational visitors evaluations of the impact of CID on enjoyable recreational use of the river corridor). Additionally, our research will contribute back to the environmental concern literature by specifying the relationships between size of place of residence, exposure to environmental problems and support for CID.

Methods

The Research Setting

The resource setting for this study was the Illinois & Michigan Canal National Heritage Corridor, which stretches 100 miles across Northeastern Illinois and includes a portion of the Greater Chicago Metropolitan Area. The Congressional Act of 1984 that created the National Heritage Corridor specified that the Corridor's cultural, historic, natural, recreational, agricultural and economic resources be

retained and enhanced. The Corridor parallels the former Illinois & Michigan Canal, the current Chicago Sanitary Ship Canal and the Upper Illinois Waterway.

The natural resources within and surrounding the waterway support a wide range of commercial/industrial developments to include petro-chemical plants, the production and storage of ammunition, power generation facilities (hydroelectric, coal, and nuclear), as well as quarries and manufacturing facilities. The river/waterway also serves as a transportation corridor, a source of water supply, and means to dispose of waste water. The river corridor and associated resources face continued and increased pressures for more development via regional economic development organizations and state and federal incentives. The "Corridor" also provides the opportunity for a wide range of water-based and water enhanced recreation. An inventory of the recreation opportunities with the corridor showed more than 20,000 acres of natural areas, thirty-two historic-education sites, twenty-eight picnic areas, nine camping areas, twenty-four boat launching areas and sixteen canoe access points (Robertson and Burdge, 1990).

The Sample

Data for this study come from a 1988 sample of summer visitors to water based or water enhanced recreation facilities within the Illinois & Michigan Canal National Heritage Corridor. The larger study was designed to examine relationships between commercial & industrial and recreational use. The sample was based upon estimated daily use at various recreation sites and was established by examine past visitation records. Visitors were systematically contacted by the survey team and asked to complete an eight-page questionnaire. Of the 1067 visitors initially contacted, 1024 (96 percent) agreed to participate and were given a questionnaire. After a post card reminder and replacement questionnaire, 757 useable questionnaires were returned, for a final response rate of 71 percent.

Measurement of Concepts

Support for CID. The dependent variable, support for commercial/industrial development, is a modification of a generalized support for environmental protection scale used by Lowe and Pinhey (1982) and others. Respondents were asked, "If you were to decide how future monies should be spent with the Illinois & Michigan Canal National Heritage Corridor would you want LESS, the SAME AMOUNT, or MORE money used for the following purposes? Remember that tax dollars are limited, so if more money is used in some areas there will be less for other areas." Our empirical measure of *support for commercial & industrial development*, was the allocation of tax revenues including the following nine items: 1. Industry: factories and warehouses; 2. Energy: power plants and cooling lakes; 3. Residential Communities; 4. Tourist facilities, e.g., lodging and restaurants; 5. Recreation resorts; 6. Transportation: roads and airports; 7. Barge terminals; 8. Amusement parks; and 9. Water recreation facilities, (e.g., ramps, marinas.).

Scores on this scale could range from 9 (less tax dollars for all scale items) to 27 (more tax support for all scale items).

The mean score was 15; and the median score was 16, with an (alpha) reliability of the of .734. For purposes of analysis the scale was collapsed into a two categories: 1 through 17 represented those persons opposed to the allocation of tax dollars to commercial & industrial development; and 18 through 27 representing those persons supporting the allocation of tax dollars to commercial & industrial development.

Encounters with problems associated with CID.

Our measure of the impact of encounters with CID allows for the understanding of the relationship between subjective evaluations of the current conditions of the resource setting and support for CID. This measure minimizes the problematic nature of depending upon place of residence as a surrogate measure of exposure to environmental problems, while at the same time responding to Tremblay and Dunlap (1978) conclusion that it is crucial to differentiate between problems at the state (national) level and at the local community level (our research focuses on those problems associated with a specific river corridor). The measure was operationalized by providing respondents with the following instructions: "Below are a list of situations that many visitors pointed out while visiting the Illinois & Michigan Canal National Heritage corridor. For each situation, please circle the response which best describes the degree to which the identified situation detracts from your enjoyable recreational use of this area. If you have *not* encountered the situation today or in previous visits please respond by circling 0 (did not encounter situation)." Other options included "encountered situation, but it does not detract from enjoyable recreation use" = 1; "situation slightly detracts" = 2; "situation moderately detracts" = 3; "situation strongly detracts" = 4; and "situation most strongly detracts" = 5. The sixteen items composing the impact of commercial & industrial development scale were as follows: 1. Private ownership of riverside property; 2. Barge fleeting areas; 3. Nuclear power plants; 4. Excessive commercial tow traffic; 5. Unsanitary industrial developments; 6. Difficulty finding a private place; 7. Lack of safety protection near industrial hazards; 8. Inappropriate use of natural areas; 9. Excessive recreation developments; 10. Commercial/industrial developments; 11. Industrial encroachment on historic feature; 12. Residential developments; 13. Crowded recreation facilities; 14. Chemical/industrial pollution; 15. Use of river for disposal of treated sewage; and 16. Commercial/industrial use of river water.

Scores on this scale could range from 0 (did not encounter any of the problem situations) to 80 (all of the identified problem situations most strongly detracted from the recreation experience). The mean score was 21, and the median score was 18, with an (alpha) reliability of .934. For the purposes of analysis the scale was collapsed into a two group scale: scores 0 through 16 represented those persons who did not encounter problems associated with CID; and 17 through 27, represented those persons who encountered problems associated with CID.

Size of place of residence was operationalized by responses to the questions, "where do you currently live?". The question included 9 options. Responses were categorized into six residential location types: *metro areas* (within Chicago city limits [n=54], cities of more than 250,000 not Chicago [n=8], and Chicago area suburbs [n=241]), *medium sized city* (city of 50,000 to 250,000 [n=91]), *small city* (a city of 10,000 to 50,000 [n=111]) *small town* (a town of 2,500 to 10,000 [n=131], and a town of less than 2,500 people [n=37]), *rural non-farm* [N=63], and *on a farm* [N=29].

Results

The bivariate distribution in Table 1 provides a general overview of the relationship between support for the allocation of tax revenues for CID and size of place of residence. First, we should note that overall 65 percent of the respondents in this sample do not favor tax support for CID. There were, however, substantial differences in support for the allocation of tax dollars for CID across six residential location types. Persons from metropolitan areas and rural non-farm areas were the most likely to oppose the allocation of tax dollars for CID. Specifically, 72 percent of the persons from metro areas and nearly 75 percent of the persons from rural/non-farm areas opposed the allocation of tax dollars for CID. Persons from rural/farm, small towns, and middle sized towns were most likely to favor current or increased levels of tax support for CID, with respectively 59 percent, 43 percent and 45 percent supporting the allocation of tax dollars to CID. Hence, the results support do support our first hypotheses that the level of support for CID does vary across residential location type and that persons from areas with lower population densities were the most likely to support CID, with the exception of rural non-farm persons.

Table 1 Level of support for commercial-industrial development by size of place of residence

Size of Place of Residence	Support for Commercial/Industrial Development	
	Opposes Tax Support	Favors Tax Support Percent
Metro Area (n=295)	72.2	27.8
Large City(n=91)	68.1	31.9
Small City(n=111)	55.1	45.0
Small Town (n=168)	57.1	42.9
Rural/non-farm(n=63)	74.6	25.4
Rural Farm(n=29)	41.4	58.6
Total	(491) 65%	(266) 35%
Chi square/df	26.21/5 Significance0.0000	

Table 2 shows the relationship between support for CID and encounters with problems associated with CID. The results suggest that there is a statistically significant relationship between encountering the adverse effects of CID and support for CID. Persons who encounter problems related to CID were more likely to oppose the allocation of tax dollars for CID than those persons who did not encounter problems related to CID. Specifically, 54 percent of the persons who

encountered problems related to CID opposed the allocation of tax dollars for CID, while 42 percent of the persons favoring the allocation of tax dollars encountered problems associated with CID. Thus, our second hypothesis is supported, in that the findings indicate that persons who encounter problems related to CID were less likely to support CID.

Table 2 Level of support for commercial/industrial development by evaluations of the impact of encounters with commercial/industrial development

Level of Support for CID	Encounters with Problems Related to Development	
	Did Not Encounter	Encountered Problems Percent
Opposes Tax Support (n=491)	45.8	54.2
Favors Tax Support (n=266)	57.9	42.1
Total	(379) 65%	(266) 35%
Chi square/df	10.5/1	Significance0.001

We next analyzed the effect of size of place of residence on the level of support for the allocation of tax dollars for CID, while controlling for the effect of encounters with problems related to CID. The results in table 3 suggest that a statistically significant relationship exists between support for CID and encounters with problems related to CID for large and small cities, in that persons who encounter problems related to CID from these areas were less likely to favor the

allocation of tax dollars for CID. Encounters with problems related to CID had the smallest effect on support for the allocation of tax dollars for CID for respondents from the residential location types of "rural/non-farm" and "small towns". Thus, there is some empirical support for hypotheses 3 in that the magnitude of the influence of being impacted by current levels of CID on support for CID varies across residential location types.

Table 3. Support for commercial/industrial development by encounters with adverse effects of CID and size of place of residence.

Size of Place of Residence	Level of Support for CID	N	Effect of Exposure to CID		Chi Square	Prob.
			Not Impacted	Impacted		
Metro Area (n=295)	Opposes Tax Support	213	48%	52%	3.33	.067
	Favors Tax Support	82	60%	40%		
Large City(n=91)	Opposes Tax Support	62	47%	53%	5.24	.021
	Favors Tax Support	29	72%	28%		
Small City(n=111)	Opposes Tax Support	61	41%	59%	6.89	.008
	Favors Tax Support	50	66%	34%		
Small Town (n=168)	Opposes Tax Support	96	45%	55%	0.71	.396
	Favors Tax Support	72	51%	49%		
Rural/non-farm(n=63)	Opposes Tax Support	47	40%	60%	0.05	.815
	Favors Tax Support	16	44%	56%		
Rural Farm(n=29)	Opposes Tax Support	12	58%	42%	0.83	.36
	Favors Tax Support	17	42%	58%		

Discussion

Our findings show that support for CID varied across residential location types and moreover is consistent with research by Marsh and Christianson (1977) and Lowe and Pinhey (1982) who found that support for development was greatest among those persons who live in or near small towns.

Our findings also support the previous observation of the importance of making a distinction between agrarianism and ruralism (Buttel and Flinn, 1977) and the value of an occupation-residence variable (Tremblay and Dunlap, 1978). The present study documents that rural non-farm and rural farmers differ in the degree that they support the allocation of

tax dollars for CID. Our findings, however, should be viewed with caution because of the relatively small number (29) of farmers in this sample. The results presented in this study also serve to support the previous research by Marsh and Christianson (1977) and Connerly (1987) which suggests that the social basis of opposition to CID is very similar to that of those persons who support environmental protection, our study provides evidence in terms of the size of place residence variable.

The findings associated with the investigations of the relationship between encounters with problems related to CID and support for CID is less clear. However, we do support earlier research showing persons who encounters environmental problems to be less likely to support CID. This research tends to conform to Tremblay and Dunlap's (1978) environmental deprivation theory in that persons from urban areas who were impacted by current levels of CID were the least likely to support CID. The finding that persons who encountered the adverse consequences of CID from rural non-farm residential location were the least likely to favor increased support is also consistent with environmental deprivation theory in that many of these person moved to rural areas in an attempt to "escape" the problems associated with CID, only to find similar problems close to their own backyard.

This research provides some insights into the differential exposure to environmental problem issue, through the examination of influence of the individuals perception of the magnitude of the impact. This may be a more accurate technique for examining this sort of relationship--as opposed to the impact objective conditions of the environmental setting--which could include a long list of confounding factors. These results suggest that the effects of encounters with the adverse consequences of CID on support for CID do vary across residential location types. Two qualification to these results must be acknowledged. First, this analysis was restricted to recreation visitors to an multiple objective river corridor. It does not include those persons who were so adversely effected by CID that they discontinued their use of corridor. Second, small numbers of respondents in the rural farm category, but this research still confirms the suggestion that rural occupation most be considered when investigation rural-urban differences (Buttel and Flinn, 1974).

Future studies should continue to investigate the relationships between adverse impacts of CID, residential location type and support for CID. This study suggests that residential location type is an important variable in understanding the support for CID, for many of the same reasons that were reported in research which examined the relationship between residential location and environmental concern (Tremblay and Dunlap, 1978). These relationships are particularly important when considering the value of various economic and commercial & industrial development initiatives.

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A STUDY OF INFORMATION SEARCH BY VISITORS TO THE BLUE RIDGE PARKWAY

Jim Rogers

Coordinator - Environmental Education, Indiana University
-Bradford Woods, Highway 67N, Martinsville, IN 46151.

Roy Ramthun

Assistant Professor - Department of Leisure Services,
Radford University, PO Box 6963, Radford, VA 24142

Abstract: The purpose of this research was to determine the factors which help predict patterns of information source use. A sample of 301 individuals completed an on-site questionnaire on the Blue Ridge Parkway during the height of Fall foliage. The instrument measured previous experience, amount of investment, active or non-active in information search, information sources used, and demographics. A cluster analysis identified four groups of information users: (1) on-site seekers - relied heavily upon information sources which were readily available on-site; (2) readers - relied heavily on written material; (3) information hounds - used any information source they could get their hands on; (4) inactive seekers - did not rely on any distinguishable information sources. A discriminant analysis indicated that previous experience, investment, and active information search significantly contributed to the prediction of group membership.

Introduction

In 1898, John Muir wrote, "Thousands of tired, nerve-shaken, overcivilized people are beginning to find that going to the mountains is going home; that wilderness is a necessity; and that mountain parks and preservations are useful...as fountains of life." Today, hundreds of millions of people look to the nation's federally protected lands each year for recreational enjoyment, mental and physical rejuvenation, spiritual uplifting, and cultural history. This is very encouraging but these visitors create an enormous collective impact. Non-biodegradable litter, trampled vegetation, and erosion from impromptu trails are some examples of this impact. Information provided to these visitors plays an important role in helping them to achieve their desired goals and is also very important to land managers in helping to communicate desired attitudes and behaviors toward the recreational use of public lands. Successful communication of information to the visitor is a necessary component in the land manager's mission to preserve and protect the natural beauty and cultural integrity of the land for future generations.

There are two general approaches land managers use to combat visitor caused impacts. The first is a "direct" approach which tries to regulate visitor behavior through

techniques such as use rationing, activity prohibitions, and law enforcement. The second approach is the use of "indirect" techniques which rely on design and communications based strategies to alter visitor behavior including informational, educational, and interpretive campaigns (McAvoy & Dustin, 1983). Due to the current period of falling budgets, managers are more likely to use information strategies rather than hiring more personnel to monitor and carry out direct measures. The use of indirect management techniques can reduce resource damage in recreation areas by changing user behavior (Brown & Hunt, 1969; Christensen, 1981; Clark, Hendee, & Burgess, 1972; Lime & Lucas, 1977; Roggenbuck & Berrier, 1982) and influence user attitude toward acceptance of management practices (Reiling, Criner, & Oltmanns, 1988).

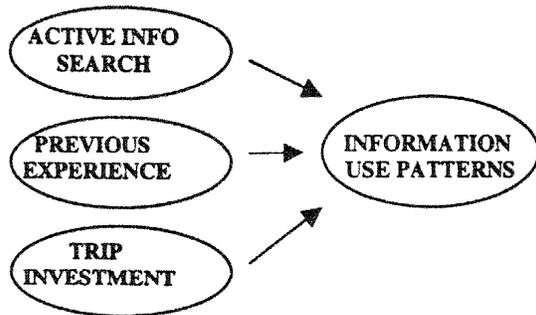
Vander Stoep and Gramann (1987) believe that a lot of resource damage caused by visitors to recreation areas is inadvertent rather than willful or malicious in intent. "The first reason park rules may be violated is because visitors are simply unaware that they exist. These types of infractions are termed 'unintentional violations' under the assumption that if the rules were known, they would be obeyed." Park rules may also be disobeyed because visitors are unaware of the damaging consequences of their actions. Infractions resulting from a lack of awareness can be termed "uninformed violations" (Vander Stoep & Gramann, 1987). Indirect approaches to reducing resource impact may be the best alternative for land managers to consider for the protection and preservation of public lands (Manfredo, 1992; Vander Stoep & Gramann, 1987).

Information supplied to visitors can be designed to persuade them to adhere to the land manager's overall goals of protecting park resources. Solving problems encountered in the recreation field often involves persuasion in one form or another. "Persuasive communication involves the use of verbal messages to influence attitudes and behavior...recreationists must be persuaded to observe rules of safety, to avoid conflicts with other visitors, and to minimize their impact on the environment" (Manfredo, 1992).

Purpose

People gain information about public lands from a wide variety of sources. Efforts at influencing the public must be aimed at specific groups and the characteristics they possess to be effective (Fazio & Gilbert, 1981). The purpose of this study is to: 1) identify groups by patterns of information source use; 2) examine the relationships of three independent predictor variables - active information search, previous experience, and investment - on patterns of information source use (Figure 1). A very limited number of studies in the recreation literature have delved into the issue of information search and more research is needed to broaden our knowledge in this area. Greater understanding of the people who are searching for information and the information sources they are using can help reach a larger proportion of the population. This is a positive step toward gaining active support for land management programs.

Figure 1: Theoretical Model of Information Use



The concept of information search can be defined as the external search for information about a particular area by the visitor. People "active" in information search are deliberately seeking external sources for information (Manfredo, 1989). For the purposes of this study, previous experience is defined as the number of previous visits to the particular area and how long ago the last visit occurred (if the person had visited before). Investment is defined as the time spent, money spent, and miles traveled to the particular area, and whether the trip was a planned vacation. An information use pattern is defined as a group of visitors using the same or similar information sources to learn more about the area.

The hypotheses tested were:

- H1) Previous experience will be a significant predictor of information source use.
- H2) Investment will be a significant predictor of information source use.
- H3) Active information search will be a significant predictor of information source use.

Researching the nature and the extent of influence that information sources have on specific groups has several relevant implications to recreation and conservation professionals. First, this study holds promise for improving the land manager's effectiveness of directing visitor behavior toward desired goals. Second, it can help to provide a more educational experience for the visitor. Third, it can contribute to the marketing of tourist experiences, locally and abroad, by successfully targeting information campaigns toward identifiable user groups.

This study was limited by a number of factors. First, the study was not designed to be a behavioral reflection of the respondents; it was limited to visitor preference upon answering the given questions. Second, the study was designed to examine self-reports. An interpretation of the questionnaire was left to the visitor which could have influenced the validity of their responses. Third, the weather conditions and seasonal changes may have affected visitor response and the overall visitor population.

Review of Literature

The behavior of recreationists (including improper behavior) strongly influences the impact of recreational

activities on the natural environment. Visitor knowledge on when, where, and how to use recreational lands can reduce the level of environmental impact (Manfredo, 1992). Indirect forms of visitor management have been the preferred choice among land managers to elicit appropriate recreation behavior rather than direct measures. Visitors also favor the use of unobtrusive management strategies which allow freedom, challenge, and spontaneity of movement over heavy-handed direct regulation (Roggenbuck, Watson, & Stankey, 1982). As with all forms of resource management, the prerequisites to effectively promoting management objectives are the availability of good information and knowing something about who the users are (Stankey & Baden, 1977). If land managers "are interested in stimulating moral development in the recreationists we serve, we now know that we must design multi-dimensional informational, educational, and interpretive programs to ensure their effectiveness" (Dustin, 1985). It is very important to gain a better understanding of the distribution of information to the visitor and its effectiveness as a behavioral modification tool.

Information sources used to promote behavioral change.

Research indicates that information can be an effective visitor management tool to promote behavioral change (Brown & Hunt, 1969; Lime & Lucas, 1977; Lucas, 1981; Roggenbuck & Berrier, 1982; Krumpe & Brown, 1982). Information supplied to visitors is a very promising and effective technique for redistributing use in highly impacted areas. Roggenbuck, Watson, and Stankey (1982) indicated that "better information on use conditions was by far the most preferred method for dispersing users...this is congruent with the common perception that lack of information on use was a problem". There are three different indirect communication techniques that have been employed to help change visitor behavior: signage, brochures, and verbal messages.

In a study conducted in Yellowstone National Park, a trail selector was used as a means to communicate information and trail attributes to the visitor. It was found to be very effective in redistributing backcountry use and increasing the visitor's perception of trail options in the Park (Krumpe & Brown, 1982). Lime and Lucas (1977) studied the influence of an informational brochure on the distribution of visitor use at the Boundary Waters Canoe Area in the Superior National Forest. In this study, 75% of the respondents said the brochure was useful and at least one third used the brochure to select an entry point or a time to visit the area. In a similar study, a brochure was designed to shift use from heavily used trails to lightly used trails in the Selway-Bitterroot Wilderness area in Montana. Visitors to the lightly used trails were influenced by the brochure in their choice of trail and a majority of the visitors found the information it contained very useful toward planning their trip (Lucas, 1981). Vander Stoep and Gramann (1987) studied the effects of three personally delivered messages on the amount of depreciative behavior committed by youth groups hiking the trails at Shiloh National Military Park in Tennessee. The results of the

study indicated that all three messages reduced the amount of serious depreciative behavior committed by youth groups by approximately 88%.

Information use patterns. For more effective communication strategies and education programs to be designed and implemented, land managers need to know where and how visitors collect information (Kersey & Ramthun, 1996). This knowledge can be used toward more effective information campaigns targeted specifically at different user groups. In a study done at Mt. Rogers National Recreation Area in Virginia, Kersey and Ramthun (1996) indicated that there is a statistically significant difference in knowledge of low impact behavior based on different styles of gathering information.

Rogers and Ramthun (1996) were involved in a similar study at Mt. Rogers National Recreation Area examining the relationships between the use of popular media sources and the respondents' attitudes toward regulation, knowledge of low impact behavior, and desire for solitude. Results indicated that there is a statistically significant difference in all three variables based on the information sources being utilized by the visitor. The study also indicated that the use of specific media is a significant predictor of lower scores on a low impact assessment, a lower desire for privacy, and a less positive attitude toward permit systems.

The influence of previous experience. Research tends to confirm the importance of direct previous recreation experience as a mediator of new information being obtained by the visitor. "The extent of previous participation in recreational pursuits can serve as an indicator of the amount and type of information a person draws on to make decisions concerning leisure behavior" (Schreyer, Lime, & Williams, 1984). The findings of Manfredi (1989) suggested information serves different functions for those who are experienced compared to those who are inexperienced with a recreational product. The study indicated that inexperienced individuals had strong interest, attitudes, and intentions toward participation in a recreational activity, but lacked knowledge.

A lack of previous experience by the visitor does play a big part in the gathering and using of information. Roggenbuck and Berrier's (1982) study on dispersing wilderness campers at Shining Rock found that an informational brochure plus personal contact was much more effective for individuals without previous experience in the area. Similarly, Krumpel and Brown (1982) found that the more inexperienced backpackers were with Yellowstone National Park, the more they used the informational brochure to select different trails in the area.

These studies reinforce the importance of land managers knowing the experience level of the group for which information is targeted. For informational campaigns to be more effective, they must be designed to meet varying visitor needs. If the group has little experience in the area, informational approaches may be useful in developing new

beliefs and affecting behavior. If the group is experienced, more care needs to be taken when introducing new information.

Investment in recreational pursuits. There are costs associated with most recreational activities that people will incur to obtain enjoyment and satisfaction. Studies of visits to various outdoor recreation areas show that a major part of the total monetary cost is associated with travel distance and time (Clawson & Knetsch, 1966). There are other factors to take into consideration also when trying to estimate the cost of outdoor recreation. The cost of on-site recreation time can be measured as income lost from work and measured as a time/cost relationship in the search for lodging, food, shopping opportunities, and available features of the park or recreational site (Walsh, 1986). Information obtained on the latter factors from a wide variety of sources would help visitors save this additional cost in time and would help to relieve anxieties of the unknown allowing for a more enjoyable experience.

Active information search. Active information search has been defined by Manfredi (1989) as the external search for information about a particular area or product relevant to an individual. Manfredi (1989) studied information search reasoning that "information search occurs when a person has an intention to make a product purchase, has high involvement in the product and its purchase, but feels that they have inadequate knowledge for making a good purchase decision". He suggested that by focusing on those involved in active information search, more people are likely to be affected by communication campaigns.

The role of prior information search is important to management objectives in outdoor recreation. Lime and Lucas (1977) found that information obtained in advance by visitors still in the stages of trip planning was more effective in redistributing use than by providing information to visitors already on-site. Krumpel and Brown (1982) indicated similar findings stating that visitors were more likely to use a wider variety of trails if they were informed of alternative trail options by a trail selector previous to planning their trip. A study by Lucas (1981) concluded that land managers "can redistribute use substantially if information about a variety of area conditions is presented to visitors early enough in the location choice process."

Methodology

This study was conducted at the Peaks of Otter on the Blue Ridge Parkway with permission of the National Park Service and in accordance with their stated guidelines. The Blue Ridge Parkway is 469 miles long and winds its way through the valleys and ridges of the southern Appalachian mountains connecting the Shenandoah National Park in Virginia with the Great Smoky Mountains National Park in North Carolina. The Blue Ridge Parkway is one of the most visited National Park Service units in the United States with an annual visitation of over twenty million people. It offers wondrous views and various recreational opportunities to a diverse visitor population.

Study subjects were all park visitors surveyed at randomly selected time periods (cluster sampling). Surveying was conducted during the months of October and November, 1996. This is the period of peak yearly visitation due to the Autumn foliage. Highly traveled points of interest at the Peaks of Otter were chosen to conduct data collection. Only two members per group were sampled to control bias associated with large groups. To control bias further, only one member per family unit was sampled reasoning that all members essentially had the same background (experience, investment, information sources used) and would respond to the questionnaire in a very similar fashion. A total of 301 respondents completed questionnaires which were used for final analysis.

The data collection instrument was a self-administered on-site questionnaire. The questionnaire was collected as soon as it was completed. The questionnaire addressed the respondent's level of experience, total investment, use of information sources, prior information search, and general demographic background.

The first two questions measured the respondent's previous experience with the Blue Ridge Parkway pertaining to the total number and frequency of visits. The summation of these questions was used to create an index score for previous experience. The next section was a set of five questions which measured how much investment the respondent had in their trip to the Parkway (miles traveled, days spent, expenses incurred, planned vacation). The summation was used to create an index score for total investment. The next question was used to determine the information sources which were used by the respondent to learn more about the Parkway. They examined a list of thirteen selected sources (i.e. ranger contacts, outdoor magazines, literature provided by the NPS, etc.) and rated each on a five-point Likert scale from "never use" to "use frequently". This helped to identify patterns of information source use by visitors. A "yes" or "no" response to the next question asking if information was requested about the Parkway before the trip helped to determine whether the respondent was active or non-active in the search for information. A final set of three questions asked for general demographic information including gender, age, education, and community.

Results

The following is a presentation and analysis of the data collected from the questionnaires. The Statistical Package for the Social Sciences (SPSS) was used to compile and analyze the raw data. This section will represent: 1) the general demographics of the sample population providing a profile of visitors to the Blue Ridge Parkway; 2) the results from the cluster analysis identifying groups by their patterns of information source use; 3) the results from the discriminate analysis showing the significance of the predictor variables (experience, investment, and active search) on the patterns of information source use found in the cluster analysis.

Demographics. A total number of 301 respondents participated in the study and are described as follows.

There were 167 male respondents (56% of sample population) and 133 female respondents (44% of the sample population), with 1 missing case. The ages of the respondents ranged from 14 years to 76 years with a mean age of 43.2 years. The education level of the respondents was measured on a 20 year scale (1-6 elementary, 7-9 junior high school, 10-12 high school, 13-16 college, and 17-20 graduate school) and ranged from 6th grade to a doctorate degree with a mean education level of 14.9 years. 103 respondents resided in a rural setting (34%), 136 respondents resided in a suburban setting (45%), and 60 respondents resided in an urban setting (20%).

Cluster Analysis. The goal of cluster analysis is to identify homogenous groups or clusters and by examining their characteristics, one may be able to target future informational strategies more efficiently (Norusis, 1990). A cluster analysis was used to identify group patterns of information source use by visitors to the Blue Ridge Parkway. Clusters were interpreted and classified by grouping the scores well above the mean from the various information categories listed on the questionnaire. Four distinct groups of information users were identified from the results of the cluster analysis and named them for the purposes of this study:

- Cluster 1. *On-site seekers* - a group who relied heavily upon information sources which were readily available on-site. These information sources were trail signs and bulletin boards, National Park Service literature, Parkway visitor centers, and tourism brochures.
- Cluster 2. *Readers* - a group who relied heavily on written material. These information sources were trail signs and bulletin boards, National Park Service literature, Parkway visitor centers, tourism brochures, local newspapers, outdoor magazines, and books about the outdoors.
- Cluster 3. *Information hounds* - a group that used any information source they could get their hands on. They utilized every information source on the survey.
- Cluster 4. *Inactive seekers* - a group who did not rely on any distinguishable information sources.

On-site seekers composed the largest group of information users (51%) followed by inactive seekers (37%), information hounds (7%), and the smallest group was the readers (5%).

Discriminate Analysis. The goal of discriminate analysis is to classify cases into one of several mutually exclusive known groups on the basis of different characteristics they possess and to establish which of these characteristics are important for distinguishing group membership (Norusis, 1990). A discriminate analysis was used to test the first three hypotheses which stated that the independent variables of previous experience, investment, and active information search would be significant predictors of group membership defined by information source use. The four

groups of information users identified in the cluster analysis (on-site seekers, readers, information hounds, and inactive seekers) were used in the analysis. The results of the discriminant analysis revealed that there is a significant relationship between all three variables and the prediction of group membership (Table 1). Investment showed the strongest contribution to explaining the discriminant function ($p=.0075$), followed by previous experience ($p=.0130$), and lastly active information search ($p=.0159$).

Table 1: Significance of Variables Contributing to the Explanation of the Discriminate Function

Step	Action Entered	Variables Included	Wilks' Lambda	Sig.
1	Investment	1	.94828	.0075
2	Experience	2	.93072	.0130
3	Active Search	3	.91335	.0159

The classification results indicate that the prediction of group membership using the variables of previous experience, investment, and active information search can be improved by 9.5% over simple random chance (Table 2). This analysis supports hypotheses 1, 2, and 3.

Table 2: Percent of Correctly Predicted Group Memberships

Actual Group	Number of Cases in Group	Number Correctly Classified	Percent Correctly Classified
On-site Seekers	116	17	14.7%
Readers	12	6	50.0%
Information Hounds	16	5	31.3%
Inactive Seekers	85	51	60.0%

* Percent of "grouped" cases correctly classified: 34.5%

Discussion

Specific research is lacking concerning patterns of information source use in outdoor recreation settings. Much of the pre-existing research in outdoor recreation has been primarily focused on passive information users, i.e., those who did not solicit information (Krumpe & Brown, 1982; Lime & Lucas, 1977; Lucas, 1981; Roggenbuck & Berrier, 1982). The goal of this study was to determine if there were any direct relationships between visitor characteristics (previous experience, investment, active search, and knowledge) and the information sources they used.

Each variable in the study was individually examined. It was found that most visitors were very experienced with the Blue Ridge Parkway (mean = 6.1462 in a range from 1 to 9) and most visitors did not have a lot of time, money, and effort invested in their trip (mean = 6.8662 in a range from 3 to 15). Only 50 visitors out of 299 were active in information search regarding the Parkway previous to their visit. Visitors were also found to be very knowledgeable on the rules and regulations of the Parkway (mean = 4.6133 in a range from 0 to 5). A cluster analysis was used to put visitors into four distinct groups defined by the sources they used (or did not use) to gather information.

The cluster analysis revealed four different groups based on the way visitors obtained their information for their trip to the Blue Ridge Parkway. The groups were named according to the various information sources used the most (i.e., scoring well above the mean on a 5 point Likert scale). Cluster 1 was named "on-site seekers" because the sources this group used were readily available or only available once on park grounds. Cluster 2 was named "readers" since all their information seemed to come from printed materials. Cluster 3 was appropriately named "information hounds" because this group of visitors utilized every information source that they could get their hands on. Cluster 4 was named "inactive seekers" based on the fact that they did not rely heavily on any sources for information. Using the four groups interpreted from the cluster analysis, the discriminant analysis was used to test the three hypotheses proposed at the outset of this study.

The three hypotheses stating that the variables previous experience, investment, and active information search would be significant predictors of information source use. Findings in the discriminant analysis supported these assumptions. All three significantly contributed to the explanation of the discriminant function. The discriminant analysis indicated that by using the variables previous experience, investment, and active information search, there was a 9.5% increase over simple random chance in the likelihood of correctly classifying visitors into one of the groups identified in the cluster analysis (on-site seekers, readers, information hounds, or inactive seekers). The discriminant function was found to be useful to land managers to help identify various user groups by the characteristics they possess.

Implications

Previous studies have shown that information provided to the user on desired management behaviors and objectives has been an effective tool. This study will help the development of more efficient and effective communication campaigns. The ability to identify groups of information users by the different characteristics they possess will help the land manager direct relative and pertinent information to visitors in a way that better meets their needs providing a more educational experience for the visitor. Putting this information in a source the visitor is more likely to use will also give the land manager the ability to reach more of the population promoting desired recreational behaviors and help gain active support for land management programs.

Knowing the experience level of recreational visitors will help land managers determine where they are gathering information. Sources identified as being used by experienced visitors might be developed more carefully to avoid repetition of regularly used information and to highlight new information with more detail. Inexperienced users will still need the basic information in a way that is easily understood. Land managers can also highlight information for the "experienced" visitor and for the "first time visitor". This can be done in readily available information sources like brochures, area specific news magazines, and the internet. Those visitors with higher

investment (living farther away, spending more money, and staying longer) may need more information on lodging and local attractions in which the internet can be a very effective tool. Also, area tourist information centers and travel agencies can be targeted in a marketing campaign supplying them with the proper information for the experienced traveler and the first time traveler. Visitors actively searching for information used sources which can be identified by land managers and made more accessible and available and can deliver more detailed information to the active seeker. People actively searching for information may be more prone to persuasion which is very important to the effective implementation of management objectives.

Visitors to the Blue Ridge Parkway had a high experience level coupled with high knowledge of the rules and regulations, low amount of trip investment, and a low proportion of visitors were active in information search. Looking at these characteristics all together, it points to a high visitation of local users. This may have contributed to visitors waiting until they were on-site to gather information or to such a large amount of visitors being inactive seekers of information; they have seen and heard it all before. New informational approaches may be necessary to better reach this population. "If highly knowledgeable users receive information on a high repeat basis over a number of use seasons, there might be less effects due to repetition of information" and this causes "boredom or reactance toward the message which reduces persuasion effects" (Manfredo & Bright, 1991). This may indicate the need for different and detailed information readily available on-site directed toward the experienced visitor. An example might be the use of more on-site programming dedicated to various issues impacting the surrounding area. This can help enlighten and recruit a local population toward management objectives. It can also give the experienced user a new and in-depth look at why the rules and regulations are so important to the maintenance and survival of public lands located in their own backyard. Keeping the experienced user active in information search is very important. If experienced visitors stop using information sources, they will not be aware of rule and regulation changes which occur over time. It seems the importance lies on Blue Ridge Parkway management directing informational strategies and campaigns on park grounds to a local populace.

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THE UTILITY OF A USES AND GRATIFICATIONS APPROACH TO ASSESS THE INFORMATION NEEDS OF FOREST VISITORS: AN ACTIVITY-BASED MARKET SEGMENTATION TEST

James D. Absher
USDA Forest Service, Riverside, CA

ABSTRACT Recent research into information needs of recreationists has identified rational choice models as one approach to better understand the roles that various information sources play in visitors' experiences. Previously reported Uses and Gratification (U&G) scales are assessed alongside more traditional explanatory variables for their ability to discriminate activity-based market segments. Data are from a study of 356 summer visitors to the San Bernardino National Forest. Selected independent variables are used in stepwise discriminant analysis to test their ability to explain recreation use segments. The analysis shows that the four U&G scales are useful in distinguishing activity groups in a way that complements traditional sociodemographic or use variables. The analysis also shows that there are some limitations to the U&G approach, at least as it was implemented here. Suggestions are made for further research needed to resolve some of these issues.

Introduction

Recently, the incorporation of communications theories in recreation resource research was advocated (Absher, 1998). Rational choice was emphasized as a general theoretical approach that was epistemologically consistent with other social psychological research being done in the field. This paper explores the adaptation of one rational choice theory from the communications literature, Uses and Gratifications (U&G) theory, to the information needs and communication behaviors of recreationists. In general terms, under the U&G approach an explanation is sought for how and why people use a communication channel through the measurement of known motivations inherent in a given communication behavior (Anderson, 1987; Baran & Davis, 1995).

Earlier work detailed how the underlying principles of U&G theory were adapted and pilot tested in forest recreation settings (Picard, 1997). Subsequent analyses of these data were undertaken to establish the theoretical validity of the approach and compile the U&G scales for forest recreation (Absher & Picard, 1998).

This paper takes another small step by conducting a comparative assessment of the utility of the forest-based U&G scales for forest or park management. This is accomplished by calculating the relationships between easily defined market segments (activity groups) and a few other variables (U&G scales and other independent

variables). These results are then assessed as to their ability to detect activity-based segment membership. Stated another way, the primary thrust of this analysis relies on market segmentation. Groups of visitors are defined in a relatively homogeneous way (by activity), and then compared for differences each might have on management relevant characteristics. One assumption is that motivational or behavioral differences are important if they can somehow be linked to differences in management processes, e.g., communicating with potential or on-site visitors. Hence there is a need for information use measures.

Conventional management analyses often rely heavily on sociodemographic or visit-related characteristics. Although at times such variables lack explanatory power they are logically linked to the behaviors under study and thus will remain mainstays in segmentation analyses. This paper seeks to extend this set of logical antecedents to include consideration of information-related behaviors as well through the use of U&G scales.

Methods

During the summer of 1996 a 3-page on-site questionnaire was distributed to a sample of 356 recreationists at sites and on days that were predetermined to provide broad coverage of the San Bernardino National Forest (SBNF) during July and August. In general one person from each group present at the site was asked to participate, and refusals were rare. No count of actual refusals is available so an exact refusal rate is unknown. All surveying was done during daylight hours, and a survey crew member was typically at a given site for a small part of the day, usually 2 to 4 hours, before moving on to another sampling location. As a result of this sampling procedure the resultant dataset may not be fully representative of the larger population of SBNF users because of the seasonality of the sample and its lack of coverage over all times of the day. The bias that this might introduce is unknown. To avoid the problems of generalization that might occur from over or under sampling various user groups relative to one another, each activity will be analyzed separately, and prior, to making segmentation comparisons.

Dependent variables

As noted above, market segments are operationalized as activity groups. One question asked the respondent to indicate their primary recreation activity for that day. For the entire sample the five most commonly reported recreational activities were picnicking, camping, hiking, fishing, and sightseeing (see Table 1). Each of these is a distinct activity although more than one might be done in any one trip to the Forest. Respondents were able to choose one or more activities, although more than half (54 percent) selected only one. The analyses below consider each activity separately so no case weighting for overall proportions or multiple response coding was necessary. Each activity is represented as a dichotomous variable, and the frequency ranges from 62 to 213 individuals from the total sample of 356.

Table 1. Most commonly reported recreational activities. San Bernardino NF (Multiple response question)

Activity	Frequency (persons)
1. Picnic	62
2. Camp	213
3. Hike	120
4. Fish	82
5. Sightsee	87

Independent variables

The questionnaire includes 24 statements that cover a range of information use situations consistent with U&G theory. These were posed in a randomized block order with a 6-point Likert response format, ranging from strongly agree to strongly disagree. Consistent with a priori expectations, these items were analyzed further to yield short, three-item scales across four primary dimensions.

Substantively these forest U&G scales represent the following domains of information use: educational, orientation, instrumental, and reassurance. Educational use occurs when an individual is seeking to learn about the plants, wildlife or conservation issues. Orientation refers to obtaining basic information about places, activities or events on the forest. Instrumental use refers to a visit with the purpose of obtaining information about parking or day use permits, or facility operating hours and dates. Reassurance use refers to visiting the information site in order to be sure they don't get lost, are safe, or know how to get help when needed.

These four U&G scales have very good psychometric properties. Calculated with a possible six-point range, individual U&G scale means range from 2.57 to 3.31, with standard deviations from .99 to 1.09, and Cronbach's scale reliabilities (alphas) from .78 to .87 (see Table 2). Further detail on U&G scale development and properties is found in Absher and Picard (1998).

Table 2. Short form (three item) Uses and Gratifications (U&G) scales: alpha reliability, mean, and standard deviation.

U&G Scale	Reliability (alpha)	Mean	Std. dev.
Education	.872	3.13	1.15
Orientation	.776	2.57	.99
Instrumental	.775	3.16	1.18
Reassurance	.830	3.31	1.09

In addition to the U&G attributes, other questions were asked to obtain other, common "profiling" measures of visit or visitor behavior. Included were measures of group size, number of previous trips, household income, race/ethnicity, and length of visit. Group size and number of trips in the past year were open-ended questions. Household income was measured in a four part ordinal variable with categories of "under \$20,000," "\$20,000 to 39,999," "\$40,000 to \$74,999," and "\$75,000 or more." Race/ethnicity was a dichotomous re-coding of the longer multiple choice question to a White/Caucasian versus "all

other categories" variable. Length of visit was also dichotomous, with categories for day use and overnight visits.

Finally, a series of questions about the respondent's National Forest knowledge were asked. For example one item was worded "I know a great deal about forests and forest plants." Other items referred to the respondent's knowledge about the Forest Service, forest wildlife and conservation issues. These knowledge questions were posed as attitude statements in a 6-point Likert format. Based on item analysis, three items were combined into a straightforward additive index of self-attributed forest knowledge with possible values from one to six.

All the use and knowledge variables have reasonably well behaved (i.e., approximately "normal") distributions or conform to what might be expected in this visitor population (e.g., average group size or the percentage of Hispanic visitors seems reasonable).

Results and Discussion

Behavior and sociodemographic differences

Selected "traditional" use and sociodemographic variables were analyzed first. Knowledge was an index based on a combination of three items as described above, and for the entire sample ranged from 1.2 to 6.0 with a mean of 3.9. Group size ranged from 1 to 40 with most in the expected range of 2 to 6 people. National Forest trips refers to a question about how many times they visited the forest in the past year. Typically this was a low number, with a median of 3, although many said they had visited more than 50 times, so the distribution was skewed somewhat. Household income had a median value of about \$35,000 per year. Overall, race/ethnicity was 81 percent white and 19 percent "other." Length of visit was 29.1 percent day use and 70.9 percent overnight use (mostly campground users).

Each cell in Table 3 reports the significance (probability) level of a statistical comparison between a defined market segment group (activity-based) and all others not in that group. Each comparison (cell) is calculated separately. The comparisons that were significant at the .05 level were reported in bold type. One of three statistical tests was used depending on the type of variable. Continuous variables, or ordinal ones based on them, were National Forest knowledge, group size and National Forest trips in the past year. These variables were analyzed with a t-test, i.e. a comparison of the mean score for those who engaged in the activity versus those who did not.

Categorical variables were compared using a Chi-square test or the closely related Fisher's exact test. One variable, household income, had four levels, so the joint distribution formed a four column by two row crosstabulation that was reported in each cell in that column of Table 3. The probability level reported in each cell was therefore based on a Chi-square statistic with three degrees of freedom. For the other two categorical variables, length of visit and race/ethnicity, both variables were dichotomous. The resultant joint distribution was a two-by-two crosstabulation, so a Fisher's exact test was calculated and its associated probability level was entered into Table 3.

Table 3. Activity-based segmentation variables by selected sociodemographic and use variables: significance of t-test, Chi square test, or Fisher's exact test.

Activity-based segment	Knowledge scale	Group size	NF trips last year	Length of visit (day vs. overnight)	Household income (4 categories)	Race/ ethnicity (white/other)
Test used:	t-test	t-test	t-test	Fisher's	Chi-square	Fisher's
Picnic	.856	.035 ^a	.674	.000 ^b	.448	.030 ^b
Camp	.117	.000 ^a	.194	.000 ^a	.224	.491
Hike	.598	.795	.313	.234	.923	.774
Fish	.152	.353	.945	.008 ^a	.389	.074
Sightsee	.756	.002 ^b	.459	.344	.432	.874

^a Group reported significantly larger or more of this variable.

^b Group reported significantly fewer or less of this variable.

The statistics in Table 3 show that some variables failed to distinguish one market segment from another: knowledge levels, number of trips in the past year, and household income were not strongly related to any of the five activity-based market segments. Other variables did reveal differences across segments: race/ethnicity was an important way to distinguish picnickers from other users. Group size and length of visit assisted differentiating picnickers or campers. Group size also helped to

differentiate sightseers from non-sightseers. And length of visit was longer for anglers than non-anglers.

In part these results can be explained by previously reported use patterns such as the greater representation of family groups and Hispanics at some of the picnic sites, or the longer length of visit inherent in camping versus the other activities, which are often predominantly done in day use mode. These data show that some user groups are differentiable with "traditional" market segmentation variables. By themselves these results are rather unremarkable

Table 4. Stepwise discriminant analysis of Uses and Gratifications (U&G) scales by activity-based segments: initial and final F test significance.

Activity-based segment	U&G scale: Significance of test (Wilks' Lambda); Initial (final)			
	Education	Orientation	Instrumental	Reassurance
Picnic	.999 (.224)	.434 (.564)	.196 (.992)	.019 (-)
Camp	.911 (.325)	.740 (.141)	.013 (-)	.469 (.442)
Hike	.006 (-)	.009 (.193)	.008 (.087)	.054 (.441)
Fish	.606 (na)	.681 (na)	.423 (na)	.223 (na)
Sightsee	.042 (-)	.056 (.357)	.654 (.162)	.730 (.505)

Uses and Gratifications differences

Table 4 presents an analysis of the five user segments with the four U&G scales. As with the previous table each cell in Table 4 displays significance (probability) levels for the statistical tests employed, but the statistical test is different for this table. Instead of individual group comparisons for each cell, this table reports the results of separate stepwise discriminant analyses with each activity as the dependent variable and all four U&G scale measures entered as independent variables. Each cell lists the significance of the initial and final F test results (Wilk's Lambda) of the discriminant relationships. That is, the first number in each cell shows the significance of that particular U&G scale with all four scales in the equation. A second number, in parentheses, is sometimes reported as well. This number is the significance of the same relationship once the primary explanatory power of the strongest relationship has been taken out by the procedure. Stated another way, the second number in each cell is the significance of the relationship after the first discriminant step is calculated. Fishing was unique in that no second significance level was reported because none of the first order relationships were strong enough to enter at the first step. This suggests that there was no explanatory power in the U&G scales to differentiate anglers.

The other four activity-based segments were differentially linked to the U&G scales as evidenced by the significant stepwise discriminant analyses (bold numbers). However, due to the interrelationships among the independent variables, the data also showed that some U&G scales that were initially significant dropped to insignificance in the first step calculations. For example, hikers were initially linked to education ($p = .006$), orientation ($p = .009$) and instrumental ($p = .008$) scale scores. After the strongest relationship (education) was entered the other two relationships were attenuated, so that their remaining explanatory power was insufficient to achieve statistical significance ($p = .193$ and $.087$, respectively). A similar pattern was observed for picnicking, camping and sightseeing, albeit with different combinations of independent variables. There were no cases of second step significant relationships, so the stepwise procedure ended after the first round in all cases.

To summarize Table 4, five separate discriminant analyses were conducted, one for each activity-based segment. Only one group, anglers, was not significantly related to any of the U&G scales. The other activity-based segments each have at least one U&G scale that distinguished such visitors from others at the outset, and there were no cases

where two U&G scales independently achieved explanatory significance after the first step. In particular, the data show that educational use of information sources differentiated hikers and sightseers. Picnickers were more likely to want information for reassurance purposes, and campers tended to rate instrumental information needs more highly. Simply put, each market segment reported slightly different information needs.

Conclusion

This analysis consisted of two similar sets of comparisons. Adopting an activity-based market segmentation perspective led to a check on the usefulness of common visit or sociodemographic variables. From this approach different profiles were distinguished for four of the five segmenting groups. Although half of the variables did not help to differentiate among segments at all (forest knowledge, trips last year, and household income), other variables were able to do so (group size, length of visit, and race/ethnicity). The differences attributable to two user segments, campers and picnickers, were especially robust. Similarly the U&G scale data showed an ability to discriminate among four of the five activity-based segments. Only the anglers were not different from their non-angler counterparts. The U&G variables complemented the traditional sociodemographic and use variables rather than supplanted them. There is an additional understanding of the market segments gained from testing information needs in addition to that obtained from sociodemographic or use variables. Further analyses is needed to better elucidate the relative contribution of each set of independent variables and perhaps establish some causal linkages among them.

This test of the U&G scales clearly demonstrated that segments of National Forest visitors use communication services in different ways. For instance, some groups preferred to obtain educational information and others were far more instrumental in their motivations. Also, the analysis showed that there were some limitations to the uses and gratification approach, at least as it was implemented here. The analyses did not discern any information use pattern for anglers. One is left to ponder why one group is different from others in this regard. A possible explanation is that the group crosscuts all

information uses, i.e. maybe they use all types of information services.

Although in the future the market segments may be defined differently (and perhaps better), the overall impression is that U&G scales can be used to tease out differences among groups that might lead to more efficient or effective information services. Collecting data on information needs and uses as an addition to traditional marketing variables offers planners or site managers a way to improve facility operations or land management planning. For instance, from a manager's perspective U&G scales can serve customer service objectives. Enhanced understanding of visitor's information needs will assist better communication with targeted user groups, and promote desired recreational uses of the forest. The results of this study suggest the U&G scales may be useful in this process and, with subsequent applications and testing, the role they can play in recreation resource management should become more apparent.

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INFORMATION USE IN THE TRIP PLANNING PROCESS: A QUALITATIVE ANALYSIS OF BACKPACKERS

Roy Ramthun

Assistant Professor
Travel Industry Management
Concord College
Athens, West Virginia 24712-1000

Abstract: Individuals planning trips in outdoor areas have a wide variety of information sources available to them. There is tremendous variation in the extent to which recreationists use these information sources. This study used qualitative methodology to examine the use of information by backpackers. It was found that individuals returning to previously visited sites were less likely to use any information source, that the most commonly used information source was a more experienced member of the individual's own party and there was little agreement among those interviewed about what represented a "good" information source.

Introduction

Education, information and persuasion are often viewed as the most practical or affordable solutions to problems of depreciative behavior and visitor management in backcountry settings. The effectiveness of educational and persuasive campaigns is, unfortunately, often low. While a great deal of research has focused on the content of educational campaigns and the behavior of message receivers, less attention has been paid to process by which outdoor users obtain information and utilize that information when planning visits to natural areas. A variety of studies have indicated that many outdoor recreationists do not obtain or do not use the information provided by managing agencies (Kersey & Ramthun, 1996; Lucas 1981; Manfredo, 1992). Many people appear to begin trips with little knowledge of the area, weather conditions or the rules and regulations that apply to users. Previous research on wildland recreationists in southwest Virginia showed very low levels of information seeking (Kersey & Ramthun, 1996). The purpose of this study was to develop greater insight into the information use and planning behavior of one common group of outdoor users, backpackers.

Methodology

This study was exploratory in nature, making it well suited to the use of qualitative methods. Qualitative methods allow the researcher to collect information and to incorporate that information into the study while it is still in progress. This is a critical feature when researching behavior that is not well understood (Lofland & Lofland, 1984). A qualitative structured interview procedure (Howe, 1988) was selected to maintain a balance in the collection of objective information about behavior and subjective data about the respondents preferences. A

theoretical sampling procedure was utilized; individuals with varying levels of experience in backpacking were sought out and asked to participate in the study.

In this study, 53 backpackers were interviewed. They responded to a series of closed questions regarding demographic variables and their experience in backpacking. They also responded to a set of open questions in which they were asked about the process they use when planning a trip, the information sources they are most likely to use and the information sources they find most useful. The individuals ranged in age from 17 to 80 years of age (mean = 28yrs) and had levels of experience ranging from over 20 years to less than one year.

Analysis was done by creating a series of typologies to identify patterns in the open responses that coincided with the demographic and experience variables (Lofland, 1977; Lofland & Lofland 1984). The typologies were created and analyzed by the author, with several other faculty and graduate students making independent readings to check for reliability.

Results

Several patterns were discernable in the data:

- 1) Everyone was less likely to seek out information when visiting sites they had been to before, even if they had not visited the site for many years. This was an anticipated finding and was consistent with findings by Lucas (1981) and others.
- 2) All of the respondents reported that they customarily travel in groups of 2-3 or 4-6 people. Individuals who reported that they usually backpacked with people more experienced than themselves used very few information sources and relied heavily on experienced friends. Individuals who traveled with more experienced companions typically used one or two sources of information while individuals who traveled with less experienced companions typically reported using three to four sources of information (see Figure 1). The people who traveled with more experienced companions reported that their most commonly used and most trusted source of information was "friends". People who reported that they typically backpacked with people less experienced than themselves used a wider range of information sources and were much more likely to utilize information provided by management. These individuals also reported that they placed more trust in maps and materials from the land managing agency. This pattern did not seem to have any relationship to the total experience level of the respondents.
- 3) There was a great deal of variability in what respondents defined as "good information". There was a pattern of responses that defined "good information" as subjective information that involved their specific needs. In particular, less experienced backpackers preferred information that was a) personal and subjective, b) interactive, and c) pertinent to safety. These respondents felt that information provided by resource managers was not useful because it did not address their personal

information needs. More experienced backpackers were more likely to report that good information was information that was a) current (up to date) and b) objective in nature. The more experienced backpackers reported preferences for objective data about the site: location of trails, camping areas, water sources etc.

4) The respondents were evenly split in their view of planning, with approximately half of the respondents viewing trip planning as an enjoyable process and half viewing planning as an odious chore. The respondents who viewed planning as a chore spent much less time planning.

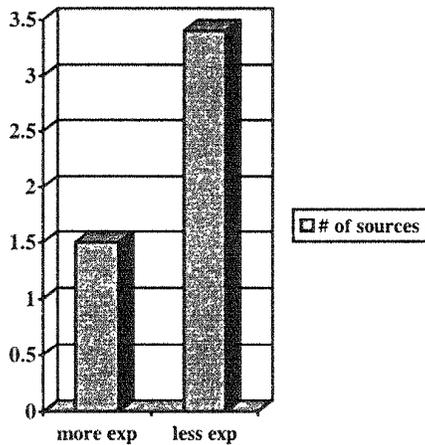


Figure 1. Reported Number of Information Sources

Conclusions

In summary, many of the backpackers interviewed in this study took a very passive role in trip planning and information gathering. The individual's social role in the travel group quickly emerged as a critical variable in the information gathering process of these backpackers. Regardless of the total years of experience, individuals tended to rely on the more experienced members of their groups as an expert information source, in many cases preferring subjective information from friends or family members to objective information provided by resource managers. Individuals in the role of "follower" sought out few sources of information, relying primarily on more experienced friends. Backpackers who went into the field with a group of less experienced companions fell into the role of "leader" and sought out more information sources. They also sought out information that experts and land managers would tend to think of as more dependable than the sources preferred by their less experienced traveling companions.

The conclusions from this study may be discouraging to managers hoping to use information sources to inform and alter visitor behavior. The visitors that are often the most likely to need information (and behavior modification) are the least likely to seek out a formal written source of information. The relatively less experienced would rather get information from the relatively more experienced members of their group. This study does indicate that personal and subjective information from an interactive source is seen by relatively less experienced individuals as "meeting their needs". A ranger or volunteer can meet this need to provide personal subjective information in an interactive fashion. The ranger or volunteer would probably be approached by relatively less experienced users who would not choose to pick up a brochure or map containing the same information. While ranger patrols can be a major cost, and the current emphasis on information and persuasion is based on a desire to cut costs, these patrols seem to meet the information acquisition needs of less experienced visitors.

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THE ASSOCIATION OF OUTDOOR RECREATION AND ENVIRONMENTAL BEHAVIORS¹

Gene L. Theodori

Research Assistant, Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University, Armsby Building, University Park, PA 16802

A.E. Luloff

Professor, Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University, Armsby Building, University Park, PA 16802

Fern K. Willits

Professor, Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University, Armsby Building, University Park, PA 16802

Abstract: Building upon earlier studies, two hypotheses concerning the association between participation in outdoor recreational activities and pro-environmental behavior are tested using data collected in a general population survey from a random sample of individuals in four communities in Pennsylvania. The first hypothesis, that there is a positive association between outdoor recreational participation and pro-environmental behavior, received substantial support. In contrast to previous research, the results did not support the second hypothesis which stated that there will be differences between/among different types of outdoor activities with respect to their impact on pro-environmental behaviors.

Introduction

Utilizing data collected in 1970 from a Washington survey, Dunlap and Heffernan (1975) explored the issue of whether involvement in outdoor recreation activities increased environmental concern among the general public. In their study, Dunlap and Heffernan tested three hypotheses. First, they hypothesized that involvement in outdoor recreation was positively associated with environmental concern. Second, they hypothesized that involvement in appreciative activities (i.e., hiking, camping, and visiting state parks and scenic areas) was more strongly associated with environmental concern than involvement in consumptive activities (i.e., hunting and fishing). And third, they hypothesized that the association between outdoor recreation involvement and protecting those aspects of the environment necessary for pursuing such activities was stronger than the association between outdoor recreation and other environmental issues such as air and water pollution.

Results indicated mixed and generally weak support for their first hypothesis, modest support for their second hypothesis, and somewhat stronger support for their third. In order to check for spuriousness, Dunlap and Heffernan examined the relationships while controlling for five demographic variables—age, gender, residence, education, and income. Although their correlations were slightly weakened, Dunlap and Heffernan found no loss of

significance. Hence, they concluded that "there is a nonspurious relationship between involvement in outdoor recreational activities (especially appreciative activities) and environmental concern" (25). Although they noted that the association between outdoor recreation participation and environmental concern needed further investigation, they argued, based on their results, that outdoor recreationists constituted a potential constituency for environmental activists.

Since their initial analysis, several other researchers (e.g., Geisler et al. 1977; Pinhey and Grimes 1979; Van Liere and Noe 1981; Jackson 1986; Nord et al. 1998) have examined the associations between participation in outdoor recreational activities and attitudes toward the environment. The overall findings of these studies have been far from consistent. In these previous studies, concern for the environment was measured by attitudinal indicators. Research has consistently shown, however, that the links between environmental attitudes and behavior are, at best, weak (Hines et al. 1987; Oskamp et al. 1991; Scott and Willits 1994; Weigel et al. 1974; but see Guagnano et al. 1995; Vogel 1996). It may be the case that participation in outdoor recreational activities leads to pro-environmental behaviors regardless of whether or not it leads to measurable pro-environmental attitudes.

The present research is a further examination of the association between participation in outdoor recreational activities and environmental concern. The purpose of this paper is to report results from a study of the association between participation in outdoor recreational activities and a stronger measure of environmental concern—*pro-environmental behavior*. Building upon previous studies, the following two hypotheses were tested. First, it was hypothesized that there is a positive association between outdoor recreational participation and pro-environmental behavior. The second hypothesis was that there will be differences between/among different types of activities with respect to their impact on pro-environmental behaviors.

Data and measurement

Data were collected in a general population survey from a random sample of individuals in four agricultural communities at the rural-urban interface in Pennsylvania (see Luloff et al. 1995). Study sites were selected based on an empirical classification of every municipality in the Commonwealth with respect to the level of agricultural presence, rurality, and growth. Each municipality was ranked according to its population size, population growth (1980-1990), migration rate (1980-1990), percent of housing unit change (1980-1990), percent of land in agriculture, percent urban population, and proportion employed in agricultural occupations. From these statistical rankings, four sites were selected to represent a typology of increasing levels of urban presence and pressure in agricultural areas. The sites chosen for in-depth study included an aggregate of minor civil divisions from each of the following four counties: Lancaster, Crawford, Snyder, and Bedford.²

Based on major issues identified in key and action informant interviews in each study site, a questionnaire was

developed which addressed land use, agricultural, development, and natural resource issues, in addition to social issues including community attachment, community ties, community participation, community leadership, and stress. Following a modified Total Design Method (see Dillman 1978; Luloff and Ilvento 1981), data were gathered in the Snyder, Crawford, and Bedford sites using mail survey techniques. However, due to the presence of a substantial number of Old Order Amish and Mennonites in the Lancaster community, data were collected via a questionnaire drop-off/pick-up procedure. Overall, a response rate of 51% was achieved, resulting in 1,491 completed questionnaires across the four sites.

Measuring pro-environmental behavior

Respondents were presented with a list of seven yes/no items which asked if during the past year they had engaged in any of the following behaviors: (1) contributed money or time to an environmental or wildlife conservation group, (2) stopped buying a product because it caused environmental problems, (3) attended a public hearing or meeting about the environment, (4) contacted a government agency to get information or complain about an environmental problem, (5) read a conservation or environmental magazine, (6) watched a television special on the environment, and (7) voted for or against a political candidate because of his/her position on the environment. Responses were scored as either zero or 1, with zero indicating that the individual had not performed the behavior and 1 indicating the individual had performed the behavior. A composite score was calculated by summing the scores for the individual items. High scores reflected high levels of pro-environmental behavior; low scores indicated low levels of pro-environmental behavior. Results of a preliminary principal axis factor analysis with oblique rotation revealed that these measures of environmental behaviors were unidimensional.³ Cronbach's alpha for this pro-environmental behavior scale was 0.66.

Measuring outdoor recreational participation

Outdoor recreational participation was assessed using a list of nine outdoor recreation activities. Respondents were asked whether they engaged in (1) picnicking, (2) camping, (3) birdwatching, (4) hiking/backpacking, (5) mountain biking, (6) skiing (downhill or cross-country), (7) fishing, (8) hunting, and/or (9) riding off-road vehicles.⁴ The most popular outdoor activity was picnicking, while mountain biking tended to be the least popular. Approximately 88 percent of the respondents had picnicked within the previous year, while less than 10 percent mountain biked. Each outdoor activity was dummy coded (where 1 = yes and zero = no).

Results

As in previous research, the relationships between outdoor recreational activities and pro-environmental behavior were assessed using bivariate and multivariate correlation/regression. As noted in Table 1, there was considerable support at the zero-order level for the proposition that participation in outdoor recreational activities is associated with pro-environmental behavior. All nine bivariate relationships were positive and statistically significant at the 0.05 level; all but two were significant at the 0.001 level. The second hypothesis, that there are differences between/among different types of outdoor activities regarding their effect on pro-environmental behaviors, received mixed support at the zero-order level. With the exception of fishing, as noted in Table 1, the associations between the appreciative to slight resource-utilization activities and pro-environmental behaviors were consistently higher than those for hunting and riding off-road vehicles and pro-environmental behaviors. The association between fishing and pro-environmental behaviors was stronger than the associations between three appreciative to slight resource-utilization activities—picnicking, mountain biking, and skiing—and pro-environmental behaviors.

Table 1. Zero-order and partial correlations between outdoor recreational participation and pro-environmental behavior

Outdoor recreational activities	N	Pro-environmental behavior	
		Zero-order	Partial correlation
Appreciative to slight resource-utilization activities			
Picnicking	921	.130	.111
Camping	892	.185	.174
Birdwatching	884	.262	.250
Hiking/backpacking	881	.247	.213
Mountain biking	867	.152	.113
Skiing (downhill or cross-country)	867	.172	.114
Moderate-to-intensive resource-utilization activities			
Fishing	889	.183	.190
Hunting	880	.074	.131
Riding off-road vehicles	834	.079	.102

* Partial correlations were computed controlling for age, education, gender, income, and political ideology; Ns vary due to frequency of participation.

* Significant at the .05 level.

** Significant at the .01 level.

*** Significant at the .001 level.

Although the bivariate relationships were positive and statistically significant, the r values were not strong. Based on previous studies, however, low correlations were anticipated. Despite the somewhat weak associations, overall the correlation coefficients and their corresponding r^2 values were more consistent and stronger, respectively, than has been previously documented.

Controlling for spuriousness

Following these earlier studies, tests for spuriousness using partial correlations were also conducted. As in previous research, age, education, gender, and income were included as control factors. Political ideology, a measure that has shown consistent association with environmental concern (see Van Liere and Dunlap 1980), also was included as a control variable. Age was measured in years. Education was scored as follows: (1) less than high school, (2) high school equivalent, (3) some college, (4) college degree, and (5) training beyond college. Gender was dummy coded, with zero = males and 1 = females. Income was measured by the categories: (1) less than \$9,999, (2) \$10,000 - \$14,999, (3) \$15,000 - \$19,999, (4) \$20,000 - \$24,999, (5) \$25,000 - \$29,999, (6) \$30,000 - \$39,999, (7) \$40,000 - \$49,999, (8) \$50,000 - \$59,999, and (9) \$60,000 and over. Political ideology was coded: (1) liberal, (2) moderate-liberal, (3) moderate, (4) moderate-conservative, and (5) conservative.

As noted in Table 1, the results indicated that controlling for these sociodemographic variables had very little effect on the size of the correlation coefficients. Indeed, holding constant the effects of age, education, gender, income, and political ideology, the variance explained by three moderate-to-intensive resource-utilization activities—fishing, hunting, and riding off-road vehicles—was slightly higher than in the bivariate case. Overall, the results provided support for Dunlap and Heffernan's (1975), Van Liere and Noe's (1981), and Jackson's (1986) assertion that the relationships between outdoor recreational participation and environmental concern are not spurious.

Of the control variables, age, gender, and income consistently failed to reach statistical significance. Education was positively and significantly ($p < 0.001$) related to pro-environmental behavior for each of the outdoor activities. Higher educated persons were significantly more likely than lower educated persons to engage in environmental behaviors. Moreover, political ideology was significantly ($p < 0.001$) related to pro-environmental behavior for each of the outdoor activities when the effects of the other variables in the model were controlled. Politically liberal individuals were more likely than their politically conservative counterparts to engage in pro-environmental behaviors.

The second hypothesis reconsidered

As noted in Table 1, participation in each of the outdoor recreational activities was positively and significantly related to pro-environmental behavior when considered individually, thus providing strong support for the first

hypothesis. Furthermore, the second hypothesis (that there are differences between/among different types of outdoor activities regarding their impact on pro-environmental behaviors) received mixed support in both the bivariate and partial correlation analysis. However, this finding may be misleading.

The above analysis and several previous analyses failed to take into consideration the fact that recreationists may engage in more than one outdoor activity (e.g., Dunlap and Heffernan 1975; Geisler et al. 1977; Van Liere and Noe 1981). Thus, while theoretically possible to compare the correlations for the relationships between participation in appreciative to slight resource-utilization activities and pro-environmental behavior with those for the relationships between participation in moderate-to-intensive resource-utilization activities and pro-environmental behavior, both realistically and statistically this procedure is questionable. That is, it is reasonable to expect that a proportion of participants could be expected to participate in at least one activity from both categories.

A more comprehensive test of the second hypothesis would be to compare the pro-environmental behaviors of the respondents who participated solely in one or more of the appreciative to slight resource-utilization activities with the pro-environmental behaviors of those who participated solely in one or more moderate-to-intensive resource-utilization activities. Thus, respondents who participated in at least one outdoor activity from both categories would be excluded from such an analysis. Unfortunately, these data suggested that such a test was not feasible. Here, approximately 64 percent of the outdoor recreation participants indicated that they engaged in at least one appreciative to slight resource-utilization activity *and* at least one moderate-to-intensive resource-utilization activity. Less than 2 percent of the respondents participated *solely* in one or more of the moderate-to-intensive resource-utilization activities, while approximately 35 percent of the respondents engaged *exclusively* in one or more of the appreciative to slight resource-utilization activities.

Therefore, to further explore the second hypothesis, a more appropriate test that examined participation in specific outdoor activities individually was conducted using correlation/regression techniques. Similar to procedures utilized by Jackson (1986), each appreciative to slight resource-utilization activity was paired with each moderate-to-intensive resource-utilization activity. For each of the 18 possible pairs of outdoor activities, the pro-environmental behaviors of the respondents who participated in the appreciative to slight resource-utilization activity and *not* in the moderate-to-intensive resource-utilization activity were compared with the pro-environmental behaviors of the respondents who participated in the moderate-to-intensive resource-utilization activity and *not* in the appreciative to slight resource-utilization activity.

The analysis was conducted by creating 18 dummy variables (Table 2). The first activity was coded zero and the second as 1. Each pair of activities was entered individually into a regression model, with age, education, gender, income, and political ideology as control variables. As noted in Table 2, the results of the bivariate analysis indicated that the difference between eight of the eighteen

pairs of outdoor recreational activities was statistically significant. Individuals who engaged in the appreciative to slight resource-utilization activity and not in the moderate-to-intensive resource-utilization activity were significantly ($p < 0.05$) more likely to perform pro-environmental behaviors.

Table 2. Zero-order and partial correlations between recreational participation in exclusive outdoor activity pairs and pro-environmental behavior^a

Exclusive outdoor activity pairs	N	Pro-environmental behavior	
		Zero-order	Partial correlation
Picnicking -- Fishing	392	.000	.001
Picnicking -- Hunting	485	-.048	-.006
Picnicking -- Riding off-road vehicles	605	-.052	-.039
Camping -- Fishing	289	.004	.025
Camping -- Hunting	360	-.111*	-.014
Camping -- Riding off-road vehicles	337	-.034	-.021
Birdwatching -- Fishing	350	-.121*	-.060
Birdwatching -- Hunting	390	-.215***	-.077
Birdwatching -- Riding off-road vehicles	350	-.132*	-.069
Hiking/backpacking -- Fishing	332	-.091	-.013
Hiking/backpacking -- Hunting	361	-.204***	-.075
Hiking/backpacking -- Riding off-road vehicles	314	-.128*	-.060
Mountain biking -- Fishing	385	-.021	.036
Mountain biking -- Hunting	325	-.097	-.010
Mountain biking -- Riding off-road vehicles	163	-.171*	-.037
Skiing -- Fishing	392	-.083	-.024
Skiing -- Hunting	359	-.140**	-.037
Skiing -- Riding off-road vehicles	211	-.107	.023

^a Partial correlations were computed controlling for age, education, gender, income and political ideology; Ns vary due to frequency of participation.

* Significant at the .05 level.

** Significant at the .01 level.

*** Significant at the .001 level.

As indicated by the partial correlation coefficients, all of the statistically significant zero-order correlation coefficients dropped to nonsignificance when the effects of age, education, gender, income, and political ideology were controlled. In short, the partial correlation analysis of the paired-activity comparisons indicated that there was no significance difference between individuals who engaged in appreciative to slight resource-utilization activities and those who engaged in moderate-to-intensive resource-utilization activities regarding pro-environmental behaviors.

Conclusion

The results of this study indicated that participation in outdoor recreational activities was positively associated with pro-environmental behaviors. Furthermore, these associations changed only slightly when sociodemographic characteristics were controlled. Although the total explained variances of the recreational activities were small, they did not differ substantially from social and demographic variables, such as education and political ideology, that have been shown elsewhere to be associated with environmental concern. Thus, these data provided

substantial support for the first hypothesis of the study, namely, that there is a positive association between outdoor recreational participation and pro-environmental behavior.

The application of a more appropriate form of analysis that examined participation in specific outdoor activities individually did not find support for Dunlap and Heffernan's (1975) second original hypothesis that consumptive activities (moderate-to-intensive resource-utilization activities) are less strongly correlated with environmental concern. The bivariate results of the paired exclusive outdoor recreational activities analysis indicated that the difference between participants in appreciative to slight resource-utilization activities and participants in moderate-to-intensive resource-utilization activities regarding pro-environmental behaviors was significant in slightly less than 50 percent of the possible 18 combinations. When the effects of age, education, gender, income, and political ideology were controlled, all of the statistically significant associations dropped to nonsignificance. Thus, the data do not support the second hypothesis. Recreationists who engaged in an appreciative to slight resource-utilization activity but *not* in a moderate-

to-intensive resource-utilization activity did not differ significantly in regard to pro-environmental behavior from those who engage in a latter type of activity but *not* a former type of activity. Further research examining the associations among non-participants, participants in either the appreciative to slight resource-utilization group or the moderate-to-intensive resource-utilization group, and those who participate in both in regard to environmental behavior is warranted.

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Footnotes

¹ Support for this research was provided by the Pennsylvania Department of Agriculture (ME 442152) and the Pennsylvania Agricultural Experiment Station (Regional Project NE-173 and State Station Project 3548). For a more detailed discussion of the ideas contained within this paper, see Theodori et al. (1998).

² For a detailed description of the typology and site selections, see Luloff et al. (1995).

³ In principal, three of the items could indicate anti- rather than pro-environmental behavior. Respondents could have attended a meeting, contacted a government agency, or voted for a candidate to *prevent*, rather than promote environmental protection. However, the correlation of these variables with unambiguously pro-environmental behaviors indicated that such intentions were rare.

⁴ A preliminary principal axis analysis of the outdoor recreation activities revealed that there were two factors. After oblique rotation to final solution, the outdoor recreational activities were organized into two conceptual categories: (1) appreciative to slight resource-utilization, and (2) moderate-to-intensive resource-utilization. Appreciative to slight resource-utilization activities included: picnicking, camping, birdwatching, hiking/backpacking, mountain biking, and skiing. Fishing, hunting, and riding off-road vehicles comprised the moderate-to-intensive resource-utilization activities group.