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Northeastern Recreation Research Symposium Policy Statement

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

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Proceedings of the 2005 Northeastern Recreation Research Symposium

April 10th, 11th, & 12th



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Tourism Planning

DEVELOPING TOURISM GOALS AND OBJECTIVES FOR THE PARKS CANADA AGENCY

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Stations Program, the National Program for the Grave Sites of Canadian Prime Ministers, and the Canadian Heritage Rivers System Program. Although Canada's first national park was established over 100 years ago at Banff, Alberta, Parks Canada continues to expand as a result of the federal government's 2002 action plan which called for ten new national parks and five new national marine conservation areas by 2008. Indicative of the current progressive political milieu, Parks Canada has developed a corporate plan (2005 – 2010) encompassing a vast array of objectives, strategies and expectations. However, the plan fails to explicate goals and objectives for tourism, an imperative and principal function for the sustainability of heritage sites and the agency.

Abstract

The Parks Canada Agency is currently responsible for 174 national sites within three major programs: National Parks, National Historic Sites, and National Marine Conservation Areas. However, the current corporate plan (2005 - 2010) fails to explicate goals and objectives for tourism, an imperative and principal function for the sustainability of heritage sites and the agency. The purpose of this paper is to suggest goals, objectives, and indicators that are fundamental to the success of any planning process. Moreover, it is suggested that these recommendations are salient to the current status of Parks Canada and the future success of its tourism expectations. Only through strategic planning and systematic implementation of goals and objectives can quality visitor experiences be realized and maintained.

1.0 Introduction

Protection, presentation, celebration, and service are the four central commitments of the Parks Canada Agency. This agency presides over the nationally significant natural and cultural heritage sites of Canada. Parks Canada is currently responsible for 174 national sites within three major programs: (1) National Parks; (2) National Historic Sites; and (3) National Marine Conservation Areas. In addition, the agency presides over an additional 500 sites included in the Federal Heritage Buildings Program, the Heritage Railway

Eagles, McCool, and Haynes (2002) define goals as, "the broadly stated social purposes for which a protected area is established" and "objectives are more explicit statements of what is to be accomplished" (p. 44). Hence, objectives that are derived from goals will ultimately guide the management of tourism. Furthermore, if objectives are to be measurable, "indicators need to be developed for monitoring" (p.46). This *a priori* foundation led to the development of tourism goals and objectives predicated on the framework suggested by Schoemaker (1984). Schoemaker provided five foundational characteristics from which to systematically construct objectives: 1) output-oriented; 2) time-bound; 3) specific; 4) measurable; and 5) attainable. Output-oriented means that objectives deal with the results of an activity by describing what is to be accomplished, but not how. Time-bound objectives provide the direction to develop the appropriate management actions, and require accountability. Specific objectives should provide all parties with a clear vision of what is to be accomplished. Measurable objectives provide a clear basis for evaluating progress and allow managers to determine where efforts need to be placed in the future. Attainable suggests that objectives must be achievable with the available funding and staffing resources sometimes compromising between the idealistic vision and the reality of the impacts of tourism.

This propositional paper presents goals, objectives, and indicators that are fundamental to the success of any planning process. Moreover, it is suggested that these recommendations are salient to the current status of Parks Canada and the future success of its tourism expectations. Hence, the explicit goals and objectives are presented as underpinnings for the development of a Parks Canada Tourism Plan. Only through strategic planning and systematic implementation of goals and objectives can quality visitor experiences be realized and maintained.

2.0 Methods

As a result of the paper by Högmander and Leivo, (2004), Metsähallitus in Finland provided a dialectic catalyst for a University of Waterloo graduate workshop. The students and faculty involved shared issues Parks Canada may well address specifically as goals and objectives for tourism within the National Heritage Sites. Utilizing analytic generalization (Schwandt 2001) based upon Eagles et al. (2002) and Shoemaker's (1984) work, the participants engaged in an extensive discourse over the salience of these processes to the current task. Consensus was generated in the development of four specific tourism strata: 1) national; 2) regional; 3) site managers; and 4) visitors. Groups were formed and worked independently according to their specific stratum. Each group developed unique goals and objectives that were derived from various sources (i.e., brainstorming, literature reviews, government documents, etc.). Subsequently, each proposal was examined by way of analyst triangulation and expert audit review (Patton 2002), upon which the proposals were refined and revised. Several drafts were prepared before the current version was collated.

3.0 Recommended Parks Canada Tourism Goals and Objectives

We provide, below, recommended tourism goals and objectives according to the four developed strata: national, regional, site managers, and visitors. In total, 16 goals were generated with 59 corresponding objectives. The four strata were developed in an awareness of potential overlap as each stratum is not insular. Subsequently, several ensuing goals and objectives for each will intersect and parallel at various times. It is suggested that goals and objectives such as

this will complement each other thereby strengthening the overall structure and composition of the document and highlight the dynamic nature of this process. Furthermore, the indicators that have been developed are meant to be seen in broad terms. The purpose of such an approach is to initiate a wide-ranging discourse on the interpretation and implementation of the suggested goals and objectives. It is the authors' hope that this document will provide the catalyst for such proceedings. Thus, the following goals, objectives (bulleted under each goal) and indicators (presented generally under each sub-heading) are presented for discussion.

3.1 National

This stratum was developed as a meta-level approach to tourism goals. Hence, the capacious nature of these goals and objectives was determined appropriate and synonymous with Parks Canada's mandate.

Goal: Create public value for the citizenry by:

- Communicating the reasons for a site's conservation.
- Providing opportunities for heritage appreciation through site expansion, improvement, and/or commemoration.
- Working towards all Canadians visiting at least one national heritage site in their lifetime.
- Engaging citizens in a collaborative process of planning and shared responsibility in shaping visions for the future.
- Fostering a sense of national identity and pride through responsible stewardship of national sites.
- Expanding global awareness and appreciation through implementation of Canada's international obligations.

Goal: Promote a collective conservation conscience by:

- Providing access for all Canadians to the information they need to recognize and protect places of national heritage
- Implementing the Commercial Heritage Properties Incentive Fund
- Maintaining, improving and monitoring natural and cultural integrity of all national heritage sites

- Working to achieve equitable distribution of site visitation

Goal: Enhance national and regional economies by:

- Gaining foreign currency by marketing tourism to key foreign markets
- Redistributing revenue throughout national and regional economies
- Allocate specific revenue to improve Parks Canada infrastructure
- Increasing opportunities for regional employment in both public and private sectors
- Practice fair and just human resource management

Goal: Promote other societal benefits and values of national heritage site visitation by:

- Education through the National School Curriculum Program
- Encouraging augmentation of each national site's interpretive program
- Employing media outlets and internet marketing and programming
- Increasing a sense of ownership through strong partnerships with local communities
- Engaging the audiences of First-Nations, visible minorities, and other marginalized groups in addition to the general population

Possible Indicators: opinion polls, survey non-use values, planning process feedback, international website hits.

3.2 Regional

The regional stratum is intended to represent the geographical area most influenced by each national site. In these regions the geographical boundaries are fluid and do not represent any one community or district. As such, these goals and objectives have applicability to both large and small regions.

Goal: Enhance the collaborative relationships between public and private sectors by:

- Ensuring cooperation for the planning and implementation of tourism activities at national sites

- Regular consultation and collaboration with stakeholders as identified in site management plans regarding the future development of parks and tourism programs
- Cooperatively implementing the sustainable tourism principles of the Tourism Industry Association of Canada/Parks Canada Accord in national parks and national historic sites
- Making clear distinctions between collaborative working relationships and business partnerships

Goal: Help private-sector operators adhere to sustainable tourism principles in national sites by:

- Developing a permitting and licensing system for all commercial tourism
- Utilizing the permitting system as a means to also educate community and operators on better environmentally sustainable business practices
- Ensuring that the licensing fee and associated income is kept in Parks Canada's general budget to support the system and ecological integrity objectives

Goal: Contribute to the diversification of local economies, increase local employment opportunities, and reduce economic leakage by:

- Developing and promoting tourism in national sites, where appropriate
- Developing a "local first" prioritized employment strategy
- Promoting the increase of daily expenditures by site visitors
- Initiating locally tendered operating expenses for each site

Goal: Park tourism will support local communities control over their lives and will be respectful of community culture and values by:

- Developing and maintaining interpretive programs, in consultation with local stakeholders where local community culture and values are included in educational programming.
- Creating opportunities to educate visitors on Aboriginal cultures at all applicable national sites.

- Ensuring local, knowledgeable, guides are used when appropriate.

Possible Indicators: planning feedback, monitoring sustainable tourism practices, develop guidelines for partnerships.

3.3 Site Managers

This stratum engages the site managers as the modus ponens of the manager's importance in the success of the site.

Goal: Ensure that the visitor presence supports national heritage preservation through:

- Ecological integrity measurement
- Commemorative integrity measurement
- Existence of educational programs about heritage preservation

Goal: The site will operate to be both fiscally responsible and environmentally self-sustaining by:

- Decreasing the amount of resource extraction
- Pragmatic resource conservation (i.e. water-saving devices and compost facilities)
- Encouraging tourist expenditure within the site
- Ensuring park sizes are large enough to support viable populations of key species

Goal: Management and staff will create an environment of mutual learning with each other, and with the general public by:

- Utilizing a proportion of management data from external sources
- Building and utilizing facilities for research and public education
- Increasing the frequency of collaboration with local/regional community
- Encouraging the development and operation of a Friend's group
- Appointing a staff liaison with a site's Friend's group

Goal: The staff of each site should be trained in public relations and tourism management, including:

- Availability of resources related to tourists
- Information regarding quality service control
- Training sessions about tourism for staff members
- Instruction about impact monitoring

Possible Indicators: proportion of external data, realization of new facilities, collaborative feedback, success of Friend's group work.

3.4 Visitors

The quality of visitor's experiences is a focal point for any tourism agency. This stratum was developed with the intent to address the range of visitor experiences while not compromising the integrity of heritage sites for future generations.

Goal: Provide high quality services to fulfill visitors' educational, social, and physical needs by:

- Maintaining an environment of high quality service
- Influencing appropriate visitors' expectations and perceptions through promotional campaigns, internet advertising, and publicity
- Informing all visitors about sensitive, sustainable, and safe use of Parks Canada's sites

Goal: Maintain current facilities and preserve the ecological and cultural integrity in Parks Canada's sites by:

- Minimizing tourists' negative impacts and maximizing the tourists' positive impacts
- Promoting site conservation and preservation to visitors through all educational activities inside the park as well as national, regional and local publicity

Goal: Create additional educational, social, and physical programs catering to target markets by:

- Motivating park managers through incentive-based directives
- Promoting an array of opportunities inside the park through various strategic channels

Goal: Promote communication with all Canadians, as potential visitors, for increasing awareness and support of National Heritage sites by:

- Positioning a progressive corporate image through promotion of positive economic impacts
- Motivating employees to engage in nature and heritage promotion to visitors in daily operations
- Advancing educational, social, and physical opportunities nation-wide to reach all Canadians

Possible Indicators: visitor exit surveys, effective marketing evaluations, accident reports, impact assessments.

4.0 Discussion

In times of economic constraint, many concerned managers seek to improve image, structure, process and output. It is questionable how many organizations have systematically developed comprehensive goals and objectives. However, effective leadership, and thus effective service, must be modeled after substantive and defensible goals and objectives. We found that adherence to the guidelines suggested by Eagles et al. (2002) and Schoemaker (1984) allowed a process for systematic development to occur and we believe the goals and objectives produced are realistic and achievable. The suggestions offered in this paper are to provide the Parks Canada Agency with a discrete reference point in the development of tourism goals and objectives. Furthermore, the substantive nature of developing an organization's goals and objectives does not preclude the viability of this iterative process. Reflexivity is central to any successful and progressive organization and the use of indicators along with revising and refining goals can abet in this process.

The authors fully recognize the magnitude of these suggestions and realize that interpretation and implementation will depend solely on the discretion of the Parks Canada Agency. Nonetheless, what is necessarily implicit is the responsibility such an agency has for creating public value. Indeed, the concept that a public agency should produce value in both the short and the long term "matches the criteria of success used in the private sector" (Moore 1995, p.10). Conversely,

the potential pitfalls in performance measurement can be numerous if the ontological divide between public and private spheres is not considered (Lindgren 2001). The five characteristics suggested by Schoemaker (1984) utilized in this document are the foundational methods to test the plausibility and utility of an agency's goals and objectives. Developing goals and objectives through this foundational lens will help policy makers navigate through the process and reduce the frustrations associated with goal implementation and realization.

5.0 Citations

- Eagles, P.F.J., McCool, S.F., & Haynes, C.D. 2002. **Sustainable tourism in protected areas: Guidelines for planning and management.** United Nations Environment Programme, World Tourism Organization and World Conservation Union.
- Högmänder, J., & Leivo, A. 2004. **General principles for sustainable nature tourism in protected areas administrated by Metsähallitus, Finland.** Proceedings of the Second International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas, June 16–20, 2004, Rovaniemi, Finland. Retrieved September 7, 2004 from: <http://www.metla.fi/julkaisut/workingpapers/2004/mwp002.htm>.
- Lindgren, L. 2001. **The non-profit sector meets the performance-management movement.** *Evaluation*, 7, 285-303.
- Moore, M.H. 1995. **Creating public value: Strategic management in government.** Cambridge: Harvard University Press.
- Patton, M.Q. 2002. **Qualitative evaluation and research methods.** Newbury Park, CA: Sage.
- Schoemaker, J. 1984. **Writing quantifiable river recreation management objectives.** Proceedings of the National River Recreation Symposium, pp. 249-253.
- Schwandt, T.A. 2001. **Dictionary of Qualitative Inquiry.** New York: Sage.

FROM RESOURCE DEPENDENCE TO TOURISM: DISCOURSES OF PLACE IN TWO VERMONT TOWNS

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Abstract

As the viability of natural resource-based industries and manufacturing declines, many rural towns turn to the service sector—and to tourism in particular—for economic sustainability and community development. During this process, towns frequently promote not only their individual attractions, but also the “sense of place” of their community. But, how does a community know or choose what images and narratives of place to present? In this research, we explore how the character of place is constructed and circulated in two Vermont towns—both with histories of forest extraction—that increasingly rely on a service-based tourism economy. We explore the material and rhetorical operations that help to produce an official, ‘natural,’ ‘unique,’ and desirable sense of place. Throughout, we maintain a critical attitude toward the mobilization of place-claims for achieving specific and tangible goals of towns—goals that purportedly reflect the wishes of “the community.”

1.0 Introduction

Rural economies are undergoing change. The global economy and other factors have negatively affected the viability of traditionally rural activities such as mining, forestry, agriculture, and manufacturing. In response, many rural towns have turned to the service sector, investing in retirement, recreation, and leisure industries (Butler & Hall 1998; Ramaswamy & Kuentzel 1998). Tourism, in particular, is often proposed as a relatively benign development strategy that can offer rural regions a new foothold in the broader economy (Stokowski 1996).

This paper focuses on one particular aspect of the transition from resource-dependent economies to tourism. Researchers have pointed out that many rural

towns are engaged in a “politics of place construction” (Sancar 1994) to attract the attention of visitors and investors. Towns often promote not only their individual attractions, but also their more-encompassing “sense of place.” A review of the literature reveals a growing awareness of the politically contested nature of “places.” This paper engages with the dynamic, complex, and politically charged public discussions about place promotion in two Vermont towns—Brighton and Barton. Both of these towns feature histories of natural resource extraction and a more recent turn towards service-based tourism economies. The paper employs a discourse-based approach to studying place in order to reveal the rhetorical and material operations that construct and sustain the towns’ “uniquely attractive” character.

The data analyzed for this paper comes from secondary sources such as town plans, sections of local newspapers, and promotional brochures and magazine articles about the two towns. The findings from this analysis will provide the foundation for a larger research project that examines the control of, and access and contributions to, discourses of place in the two towns. This type of research can help to reveal, on the one hand, the coalitions formed around dominant visions and uses of place, and on the other hand, the silences, discontinuities, and contingencies that support these visions. By exploring the intersection of power and knowledge in place claims, this scholarship hopes to contribute to a more democratic and transparent social dialogue about the two towns’ character.

2.0 Literature Review

Community researchers have identified a pattern of transitional steps in the economic transformation of rural towns. Roughly until the 1950s, many rural towns enjoyed a competitive advantage in the national economy due to their proximity to natural resources. But expanding markets, various technological advances, and a growing awareness of environmental degradation upset the economic viability of traditionally rural activities such as agriculture, mining, and forestry. The low-cost labor and cheap land available in many rural areas attracted

the attention of the manufacturing industry, although the increasingly global economy of the 1980s and 1990s raised doubts about the feasibility of an economy based on manufacturing as well (Ramaswamy & Kuentzel 1998, pp. 63-64).

In response to these uncertain economic conditions, many rural towns turned to the service sector, investing in governmental, technology, retirement, recreation, and leisure industries (Marsden et al. 1993; Sancar 1994; Butler & Hall 1998; Ramaswamy & Kuentzel 1998). The advocates of tourism, in particular, have promised quick and extensive economic rewards, ranging from the generation of much-needed cash and capital investments to the creation of jobs and diversification of the local economy (Stokowski 1996; Goudie et al. 1999).

The increasing reliance of rural towns on leisure and tourism as sources of revenue has meant that they, “just like other consumer products, have had to turn to branding to identify and distinguish themselves” from other tourist destinations (D’Hauteserre 2001, p. 300a). Sancar (1994) identifies “a politics of place construction ranging across material, representational, and symbolic activities” in the competition between localities to signal their unique attractions to visitors and investors. Towns, in both urban and rural regions, have become engaged in conscious and explicit efforts to “boost” their image (Short et al. 1993; Sancar 1994; Urry 1995; Butler & Hall 1998). Roberts and Hall (2001) declare that local “efforts have been made in a variety of settings to consciously ‘improve,’ establish or change the sense of place of rural areas through the creation and re-creation of specific images” (p. 40). The subject of this paper is precisely this ongoing process of place construction and promotion in rural towns transitioning to a service economy.

Many of the initial attempts to study place in a rigorous manner were developed within the field of geography. Humanistic geographers such as Tuan (1974) and Relph (1976) conceptualized places as “meaningful” for individuals or groups of persons, and attempted to capture the fullness of people’s experiences with their environment. They were interested in studying people’s feelings about places, especially their feeling of being

“inside” places. In these accounts, place emerges from the interaction between human experience and a given physical environment.

Subsequent place research has both built on and criticized Tuan and Relph’s phenomenological conceptualization of place. In his study of the sense of place of a region in northern Idaho, for example, Ryden (1993) follows Tuan’s and Relph’s frameworks when he talks about the “invisible” landscape of “usage, memory, and significance” that is “superimposed upon the geographical surface and the two-dimensional map” (p. 40). He points out, however, that “the key to seeing, understanding, and sharing with others the invisible landscape” is language (p. 41). According to him, the meanings of places are “communicated, expressed, and maintained” by folk narrative, that is, by the stories told by the people who live there (p. 46). Stokowski (2002) argues that, “place affiliations are sustained by rhetorical (i.e., in the classic sense, persuasive) uses of language, with participants using stylistic devices such as icons, imagery, argumentation, symbols, and metaphors, among others” (p. 372). Ryden and Stokowski, therefore, draw attention to the narratives, myths, fables, songs, and other linguistic creations that transmit and sustain a community’s sense of place.

While Ryden puts on the ethnographer’s hat in his study of place, Rodman (1992) worries that external observers often “smooth” the multiplicity of local place meanings into a single narrative. Rodman points out those places are “multiple constructions” and that their consolidation into a story or a narrative is often the result of political moves. “Places, like voices,” Rodman argues, “are local and multiple” (1992, p. 643). Massey (1994) makes a similar argument when she conceptualizes place as a product of constantly changing social relations and dynamic social processes. She concludes that, “there is, in that sense of a timeless truth of an area, built on somehow internally contained character traits, no authenticity of place” (1994, p. 121).

Recent scholarship in the place politics of tourism, community, and natural resource planning has taken these concerns seriously. Thus, Stokowski (2002) declares that research “must advance into analyses of the

presentation, evaluation, and negotiation of divergent place discourses created by people engaged in social interaction” (p. 380). And Cheng, Kruger, and Daniels (2003) recommend that place research allow “expression of place-based experiences and affiliations that may not otherwise be heard or considered legitimate” (p. 110). They hope that the inclusion of a “broader range of voices and values centering around places” (p. 89) will take the planning process farther than the polarized interest- and user-group politics will (e.g., “environmentalists” versus “loggers”).

Discourse theory provides a useful framework for analyzing the political effects, multiplicity, and variety of place claims. Conceptualizing place as an object of discursive practice allows researchers to focus on the contingent and transient structures that make a locale meaningful, nameable, or simply “there” for people in their conversations. It means “rediscovering the connections, encounters, supports, blockages, plays of forces, strategies and so on which at a given moment establish what subsequently counts as being self-evident, universal and necessary” (Foucault 1977, p. 76). Rather than recovering the foundations of an “authentic” or “traditional” sense of place, this approach examines the complex and fragmented events that – sometimes linked or interdependent, and other times not – come together to give meaning to a place. By investigating the contingency of the events that have created a particular place (and thereby questioning the discursive boundaries that have confined that place), researchers and scholars will have gone a long way toward ensuring that discussions of sense of place in rural tourism planning are “progressive; not self-enclosing and defensive, but outward-looking” (Massey 1994, p. 147).

3.0 Methods

The main sources of data used for this paper are written texts that contain images or narratives about the sense of place of two Vermont towns – Brighton (and its village, Island Pond,) and Barton. Using the techniques of content, narrative, and discourse analysis, three types of texts are analyzed: (a) town plans, (b) sections of local newspapers, including editorials and letters to the editor, and (c) promotional brochures and magazine articles about the two towns.

Both Brighton and Barton adopted new town plans in 2002. These documents set fresh visions and goals for the towns, and spell out the two communities’ “official” wishes for the future. While the plans present the towns’ goals in neat, bulleted lists, a review of the last 5 years’ editorials, letters to the editor, and feature articles of two local newspapers reveals the complexity and messiness of community debates about the future of the towns. For this paper, articles published in the Caledonian Record (St. Johnsbury, Vermont) and the Burlington Free Press (Burlington, Vermont) were collected and analyzed. These articles were retrieved by an all-text database search on the terms “Brighton,” “Island Pond,” and “Barton.” The Burlington Free Press is the newspaper with the largest circulation in the state, while the Caledonian Record is one of northeastern Vermont’s two dailies.

In contrast to the multiplicity of ideas about the two towns expressed in the newspaper articles, full-length features in the Vermont Life magazine and tourist brochures collected at official visitor centers tend to portray the towns from unidimensional perspectives. Vermont Life magazine published its initial issue in 1947, and is now published by the Vermont State Department of Tourism and Marketing. Promoting Vermont qualities and lifestyles, it boasts a larger out-of-state than in-state subscription list. With the help of published indices to Vermont Life, all of the articles that featured Brighton and Barton from 1947 through 2004 have been identified and included in the analysis (a total of eight articles). Although this is a relatively small set of feature stories, it gives an historical perspective on community events, affairs, and people.

Of course, none of these sources are unbiased. Town plans both describe a place and “boost” its image. Editorials and letters to the editors of newspapers provide opinions, and are meant to persuade. Tourist brochures and Vermont Life magazine were created to promote the state to outsiders, and to attract new residents and tourists. All of these sources play rhetorical and discursive roles in establishing and manipulating place meanings.

A full and comprehensive discourse analysis would consider the intentions of the authors that produce these documents, as well as the characteristics of the audiences

that read and react to them. But the general purpose of our analysis was to identify the ways in which these secondary documents construct the towns' senses of place. Data analysis proceeded as follows. First, each set of documents was reviewed for examples of practices and symbolism used to support claims about the unique character of the towns. A generalized coding scheme emerged from this initial review. Second, the documents were re-read and the coding scheme was systematized. Third, it was ensured that the coding categories dovetailed meaningfully and that the differences among them were evident (Patton 2002). Broadly speaking, the analysis sought to examine "how language constructs phenomena, not how it reflects and reveals" them (Phillips & Hardy 2002, p. 6). Rather than treating the texts as windows to their authors' intentions, motives, or consciousness, the focus was placed on the "work" that these public documents perform in authorizing specific experiences, identities, characterizations, and imagery as relevant to the discussions about the towns' character.

The economies of Brighton and Barton have always been dependent on the towns' natural resources. Following their inception as railroad towns, the timber industry employed a large proportion of their residents. Later, both towns relied on the furniture manufacturing industry, before reinventing themselves as tourist attractions over the last two decades. The inclusion of two towns in the analysis, rather than just one, was hoped to provide a clearer understanding of the role of local arrangements and contingencies in weathering larger, regional shifts in the economic bases of rural places.

4.0 Analysis

4.1 The Historical Towns: People Against Nature

Located in the northeastern corner of Vermont, the towns of Brighton (Essex County) and Barton (Orleans County) became permanently settled by persons of European descent only after the Revolutionary War. The towns' populations remained relatively low in the first half of the 19th century. Brighton's town plan attributes this to "the relative isolation of the township in a rugged, and often harsh, environment. Travel, for example, was limited to sleds and snowshoes through the long winter season" (2002, p. 35).

The frontier imagery does not solely describe the white settlers' experiences in the area, however. It also taps into and further reinforces a broader narrative about the towns' central location in a three-county area known as Vermont's Northeast Kingdom. A 1981 Vermont Life article featuring the town of Barton, for example, states that "the name [i.e. Northeast Kingdom] inspires curiosity and conjures images of a rugged terrain, an independent people, of a region where Winter winds blow a little colder, snows drift a little deeper, and people grow a little harder" (Khouri 1981, p. 3). This characterization of the land found its way into recent debates over the future of the towns. In a response to an editorial on the economic plight of Brighton, for example, a reader of the Burlington Free Press contended that "the Northeast Kingdom is not a wild frontier [...]" A quick geography lesson might help: Most parts of the Northeast Kingdom are 90 minutes from Montreal, like Burlington [...] and three-and-a-half-hours from Boston, like Burlington" (2001, June 23). The towns' early settlement history, therefore, does more than reveal how things "really" were two hundred years ago. It also serves as a supporting element in constructing (or contesting) the towns' present character and future direction.

The two towns' populations increased considerably in the 1850s, following the construction and opening of railroads connecting Montreal, Quebec, and Portland, Maine. According to the U.S. Census, between 1840 and 1860, Brighton's population grew from 157 to 945 persons, while Barton's residents increased in number from 892 to 1,590 (see Table 1). Brighton's town plan states that the town was uniquely suited for a major train station, as it "offered a convenient and almost perfect midway point between Montreal and Portland" (2002, p. 35).

References to the town's past character as a transportation hub can also be found in recent Vermont Life articles that promote Brighton's historic and recreational resources. A piece publicizing the town's snowmobiling opportunities, for example, makes the link between the past and the present explicit: "In a sense, Island Pond's emergence as a snowmobiling crossroads is an echo of its past, when its position on the rail line connecting Portland, Boston and Montreal made it a bustling railroad town. Today it

Table 1.—Populations of Brighton, Barton, and their respective counties, 1840 - 2000.

	Brighton	Essex County	Barton	Orleans County
1840	157	4,198	892	13,634
1860	945	5,786	1,590	18,981
1880	1,691	7,931	2,364	22,803
1900	2,023	8,056	2,790	22,024
1920	2,280	7,364	3,506	23,913
1940	1,754	6,490	3,371	21,718
1960	1,545	6,083	3,066	20,143
1980	1,557	6,313	2,990	23,440
2000	1,260	6,459	2,780	26,277

Sources: U.S. Census Bureau. (2000). United States census of population; University of Vermont. (1981). Two hundred years and counting: Vermont community census totals, 1791 to 1980.

is the snowmobile, not the locomotive that provides the power” (Vara 1997, p. 37). The analogy drawn with the town’s historic role and position constitutes a significant operation in the tourism proponents’ rhetoric, as it connotes the potential recovery of a lost, but booming Golden Era. After describing the by-gone town as a “cosmopolitan, international tourist stopping-off point,” for instance, a 1980 Vermont Life article offers a cheery description of the possibilities introduced by modern forms of tourism:

During the Summer and the sporting season the town is once again a cosmopolitan place, drawing visitors from throughout the Northeast and Canada. Some even fly in and land at the local airport. Island Pond [i.e. a village in Brighton] has weathered well the transition from parlor cars to Winnebagos and private planes. (Kaufman 1980, p. 42).

The arrival of the railroad in the early 1850s affected the fledgling towns of Brighton and Barton in crucial ways. Sherman, Potash, and Sessions (2004) declare that the village of Island Pond was practically “created” by the railroad, while Barton was part of a handful of towns that “shifted their centers to meet the tracks” (p. 226). The timber industry grew as it took advantage of the new means of transportation. In the industry’s “heyday” in Brighton’s county, “eight mills worked at a feverish

pace trimming into clapboard and furniture the 57-foot long logs” (Pike 1981, pp. 62-63), while “Barton was a booming industrial and resort town” (Khoury 1981, p. 4).

Historical Census figures show that the populations of Brighton and Barton peaked in the first decades of the twentieth century and declined steadily after (see Table 1). The 2000 Census puts the populations at their lowest levels in a hundred years. The population decline experienced by the towns over the 1980-2000 period contrasts with the slight increase experienced by their respective counties over the same period.

The Census Bureau reported in 1980 that 40.3 percent of Barton’s employed population of 16 years and older worked in the manufacturing sector (similar data were not available for Brighton). The figures reported by the 2000 Census for the same category were 20.7 percent for Barton, and 27.2 percent for Brighton. Hence, the percentage of persons employed by the manufacturing industry in Barton halved over the two decades. The closing in 2001 of a major furniture plant located in Brighton has caused further concern over the area’s economic situation.

The analyzed documents paint a rather incomplete picture of the towns’ histories. There is no mention, for example, of the Native American tribes who once

inhabited the area, or of the different classes of citizens that built the towns. The received histories focus clearly on the towns' economies, not on their societies – and land is something to be conquered, in a physical sense or symbolically.

4.2 The Contemporary Towns: Utility and Aesthetics of Nature

Thus, it is perhaps not surprising that Brighton's and Barton's 2002 town plans encourage economic growth. Coupled with the preservation of the town's "unique" character, Brighton sees an opportunity in the area's "growing tourism" (2002, p. 4), while Barton's plan states that "tourism will likely serve as the town's leading economic industry for the foreseeable future" (2002, p. 11). Both of the plans list the towns' established and potential tourist attractions.

Barton's plan introduces its natural resources as essential to the survival of the town's economy. The resources "include the forests (for foliage and habitat for sporting game and birds), recreational water bodies including streams and lakes for fishing, and the general scenic beauty of the area" (p. 11). The plan immediately follows this enumeration with a further exhortation on the resources' importance: "The town's residents should have a general awareness of how these resources are critical to the town's economy and environment" (ibid.).

Barton's characterization of the town's water resources appears very utilitarian: "Barton's extensive water resources, lakes, ponds, rivers, streams, offer many forms of recreation. Besides these resources being of obvious natural value, they are of great economic value because of tourists, fishermen, boaters, swimmers, and hikers" (p. 22). In contrast, Brighton's description of its resources is more pastoral: "All living things need water to survive, and Brighton is fortunate in the quantity and placement of its water resources. [...] Also, beautiful lakes, rivers and ponds design the countryside adding light, color and life to the rolling hills" (pp. 31-32). This concern with presenting a romantic and pleasing image of the town emerges repeatedly in the Brighton town plan. The plan's authors, for example, "envision in the park, on Cross Street, a nostalgic skating rink, with lights and perhaps music, to keep at least a little part of our town quaint"

(p. 5). And in a discussion of land use districts, the plan states that, "open land is particularly valuable for tourism and recreation. In the words of the 'Planning Manual for Vermont Municipalities', 'open land provides residents and visitors with an opportunity for quiet and spiritual enrichment [...].'" (p. 8). The construction of the land as a scenic resource reaches a climax in the careful categorization of certain places in town as "points to look at" and others as "points to look from" (p. 38). Oddly enough, two pages later, the plan refers to Brighton as the "Snowmobile Capital of Vermont." There is no discussion, however, of the apparent incompatibility between snowmobiling and the quiet enjoyment of the outdoors.

Brighton's town plan makes use of several studies, statistics, and inventories of the area's natural communities, especially in connection with wildlife and habitat management. The plan contends that, "Brighton is rated fourth in terms of ecological values of the 78 towns in Vermont that are included in the Northern Forest. [...] Brighton rated well because it scored first for natural communities, second for rare animals and high for rare plants and wintering areas" (pp. 32-33). This portrayal of the town is also sketched out in the most recent Vermont Life article concerned with Brighton. In the article, the Wenlock Wildlife Management Area, accessible from Island Pond, is described as "one of Vermont's premier birdwatching spots" (Pfeiffer 1998, p. 50). The article lists the "notable birds" that one may find at the Area, and offers directions for driving there.

What is striking about Brighton's plan is its reliance on ecology (wildlife in particular) as a mechanism for town boosting. It is not clear from the planning document as to whether public comment was sought on this choice of futures – or whether the framing of the place-image was a top-down, expert driven decision.

4.3 The Future Towns: Complex Visions of Reality

Feature articles and letters sent to the editors of the Burlington Free Press and the Caledonian Record, however, suggest that the public does not always receive uncritically the depiction of the towns' lands as scenic or ecologically important. The public forum provided by the newspapers reveals discussions about the character

of the land – and about the suitability of tourism as a development strategy – that involve very different visions of the towns. Commenting on a newly proposed wildlife management area near the town of Brighton, a citizen attending an official hearing declared that, “some people think we need to sit by and let this land become an eco-park. [...] I don’t think so. I think we should manage these lands to the fullest” (Burlington Free Press, 2001, November 7, p. 1B). Addressing the same issue, a letter to the editor of the Free Press asserted that,

perhaps this is a part of some master plan, as some in the [Northeast] Kingdom suggest, whereby Chittenden County [Vermont’s most populous county] types allow the Kingdom to spin into economic doom so that it can then be bought up and become a playground for the privileged when they are done plundering Northwest Vermont and have run out of pretty places to pedal their bikes, trails to hike and clean water in which to swim. Seems plausible: Bike racks are beginning to outnumber rifle racks in Island Pond. (2001, September 24, p. 5A).

Public debates about the role of natural resource planning in the future of northeastern Vermont are hence inextricably linked not only to studies of ecologically rare and sensitive communities, but also to cultural norms and struggles to define activities “appropriate” to the area. In response to the elimination of hunting camps on recently purchased state and federal lands in the Brighton area, a camp owner and president of the Traditional Interest Association wondered “if children are going to be able to enjoy and learn from that land like I did. [...] I just feel like Vermont’s heritage – a heritage that helped define who my Dad was, a heritage that’s shaping who my son is – was cheated” (Burlington Free Press, 2003, March 30, p. 1B). The connections between landscape and identity, place and person can become important resources in discussions of tourism as a rural development strategy. In a letter to the editor of the Caledonian Record, a resident of Canaan, Vermont (the town located in the state’s northeast corner), for example, claimed that,

few of us who live in this northeastern most part of the Northeast Kingdom are interested in making a living catering to tourists, although we can put

up a few in the three or four little motels which exist in this region. Most of us would rather have employment in constructive forest-based industries than just make up the beds, sweep floors and wash dishes in tourist accommodations. (Caledonian Record, 2001).

The description of tourism-related employment as “just” making up beds, sweeping floors, and washing dishes is obviously limited but it serves the purpose of presenting forest-based jobs in a favorable light. It is important to notice, though, that the description is part of a struggle to define which activities, identities, and experiences should be considered relevant in community discussions about and plans for the future of the area.

It is perhaps not surprising that public commentary about the character of the land and its inhabitants feature a wide and complex range of positions, interests, and values. What a discourse-theoretical study of place can reveal, however, are the operations that allow certain constructions of the towns and development strategies to appear common-sensical and self-evident. The settlement and railroad era histories of the towns, the listing of their scenic spots, scientific inventories, and the area’s cultural traditions, constitute resources to be used in fashioning specific arrangements of activities on the land and supporting what are said to be particular “community” goals. It is important to keep in mind that different actors attempt to promote different visions of the towns, and that it is useful to examine how various stakeholders circulate and manipulate these visions. The next stage of our research project will involve interviews with community leaders and residents engaged in or directly affected by the planning process in the two towns. It is hoped that a study of their contributions to, control of, and access to discourses of place will illuminate the “maintenance and activation of power in the creation and negotiation of landscapes” (Greider & Garkovich 1994, p. 18).

5.0 Conclusion

This paper studies the construction and promotion of place in two rural towns transitioning to a service economy using secondary sources. It employed a perspective that tried to be sensitive to the rhetorical

and material operations that make it possible to talk about the towns in certain ways and to defend or contest certain development strategies. The analysis endeavored to examine the rhetorical structures that must be in place before different community members can meaningfully present and expound on specific images of the towns. Representations of place in the two towns were shown to be contingent on, among other things, particular interpretations of the towns' histories, "appropriate" activities in the area, and federal and state wildlife management and land conservation initiatives.

While Brighton and Barton share a historical reliance on resource-dependent industries and a more recent downturn in economic fortunes, an important difference between them lies in their general approach to planning. While Brighton's town plan attempts to list and classify its tourism-related resources thoroughly – as well as to suggest specific management actions – Barton's plan starts with the belief that,

'planning and regulation', in general, have developed too strong a grip on the community and on the individual property rights of its citizens. Therefore, it is critical that the planning efforts address those issues which are, in fact, of serious concern to the citizens of the town of Barton, and to maintain sensitivity to preventing the adoption of frivolous or overly subjective regulations which do not. (p. 3, original emphasis).

That difference and all other findings of this paper will be explored in a subsequent stage of this research project. The main assumption underlying this research project is that people create places as they talk about them. The secondary data analysis performed in this paper will therefore be complemented by an ethnographic study of planning in the two towns.

Critical engagement with structures that support claims about the "authentic" or "unique" character of places ought to loosen essentialist representations of place and allow place claims to emerge in their full complexity. The messy and political character of discussions about place in the context of rural tourism planning should be acknowledged rather than stifled by statements of how things "really" are. The force driving this research is the

hope that we can design rural tourism planning processes that do not shy away from the political aspects of place claims. People make the world they live in – and this type of scholarship will help us understand how.

6.0 Citations

- Barton, Vermont. 2002. **Town of Barton municipal development plan: Barton and Orleans village.**
- Brighton, Vermont 2002. **Brighton town plan Burlington Free Press.** (2001, June 23). Letters to the editor; Kingdom isn't wilderness. p. 5A.
- Burlington Free Press. 2001, September 24. **Chittenden County types allow Island Pond demise.** p. 5A.
- Burlington Free Press. 2001, November 7. **Hearing on land draws crowd.** p. 1B.
- Burlington Free Press. 2003, March 30. **Champion dispute still chafes.** p. 1B.
- Butler, R.W. & Michael Hall, C. 1998. **Image and reimagining of rural areas.** In Butler, R.; Michael Hall, C. & Jenkins, J. (Eds.) *Tourism and recreation in rural areas.* Chichester, England: John Wiley & Sons.
- Caledonian Record. 2001, November 19. **Letters to the editor; Logging not the only reason.**
- Cheng, A.S.; Kruger, L.E. & Daniels, S.E. 2003. **Place as an integrating concept in natural resource politics: Propositions for a social science research agenda.** *Society and Natural Resources*, 16, 87-104.
- D'Hauterres, A.-M. 2001. **Destination branding in a hostile environment.** *Journal of Travel Research*, 39, 300-307.
- Foucault, M. 1977. **Questions of method.** In Burchell, G.; Gordon, C. & Miller, P. (Eds.) (1991). *The Foucault effect: Studies in governmentality.* Chicago: University of Chicago Press.
- Goudie, S.C.; Khan, F. and Kilian D. 1999. **Transforming tourism: Black empowerment,**

- heritage and identity beyond apartheid.** South African Geographical Journal, 81(1), 22-31.
- Greider, T. & Garkovich, L. 1994. **Landscapes: The social construction of nature and the environment.** Rural Sociology, 59(1), 1-24.
- Kaufman, R.H. 1980, Summer. **Island Pond.** Vermont Life, 40-42.
- Khoury, L. 1981, Winter. Barton: **Winter in the Northeast Kingdom.** Vermont Life, 2-9.
- Marsden, T.; Murdoch, J.; Lowe, P.; Munton, R. & Flynn, A. 1993. **Constructing the countryside.** Boulder: Westview Press.
- Massey, D. 199). **Space, place, and gender.** Minneapolis: University of Minnesota Press.
- Patton, M.Q. 2002. **Qualitative research and evaluation methods, 3rd ed.** Thousand Oaks: Sage Publications.
- Pfeiffer, B. 1998, Spring. **Best birding: A flock of Vermont places to see birds.** Vermont Life, 49-51.
- Phillips, N. & Hardy, C. 2002. **Discourse analysis: Investigating processes of social construction.** Thousand Oaks, CA: Sage Publications.
- Pike, H.C. 1981, Summer. **Remembering the legendary loggers.** Vermont Life, 60-63.
- Ramaswamy, V.M. & Kuentzel, W.F. 1998. **Rural restructuring and the transition of a tourism-dependent community.** Tourism Analysis, 3(2), 63-76.
- Relph, E. 1976. **Place and placelessness.** London: Pion Limited.
- Roberts, L. & Hall, D. 2001. **Rural tourism and recreation: Principles to practice.** New York: CABI Publishing.
- Rodman, M.C. 1992. **Empowering place: Multilocality and multivocality.** American Anthropologist, 94(3), 640-656.
- Ryden, K.C. 1993. **Mapping the invisible landscape: Folklore, writing, and the sense of place.** Iowa City: University of Iowa Press.
- Sancar, F.H. 1994. **Paradigms of postmodernity and implications for planning and design review processes.** Environment and Behavior, 26(3), 312-337.
- Sherman, M.; Sessions, G. & Potash, P.J. 2004. **Freedom and unity: A history of Vermont.** Barre, VT: Vermont Historical Society.
- Short, J.R., Benton, L.M., Luce, W.B. & Walton, J. 1993. **Reconstructing the image of an industrial city.** Annals of the Association of American Geographers, 83(2), 207-224.
- Stokowski, P. 1996. **Riches and regrets: Betting on gambling in two Colorado mountain towns.** Niwot, Colorado: University Press of Colorado.
- Stokowski, P. 2002. **Languages of place and discourses of power: Constructing new senses of place.** Journal of Leisure Research, 34(4), 368-382.
- Tuan, Y. 1974. **Topophilia.** Englewood Cliffs, New Jersey: Prentice-Hall.
- Urry, J. 1995. **Consuming Places.** London: Routledge.
- Vara, J. 1997, Winter. **Snow haven: Snowmobilers make tracks to Island Pond.** Vermont Life, 33-37, 85.

UNDERSTANDING WEB TRAVEL SEARCH AND PURCHASE BEHAVIORS

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Abstract

This study discusses the crucial aspects of tourism communication systems and examines the level of use of various information technologies at home and enroute, specifically, the use of the Internet for travel planning and purchases. The purpose of the study is to gain a better understanding of the use levels of various information technologies so that travel marketers can better service and sell to travelers those who use information obtained through web-based communication technologies.

1.0 Introduction

The rapid growth of information and communication technologies during the last decade has had reflective implications for the tourism industry. The Travel Industry Association's TIA Travel Survey (2004) estimates that 56 percent of the U.S. adult population uses the Internet and 67 percent of travelers claim to be Internet users. Diffusion of information and communication technologies may be approaching its maturity stage of which users have learned about and received the benefits of recent technologies such as the Internet. The rapid increase in Internet usage provides an efficient communication platform through which travelers and organizations interact and relationships develop (Dellaert 1999). For example, before innovative computerized systems, the purchasing of an airline ticket was a complex and often unsatisfactory process for tourism suppliers and consumers. Today however, the Internet allows tourists and agents to avoid traditional reservation systems (e.g., SABRE) and directly communicate with transportation providers or packagers such as Travelocity. This example illustrates how the Internet may reinforce or displace traditional information channels.

The various information sources travelers use to obtain information have changed considerably over the past few years. The research of Vogt (Vogt and Fesenmaier 1998; Vogt and Stewart 1998; Stewart and Vogt 1999) on information search across multiple phases of travel planning and vacation experiences suggests that consumers search for primarily problem solving reasons and will gravitate to sources which perform better on problem solving. Web-based information has the capabilities of improving the quality and quantity of travel-related information, however the web still remains fairly unavailable once on vacations. Selected accommodations, visitor or welcome centers, or other retail services may provide Internet access enroute or on-site, however up until 2005, has been limited in terms of access while away from home or work.

To understand shifts in traditional information sources to more contemporary or web-based information sources, an overview of information sources is needed. Here, two models are shown based on 1) information formats (Table 1) and 2) information providers (Table 2). In a tourism context, it has been shown to be useful to identify information sources by considering stages of a vacation, which is 'before trip' and 'during trip' (Tjostheim 1997). Formats refer to the media that communicates the information. Past research has suggested format categories such as interpersonal communications, mass media, interactive media, and computerized communication. Providers refer to the individual or sector in charge of creating or accessing the information and include transportation providers (i.e., departments of transportation), traveler controlled or demanded, and industry control. These information sources are generally available or relevant in certain stages of a vacation and not necessarily versatile across all stages. For instance, an important information source is a welcome center which is of particular relevance in the second or during trip stage, whereas TV advertising is designed for primarily the first stage, or before departing for travels.

As the online traveler market has expanded so has the number of online travelers who actually use the Internet

Table 1.—Information formats

	Stage 1 – before trip	Stage 2 – during trip
Interpersonal communication	face to face (word of mouth), telephone, fax, mail	information/welcome center
Mass media	magazines, brochures, newspapers, television, direct mail, radio	travel books, brochures, tourist guide, maps
Interactive media	-	travel information kiosks
Computerized communication	email, discussion groups, web	GPS, navigation system, on star service, cell phone, lap top, electronic sign

Source: Tjostheim, 1997

Table 2.—Information providers

	Stage 1 – before trip	Stage 2 – during trip
Transportation provider control	websites offering trip planning	signboards and road sign
Traveler control	websites, printed, word of mouth	car components, cell phone, GPS, satellite radio, Internet
Industry control	marketing and information packets, 800#, reservation systems	welcome center, visitor information center, hotel, billboards

to search for travel information or purchase travel products. With the recent advent of wireless technology, such devices can now be used to access the Internet for information, allowing people to stay connected while away from home or the office. This study focuses on the aforementioned aspects of travel and tourism communication systems and examines the level of use of various information technologies at home and en-route, specifically, the use of the Internet for travel planning and purchases. The purpose of the study is to gain a better understanding of the use levels of various information technologies so that travel marketers can better service and sell to travelers, particularly those on vacation, using necessary and desired information accessed through web-based communication technologies.

2.0 Methods

Data were collected in a computer-assisted telephone-interviewing laboratory maintained by the Travel, Tourism, and Recreation Resource Center at Michigan State University. The survey population consisted of households in the states of Illinois, Indiana, Michigan,

Ohio, Wisconsin, and the province of Ontario. The survey employed random digit-dial samples of household telephone numbers in this region purchased from Survey Sampling, Inc. The CATI laboratory was in operation from 6 p.m. to 10 p.m. EST Monday through Thursday evenings and on the weekends from noon to 4 p.m. EST on Saturday and from 2 p.m. to 6 p.m. EST on Sunday. In the evenings, households in the Eastern time zone were called from 6 p.m. to 9 p.m. EST and households in the Central time zone were called from 7 to 10 p.m. EST so that attempts to contact potential respondents in the different time zones were made within the same time span. In addition, numbers within each time zone were randomized so interviewers did not call the same state/province throughout their shifts. Up to five attempts were made to contact each household in the designated sample. Interviewers randomly selected respondents within households by asking to speak to the adult over 17 years old who would have the next birthday. If that person was not available, interviewers asked to speak to the person who would have the following birthday. The procedure was used to minimize the potential bias

Table 3.—Internet use segments

	Frequency	Percent
No Internet access	630	33.5%
Internet access only	279	15.6
Internet access and travel information search only	402	21.6
Internet access, travel information search, buying nontravel products	230	12.2
Internet access, travel information search, buying travel products	254	13.5
Internet access, no travel information search, buying nontravel products	60	3.2
Internet access, no travel information search, buying travel products	7	0.4

caused by the tendency of certain persons in a household to answer the phone more frequently. The data set included 2,099 completed interviews during four months of summer/fall, 2001 (these data represent available information technologies during that time period and may not reflect today's technology environment, however, are a benchmark for understanding consumer demand).

Questions on information technology were developed by researchers at MSU in collaboration with the Michigan Dept. of Transportation. The questions asked in the phone survey ranged from travel, in general, to focusing on a specific trip in Michigan.

3.0 Findings

Respondent Demographic Profile. The distribution of respondents by state or province of residence is as follows:

• Michigan	25%	• Ohio	16%
• Ontario	20%	• Wisconsin	15%
• Indiana	11%	• Illinois	13%

The respondents were likely to be women (61%) and without children in the household (65%). The largest income group's income range was above \$65,000 (39%), followed by below \$42,000 (33%).

Auto Dependent Travel Market. Seventy-five percent of respondents reported driving a vehicle that they owned or leased for their most recent trip. Two-thirds of the respondents had taken a car trip in the year of the study (2001), 22 percent reported their last trip in the prior year (2000) and 11 percent reported that it had been a few years since taking a trip. The reasons respondents preferred vehicles travel were rated on a 10-point scale. The main reason was convenience and flexibility (mean=7.5) and other reasons were safety and cleanliness, need for local transportation at their destination, and want to make stops along the way (mean 6.3 each).

Preferences for Enroute Information-near and away from home. Respondents rated (on a scale of 1 to 10) information they would desire or need during a vehicle trip. Heavy traffic and congestion, as well as construction and detour information, were the most needed types of information during a vehicle trip (mean=8.2 both). Directions and routing information (mean=7.6) and weather condition (mean=7.4) were also requested, followed by information about accommodations (mean=6.9) and auto service centers (mean=6.4).

Internet Usage. Based on a series of questions about Internet access and use over the past 12 months (Table 3), respondents (n=1,862) were placed into one of seven

groups – no Internet access (n=630), access to the Internet but have not searched for travel information or made purchases (n=279), only searched the Internet for travel information (n=402), searched for travel information and purchased nontravel products on the Internet (n=230), searched and purchased travel products on the Internet (n=254), purchased nontravel products on the Internet with no reported travel search behaviors (n=60), and purchased travel products on the Internet with no reported travel search behaviors (n=7). Summing across selected groups shows that 66 percent of the households participating in the survey have Internet access (either at home or work) and 48 percent of the households participating searched for travel information on the Internet in the past 12 months. Of the 551 households who purchased any type of product over the Internet, 47 percent of the households purchased travel products.

Types of Internet Usage-at home/before trip. Thirty-two percent of those with Internet access indicated that before leaving on a trip they searched for highway information on routes, construction or maps, 30 percent searched for general transportation information, and 17 percent searched for accommodation information, and 6 percent attractions and activity information. Other information searched by even fewer respondents included destination information, weather information, or reservation-related information.

Number of Internet Purchases. Forty-eight percent of those with Internet access reported purchasing general products through online means two to five times over 12 months, while 21 percent indicated only a 1 time on-line purchase, and 22 percent purchased online 6 to 15 times. Regarding travel product purchase, 48 percent of those who have purchased through the Internet purchased travel products 2 to 5 times in a 12 month period.

Type of Internet Travel Product Purchases. The major travel purchases through the Internet were airplane tickets (75% of those with Internet access), followed by accommodation reservations (22%).

Information Technology Use on a Recent Michigan Trip. A series of questions were asked about enroute or

at the destination information technology use during a recent vacation to the state of Michigan (Table 4). Individuals who search for and purchase travel products on-line were more likely to bring a cell phone on a trip (81% of this group would bring), pager (22%), palm pilot (17%), or laptop (16%); compared to individuals who search for travel information but have not purchased travel products on the Internet (cell phone 75%, pager 21%, palm pilot 5%, and laptop 10%) or individuals with no Internet access (cell phone 57%, pager 12%, palm pilot 1%, and laptop 3%).

4.0 Discussion

As technologies are brought to market, travelers are benefiting from the information made available through them. These findings show that sizable travel segments are using the Internet for a variety of purposes. Besides cell phones, other portable technologies that could provide web access for real time data or web-based information storage are being used at fairly low levels (at the time these data were collected). Therefore, it is important for future studies to watch for shifts in information sources, formats, providers, and hardware through which travelers search for and obtain travel information.

Businesses and destination marketers need to develop information platforms and databases that are compatible with hardware and services. Also, information providers need to monitor both at home and on vacation information technology uses in order to create appropriate information (i.e., content, file types, purchase capabilities) for tourists making vacation decisions. This research suggests that vehicle-based travelers desire or need real-time highway information, as well as travel service information. Traditionally this type of information has been offered in printed highway maps, telephone services, and welcome centers. Recently, cell phones offer travelers the opportunity to call service providers directly; use GPS systems either handheld, provided in a car (telematics), or in a response system (Onstar); or view live transportation sign boards in urban areas or construction areas. Research on this topic should guide future department of transportation information systems and other information providers in the travel and tourism industry.

Table 4.—Information technology use on a recent Michigan trip

Experiences during a recent Michigan trip	No Internet access	Internet access only	Internet access and travel information search	Internet access, travel information search, buying nontravel products	Internet access, travel information search, buying travel products	Internet access, no travel information search, buying nontravel products	Internet access, no travel information search, buying travel products	Total
Notice and read electronic message boards	60.6%	53.0%	64.5%	72.1%	69.6%	63.2%	50.0%	63.7%
Change route as a result of reading the message boards	27.4	26.9	30.0	29.3	23.4	5.0	100	27.7
Travel with cell phone in vehicle	57.2	71.3	74.6	81.7	80.5	47.4	100	71.0
Travel with pager in vehicle	12.2	18.8	21.4	16.5	22.1	5.3	50.0	17.6
Travel with global positioning system/ GPS in vehicle	4.4	3.0	3.5	4.6	5.3	5.3	50.0	4.3
Travel with lap top computer in vehicle	3.3	10.9	10.4	10.1	15.9	15.8	0	9.6
Travel with Onstar service in vehicle	2.8	4.0	1.7	7.3	1.8	0	0	3.2
Travel with navigation system in vehicle	2.2	5.0	4.0	2.8	2.7	0	0	3.2
Travel with palm pilot in vehicle	1.1	5.0	4.7	13.8	16.8	10.5	0	7.3

These segments were formed through a series of questions asking about Internet access and purchase behaviors over 12 months in 2000/2001.

5.0 Citations

- Dellaert, G.C.B. 1999. **The tourist as value creator on the Internet.** Information and Communications Technologies in Tourism, 66-76.
- Stewart, S. & Vogt, C. 1999. **A case-based approach to understanding vacation planning.** Leisure Sciences, 21(2): 79-96.
- TIA – Travel Industry Association of America 2004. **Travelers’ use of the Internet.** Washington, DC.: TIA.
- Tjostheim, I. 1997. **The new network in the Norwegian tourism industry – marketing and organizational theories as perspectives for a study.** Information and Communications Technologies in Tourism, 110-118.
- Vogt, C. & Fesenmaier, D. 1998. Expanding the functional tourism information search model. *Annals of Tourism Research*, 25(3): 551-578.
- Vogt, C. & Stewart, S. 1998. **Affective and cognitive effects of information use over the course of vacations.** *Journal of Leisure Research*, 30(4): 498-520.

Roundtable Discussion

THE CURRENT STATE OF HERITAGE AREAS RESEARCH: CHALLENGES AND OPPORTUNITIES

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Abstract

Twenty years have passed since the first national heritage area, the Illinois & Michigan National Heritage Corridor, was designated in 1984. As interest in using national heritage areas to promote resource conservation and preserve community vitality increases, pressures to understand how heritage development works (and does not work) are also increasing. Heritage area practitioners and researchers are coming together to discuss and define a heritage areas research agenda, to include identifying questions and gaps in the body of existing research. Challenges inherent to the interdisciplinary nature of heritage development remain in the way of defining an agenda, as do the contrasting needs of individual areas with their policy-making counterparts. As the body of research and research tools grows, so will new opportunities for research, and so the agenda continues to evolve with each new interdisciplinary discussion.

1.0 Heritage Area Designation and Development: Past and Present

The first national heritage area, the Illinois & Michigan National Heritage Corridor, was designated by Congress over 20 years ago. The designation recognized a collection of nationally significant cultural and historic resources and created a regional management structure to facilitate stakeholder collaboration on shared preservation projects. Federal involvement was limited to technical and financial assistance, and the land stayed in state and private ownership. The designation called for the use of a collection of conservation, interpretation, recreation, and preservation tools, and project planning and implementation was left in the hands of local

stakeholders. The legislation provided temporary National Park Service involvement under the assumption that local capacity to sustain projects could be achieved in a decade or less.

The national heritage area concept was soon adopted elsewhere by the National Park Service—in the Blackstone River Valley in 1986 and the Delaware & Lehigh Valleys in 1988. Since the 1980s, 27 areas have received national designation and been given technical and financial assistance to conserve resources and stories that have been deemed nationally significant. The scale and thematic scope of the areas differs dramatically, as do the ways that partners prioritize and implement activities. Still, common themes are that much of the work is entrepreneurial in nature, multidisciplinary, and requires significant volunteer involvement and local leadership.

The differences in resources and management strategies among the 27 national heritage areas impose challenges to identifying, measuring and evaluating heritage area impacts. In the absence of National Park Service program legislation and with little in the way of research or evaluation to rely on, there is little information to guide the development of policies and guidelines that ensure quality, consistency and accountability while allowing for entrepreneurship, flexibility and creativity. Heritage areas, which are increasingly run by nonprofit organizations instead of Federal Commissions, informally share ideas with each other about management and innovative project partnering, which includes aligning their interests with private businesses, educational institutions and tourism professionals. While heritage development is rooted in past stories, resources and traditions, the missions and goals of heritage areas are heavily focused on the livability of communities, and rely on the participation and engagement of local residents, organizations and leaders to help them achieve their goals. The long view and inclusive approach require participants to trust in the process, be flexible in their participation and accept that tangible results take time.

2.0 Current Policy and Management Pressures

Since NPS funding typically ceases 5 to 15 years after designation, the heritage areas are consistently running up against time. They are periodically asked by potential funding partners and the National Park Service to provide rationales for continued assistance and involvement. However, in the 20 years since the Illinois and Michigan was designated, the consensus among practitioners and academics is that heritage areas took more than two decades to become self-sufficient. The National Park Service Advisory Board Partnerships Committee, which advises the Secretary and the Director on issues related to National Park Service policy, has been charged with defining the future role of the National Park Service in the national heritage areas and in particular the role of the NPS in heritage areas over time. Among recommendations that suggest practical ways to shape and strengthen heritage area policy, the Advisory Board recommends supporting research and analysis to provide the information necessary to evaluate progress over time. Regardless of the realistic time frame for heritage area fruition, heritage areas need to provide proof their effectiveness. Research can also help define the appropriate roles of major partners in collaborative conservation and partnership networks, help identify outcomes of designation and partnership on resource conservation and community and economic development over time, and define quality standards for heritage development.¹ In the current policy environment, qualitative and quantitative research, whether focused broadly on heritage areas or specifically on individual scenarios, has the power to inform effective policy development and management standards.

Pressures to measure the impacts of heritage development are also coming from Congress, where at least 20 designation bills have been introduced as of May 2005.² The popularity of heritage areas has influenced

policy makers and critics to ask whether heritage area designation is an effective National Park Service (NPS) investment. In 2003, Senator Craig Thomas (R., WY) asked the Government Accountability Office to investigate the impacts of NPS funding in national heritage areas. Their report calls for greater accountability and a more systematic process for establishing national heritage areas.³ Senator Thomas has also asked the National Park Service to write a national heritage areas program bill. The National Heritage Partnership Act has been introduced in the 109th (S. 943) alongside a companion bill in the House.⁴

Heritage area managers and partners and the academic community must come together to identify what kinds of research are most urgently needed and to participate in developing and applying evaluation methodologies to measure the efficiency, effectiveness, impacts and outcomes of heritage area development and practice. Additionally, at the local level, heritage areas have their own set of research needs.

As the body of research grows, new research reveals new sets of questions. The evolving nature of the heritage research agenda makes the ongoing dialog between practitioners and academics on the current research environment an effective way to help practitioners and academics focus their questions, identify common priorities, discuss what is doable, and agree on current research priorities. The agenda being developed provides opportunities to build upon existing thinking as it creates a baseline upon which to build subsequent research and conclusions about how heritage areas get work done.

¹National Park System Advisory Board Partnerships Committee Report to the Board, "Findings and Recommendations on the Future of the National Heritage areas in the National Park System." April 16, 2005.

²Available from <http://www.cr.nps.gov/heritageareas/LEG/introbills109.pdf> (accessed May 30, 2005).

³"A More Systematic Approach for Establishing National Heritage Areas and Actions to Improve their Accountability are Needed." Testimony provided before the Senate Committee on Natural Resources by Barry Hill, March 30, 2005.

⁴In 1994, Representative Hefley introduced the first bill to establish a national heritage areas program, the American Heritage Partnerships Act. Hefley has reintroduced his bill in subsequent years as well. A current list of pending legislation is maintained by the NPS National Heritage Areas Washington office at <http://www.cr.nps.gov/heritageareas/LEG/index.htm> (accessed May 30, 2005).

Appalachian Forest Heritage Area

The Appalachian Forest Heritage Area has its roots in the long history of human use of the highland forests of West Virginia and western Maryland. For centuries, the forests of the Appalachian Mountains have sustained local settlers, provided raw materials for America's economic expansion, and inspired visitors. AFHA tells the story of this forest legacy and the mountain people who forged it. Forest heritage has been defined as "the ongoing story of how the forest shapes history and culture, and how ecology and human use have shaped the forest."

The Appalachian Forest Heritage Area (AFHA) initiative is now in the final year of the four year USDA Fund for Rural America grant. Although budgetary control during the initial grant period resides with the Extension Service and the Division of Forestry at West Virginia University, the implementation process and long-term management of the heritage area is taking the form of a community-based, collaborative decision process.

Policy and management pressures have existed throughout the process. Bringing together a diverse set of stakeholders has led to a variety of differences of opinions, such as appropriate terminology, logo selection, and the AFHA role in endorsing other projects. A second challenge for the heritage area has been accommodating property rights concerns of project stakeholders and county landowners. In West Virginia, approximately 83 percent of the land area is privately owned, 7 percent industry owned, and 10 percent are publicly owned lands. Within the boundaries of the AFHA, the percentage of public land is higher due to the proximity of the Monongahela National Forest. Policy and management constraints have complemented The Appalachian Forest Heritage Area's growth process and represents the dynamic relationships between stakeholders.

Initially conceived in the crucible of a university setting, AFHA is in a unique position to serve as a model or demonstration project for future heritage areas. Heritage areas such as the Appalachian Forest Heritage Area, are gaining momentum because people seek solace and meaning in their local and regional landscapes and special places when there is so much uncertainty in global economic and political affairs. Research opportunities lie in continuously monitoring lessons learned, economic and social benefits derived, and implementation constraints and reporting findings to the larger academic, heritage, tourism, and extension communities.

-- Dr. Dave McGill, Dr. Steve Selin, and Susan Martin-Williams, West Virginia University Division of Forestry

3.0 Call for interdisciplinary sharing of research and approaches

The National Park Service National Heritage Areas Washington office has coordinated three workshops to bring practitioners and academics together to assess current heritage area research, identify research needs and refine a research agenda. The most recent workshop, *National Heritage Areas II: Fostering a Research Agenda*, was held during the 2005 George Wright Society (GWS) *Biennial Conference on Parks, Protected Areas, and Cultural Sites* in Philadelphia. In contrast with the first two workshops, which involved participants from federal agencies and organizations to discuss ways to collectively advocate for and facilitate research, this workshop involved researchers and practitioners who are themselves thinking critically about research needs. The workshop discussion was loosely based on work by four advanced degree-seeking students engaged in qualitative research on social meaning, policy, indicators, and management models in individual emerging and designated national heritage areas.⁵

Research on landscape-scale conservation of the type occurring in national heritage areas in the United States has grown in quantity and complexity since Adrian Phillips, Vice Chair for World Heritage of the World Commission on Protected Areas (WCPA) of International Union for the Conservation of Nature (IUCN), presented his diagram on the cyclical nature of research as it informs practice at the first research workshop. Phillips proposed a way to organize the demands on the research agenda by categorizing priorities into four interrelated components:

- Developing existing capacity
- Improving knowledge and understanding

⁵Abstracts of the session entitled National Heritage Areas I: Current Research on Social Meaning, Policy Evaluation, Qualitative Indicators, and Management Models available at <http://www.georgewright.org/>; papers to be published as conference proceedings in late 2005. Proceedings of the National Heritage Areas research meetings are available at <http://www.cr.nps.gov/heritageareas/REP/research.htm> (accessed May 30, 2005).

- Monitoring and evaluation
- Promoting the concept.⁶

As the base of knowledge and understanding grows, some researchers are beginning to measure the qualitative aspects of heritage area development and maturity by looking at what happens between partners doing heritage development work. Qualities of heritage area development include willingness and readiness to become a self-identified heritage area, sophistication, changing quality of life, and the commodification of heritage. But practitioners and researchers are interested in probing other questions as well. Some of those highlighted during the most recent research discussion include:

- Do heritage areas effectively address diversity, civic engagement, and inclusiveness?
- What makes heritage real for people? What brings people together?
- When is the most appropriate time to designate an area?
- Does National Park Service (NPS) involvement add value e.g. increase other organization involvement?
- How do we make the heritage area strategy more mainstream to the NPS?
- Is environmental and ecosystem recreation a “gateway” into heritage?
- Is heritage an effective bio-social system development and management tool?
- What is the role of place-based education?
- How much time is enough to affect change?⁷

⁶Diagram available at <http://www.cr.nps.gov/heritageareas/REP/research.htm> (accessed May 30, 2005)

⁷Proceedings from Fostering a Research Agenda meeting at the 2005 George Wright Society Symposium, 2005. Proceedings available from www.cr.nps.gov/heritageareas/research.htm (accessed June 1, 2005).



June 2003, updated March 2005

The questions, proposed by participants with differing research priorities, probe a variety of issues and therefore make prioritizing research needs difficult. Researchers realize that methodologies and established research practices in other disciplines, such as business, education, and health, can provide a relevant context for evaluating issues including sustainability, quality of life, leadership, social justice, Federal roles and responsibilities, and “success,” and the crossover may provide the context needed to clarify, organize and prioritize research on heritage development.

4.0 Obstacles to Identifying and Prioritizing Measurement and Evaluation Needs

In spite of the productive dialog taking place to clarify the current research agenda, the interdisciplinary nature of heritage development complicates the identification of appropriate evaluation methods. The interdisciplinary backgrounds of researchers similarly create obstacles to communicating research methodologies and approaches. The needs of researchers also differ from the needs of practitioners, policymakers, and the National Park Service. Researchers need ways of better consolidating and sharing their information in ways that are accessible and useful to practitioners and one another. Additionally, heritage development impact is inherently challenging to measure in isolation of other factors including changes

in the economy, demographics, and land use. Economic impact analyses are also limiting in their ability to measure the impacts of heritage areas on quality of life and perceptions about change. Participants in workshop discussions agree that a combination of qualitative and quantitative research methods may be the most effective way to measure “success” (which itself needs to be further defined) and the importance of strong leadership, positive communication, time, and flexible and open-minded partners. Two components of the proposed organizational diagram, Measuring and Evaluation and Improving Knowledge and Understanding, share a symbiotic relationship, each informing and being refined by the other. The heritage areas field is old enough to have established subject matter for study but young enough that the information has not been gathered and organized in any formal way. Information gathering includes the collection and organization of physical documents and examples but also using survey instruments to record changing perceptions about community vitality. Indicators and analysis of the evidence could take various forms, including:

Indicators:

- Quantitative indicators of “process”
- Quantitative impacts
- Non-economic qualitative impacts
- “Brain drain” and “youth drain” before and following designation
- Social capital indicators – e.g. readership of newspapers, civic participation, longitudinal baseline data collection
- Measurement tools to quantify/qualify the level of success/ satisfaction perceived by residents and stakeholders
- Money being kept in the economy–(e.g. through local business development, local foods and products)

Comparative Analysis:

- Compare NPS and non-NPS models, best practices and successes
- Compare managing entities in bureaucracies and non-government organizations, local governments and characterize what works

- Compare international management models such as greenways in central Europe
- Document and compare cultural differences/ perceptions--urban/rural, generational, ethnic--within and outside heritage areas

Evaluation criteria:

- Develop and test evaluation criteria and models or frameworks.

5.0 Opportunities to Build upon Existing Efforts

Periodic research agenda workshops are meant to ensure that practitioners and academics share knowledge and insights and develop joint strategies for advancing the agenda and building the network. The discussions also provide an opportunity for participants to share opportunities and resources currently in use. Building upon existing efforts is one way to build the research base and identify where the agenda needs to go next. Building on existing resources may include:

- A synthetic, interdisciplinary bibliography drawing across disciplines and fields
- Leadership forum on developing capacity
- Study tours and exchanges
- Align research interests with existing practitioner organizations such as the Alliance of National Heritage Areas
- Utilize existing projects such as the National Trust Rural Development Initiative to test proposed criteria
- Build upon and refine existing institutional evaluation methods and models
- Compile an atlas of current practices and methods used within and across heritage regions.

The Alliance of National Heritage Areas, a non-profit coalition of the 27 national heritage areas, has been developing indicators to measure impact in national heritage areas. In 2002, national heritage area directors compiled a list of over 30 indicators which could be feasibly measured. The National Park Service now partners with the heritage areas to collect annual data on a short list of almost a dozen performance

metrics that measure progression toward conservation, partnership and stewardship goals.⁸ Qualitative research conducted concurrently will help the areas to refine their indicators and their counting mechanisms to include those that most accurately reflect the impacts of national heritage area activities. The Alliance also helps individual areas conduct periodic Money Generation Impact studies. More than a dozen areas have or are currently conducting onsite visitor surveys to measure visitor demographics and trip characteristics. Michigan State University compiles summary conclusions on the economic impacts of visitation to national heritage areas.⁹ The limitations of economic impact studies as compared with other more complex methods of evaluation are much debated, as there seems to be value placed on reporting high numbers of economic impact regardless of what the numbers imply for long-term resource conservation and community vitality.

Existing information is being disseminated since the most recent research workshop. An online bibliography of heritage development materials and publications is in development. This bibliography reflects the growing number of articles and publications specific to heritage area development and evaluation and is the first attempt to collect heritage development-related research and evaluation in a central location.¹⁰ Research presentations are also generating excitement among new audiences to conduct heritage areas-related research. Research presentations, such as one at the 2005 Cultural and Heritage Tourism Alliance Conference in Chicago on economic impact evaluation tools that measure the impacts of cultural and heritage infrastructure, are providing practitioners with tool to develop quantitative performance indicators tailored to their own needs.¹¹

⁸Visit <http://www.cr.nps.gov/heritageareas/REP/research.htm> (accessed May 30, 2005)

⁹Report available from <http://www.prr.msu.edu/mgm2/default.htm> (accessed May 30, 2005)

¹⁰Visit <http://www.heritagedevelopmentinstitute.org/research/> (accessed May 30, 2005)

¹¹"Making Research Actionable: What to Do With the Numbers." Conference program available at <http://www.chtalliance.com> (accessed May 30, 2005).

Qualitative analysis is surfacing as well. A recent panel session at the 2005 George Wright Society *Biennial Conference on Parks, Protected Areas, and Cultural Sites* by advanced-degree seeking students doing qualitative research on issues specific to individual heritage areas exposed National Park Service social scientists to new ways of evaluating changing cultural dynamics and perceptions in lived-in landscapes.

Qualitative research is also beginning to surface in the form of reports that assess the progress of national heritage areas since designation. The reports are being used by the areas to document their progress and accomplishments and to make a case for continued federal and partner involvement. In 2004, the John H. Chafee Blackstone River Valley National Heritage Corridor Commission initiated a sustainability study to evaluate the past 18 years of work. The evaluation assessed the Commission's accomplishments and progress toward achieving its stated goals, the National Park Service (NPS) investment and leveraging impact, further actions and commitments needed to protect, enhance, and interpret the Corridor, the Commission form of management, and possible future management options and alternatives for achieving their goals. The evaluative process is being adapted to the needs of the Delaware & Lehigh National Heritage Corridor as it assesses its own progress and future management alternatives. With subsequent assessments researchers hope to draw similarities and differences among the findings from different heritage areas and provide this analysis to policy makers and heritage area leaders to inform the development of effective national guidelines and management policies.

The National Park Service encourages practitioners and researchers to understand the value of research and to invest in research because the knowledge furthers the abilities of the National Park Service and Congress to determine their role in heritage development and understand the impacts of the Federal involvement. The research priorities of the National Heritage Areas Washington office are to foster the development of:

1. Definitions of "success" and "sustainability" in national heritage areas

Blackstone River Valley National Heritage Corridor

In 1986 Congress established the Blackstone River Valley National Heritage Corridor to preserve and interpret the unique and significant contributions of the valley's resources and history to the nation's heritage. The Blackstone River Valley is one of the nation's richest, best-preserved repositories of landscapes, structures, and sites attesting to the rise of industry in America. The valley led in the social revolution that transformed an agricultural society into an industrial giant. These two forces, agriculture and industry, shaped the patterns of settlement, land use, and growth in the valley. Thousands of structures and entire landscapes still exist that represent the history of the American Industrial Revolution and the complex economic and social relationships of the people who lived and worked here.

Today, the most significant resource of the Blackstone Valley is its "wholeness," the unique survival of representative elements of entire eighteenth- and nineteenth-century production systems. Few places exist where such a concentration of integrated historic, cultural, and natural resources is as accessible to interpretation, preservation, and other management strategies.

Thinking of the Blackstone National Heritage Corridor as a partnership system has implications for the strategy needed to sustain and build on success within the Corridor. As the Commission deliberates on the future of the Corridor, it will need to consider how best to build upon past success to create a framework for the future that will support and sustain that success over the long term.

Research opportunities lie in monitoring the impacts of the study on decision-making and planning for the future, monitoring the change occurring as projects gain momentum in the third decade of the designation, measuring the indirect impacts of heritage area designation including economic and social benefits, and constraints of time and funding on project completion and eventual sustainability.

-- excerpted from the *Executive Summary for Reflecting on the Past, Looking to the Future* (2005)
Martin-Williams, West Virginia University Division of Forestry

2. A body of cases studies that articulates successful and sustainable management frameworks and practices, critical components of success, and benchmarks of sustainability
3. Indicators to monitor and measure heritage area maturation, success, and sustainability
4. An international network of researchers and practitioners that supports the ongoing discussion, development and dissemination of research, resources, and opportunities
5. Consistent and high-quality heritage development practice through the proliferation of training, networking, information exchange and resource sharing opportunities.

6.0 Concluding Thoughts

As the body of research grows, the research agenda for heritage areas will become more focused. Continually reviewing and assessing progress is the most effective way to stay on task and to refine the research agenda to guide researchers and practitioners in their work. Keeping the dialog alive among practitioners and academics nationwide by creating regular opportunities to promote information exchange and updates will keep the spirit and focus of heritage areas research relevant to practitioners and policymakers.

The authors welcome any suggestions and additions you might have to contribute to the ongoing development of a heritage area research agenda.

Perceptions and Preferences

ROLE OF NATURAL AND CULTURAL FEATURES IN RESIDENTS' PERCEPTIONS OF RURAL CHARACTER

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Abstract

Rural landscapes are rapidly changing as more families migrate in from cities and suburbs, yet there have been few systematic attempts to have residents describe exactly what rural character means to them. As part of a USDA Forest Service research program examining landscape change (Potts et al. 2004), this study focused on the landscape and residents of six townships in south central Michigan. Six groups of four to five residents each were transported throughout the townships to discuss landscape features that represent rural character. Several thematic preferences surfaced. Land use for residential development was a major concern among all of the residents. Depending on the type and location, subdivisions in agricultural areas were viewed either neutrally or negatively. Most residents found cleared lots with new houses built close to the road to be objectionable and preferred housing with vegetative screening. Woodlots, wetlands, and farmland also showed up in all six discussions as a positive attributes. Implications for land use planning are discussed.

1.0 Introduction

As more families migrate from cities and suburbs to rural areas, problems associated with land use surface. The following entry appeared on the top of a list of websites after an internet search of the phrase, "defining rural character":

"Everyone agrees - we love our "Rural Character". But what exactly does rural character look like? It might look different to everyone, but I would guess there would be some basic similarities. So I am proposing a contest. Put your thinking caps on, get your creative juices flowing, and send in your interpretation. You could take a photo, write a poem or an essay, draw or paint a picture, create a sculpture. Anything that expresses your concept of what rural character is.

The Open Space Citizen's Committee is hosting a workshop on March 17, 2004 at the Wittenbach Center across from the High School. We will display the entries there, and ask attendees to vote for their favorites. I'm not sure what the prize will be at this point, but we'll come up with something. It will be fun just to see what everyone comes up with." (source: <http://www.vergennestwp.org/definingrural.htm>, accessed 02/10/04).

The fact that this website is in Michigan underscores the point that not only is defining rural character a need, it is also meaningful to the study population for the proposed research. Residents in rural areas are asking planning officials in local units of government to preserve rural character and various policy alternatives (zoning, purchase and transfer of development rights, open space overlays) are being pursued. A critical problem, however, is that there is a poor understanding of how local residents perceive and define "rural character."

1.1 Literature Review

Studies conducted during the past 10 years have linked perceptions of rural character to specific land use criteria that can be used by policy makers to guide design and zoning policies at the local level. For example, Sullivan (1994) studied individual preferences for physical characteristics at the rural-urban fringe, where farms and forests were being overcome by urban sprawl at a fairly rapid pace. Sullivan used a photo-questionnaire,

consisting of 32 black-and-white photographs to assess preferences. Respondents were instructed to indicate their level of preference by circling a number from one to five located beneath each photo. Scenes in the photos depicted a range of housing types, including older farm houses, multiple family cluster developments and single family housing on large and small lots. Photos also included varying amounts of farmland and woods as these features were in jeopardy of being lost due to development. Sullivan sent questionnaires to farmers, township planning commissioners, and other residents of a county in southeastern Michigan. He found that rural-urban fringe residents preferred landscapes that contained both farms and forested land. They also preferred subdivisions and clusters of homes with mature trees instead of few trees and single family housing over multiple family housing. These findings suggest that, where rural character preservation is a goal, new developments should be built near or in forest settings and either maintain existing trees or plant new ones to take their place. By far, the most preferred photos contained no built elements. The highest ratings were given to forested areas and farmland scenes containing open fields that were bordered on two or more sides by woods in the background. Photos of multiple family housing, nearly devoid of plant materials received the lowest ratings. Sullivan concluded that preserving rural character means protecting agricultural land, open space, hedgerows and woodlots. Furthermore, housing and other developments perceived as possessing rural character should be built in close proximity to these features.

Ryan (2002) also used a photo-questionnaire in his survey of residents of the rural-urban fringe in western Massachusetts (near Amherst). His study purpose was to identify the elements of the rural landscape that local residents value. In particular, he was interested in residents' reactions to various types of new cluster subdivision designs that attempt to address urban sprawl. He learned that, for subdivisions, the visibility of protected open space along roads and other public viewpoints was an element that was perceived to be compatible with the rural landscape. Conversely, those subdivisions with no visible open space from public viewpoints were considered incompatible with rural

character. Ryan also found that while cultural features such as old homes and stone walls were deemed important to rural character, natural features, including farm fields, were perceived to be more important. The lack of new development was perceived to be almost equal to cultural elements in defining rural character. Rural New England residents wanted privacy, but did not equate privacy with the inability to see neighbors' homes. They rated nature and nature-related activities to be the most positive features of rural living. Having nearby places to walk or hike, room to garden, being able to see the stars at night and feeling safe in one's neighborhood were the most highly regarded features. As opposed to residents of larger rural lots, residents who lived on small lots were more likely to say that subdivision scenes were compatible with rural character. Higher density new developments tended to be more acceptable to those already living in these types of subdivisions. While farms and natural qualities were rated as highly important to rural character, these features were appreciated more so by newer residents (residing there less than 12 years) and farmers than long-time residents who were not farmers. Ryan concluded that new rural subdivisions should be screened from public view. The impacts of development were not spread evenly among rural residents in the study. Negative impacts were felt more strongly by those living on small parcels along country roads than by cluster or conservation subdivision residents. This is likely because the homes of cluster subdivision residents typically face interior roads and are buffered from surrounding impacts by vegetation and permanently protected open space.

Vogt and Marans (2004) compared individuals who purchased a single-family home within the last 7 years with less recent homebuyers in terms of how home, lot, neighborhood and community features affected their purchase decisions. These investigators learned that naturalness and open space were not consistently the most important features for homeowners in rapidly growing urban fringe areas that still have a large proportion of land area in open space (the southeastern Michigan, Detroit metropolitan area). Instead, neighborhood and housing design, schools and access were rated more highly. In rapidly growing urban fringe areas, they concluded that land use policies that attempt

to preserve naturalness and other rural features may not yet have sufficient support from consumers, planners and legislators to be pervasive.

1.2 Implications and Study Purpose

Both the studies of Ryan (2002) and Vogt and Marans (2004) were conducted in rapidly growing areas at the urban-rural fringe. Policies that attempt to curb the negative impacts of such development are often reactive, late in the planning process, and may not be influencing home buying behavior (Vogt and Marans 2004). Little research has focused on areas where urban development might some day be a concern but where the opportunity still exists to implement policies that are proactive in terms of managing the growth that may occur. This is an important gap because there is some evidence that multiple housing family dwellers exhibit somewhat more tolerance for higher density types of developments than do single family dwellers (Sullivan 1994; Ryan 2002) and that consumer support for cluster or conservation subdivisions is somewhat limited in rapidly growing fringe areas (Vogt and Marans 2004).

Professional land use planning guidelines exist; however, these guidelines recommend that agreement on the meaning of rural character be reached at the community level (Yaro et al. 1988; Heyer 1990; Corser 1994; Balash 1999). Since research has demonstrated that perceptions of rural character vary between different groups in the same community (Sullivan 1994; Ryan 1998, 2002; Jones et al. 2003), achieving consensus will likely involve accepting a range of definitions. Planners disagree among themselves concerning the benefits of such rural preservation techniques as cluster developments and conservation subdivisions (Arendt 1996; Corser 1994). Planners and local residents display divergent preferences for landscape design standards (Clare Cooper Marcus 1990; Hester 1984; Hubbard 1997). Clearly, the patterns of similarities and differences among these groups need to be studied systematically as the results from such studies can inform decisionmakers who are interested in protecting rural character.

The purpose of this study was to gain a better understanding of how local residents perceive and define rural character so that policy-relevant criteria can be developed to protect the qualities of rural landscapes

that are important to people. This study focused on the landscape and residents of six townships in south central Michigan in September of 2004. The townships ranged in size from 1,500-4,000 residents. These areas have experienced some population growth in the last decade; however, much of the private land is still undeveloped. Some residents work locally, including farming, while many more commute to work in nearby cities.

2.0 Methods

A roving focus group methodology was employed. Six groups of four to five residents (n=26) were transported in a van along a pre-determined route through the townships. During the focus group discussion, residents were asked to point out features of the landscape they felt represented various levels (low to high) of rural character. Residents were also asked to point out features that detracted from the concept of rural character.

Sullivan (1994) found that three elements contributed to perceptions of the urban-rural fringe: (1) farmland that is associated with wooded areas; (2) housing type; and (3) amount and density of trees. Focus group participants were given the opportunity to observe these types of scenes, with one exception. Sullivan's reference to "housing types" included both multiple and single family housing. The rural landscapes that focus group participants experienced did not include multiple family housing. Sullivan also recommended exploring the extent to which the proximity of new housing to existing farming operations brings dissatisfaction from the perspectives of both new residents and farmers. Thus, the study route included locations where focus group participants had the opportunity to comment on homes that were adjacent to farming operations. In addition, focus group participants viewed a broader range of natural resource features not included in previous studies, such as riparian areas, wetlands and ponds.

Residents were chosen using a snowball approach that began with short interviews with key informants (e.g., the township supervisor. The focus group discussions lasted approximately 30-45 minutes and were recorded and transcribed to capture personal definitions of rural character and identify policy-relevant landscape- and development-related variables.

Discussions were recorded with a Sony (ICD-MS515) audio digital recorder which was attached to the ceiling of the van. After the recordings were transcribed, Atlas.ti 5.0 was used to categorize the focus group discussions into distinct thematic areas. Each transcript received two researcher reviews in order to ensure agreement. Landscape views that were the subject of discussion were photographed for future objectives of the research. Residents also filled out a short questionnaire on their demographic history.

3.0 Results

The average age of the 27 focus group participants was 55 years. The majority owned land in the townships and had lived there for 28 years on average. Most had lived in a rural area in southern Michigan for most if not all of their lives.

When examining the transcribed files, three code categories were used to separate the content: “Rural,” meant anything that definitely represented rural character; “Detract,” meant anything that took away from the landscape; and “Conditional,” meant something that the residents could accept as not detracting from the rural landscape if certain conditions were met. The subjects commented on many different natural and cultural features. The features that were discussed most frequently among the six groups included housing, animals, buildings, farms, vegetation, water, community, and sensory features.

Of all the features discussed, housing surfaced most frequently. The residents were sensitive to the development issues they are facing. Depending on the type and location, subdivisions in agricultural areas were viewed either neutrally or negatively. Most residents found cleared lots with new houses built close to the road to be a threat to rural character and preferred housing with vegetative screening. Subjects were disappointed about houses being built in the middle of fields with no surrounding vegetation, especially if that land had previously served for agricultural purposes.

“Chopping up farmland for residential use is not rural...”

New housing hidden by vegetation or topography was more acceptable. The term “cookie-cutter homes” was reoccurring, and referred to identical housing. The subjects did not like “cookie-cutter” homes. Building houses in a row, or close together, was considered a major detraction from the rural landscape. Subdivisions were mentioned frequently and were considered a detractive feature. Modern style housing, groomed yards, and housing on small acreage all were considered to detract from the rural landscape.

“Subdivisions are not rural...”

The rural residents that participated in the focus groups were not overly romantic or naïve about the rural condition. They recognized that some growth was inevitable but were relatively clear about the nature of developments that would and would not detract from rural character. For example, while they felt that subdivisions per se would detract from rural character, a well-designed subdivision with some open space and ample vegetative screening from the road would be acceptable. Subdivisions were considered acceptable as an alternative to having several houses built along the road. Building on larger lots, set back from the road was more acceptable than houses built close to the road.

“Although, I prefer them putting the houses all in a wad like that than stringing them out along the road frontage...”

Manufactured and modular homes were frequently discussed. Most often they were labeled as a detractive feature, but some residents felt that if they were newer and less “trailer-like,” and set on a larger lot, they may fit in to the rural landscape.

Vegetation surrounding single family homes seemed to make the newer housing fit in to the rural landscape. Vegetation was a popular theme in terms of landscaping. Trees were depicted to be important in landscaping and screening of development. Subjects stressed their preference for leaving the natural vegetation and wild growth both in landscaping and along the roadside.

Animals were often discussed in terms of both livestock and wildlife. Seeing and smelling livestock such as chickens, cows, hogs, working horses, and other farm animals seemed imperative to the concept of “rural character.”

“There is some livestock that looks delightfully rural...”

Deer, waterfowl, wild turkeys, woodchucks, buzzards roosting in the trees, and many other forms of wildlife and birds were pointed out as well. Subjects commented that with the coming of development they have noticed less wildlife in these areas. This was considered a major detractor from the rural character. Another interesting point was the amount of car-deer accidents in recent years, maybe due to increased traffic and less deer habitat.

A plethora of buildings were discussed, the most popular being big, red barns. Farmhouses, schoolhouses, and churches were often discussed as positive features. Also, cemeteries were pointed out as symbolic of rural areas.

“...we’ve got a beautiful old church coming up on the left, and a beautiful old red barn on the right...”

Brand new “modern” buildings strip and commercial development, and closed schools and buildings were all features that subjects felt detracted from the rural landscape.

Southern Michigan has many rich riparian areas. Water features, including marshes, wetlands, swamps, ponds, and rivers were consistently indicated as significant features in the rural landscape. Not only were these features mentioned for aesthetic purposes, but they were also deemed ecologically important for specific vegetation that provide wildlife and bird habitat. Subjects expressed disapproval for the filling in or draining of these wetland areas.

“...our wetlands are unique, and really set us apart from other areas...”

In southern Michigan, farms are a big part of the rural landscape. Agricultural activities shined through in each

of the focus group discussions. Several farm features were mentioned including farmland and fields, animal pastures, farm equipment, silos, and bales of hay lying out in the field.

“...alright, tractors, silos, cows...this is the epitome of rural...”

The residents revealed many features that weren’t necessarily a physical part of the landscape. There were many discussions about “non-rural” people moving into the area and then complaining about the very things that make that area rural. Half of the groups mentioned something about new residents protesting the rural odors that go hand in hand with farming. To local residents, the rural odors are a “rural” feature...something that is part of rural character.

“seeing and smelling the animals is something that is country...”

Residents also found temporary rural living to be contradictory to the rural atmosphere. For example, focus group participants reacted negatively to people who build a “starter” home on the edge of a corn field, and then sell it and move on a few years later.

Sensory rural features discussed include hearing, seeing, and smelling the animals, both livestock and wildlife; the lack of sounds, the sounds of nature, being able to see the stars, the vivid colors, open space, natural views, rolling hills, and the pattern and order of the farm fields.

“It’s so quiet out here....and the stars....you can always see the stars at night. It’s much different than living in the city.”

Though many different forms of vegetation were mentioned including wildflowers, wetland plants, and vines, trees were the main focus. Trees were extremely important to all of the residents in this study, and in a variety of ways! Building among the trees, instead of cutting them out, was favorable. There was a strong preference for housing built among the natural features. Forests and woodlots were depicted as significant to the rural landscape. Trees growing alongside of the

road, in yards, and in fields arching over crops, or with wildflowers and grasses, were also discussed.

“But, ah, they kept the woods...”

4.0 Discussion

Local residents demonstrated enthusiasm about their local rural setting. The subjects were quite comfortable with the roving focus group methodology and provided meaningful insights and realistic data. Content from the focus group discussions resonates with earlier studies in that the same or similar cultural and natural landscape features were discussed in a qualitative research setting. The subjects went beyond mentioning only physical and cultural characteristics and discussed additional features that accompany life in a rural area involving auditory and olfactory senses.

These data are specific enough to provide guidance at the local level in revising master plans or zoning ordinances to protect rural character. In fact, this study addresses a highly pragmatic planning need (specific and legally-defensible definitions of rural character based on residents' perspectives). For example, this research suggests that, where protection of rural character is a goal, land use plans should stress the importance of old buildings, natural vegetation, open space, wetland areas, and farmland. Conversely, housing in close proximity to the road, identical housing units adjacent to one another, unscreened subdivisions, and commercial development should be minimized. In addition, based on community input, zoning ordinances might be modified to resonate with the interests of the local residents regarding desired setback requirements, lot sizes, and cluster subdivisions with vegetative screening. By understanding common perceptions of rural character, planners and policy makers can plan for and maintain rural landscapes more objectively than in the past.

The results of this study should be interpreted with some caution. These data can only be extrapolated to townships with the same demographic, historical, and landscape criteria as this region is unique both in placement, inhabitants and landscape. The subject sample may not be completely representative of all of the

area residents. As previously stated, most subjects had lived in the study areas for most of their lives. The sample included mostly home- and landowners, and middle- and senior-aged persons. Younger persons and those who had recently moved into the six townships were underrepresented.

4.1 Future Research

Six more focus groups using the same procedures will be completed in 2005. Landscape views that were discussed by previous focus group participants are being photographed. These photos will become part of a survey instrument, which will be mailed to a random sample of township residents in the fall of 2005. The survey data will be used to validate the results of the focus groups and provide further guidance for planning officials. Furthermore, demographic information collected with the photosurvey will be used to stratify the participant sample and test the significance of separate regression models using a policy-capturing or other data clustering approach (Propst and Buhyoff 1980; Kaplan and Kaplan 1989).

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5.0 Citations

- Arendt, R. 1996. **Conservation design for subdivisions: A practical guide to creating open space networks.** Washington, DC: Island Press.
- Balash, H. 1999. **Keeping the rural vision: Protecting rural character and planning rural development.** Olympia, WA: State of Washington, Department of Community, Trade and Economic Development. Available online: <http://www.mrsc.org/Subjects/Planning/rural/ctedrural.aspx>
- Clare Cooper Marcus, C.A.F. 1990. **People places: design guidelines for urban open space.** New York: Van Nostrand Reinhold.

- Corser, S.E. 1994. **Preserving rural character through cluster development.** PAS Memo, July: 7pp. (American Planning Association).
- Dillman, D.A. 1978. **Mail and Telephone Surveys: The Total Design Method.** New York: Wiley.
- Hester, R.T. 1984. **Planning neighborhood space with people.** New York: Van Nostrand Reinhold.
- Heyer, F. 1990. **Preserving rural character (PAS 429).** Chicago, IL: American Planning Association, Planning Advisory Service.
- Jones, R.E., Fly, J.M., Talley, J., and Cordell, H.K. 2003. **Green migration into rural America: The new frontier of environmentalism?** Society and Natural Resources, 16: 221-238.
- Hubbard, P. 1997. **Diverging attitudes of planners and the public: An examination of architectural interpretation.** Journal of Architectural Planning Research, 14(4): 317-328.
- Kaplan, R. and Kaplan, S. 1989. **The experience of nature: A psychological perspective.** New York: Cambridge University Press.
- Potts, Robert, Gustafson, Eric, Stewart Susan I., Thompson, Frank R., Bergen, Kathleen, Brown Daniel G., Hammer, Roger, Radeloff, Volker, Bengston, David, Sauer, John, and Sturtevant, Brian. 2004. **The Changing Midwest Assessment: land cover, natural resources, and people.** Gen. Tech. Rep. NC-250. St. Paul, MN: US Department of Agriculture, Forest Service, North Central Research Station. 87 p.
- Propst, D.B. and Buhyoff, G.H. 1980. **Policy capturing and landscape preference quantification: a methodological study.** Journal of Environmental Management, 11, 45-59.
- Ryan, R.L. 1998. **Local perceptions and values for a Midwestern river corridor.** Landscape and Urban Planning, 42: 225-237.
- Ryan, R.L. 2002. **Preserving rural character in New England: Local residents' perceptions of alternative residential development.** Landscape & Urban Planning, 61, 19-35.
- Southeastern Michigan Council of Governments (SEMCOG). 2003. **Land use tools and techniques: A handbook for local communities.** Detroit, MI: SEMCOG.
- Sullivan, W.C. III 1994. **Perceptions of the rural-urban fringe: Citizen preferences for natural and developed settings.** Landscape & Urban Planning, 29, 85-101.
- Vogt, C.A. and Marans, R.W. 2004. **Natural resources and open space in the residential decision process: A study of recent movers to fringe counties in southeast Michigan.** Landscape & Urban Planning, 69, 255-269.
- Yaro, R., Arendt, R., Dodson, H. and Brabec, E. 1988. **Dealing with change in the Connecticut River Valley: A design manual for conservation and development.** Cambridge, MA: Lincoln Institute for Land Policy.

THE ROLE OF RISK PERCEPTION IN A ONE-DAY WILDERNESS WHITEWATER RAFTING TRIP

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Abstract

The purpose of this study was to gain a deeper understanding of motivations to participate in a wilderness whitewater rafting trip. Particularly this study examined the importance of perceived risk as a motivator for participation and the change in risk perceptions between different sections of river and from pre to post trip assessments. The study was conducted with a sample of individuals participating in a rafting trip through Section III (n=98) and Section IV (n=104) of the Chattooga River, a Wild and Scenic River on the Georgia-South Carolina border. Descriptive statistics revealed that “interacting with family and friends” and “enjoyment of nature/pleasure” were the most important motivations for participation in a rafting trip. T-test analyses showed that perceptions of the amount of risk involved in the rafting trip decreased significantly from pre to post measurements in both river sections ($p < .05$). Furthermore, perceptions of the amount of risk involved in the rafting trip was significantly higher for Section IV participants than for Section III participants ($p < .05$). Lastly Section IV participants were significantly more motivated by “allure of danger/risk/challenge” than their Section III counterparts ($p < .05$). The two groups did not differ with respect to the motivational factors of “interacting with family and friends” and “wilderness experience” ($p > .05$). Theoretical and managerial implications of these results are discussed.

1.0 Introduction

Risk-based outdoor recreational activities continue to experience rapid growth in popularity, variety and

variations of activities participated in, and destinations of travel. While current research indicates this trend will continue to expand in the foreseeable future, research focused on why patrons desire to participate in these types of activities and how they perceive the risk associated with such experiences is inadequate. This study took place at the Chattooga Outpost of the Nantahala Outdoor Center (NOC) utilizing clientele who had participated in a rafting trip on either Section III or IV of the Chattooga River, a Wild and Scenic River located on the Georgia-South Carolina border. Section III is relatively mild-mannered and contains primarily Class I, II and III rapids and numerous large, deep pools. Section IV, considered to be one of the most difficult and dangerous rivers commercially rafted in the United States, is steep, often violent, with numerous natural hazards inherent to the river.

2.0 Objectives

This study was undertaken to gain a deeper understanding of motivations for participation in a wilderness whitewater rafting trip, particularly the role that risk perception plays in the experience. That is, do patrons participate because of the risk or in spite of it? A further understanding of risk as a motivator or deterrent for participation may prove valuable to managers within the whitewater rafting industry as well as land managers and agencies as they strategize the policies and procedures needed to meet the ever growing number and diversity of users. This study was also designed to discover if clientele on the two sections of river had differing levels of risk perception and if their perception of risk changed as a result of rafting the river. In addition, this research project determined how clientele first came to know of rafting on the Chattooga River, information that can be utilized by outpost management in designed more effective marketing campaigns. This information may assist managers in further understanding motivations for participation in whitewater rafting and aid in designing marketing messages that will be more appealing to specific types of customers.

3.0 Literature Review

Recent studies have shown that participation rates in a variety of outdoor recreation activities increased 10 percent between 1998 and 1999 (Bricker and Kerstetter 2002). With over 30 percent of American soil controlled by federal land and resource management agencies, few issues are more significant for federal managers and guides and outfitters today than the dramatic increase in participation rates of outdoor recreation activities, including adventure recreation, and the growing phenomenon of risk as a sought-after component of these activities (Bricker and Kerstetter 2002; Ewert, Galloway, Estes 2001). This concept has been extremely visible in the growing popularity of adventure recreation, an offshoot of outdoor recreation, as a leisure pastime. Adventure recreation activities include backpacking, mountain biking, whitewater river rafting, wilderness camping, mountain climbing, whitewater canoeing, SCUBA, spelunking, and others (Ewert 1990).

The Chattooga River, considered by many to be one of the most difficult and dangerous rivers commercially rafted in the U.S., was originally rafted in 1971 by three companies, NOC, Southeastern Expeditions, and Wild Water Ltd. After inclusion into the Wild and Scenic Rivers Act in 1974 these three companies were grandfathered commercial permits by the USFS to take clientele down Sections III and IV of the river. From 1971 to 1984 records regarding total number of participants taken down the Chattooga River were not kept by NOC. Payson Kennedy, founder of NOC, supplied river numbers from 1985 to 2003 regarding the amount of people NOC has taken down the river. Numbers have fluctuated between a low of 8,158 clients in 1986 to a high of 17,267 clients in 1996. The average number of participants/calendar year that float the Chattooga River with NOC from 1985 through 2003 is 13,026.

Adventure recreation was defined by Mobley (1985) as an activity “often tied to outdoor pursuits that involve an obvious possibility of physical injury” (p. 13). The risk associated to these outdoor pursuits is most noticeably the possibility of physical or psychological injury. This could include minor injuries, major injuries,

environmental injuries, emotional injuries, and death (Tholkes 1998). From these possibilities the individual must confront anxiety about what is unknown to them (Miles 1978). The trend of pursuing risk as a component of adventure recreation continues to develop and evolve. In 2003, more than 300 adventure races were held in the U.S., a number which is expected to double in 2004 (Sieger 2003). Overall, adventure recreation pursuits symbolize one of the most rapidly growing recreational activity segments in the world (Ewert et al. 2001).

“Risk,” as defined by Webster (1973), “is the possibility of loss or injury; peril” (p. 1000). Risk can be further defined as being either actual (objective) or perceived (subjective). Ascertaining actual risk includes an evaluation of the hazards inherent with the activity through a critical assessment (Pedersen 1997). Measuring or assessing actual risk, as described by Guthrie (1997), could include an evaluation by experts, review of statistics and accident reports, classes, books, journals, personal observation and reflection on the experience, and critical thinking. Davis-Berman and Berman (2002) assess actual risk entailing the actuarial approach; looking at past data regarding such variables as numbers of participants, figures concerning injury/illness/death, etc. in a variety of pursuits. This objective assessment of risk looks at the likelihood of an event and the consequences of the said event.

Perceived risk is often viewed as the risk associated with the activity as perceived by the participant (Guthrie 1997). Cheron and Ritchie (1982) described perceived risk as a “multidimensional psychological phenomenon which influences individual perceptions and decision process” (pg. 140). It also “...involves a subjective perception of the potential for injury or death inherent in an activity” (Davis-Berman & Berman 2002). Robinson (1992) defined it as “...how individuals perceive situational risk relative to their perceived confidence to deal with that risk” (p. 53) Research has shown that when evaluating perceived risk the participant must weigh two distinct factors: the chance of failing to accomplish the goal (outcome) and the consequence of failing (harmless to fatal) (Robinson 1992).

The topic of perceived or subjective risk warrants further investigation because, as continually demonstrated in research, people generally have misperceptions regarding a variety of everyday occurrences. One of the most recognized examples of an event with a high perception of risk is a person being attacked by a shark while swimming in the ocean. However, fewer than 1 in 6 million people will be attacked by a shark which will result in hospitalization and less than 1 in 578 million will be killed in a shark attack (Ropeik & Holmes 2003). Simply stated, a person is 19,593 times more likely to die from contracting skin cancer than from a shark attack. Brannan et al. (2002) also discovered that the greater the amount of experience, the lesser the perception of risk. Cheron and Ritchie (1982) summarized that perception of risk is largely founded on prior experience and that perceived risk declines as individuals become more familiar with an activity. Whitewater rafting is perceived by many people unfamiliar with the activity to harbor a high level of risk. In a study originally researched by Cheron and Ritchie (1982) and expanded upon by Brannon et al. (1992), the general public's perception of various aspects of risk for 24 well-known recreation activities was determined. The study had participants rate numerically from 0 (no risk) to 8 (high risk) according to the amount of risk (physical and psychological) they believed each stated activity to contain. In regards to the public's perception of "risky" activities, whitewater rafting ranked third overall behind skydiving and rock climbing as an activity with a high level of risk.

Individuals who are motivated to participate in adventure recreation activities because of the risk have been studied, most notably, by Guthrie (1997), Helms (1983), Robinson (1992), and Tholkes (1998). According to Robinson (1992), participants in common adventure recreation activities are attracted to the activity for two reasons: (1) a need to be mentally aroused through an activity which has, at least on the outside, a perception of being dangerous; and (2) participants with a strong regard for self direction. This need to be aroused has been researched by Zuckerman (1979) who defined it as, "sensation seeking," or "as the need for varied, novel and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences" (p. 10).

Why do people leave the relative safety of their lives to experience adventure recreation activities such as whitewater rafting, mountain climbing, or wilderness backpacking? Guthrie (1997) conducted research regarding motivational factors for participation in both high and low risk recreation activities. Regardless of the nature of the activity (high or low risk), individuals participate for the enjoyment of nature, physical fitness, pleasure, tension reduction, escape/rest, excitement, and beauty. Additional reasons for participation include the allure of the risk, adrenaline rush/tension release, testing abilities, the allure of challenge and uncertainty, self actualization (Yaffey 1990), and for a search for competence (Ewert and Hollenhorst 1990). Through participation in an activity, participants frequently describe a euphoric feeling of total control, where only they are in complete control of their destiny (Cahill 1986). Outdoor and Adventure Recreation oriented activities are also participated in for social reasons. This shared participation may potentially foster the edifice of the concept of team and teamwork and promote the growth of personal bonds.

Extensive research has been completed into the biological theories of why people choose to participate in activities which harbor the very real possibility of physical or psychological harm. These theories of participation have been adopted into Priest's Dimensions of an Adventure Experience (DAE) and are: Sensation Seeking (Zuckerman 1979), to experience a "Flow" like state (Csikszentmihalyi & Csikszentmihalyi 1991), and arousal through the release of endorphins (Ellis 1973; Jones and Ellis 1997). Priest's DAE was designed and developed to further explain adventure recreation activities and pursuits (Priest and Carpenter 1993). The model depicts the relationship connecting the risk (actual) of an activity and the competence level of the participant in the activity on an X-Y axis. The X axis, which represents risk, describes it in relation to the environmental orientation (developed versus natural), social orientation (programs and courses versus peers or solo), actual risk (low versus high), and the factors of eustress, distress, and fear. The Y axis explains competence in relation to attitudes and abilities, skill and experience level (low versus high), frequency of participation (low versus high), and locus of control (external versus internal).

4.0 Methods

The data were collected utilizing a mixed-method design incorporating both quantitative and qualitative data collection techniques. Interviews and surveys were administered to clientele who had participated in a rafting experience with NOC on either section III and IV of the Chattooga River along the Georgia/South Carolina border. Collection was commenced on May 17th and concluded on June 25th 2004 ensuring information was collected from both the “shoulder season” and the “peak season.” The author accessed patrons for completion of both the survey instrument and face to face interviews after arrival post-trip at the outpost. The survey instrument was administered every fourth day per section for 6 weeks on a rotating schedule of days between the two sections. Of Section III clientele, 105 agreed to complete the instrument and seven refused to participate providing a participation rate of 93.8 percent. Of Section IV clientele, 110 agreed to complete the survey instrument and six refused to participate for a participation rate of 94.3 percent. In addition, 15 interviews were conducted; five with Section III participants and ten with Section IV participants. The participation rate was 100 percent for interviews as all who were asked to participate agreed to answer interview questions. Interviewee participants were also selected utilizing a random sampling technique and were interviewed following a standardized open ended format. The survey instrument and face to face interviews were not administered at the same time because there was not enough time for study participants to complete both. The information obtained during the qualitative portion of the data collection phase was analyzed as an ongoing process throughout the duration of the study and select comments were included as a supplement to the quantitative information.

5.0 Results

5.1 Description of Sample Population

A total of 202 customers of NOC completed the survey instrument. Additionally 15 other individuals participated in brief interviews regarding their experience on the river. Section III respondents were evenly distributed between genders Section IV respondents were not as evenly distributed as 66 percent of respondents

were male and 34 percent were female. Of Section III respondents, 78 percent were between 35-54 years of age with the most frequent distribution being individuals 45-54 years of age. Of all Section IV respondents, 58 percent were between the ages of 25-44. These figures indicate a general trend towards younger rafters choosing Section IV while slightly older rafters gravitating towards Section III. The majority of respondents for both sections were White (97% on Section III and 95% on Section IV). College graduates, who compromised 37 percent of Section III guests and 32 percent of Section IV guests, were the most frequently represented demographic group for both sections of river. As a general trend, the most frequently reported household income category for both Section III and IV is \$100,000 to \$200,000.

Survey respondents were asked to indicate if they had prior experience whitewater rafting. The majority of survey respondents (69% of Section III guests and 71% of Section IV guests) reported as to having previously participated in a whitewater rafting experiences. Of survey respondents who had participated in prior whitewater rafting experiences, 46 percent indicated they rafted one to two times prior. Thirty-two percent of Section III and IV guests had rafted 3-5 times prior and 13 percent of Section III and IV guests had rafted 6-10 times prior. A substantial percentage of survey respondents had previously rafted the Chattooga River (29% of Section III clientele and 28% of Section IV clientele).

Rafters were asked to list how they first came to know of whitewater rafting on the Chattooga River. Word of mouth accounted for 37 percent of Section III respondents and 62 percent of Section IV respondents. Section III experienced over two times the amount of repeat customers (12.2%) compared to Section IV (5.7%). Comments gleaned from interviews regarding how clientele came to know of Chattooga River rafting are consistent with the aforementioned numbers. One Section III interviewee remarked, “A neighbor filled us in about it a couple of years ago. He was here with a church group or something and they had a great time, told me that if I was ever in this area to check it out and here we are.” Section IV interviewee remarks are also analogous regarding how people came to know of

Table 1.—Frequency Distribution of participant’s primary motivation for rafting the Chattooga River

Primary Reason for Participation	Section III		Section IV	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Physical fitness	0	0%	0	0%
Try something new	18	18%	5	5%
Nostalgia/chance to reminisce	0	0%	0	0%
Enjoyment of nature/wilderness	18	18%	16	16%
Chance to interact with family and friends	25	26%	36	34%
Allure of danger/risk taking/adrenaline	7	7%	11	11%
Fun/enjoyable way to spend the day	30	31%	36	34%
Total Respondents	98	100%	104	100%

whitewater rafting with NOC on the Chattooga River. “I found out about you guys in a brochure” was a comment voiced by several interviewees.’ “I had never heard of this place until 2 days ago, we came across a brochure at the welcome center in Helen, Georgia and decided to go for it.” Another interviewee was quoted as saying, “I heard about you through my uncle and the internet. I did a search on Google and you all (referring to NOC) popped up.”

5.2 Primary Motivations

Survey respondents were asked to indicate their primary reason for engaging in a whitewater rafting experience. Of combined (Section III and IV) responses, “Fun, enjoyable way to spend the day” received the highest distribution with 33 percent of all responses. Thirty percent of respondents indicated “the chance to interact with family and friends” as their primary reason for participating. “Allure of danger/risk taking/adrenaline” accounted for nine percent of total respondents’ primary motivation for participation. As evident in Table 1, this trend of participating because of the risk is skewed towards Section IV respondents as 11 percent indicated that their primary motive for participation was the allure of danger/risk taking/adrenaline compared to 7 percent from Section III.

Regarding Section III respondent’s primary motivation for rafting, 31 percent indicated that their primary

motivation for participation was that it was “a fun enjoyable way to spend the day.” This also came to light in the comments of interviewees. “I guess we came in spite of it (when asked what role risk played in their decision to go rafting). Actually it wasn’t even a major consideration. We wanted to get out and do something together, as a group, in the out-of-doors, and this seemed like it fit the bill perfectly. A little bit of anxiety isn’t all bad either.” Of Section IV survey respondents, 34 percent indicated their primary motivation for participation was the chance to interact with family and friends. “We were looking for fun and fellowship” one Section IV interviewee respondent remarked. “These guys I have had in fellowship for 4 to 5 years and we wanted to do something all together before they head off to college next fall.”

As previously mentioned, 11 percent of Section IV survey respondents indicated that their primary reason for participating in a wilderness whitewater rafting trip was for the allure of danger/risk taking/adrenaline. This figure was also given support by interviewee comments: “we were looking for a setting in which students were forced to take risks they otherwise normally wouldn’t take. So as an educator we had deliberate, risk based goals. I mean we deliberately choose Section IV to help foster group development and teambuilding. We came here and ran Section IV for a very specific reason, because of the increased risk.”

5.3 Risk Perceptions

Survey respondents were asked to indicate their pre and post-trip feelings regarding the danger/risk associated with the river via a five-point Likert-type scale (5 = strongly agree, 1 = strongly disagree, and 3 = neutral). In every instance respondents reported that they felt the river was less dangerous post-trip than they originally envisioned it to be before the trip. Results from a paired samples T-Test revealed that respondents' perceptions of risk significantly decreased from pre to post-trip on Section III ($p = .000$). Likewise, results from a paired samples T-Test revealed that respondents' perception of the risk on Section IV significantly decreased from pre to post-trip ($p = .000$).

In addition, it was hypothesized that Section IV respondents would have higher pre-trip perceptions of risk than Section III respondents. Results from a one-tailed T-Test supported this hypothesis ($p = .000$). Likewise, it was hypothesized that Section IV respondents would have higher post-trip perceptions of risk than Section III respondents. Again, one-tailed T-Test analysis supported this hypothesis ($p = .000$).

Finally, it was hypothesized that survey respondents, depending on what section of river they had rafted, would have different reasons for participating in a wilderness whitewater rafting experience. Section IV participants were significantly more motivated by "allure of danger/risk/challenge" than their Section III counterparts ($p < .05$). However, the two groups did not differ with respect to the motivational factors of "interacting with family and friends" and "wilderness experience" ($p > .05$).

6.0 Conclusions & Implications for Application

6.1 Conclusions

This research has shown that the allure of risk plays a small factor in participants' decision to go whitewater rafting on the Chattooga River. Descriptive statistics

Figure 1 - Section III
Frequency Distribution of Participants Primary Motivation for Rafting the Chattooga River

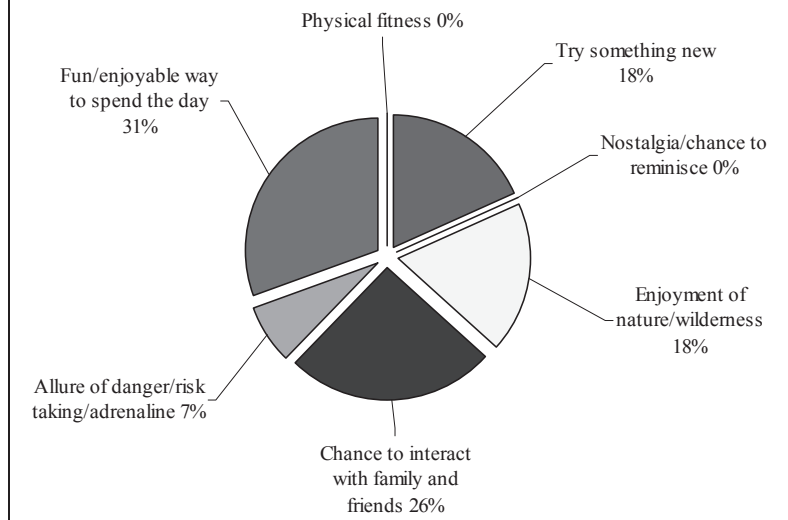
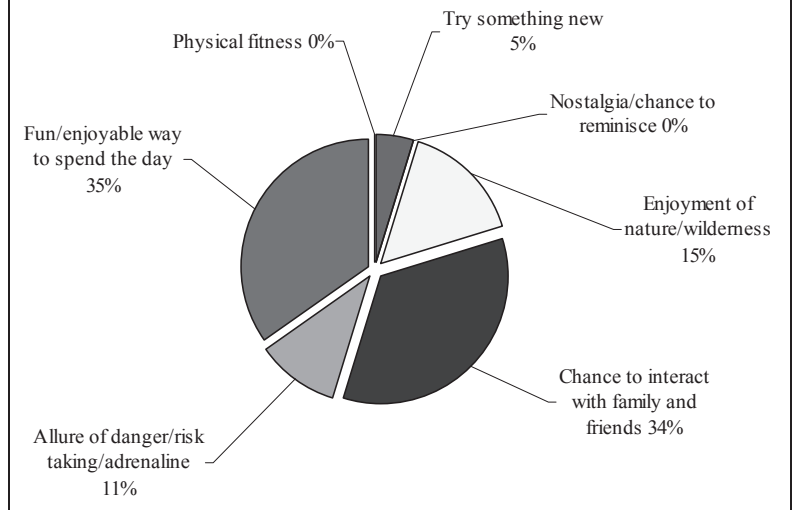


Figure 2 - Section IV
Frequency Distribution of Participants Primary Motivation for Rafting the Chattooga River



revealed that "interacting with family and friends" and "enjoyment of nature/pleasure" were the most important motivations for participation in a rafting trip regardless of the section of the Chattooga River rafted (III or IV). T-test analyses indicated that perceptions of the amount of risk involved in the rafting trip decreased significantly from pre to post measurements in both river sections. While it was beyond the scope of this study the authors speculate that it could be attributed to a number of different factors, including but not limited to experience of the guide, water level and temperature,

Table 2.—Frequency distribution of participants’ feelings/emotions about the risk/danger associated with rafting the Chattooga River prior pre-trip

Pre-trip Feelings/ Emotions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Extremely dangerous/ high risk (Section III) ^a	3	3.0%	9	9.2%	42	42.9%	40	40.8%	4	4.1%
Extremely dangerous/ high risk (Section IV) ^a	7	7.7%	36	34.6%	34	32.7%	21	20.2%	6	5.8%

^a N=98 of Section III respondents and N=104 of Section IV respondents

Table 3.—Frequency distribution of participants’ feelings/emotions about the risk/danger associated with rafting the Chattooga River post-trip

Post-trip Feelings/ Emotions	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Extremely dangerous/ High risk (Section III) ^a	2	2%	7	7%	35	36%	45	46%	9	9%
Extremely dangerous/ High risk (Section IV) ^a	3	3%	21	20%	33	32%	41	39%	6	6%

^a N=98 of Section III respondents and N=104 of Section IV respondents

weather conditions, differences in rafts, etc. It would be important to further probe into these potentially critical factors. It was also determined that perceptions of the amount of risk involved in the rafting trip were significantly higher for Section IV participants than for Section III participants. Lastly Section IV participants were significantly more motivated by “allure of danger/risk/challenge” than their Section III counterparts. The two groups did not differ with respect to the motivational factors of “interacting with family and friends” and “wilderness experience.”

6.2 Implications for Application

Of particular interest for whitewater rafting managers is the overwhelming response that social reasons are their

primary motivation for participation. This is in spite of a marketing focus on Section IV that promotes it is “high adventure.” Also of interest to the commercial whitewater industry is the data of how clientele first came to know of Chattooga River Rafting. “Word of mouth” represented how 37 percent of Section III respondents and 62 percent of Section IV respondents came to know of Chattooga River rafting with the NOC. These figures may be tied to the high level of customer satisfaction that NOC strives to provide its clientele, possibly resulting in customers recommending the trip to their family, friends, and neighbors. Other notable ways that clientele came to know of Chattooga River Rafting include the internet and brochures.

The following marketing recommendations are based on the results of this study and were provided to NOC Management.

- Consider target marketing return guests. Figures indicate nearly one in three customers have previously rafted the Chattooga River. Also, word of mouth advertising from past customers was very important.
- Continue efforts to have river guides return to work successive seasons. Veteran guides are more skilled and knowledgeable about the river and its many features and history which may make clientele more inclined to recommend a rafting trip to family/friends.
- Discontinue advertisement utilizing billboards. Of 202 questionnaire respondents, zero indicated they had come to know of Chattooga River Rafting with NOC by means of billboards.
- Consider shifting marketing focus of Section IV to include “chance to interact with family and friends” and “fun/enjoyable way to spend the day.” While the lure of risk is an undeniable component of a Section IV rafting trip it is by no means the only or most significant motive that clientele choose to participate.

7.0 Citations

- Bricker, K., Kerstetter, D. 2002. **An interpretation of special place meanings whitewater recreationists attach to the South Fork of the American River.** *Tourism Geographies*, 4(4), 396-425.
- Cahill, T. 1986, June. **Scaring yourself silly a little terror is good for the soul.** *Outside*, 11(6): 29-30; 32.
- Cheron, E.J., Ritchie, J.R.B. 1982. **Leisure activities and perceived risk.** *Journal of Leisure Research*, 14(2): 139-154.
- Csikszentmihalyi, M., and Csikszentmihalyi, I.S. 1991. **Adventure and the flow experience.** In J.C. Miles and S. Priest (Eds.), *Adventure Education*, (pp. 149-155). State College, PA: Venture Publishing.
- Davis-Berman, J., Berman, D. 2002. **Risk and anxiety in adventure programming.** *The Journal of Experiential Education*, 25(2): 305-310.
- Ellis, M.J. 1973. **Why people play.** Englewood Cliffs, NJ: Prentice-Hall.
- Ewert, A., 1990. **A review of adventure recreation: concepts, history, trends and issues.** “An Outdoor Renaissance” *Proceedings of the National Conference on Outdoor Recreation*. (pp. 63-80) 4th Annual Conference, Boone, North Carolina.
- Ewert, A., Galloway, S., Estes, C. 2001. **Adventure recreation: what’s new for resource managers, public policy analysts, and recreation providers.** *Parks & Recreation*, 36(2): 26-34.
- Ewert, A., Hollenhorst, S. 1990. **Risking it on wildlands: the evolution of adventure recreation.** *Journal of Environmental Education*, 21(3): 29-35.
- Guthrie, S.P. 1997, November. **Actual Risk and Perceived Risk: Implications for Teaching Judgment and Decision-Making to Leaders.** Paper presented at the International Conference on Outdoor Recreation and Education.
- Helms, M. 1983. **Psychological and sociological phenomena affecting the perceptions of risk and hazard in mountaineering.** *Process and Concepts in Recreational Sports – Selected Papers from the 33rd Annual National Intramural-Recreational Sports Association Conference*. (pp. 240-253).
- Jones, R.A., Ellis, G.D. 1996. **Effect of variation in perceived risk on the secretion of B-endorphin.** *Leisure Sciences*, 18: 277-291.
- Mobley, M. 1985. **On the razor’s edge: the management of risk.** *Trends*, 22(3): 12-14.
- Pedersen, D.M. 1997. **Perceptions of high risk sports.** *Perceptual and Motor Skills*, 85, 756-758.

- Priest, S., Carpenter, G. 1993. **Changes in perceived risk and competence during adventure leisure experiences.** Journal of Applied Recreation Research, 18(1): 5-71.
- Robinson, D.W. 1992. **A descriptive model of enduring risk recreation involvement.** Journal of Leisure Research, 24(1): 52-63.
- Ropeik, D., Holmes, N. 2003, August 9. **Never bitten, twice shy: the real dangers of summer.** The New York Times, pp. A10-11.
- Seiger, M. 2003, May 5. **Paddle faster, mom.** Time, 161(18).
- Tholkes, B. 1998, September 1. **Defining risk.** Camping Magazine, 71(5): 24-27.
- Webster, M. 1973. Webster's new collegiate dictionary.
- Yaffey, D. 1990. **Outdoor pursuits and adventure experience- escaping the needs-trap as a means of personal growth.** The Journal of Adventure Education, 8(2): 22-25.
- Zuckerman, M. 1979. **Sensation seeking: beyond the optimal arousal level of arousal.** Hillsdale, N.J.

USE, USERS, AND BENEFITS OF THE WEST BRANCH OF THE FARMINGTON RIVER

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Abstract

Presented are results of a study of the use, users, and benefits of a designated Wild and Scenic river in west central Connecticut – the West Branch of the Farmington River. Specifically, we compared anglers and floaters on this relatively unique “partnership river.” Findings indicated that while there were substantial differences between these two groups, there were striking similarities in terms of their motives for river use and the most important benefits they felt the river generates. The most important implication of this research for management partners and river policymakers is that protecting and conserving the West Branch’s natural, scenic, and recreational resources are the most critical contributors to the recreation experiences of users. Therefore (and consistent with the Wild and Scenic Rivers Act of 1968), conserving the quality of the river itself and river corridor resources should remain very high priorities. Other findings, results and implications are discussed.

1.0 Introduction

River conservation and recreation are important in the United States and becoming more so. According to the National Survey on Recreation and the Environment (NSRE), large proportions of Americans participate in river-related recreation. Many river recreation activities are growing rapidly in participation and are forecast to continue growing for decades to come. For example, in 2000-2001 about 10 percent of U.S. adults canoed, 10 percent rafted, 4 percent kayaked, 23 percent warm freshwater fished, and 14 percent cold freshwater fished (Cordell et al. 2004, p. 109-110). Kayaking was the

fastest growing of 49 common outdoor recreation activities between 1994 and 2001 (up 186%) (Cordell et al. 2004, p. 71-72) and participation in raft/floating, canoeing, and fishing are all forecast to increase substantially from 1995 to 2050 (Bowker, English & Cordell 1999).

An essential tool for preserving outstanding rivers for future generations and, therefore, helping to meet current and future demand for river recreation is the National Wild and Scenic Rivers Act of 1968 and its amendments, which created the National Wild & Scenic Rivers System. This system now includes 180 river segments in 41 states and protects over 11,300 river miles (National Park Service 2004). To qualify for Wild and Scenic (W&S) designation, river segments must be free-flowing and have at least one “outstandingly remarkable” resource value which can include scenic, recreational, geologic, fish and wildlife, historic, cultural, or similar values. Once designated, W&S rivers are protected from new dams and other impoundments and can be managed by a variety of federal agencies including the National Park Service (NPS), USDA Forest Service, BLM, U.S. Fish & Wildlife Service, or the U.S. Army Corps of Engineers.

This W&S river study was sponsored by the NPS Park Planning and Special Studies & Rivers, Trails and Conservation Assistance Programs and American Rivers, Inc., a nationwide nonprofit river conservation group. Specifically we set out to accomplish three objectives:

1. Understand recreational use and users along a somewhat unique W&S river segment
2. Compare the two primary river user groups of that segment
3. Draw conclusions for river management and policy

What is presented here is actually one part of a larger study involving research at two W&S rivers. The overall study looked at two very different W&S segments in an attempt to begin to represent the diversity of rivers

included in the system. This paper focuses on some of the key social psychological findings related to users and use from the first of these studies. It is primarily descriptive in nature and was carried out to provide information for local river management partners as well as for NPS and river conservation groups.

2.0 Methods

The study site was the West Branch of the Farmington River in Connecticut, a 14-mile long W&S segment about 30 minute drive northwest of Hartford. The West Branch was designated in 1994 and is a classic example of a “partnership river” (once referred to as “private land rivers”). Partnership Rivers have no federal land and no federal land acquisition is authorized, there is a local “council or committee” responsible for developing and implementing the river management plan, land use is governed by local and state statutes, and costs and responsibilities are shared among partners. Only eight of the 180 W&S segments are Partnership Rivers, all of which are located in the eastern part of the country. Each is managed through partnerships of federal, state, local agencies, local river users and nonprofits organizations (NPS 2004b). The “partnership model” used to manage such rivers is in contrast to more typical W&S rivers which flow through public land managed by a federal agency. As such, those rivers are often referred to as “public land rivers.” In one sense, of course, all W&S rivers are “partnership rivers,” but the Farmington and the seven others noted above are exclusively so.

There is considerable variability and flexibility among partnership rivers in terms of how they are protected and managed. However because they are often located close to urban populations, they frequently experience intense pressures from population growth, development, and pollution. Protection of the corridors of land along partnership rivers, in particular, can be complicated and sometimes problematic. For the West Branch, corridor protection is accomplished through municipal zoning by the six towns through which it flows. In the case of the West Branch this and other management functions are coordinated by the Farmington River Coordinating Committee – a coordinating body made up of key public agencies and stakeholder groups.

A unique and important feature of the West Branch of the Farmington is its 3-mile “Trout Management Area” (TMA) managed by the Connecticut Department of Environmental Protection (DEP). This actively managed, high quality fishery is very popular regionally and its creation actually predates the segment’s W&S designation by about 6 years. This TMA section of the W&S segment is considered by some to be one of the premier fisheries in the east (Passante 2001).

Study data were gathered through on-site user interviews conducted by paid interviewers from April through September 2001. A systematic interview schedule representing all days of week and daylight hours was developed and employed to make the sample as representative as possible. The schedule consisted of two weekly “passes” of the entire river corridor by car. This approach was possible because nearly the entire segment is visible from nearby roads. Being able to observe the entire segment during these passes enabled interviewers to contact nearly every visitor at all access points and conduct visual counts of users during each pass. The on-site interviews were followed-up with mail questionnaires to willing subjects. A total of 483 interviews were conducted yielding 247 completed mail responses for a 51 percent response rate overall.

3.0 Results

Study results are summarized in four brief sections: user characteristics, trip characteristics, user experiences & attitudes, and benefits of river use & protection. These results are just a sampling of those included in the full study report, which is available from American Rivers at their web page.

Fishing, tubing, and boating were the three most common activities, in that order. Most river users were fishing and the vast majority of the anglers were fly fishing. Extrapolating from the on-site visual counts we estimated that overall river use in 2001 was 77,400 visits comprised of 62 percent fishing, 30 percent tubing, and 8 percent boating. Based on their self-reported primary activities our sample was made up of 77 percent anglers, 15 percent tubers, and 8 percent boaters. For further analyses we combined the tubers and boaters to form a “floaters” category and compared these floaters to the anglers.

Table 1.—Users' characteristics

Characteristic	Anglers	Floaters	Overall	<i>n</i>	Difference
% male	93.6	54.9	84.8	223	<i>p</i> =.000
Mean age	49.6	41.6	47.7	225	<i>p</i> =.000

Table 2.—Users' trip characteristics

Characteristic	Anglers	Floaters	Overall	<i>n</i>	Difference
Mean Travel Distance	56.5	47.6	54.5	231	<i>p</i> =.516
% With River as Primary Destination	95.0	98.1	95.7	231	<i>p</i> =.333
% on Overnight Trips	10.1	7.7	9.6	230	<i>p</i> =.602
% on First Visit to River	8.4	34.6	14.3	231	<i>p</i> =.000
% Using Commercial Outfitter	1.1	71.2	16.9	231	<i>p</i> =.000
Mean Trips in Past 12 months	38.3	3.8	30.5	229	<i>p</i> =.000
Mean Hours at River	5.0	3.5	4.7	230	<i>p</i> =.000

3.1 User Characteristics

Overall, users tended to be well-educated, middle-aged males on repeat day trips who had traveled 32 miles or less to get to the river. River use was dominated by men overall, with nearly 85 percent of users in the sample being male. This was significantly more the case with the anglers, 94 percent of whom were male. The floaters were much more evenly mixed in terms of gender with 45 percent of them being female. The anglers were also significantly older than the floaters, at nearly 50 years on average compared to an average age of 42 for the floaters (Table 1).

3.2 Trip Characteristics

Table 2 summarizes key trip-related variables and compares anglers to floaters on each. In terms of users' trips, people traveled an average of 55 miles one way to get to the river (median 32), virtually everyone had the river as their primary destination, and only about 10 percent were visiting as part of an overnight trip. There were no differences between anglers and floaters on these variables. Most users were on a repeat visit to the river, with only 14 percent reporting that this was their first visit. There was also a group of long time visitors, however, with over a quarter having first visited more than 25 years earlier. Seventeen percent used the services

of a commercial outfitter during their visit. Overall, users had made an average of 31 visits during the past 12 months (median 10) and spent an average of 4.7 hours at the river during their present trip. There were significant differences between anglers and floaters on these last four trip-related variables, however. Floaters were far more likely to be on their first visit and use the services of an outfitter than were anglers and anglers had visited far more often during the past 12 months and spent significantly longer at the river than had floaters. The commercial outfitter use was mainly among the tubers that typically rent tubes and use the shuttle bus service provided by an outfitter on the lower section of the W&S segment.

3.3 User Experiences & Attitudes

Overall, users were quite satisfied with their river experiences regardless of the particular activities they were engaged in during their visits. Respondents' mean satisfaction rating was 7.5 on a 10-point scale with 10 being "the best possible trip" (Table 3). There was no significant difference between the two groups in terms of satisfaction. Crowding ratings for the river conditions during their visits that day were relatively low, but in this case the floaters reported significantly higher levels of crowding than did the anglers. This appeared to be

Table 3.—Users' experiences

Variable	Anglers	Floaters	Overall	<i>n</i>	Difference
Mean Satisfaction Rating ¹	7.5	7.8	7.5	230	<i>p</i> =.236
Mean Crowding Rating ²	3.2	4.4	3.4	228	<i>p</i> =.000

¹Satisfaction measured on 10-point scale with 10 being “the best possible trip.”

²Crowding measured on 9-point scale with 9 being “extremely crowded.”

mainly among the tubers that are almost all concentrated on the last 2.5 miles of the segment, well below the TMA popular with anglers.

West Branch users were next asked to rate the importance of 22 different possible motives for visiting the river that day. Table 4 summarizes the results of these questions with the reasons presented in rank order from the most to the least important overall. The five most important reasons overall were: “To enjoy the view along the river”, “To experience the Farmington River”, “To be close to nature”, “To relax physically”, and “To help reduce built-up tension”. Both anglers and floaters had the same three most important reasons for visiting, all of which had to do with the quality of the natural resources available at or along the river. Five of the motives were significantly more important to the anglers than they were to the floaters. They were: “To use my equipment”, “To experience solitude”, “To think about my personal values”, “To be on my own”, and “To be away from the family for a while”. And two others (“To do something with my family” and “To take risks”) were significantly more important to the floaters than the anglers.

An important purpose of the overall study was to gauge users' attitudes and perceptions of river conditions and management, particularly for this relatively unique “partnership river” (as opposed to the more typical “public land rivers”). Before asking those questions, however, it was important to check the assumptions of some planners and managers that most users were aware that the West Branch of the Farmington was in fact designated Wild and Scenic. Interestingly, most respondents reported that before receiving the study survey they were not aware of this, in spite of the fact that there are signs at various points along the river indicating that the West Branch is a designated W&S

river. Overall, only 49.6 percent of users were aware of the river's W&S designation. There was also a significant difference between anglers and floaters in this regard, with 50.3 percent of anglers, but only 32.7 percent of floaters, respectively, being aware of the river's W&S designation (*p*=.025).

After a brief description of W&S designation and its intended protections, a series of questions was asked related to users' attitudes regarding river resources and management. Table 5 presents a summary of the results of these six questions organized from the one with the highest overall score to that with the lowest. Most respondents felt that W&S designation was extremely important for the river and, likewise, most were quite satisfied with the river. Of the six attitude questions these were the only two where there were significant differences between the anglers and the floaters. The anglers were both more satisfied with the river than were the floaters and felt W&S designation was more important than did the floaters. Overall, users felt the current “partnership model” was both appropriate and effective for the West Branch. There was also fairly high satisfaction overall with the corridor of land along the river and general agreement that the current protection efforts for the lands within 100 feet of the river were being effective. However, both of these attitudes related to the corridor of land were less supportive and optimistic than were the related responses regarding the river itself. There were no differences between anglers and floaters in these regards.

3.4 Benefits of River Use & Protection

The National Park Service was quite interested in understanding and documenting the benefits of W&S Rivers in general and along a “Partnership River” like the Farmington, in particular. We examined river benefits in two ways—objectively in terms of consumer surplus

Table 4.—Users' motivations for visiting the river

Reason	Anglers ¹	Floaters	Overall	<i>n</i>	Difference
To enjoy the view along the river	4.2	4.2	4.2	217	<i>p</i> =.623
To experience the Farmington River	4.2	4.0	4.2	219	<i>p</i> =.197
To be close to nature	4.2	3.9	4.1	208	<i>p</i> =.102
To relax physically	3.9	3.8	3.9	220	<i>p</i> =.594
To help reduce built-up tension	3.8	3.6	3.7	217	<i>p</i> =.368
To use my equipment	3.9	2.3	3.6	216	<i>p</i> =.000
To experience solitude	3.6	2.7	3.4	215	<i>p</i> =.000
To get exercise	2.9	3.1	2.9	214	<i>p</i> =.267
To think about my personal values	3.0	2.5	2.9	210	<i>p</i> =.024
To bring back pleasant memories of a prior visit	3.0	2.7	2.9	210	<i>p</i> =.281
To be on my own	3.1	1.9	2.8	216	<i>p</i> =.000
To be with the members of my group	2.4	3.8	2.7	200	<i>p</i> =.000
To do something with my family	2.2	4.3	2.7	201	<i>p</i> =.000
To reach a specific destination	2.6	2.1	2.5	208	<i>p</i> =.063
To learn about the countryside	2.4	2.5	2.4	203	<i>p</i> =.558
To share my skills and knowledge with others	2.4	2.1	2.3	209	<i>p</i> =.179
To be away from the family for a while	2.1	1.3	1.9	214	<i>p</i> =.000
To meet new people	1.7	1.6	1.7	212	<i>p</i> =.489
To test my endurance	1.6	1.9	1.6	208	<i>p</i> =.073
To take risks	1.4	2.1	1.6	209	<i>p</i> =.000
To show others I can do it	1.5	1.7	1.6	208	<i>p</i> =.296
To be creative (sketching, painting, taking pictures, etc.)	1.4	1.4	1.4	204	<i>p</i> =.909

¹All means are based on 5-point scales with 1 being “not at all important” and 5 “extremely important”

and the economic impacts of river recreation use, and then based on users' perceptions of various potential river benefits.

As noted above, the total annual use of the W&S segment of the West Branch was estimated to be 77,400 visits in 2001. This estimate was extrapolated from our on-site counts and is consistent with NPS estimates from the earlier W&S Study Report for the segment (U.S. Department of Interior 1995). The river's recreation use generated an estimated local economic impact of \$3.63 million for the five river towns and supported 63 jobs. These results were based on detailed expenditure data supplied by respondents in the mail survey and analyses

of those data using the MGM2 model software (Stynes et al. 2000). A 2001 consumer surplus of \$9.45 million was estimated for recreation using a travel cost model (TCM). Consumer surplus is essentially a measure of total social value and represents the aggregate value to users over and above what they actually have to pay for their trips.

In addition to the objective measures of river benefits just noted, users were also asked to rate the importance of 10 broader benefits the West Branch might have for its surrounding communities. Table 6 summarizes these results by presenting the 10 benefits in rank order from the ones considered to be the most important to respondents overall to those considered to be least

Table 5.—Users' attitudes regarding river resources and management

Variable	Anglers ¹	Floaters	Overall	<i>n</i>	Difference
Importance of wild and scenic river designation for the Farmington?	6.5	5.9	6.4	230	<i>p</i> =.005
Overall satisfaction with the Farmington River?	5.8	5.4	5.7	224	<i>p</i> =.025
Appropriateness of the “partnership model” for managing the Farmington River and the lands along it?	5.5	5.3	5.4	225	<i>p</i> =.416
Effectiveness of current wild and scenic river protection efforts?	5.3	5.4	5.3	224	<i>p</i> =.727
Overall satisfaction with the corridor of land along the Farmington River?	5.2	5.1	5.2	224	<i>p</i> =.582
Effectiveness of current protection efforts on the lands within 100 feet of the river?	4.9	5.3	5.1	223	<i>p</i> =.139

¹All means are based on 7-point scales with 1 being “not at all” and 5 “extremely” important, appropriate, or effective depending on the question. Satisfaction means are based on 7-point scales with 1 being “very unsatisfied” and 5 “very satisfied”

important. The top three benefits (each having very high overall rankings of greater than 6 on the 7-point scale) were all related to the natural resources of the river and its corridor. They were the importance of “fish and wildlife habitat,” “aesthetic beauty,” and “preserving undeveloped open space.” These were the most important benefits for both the anglers and floaters, although the order of their top three varied slightly for the two groups. The overall benefit rankings were consistent with what people told us in an open-ended question were the things they liked best about the Farmington River and the corridor of land along it. These were: high quality water, beauty, scenery, and good fishing.

The rank orders of the importance of the 10 benefits were nearly identical for the two groups. There were only three of the 10 benefits where the anglers' and floaters' importance scores were significantly different. The anglers felt the fish and wildlife and aesthetic benefits of the river were significantly more important than did the floaters, while the floaters felt the public recreation opportunities provided by the river were more important than did the anglers.

Although none of the ratings were below the scale midpoint of 4 overall, there were two that were

considerable less important to both groups. “Tourism and business development” and “traffic reduction and transportation alternatives” were the two least important overall and with each of the two groups separately.

4.0 Conclusions

The West Branch of the Farmington is a popular destination for river-based recreation in Connecticut and the region. This 14-mile Wild and Scenic segment is used for a wide range of activities and experiences, most commonly fishing, tubing, and boating. And although the Farmington's anglers and floaters are quite different in terms of many of their user characteristics, trip characteristics, and experiences, there are a number of things that these two different user groups have in common. These similarities are most striking in terms of their motives for taking their river trips and the benefits they feel the river generates for its surrounding communities. The common element in these similarities seems to be the importance of the river's high quality protected natural resources. This applies to both the river itself as well as the corridor of land through which it flows.

National Wild & Scenic Rivers are designated to protect and enhance “outstandingly remarkable” resource values

Table 6.—Users' perceptions of possible river benefits

Potential Benefit	Anglers ¹	Floaters	Overall	<i>n</i>	Difference
Fish and wildlife habitat	6.7	6.1	6.5	228	<i>p</i> =.002
Aesthetic beauty	6.4	6.2	6.4	229	<i>p</i> =.257
Preserving undeveloped open space	6.4	6.1	6.3	230	<i>p</i> =.046
Community pride	5.6	5.7	5.6	223	<i>p</i> =.670
Public education about nature	5.4	5.5	5.4	225	<i>p</i> =.641
Public recreation opportunities	5.2	5.8	5.3	227	<i>p</i> =.011
Health and Fitness	4.9	5.4	5.0	223	<i>p</i> =.062
Access for persons with disabilities	5.0	4.8	4.9	225	<i>p</i> =.669
Tourism and business development	4.4	4.4	4.4	224	<i>p</i> =.860
Traffic reduction and transportation alternatives	4.3	4.4	4.4	222	<i>p</i> =.776

¹All means are based on 7-point scales with 1 being “not at all important” and 7 “extremely important”

including their free-flowing conditions. Apparently these values are, in fact, important to Farmington users. In general, the anglers and floaters are both visiting because of things that depend on high quality protected natural resources. The most important reasons that both the anglers and the floaters report for coming to the river, overall, are enjoying the views, experiencing the river itself, and being close to nature. Similarly, when asked to rate the importance of 10 broader public benefits the West Branch might have for surrounding communities, three benefits were rated as extremely important overall: fish and wildlife habitat, preserving undeveloped open space, and aesthetic beauty. These were the highest rated benefits regardless of whether the users were fishing or floating. Based on users' high levels of satisfaction and the fact that so many are returning to the river frequently, many users are apparently getting what they come for including these natural resource-based river experiences and benefits.

We were able to confirm the importance of high quality natural resource to Farmington users by examining users' actual current and intended trip demand under different hypothetical trip cost and river quality conditions. Analyses showed that average trip demand (as well as economic benefits) would be more adversely impacted by a natural or a man-made disaster that would impair the quality of the West Branch of the Farmington than

they would be by trip cost increases. Our conclusion is that protecting and conserving the West Branch's natural, scenic, and recreational resources are the most critical contributors to the recreation experiences of users.

The more objective results regarding river benefits were also enlightening. The economic impact of \$3.63 million for the five river towns with 63 jobs supported by West Branch recreation is actually quite large considering its rural nature and that only about 10 percent of visits involve overnight stays. The total economic benefit (consumer surplus) to recreational users of \$9.45 million was also quite substantial. Both of these estimates should be encouraging and useful for local river managers and supporters.

Unexpectedly, over half of all users were unaware that the West Branch was a federally designated Wild and Scenic river. This in spite of the fact that the river has been part of the National Wild & Scenic Rivers System since 1994 and that there are occasional signs near the river indicating that the West Branch is designated Wild and Scenic. It may be that users are not seeing these signs or hearing about designation at all. It may also be that the information about designation does not seem relevant or important to them at the time and does not, therefore, make any lasting impression. What is interesting is that respondents felt W&S designation was quite important

overall once they were provided with the survey's brief description of W&S designation and its intended protections. This lack of awareness among users seems to be a missed opportunity for managers and river advocates to build support for the Farmington and other existing and potential W&S river segments.

5.0 Implications for Wild & Scenic River Management & Policy

The results of this research have a number of potentially important implications for local as well as national river managers and advocates. Foremost among these is the confirmation that conserving, and in some cases enhancing, the quality of free flowing rivers and their river corridor resources should be the highest priority for river authorities. The most important reasons people visited the West Branch were enjoying the views, experiencing the river itself, and being close to nature and the most important benefits they felt the river has for surrounding communities were fish and wildlife habitat, aesthetic beauty, and preserving undeveloped open space. All of these, to varying degrees, relate to the natural resource conditions of the rivers and their corridors. National Wild & Scenic Rivers are designated to protect and enhance "outstandingly remarkable" resource values including their free-flowing conditions. Apparently these values are in fact important to users. They are visiting because to things related to the high quality protected natural resources and are appreciating these values. From the perspective of river users, it is clear that river managers and planners should boldly emphasize protection of high quality resource values and diligently monitor the quality of natural resources and user experiences.

The findings that natural resource values are so important to users of a "partnership river" might be surprising to some who are most familiar with more remote public land rivers that flow through more pristine environments. It might be that the natural resources of the Farmington were so important to users because the Farmington is the most natural river available in a relatively developed region. It might also be that the fly fishing in the Trout Management Area and tubing experiences available along the lower end of the segment are unique in other ways not captured by this research. Regardless, it does

seem important that a diversity of rivers be considered and, where appropriate, added to the National Wild and Scenic Rivers System.

It is worth noting too, that in the opinions of river users themselves, "tourism and business development" and "traffic reduction and transportation alternatives" were the two least important benefits the river has for surrounding communities. This was the case for our entire sample overall and as well as for both the anglers and the floaters separately. This is not to say that the river does not generate these benefits. It is simply that the tourism and transportation related benefits are much less important to users than are other benefits, such as those natural resource related ones noted above. Generating increased local economic impacts and other tangible benefits are often very important to local chambers of commerce and government officials and, hence, frequently touted by planners, advocates, and managers. This study suggests that we all need to keep in mind that such benefits are often very unimportant to the users themselves, however. This implies that river advocates and managers need to consider the perspectives of their various audiences and that this is especially important to remember when attempting to build support for river protection among river users themselves.

The finding that so many river users overall were unaware that the West Branch was designated Wild and Scenic was surprising and somewhat troubling. The W&S designation for the West Branch appears to be very beneficial and once users understand what designation is and what it is for, they are quite supportive and agree that it is important. The river attracts users who are seeking experiences consistent with the purposes of the National Wild and Scenic Rivers Act and appears to be generating benefits consistent with the Act as well. Yet less than half of the users there knew the river was designated as Wild and Scenic. This indicates that everyone involved needs to do a better job of informing users about Wild and Scenic River designations. This is true not only related to whether or not a particular segment is designated, but also regarding what W&S designation is and what it is intended to accomplish. This need to better inform users is a responsibility not only for the National Park Service, but for all local and national river partners.

The finding that there is a core of frequent visitors who have been visiting for many years, and that most users are highly satisfied with their river experiences, may also offer opportunities for river managers and advocates. There is likely a group of very committed users who feel strongly enough about these rivers that they would be willing to become active volunteers or partners in other ways. Either directly or through nonprofit partners, river managers and advocates should be able to tap some of this enthusiasm for ongoing volunteer efforts ranging from peer education, resource monitoring, and resource management.

And finally, further research should directly compare “partnership rivers” with more traditional “public land rivers.” This study began to explore the differences and similarities between these two types of resources and their associated management approaches, but more attention is needed. This is particularly true because of the many river segments that are potential additions to the National Wild and Scenic Rivers System that are not located in large areas of public land and would require a partnership approach if designated.

6.0 Citations

- Bowker, J.M., English, B.K. and Cordell, H.K. 1999. **Projections of Outdoor Recreation Participation to 2050.** In Cordell, K. & Betz, C., eds. 1999. *Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends*. Champaign, IL: Sagamore Publishing, pp. 324-350.
- Cordell, H.K., Betz, C.J., Green, G.T. and Mou, S. 2004. **Outdoor Recreation for 21st Century America.** State College, PA: Venture Publishing.
- National Park Service. 2004. **River Mileage Classifications for Components of the National Wild & Scenic Rivers System.** Available at <http://www.nps.gov/rivers/wildriverstable.html> Site accessed 7/3/04.
- National Park Service. 2004b. **What is a Partnership Wild and Scenic River?** Partnership River News, issue 2, p. 8. Washington, DC: National Park Service Partnership Rivers in the Wild and Scenic Rivers Program.
- Passante, J. 2001, July. **Farmington River Hatches.** Fly Fisherman, 22 (5): 48-51, 60-62.
- Stynes, D.J., Propst, D.B. Chang, W.H., and Sun, Y.Y. 2000. **Estimating National Park Visitor Spending and Economic Impacts: The MGM2 Model.** East Lansing: Michigan State University, Department of Parks, Recreation and Tourism Resources.
- U.S. Department of the Interior. May, 1995. **Farmington River Wild and Scenic Study: Final Report.** Division of Rivers and Special Studies. National Park Service, North Atlantic Regional Office. 145 pps.

Impact Monitoring

A CLASSIFICATION OF MAJOR SPRINGS IN FLORIDA USING THE WATER RECREATION OPPORTUNITY SPECTRUM FRAMEWORK

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Abstract

For the past three decades, many researchers and land managers have utilized the recreation opportunity spectrum framework (ROS) to provide a diverse set of recreational opportunities to users. However, the concepts on which ROS is based and most of the previous applications of ROS, have not addressed the water-based land management and research. Water recreation opportunity spectrum (WROS) that reflects a more applicable approach for water-based planning should be taken. The purpose of this study was to help water-based recreation resource managers protect spring-based resources and provide diverse recreational settings. The purpose of this project was to use Florida Springs as a case study in WROS with the addition of a spatial component. The main objectives were to classify major springs in Florida into water recreation opportunity spectrum, to identify currently available recreational classes of major springs, and to identify patterns of spatial distribution of major springs by using GIS. The results indicated that there are some differences in the distribution of overall physical, social, and managerial conditions, along with different classes of recreational opportunities. The findings showed that rural developed, rural natural, and semi-primitive settings were considered to be currently available regarding overall inventory of major springs in Florida with some patterns of spatial distribution. Based on these findings, it is recommended that recreation managers and planners may consider providing other unavailable recreational settings to meet diverse needs of recreationists.

1.0 Introduction

Since the 1970s, planners in the primary U.S. land management agencies realized needs for a framework that would better combine outdoor recreation with management planning of diverse use. Those strong needs of recreation planning have been more accelerated since the initiation of several significant statutes such as Renewable Resources Planning Act in 1974, Federal Land Policy and Management Act in 1976 (Driver et al. 1987), and National Forest Management Act in 1976 (Heywood et al. 1991). As a result, Clark and Stankey (1979), other researchers and federal land management agencies introduced the recreation opportunity spectrum (ROS) framework and planning system that would help recreationists to seek and achieve opportunities for activities, settings, experiences, and benefits by participating in recreation. Many empirical studies about the land-based ROS concept interrelating activities, settings and experiences have been done in the past two decades (Floyd & Gramann 1997; Heywood 1991; Manfredo et al. 1983; Shafer & Hammitt 1995).

Although some ROS studies (Harris et al. 1985; Williams & Knopf 1985) have been conducted around water-related areas, much of the concept and application of ROS have not been addressed directly in the water-based land agencies and research. A more applicable approach for water-based planning should be taken. That is, the water recreation opportunity spectrum (WROS) should be discussed more widely in the current literature. WROS is not a new concept, but modeled after the ROS. Aukerman and Haas (2004) have proposed that WROS is a new tool tailored to water resources such as reservoirs, lakes, rivers, bays, wetlands, costal zones, and marine protected areas and helps understand the type and location of six types of water-related recreation opportunities from urban to primitive. WROS allows recreation resource managers to inventory and map those classes to help visitors and recreationists decide where to recreate. The basic concept of WROS could contribute to planning of recreational use to meet diverse recreational opportunities and protect natural resources.

There are approximately 500 springs in Florida managed by four different Water Management Districts. Florida's springs play a considerable role contributing the economy of Florida as well as providing outdoor recreation opportunities for millions of residents and tourists. They also provide a good habitat for a variety of species (Carter & Pearch 1985; Stamm 1994). However, the recreational use and development of springs has grown rapidly. Major water-based recreation activities such as swimming, motorboating, canoeing, kayaking, tubing, and fishing tend to be heavily contingent upon springs-based natural resources. Highly developed recreational facilities and intense natural resource modification appear at some springs. These changes could have negative environmental impacts on the ecosystem of the springs. In this sense, there is clearly a need for a study designed for water-based recreation managers to plan management strategies of inventorying recreational settings, deciding types and location of recreational opportunities, and ameliorating negative environmental impacts on spring resources. Therefore, the purpose of the study was to help water-based recreation resource managers protect spring-based resources and provide diverse recreational settings. The main objectives of the study were to classify major springs in Florida into the water recreation opportunity spectrum, to identify currently available recreational classes of major springs, and to identify patterns of spatial distribution of major springs based on a WROS map. This study also sought to generate recommendations for management and future research.

2.0 Methods

2.1 Study Areas

A spring is a point from which natural groundwater discharges into surface water bodies. Recent geologists estimate that there are nearly 700 springs in the State of Florida, representing perhaps the largest concentration of freshwater springs on Earth (Florida Department of Environmental Protection 2003). Springs in Florida provide a good habitat for a variety of species, offer outdoor recreation opportunities to residents and visitors,

Table 1.—Setting attributes and indicators

Setting attributes	Indicators of settings
Physical	Degree of public access*
	Degree of natural resource modification*
	Degree that natural resource dominate an area*
Social	Degree of crowding*
	Degree of diverse recreation activities
	Degree of suitability of activities
Managerial	Degree of protection*
	Degree of safety*
	Number of developed facilities
	Facility development

*Data sources were mainly from FDEP websites

and contribute the economy of Florida (Carter & Pearch 1985; FDEP 2003; Stamm 1994). For instance, hundreds of manatees living at the most northerly edge of Florida are dependent on springs for warm water refuges to survive winter seasons. Twelve state parks that were named for springs attracted over two million visitors in 2003. Water, especially in the headsprings, is remarkably clear and has long been an attraction to local residents and visitors.

2.2 Data Sources

For physical, social, and managerial attributes, this study used multiple sources compiled from published books, published reports, Florida Department of Environmental Protection (FDEP) websites, and other online sources in 2004. FDEP websites provide setting indicators that describe degrees of public access, natural resource modification, crowding, protection, etc. (Table 1). Descriptions of those degrees are very similar to those for the continual recreation opportunity spectrum although characterized by a subjective point of view. Other published sources helped identify types and number of activities and facilities in this study.

For geographic patterns, geographic data of Geographic Information Systems (GIS) shape files that locate the spring areas were obtained from the FDEP geological survey team and Florida Geological Data Library (FGDL) website in 2004. After acquisition of the data, a

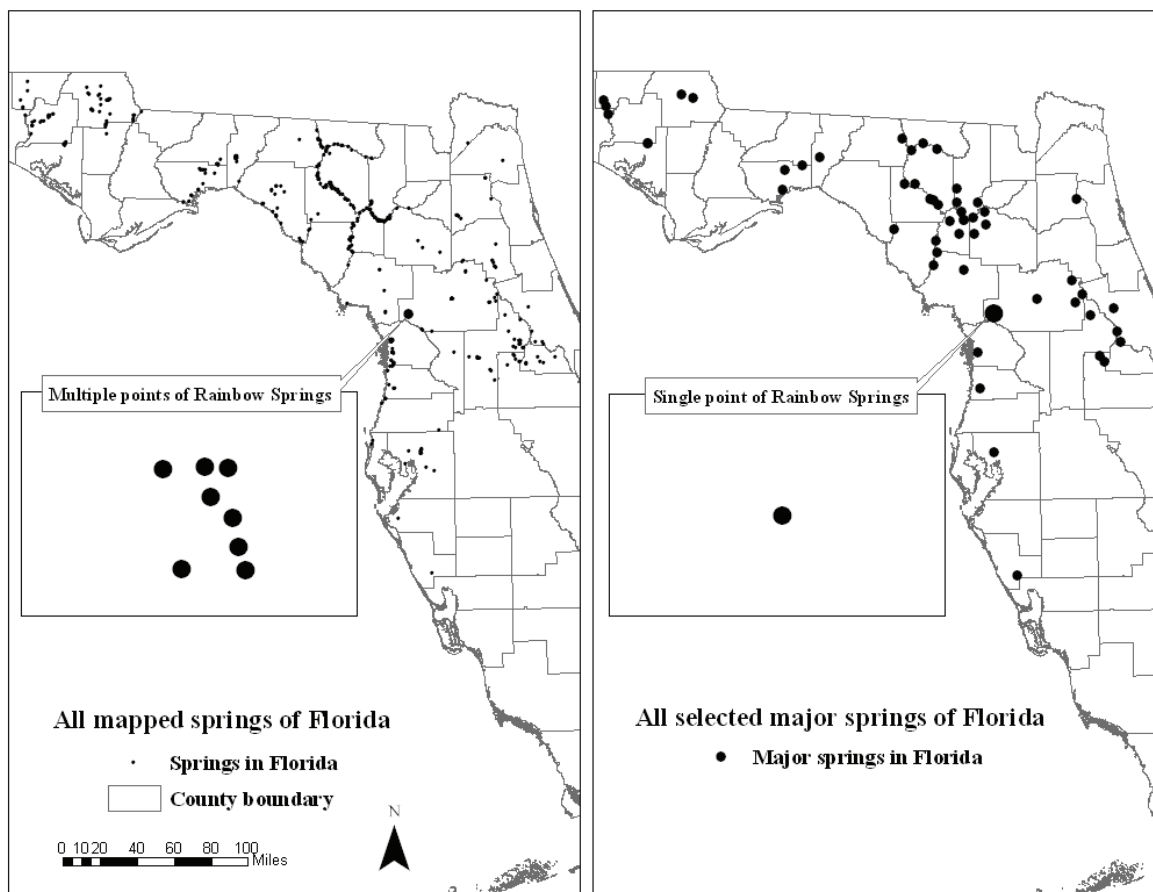


Figure 1.—All mapped springs and major springs in Florida

total of 462 springs' sites in Florida, including 1st to 4th magnitude and unknown springs, were mapped out as a point using ArcGIS software, version 8.3 (Environmental Systems Research Institute, 2003). Even multiple points of a spring were mapped (Fig. 1). In this study a total of 53 springs described as 1st to 3rd magnitude were considered to be major springs with a single point of a spring (Fig. 1). Other springs were not included in this study because setting indicator data was not available in multiple sources.

3.0 Results

As Table 1 shows, physical, social, and managerial setting attributes were used in this study to determine WROS of major springs in Florida. Indicators for physical setting consisted of public access, natural resource modification, and domination of natural resource surrounding spring areas. Indicators used for social setting were crowding, diverse recreation activities, and suitability of activities. Indicators used for managerial setting were protection,

safety, number of developed facilities, and level of facility development. Setting attributes and indicators of WROS are similar to those of ROS, but as stated earlier, WROS indicators focus more on water resources.

For continual degrees of each setting indicator a 6-point scale was also used in this study to be consistent with six gradations of water-based recreation opportunities in WROS users' guidebook proposed by Aukerman and Haas (2004). Those six types are:

1. urban,
2. suburban,
3. rural developed,
4. rural natural,
5. semi-primitive
6. primitive.

As an example of physical indicator degrees, public access ranges from "an excellent condition" in an urban setting

Table 2.—WROS physical inventory

Physical indicators of settings	Urban (1)	Suburban (2)	Rural developed (3)	Rural natural (4)	Semi-primitive (5)	Primitive (6)
Public access	Excellent	Very good	Good	Strenuous	Very strenuous	Extremely strenuous
Natural resource modification	Completely degraded	Very degraded	Fairly degraded	Fairly pristine	Very pristine	Extremely pristine
Natural resource dominating an area	Poor	Fair/fine/good	Good-very good	Very good	Very good-outstanding	Excellent or outstanding

Adopted from WROS users' guidebook proposed by Aukerman and Haas (2004)

Table 3.—WROS social inventory

Social indicators of settings	Urban (1)	Suburban (2)	Rural developed (3)	Rural natural (4)	Semi-primitive (5)	Primitive (6)
Crowding	Heavy or crowded	Very large or heavy on warm days	Very large or heavy on warm weekends	Small or moderate on warm weekends	Very small	None
Number of diverse recreation activities	Extensive or dominant (+6)	Very prevalent or widespread (6)	Prevalent or common (5)	Infrequent (4)	Little or seldom (3)	Very little or rare (-2)
Suitability of activities		Diving	Kayaking Canoeing Swimming			

Adopted from WROS users' guidebook proposed by Aukerman and Haas (2004)

Table 4.—WROS managerial inventory

Managerial indicators of settings	Urban (1)	Suburban (2)	Rural developed (3)	Rural natural (4)	Semi-primitive (5)	Primitive (6)
Protection	Excellent or outstanding	Outstanding-very good	Very good	Very good-good	Good/fair/fine	Poor
Safety	Excellent or outstanding	Outstanding-very good	Very good	Very good-good	Good/fair/fine	Poor
Number of developed facilities	Extensive or dominant (+6)	Very prevalent or widespread (6)	Prevalent or common (5)	Infrequent (4)	Little or seldom (3)	Very little or rare (-2)
Facility development		Parking lot, marina, or dock				

Adopted from WROS users' guidebook proposed by Aukerman and Haas (2004)

to “an extremely strenuous condition” in a primitive setting (Table 2). As an example of social indicator degrees, crowding is “heavy” in an urban setting and “none” in a primitive setting (Table 3). As an example of

managerial indicator degrees, developed facilities range from “an extensive or dominant condition” in an urban setting to “very little or rare condition” in a primitive setting (Table 4).

Table 5.—Overall WROS classification

Inventory sites*	Setting attribute ratings			WROS classification (average ratings)
	Physical	Social	Managerial	
Ginnie Springs	3.0	4.6	3.0	Rural natural (3.5)
Rainbow Springs	3.0	4.4	2.5	Rural developed (3.3)
Blue Spring (Levy county)	1.5	4.7	2.6	Rural developed (2.9)
Holton Creek Rise Spring	6.0	5.7	2.5	Semi-primitive (4.7)

*Example of four sample sites; Adopted from WROS users' guidebook proposed by Aukerman and Haas (2004)

Notably, this study allowed some flexibility of coding system. For instance, if a spring area has more than 6 different recreation activities, degree of diverse recreation activities was considered to be extensive so an urban setting (1) was assigned to the spring area. Additionally, if there are less than two recreation activities available in a spring area, a primitive setting (6) was assigned to the spring area (Table 3). Coding for number of developed facilities was considered to be consistent with that for diverse recreation activities (Table 4). Furthermore, as far as suitability of recreation activities is concerned, swimming, canoeing and kayaking were considered to be appropriate from urban to primitive settings, so a primitive setting (6) was given to a spring area with those activities available. In the same manner, a middle point of rural natural setting (4.5) was assigned to diving (Table 3). Coding for facility development was also considered to be consistent with that for suitability of recreation activities (Table 4).

As Table 5 shows, to determine overall classification of Ginnie Springs as an example, once each physical indicator was assigned to a certain value of recreational class, all values of physical indicators were summed and then divided by the number of physical indicators to acquire an average of recreational classes. As a result, a rural developed setting (3.0) was considered to be available in Ginnie Springs regarding overall physical inventory. Overall social rating (4.6) and overall managerial rating (3.0) were obtained in the same way as overall physical rating. We then averaged all values of physical, social and managerial attribute ratings to

identify overall classification of Ginnie Springs as a rural natural setting (3.5). Finally, this study integrated all values of physical, social, managerial and overall inventory ratings into GIS layers of major springs in Florida.

The geographic distributions of the 47 physical inventory ratings sites are displayed in Figure 2. Suburban and rural developed settings were considered to be more active than the primitive, less developed settings. More than 35 percent of the sites appeared to be suburban and more than 30 percent were rural developed settings. In addition, same settings were more likely to appear clustered, and neighboring settings tended to be continual regarding the WROS classes. For instance, suburban and rural developed settings were adjacently located.

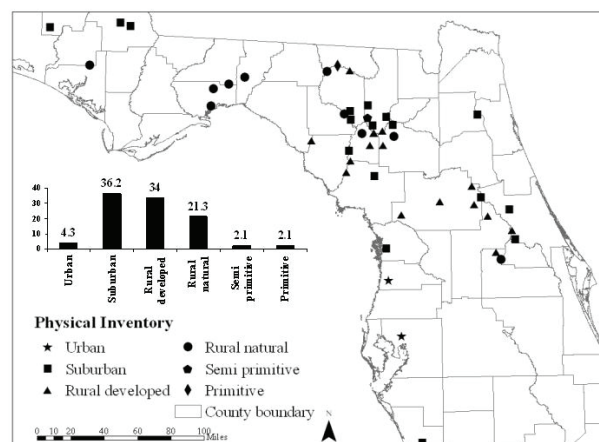
**Figure 2.—Physical inventory**

Figure 3 displays the geographic distribution of the 53 social inventory sites. Semi-primitive settings were more likely to be dominant in the study region. More than 55 percent of the sites appeared to be semi-primitive and around 30 percent rural natural settings. Rural developed and semi-primitive settings were more likely to appear evenly dispersed. Neighboring settings tended to be continual. The 53 managerial inventory sites are displayed in Figure 4. Rural developed settings appeared to be more dominant than any other setting. They represented more than 50 percent of the sites and tended to appear evenly dispersed in the study region.

The distributions of a total of 53 overall inventory sites were mapped in Figure 5. In the study region, rural developed, rural natural and semi-primitive settings were found to be currently available. Around 45 percent of the sites were considered to be rural developed, nearly 40 percent rural natural, and about 15 percent semi-primitive. Other settings such as urban, suburban and primitive settings were not available. Furthermore, rural developed settings were dispersed mostly in northern and central Florida regions, rural natural settings dispersed mostly in northern and panhandle Florida regions, and semi-primitive settings dispersed mainly in panhandle Florida regions.

4.0 Summary

In the physical inventory, suburban and rural developed settings tended to be active and those same settings more likely to appear clustered. In the social inventory, semi-primitive settings were usually dominant, while rural developed and semi-primitive settings appeared fairly evenly dispersed. The managerial inventory showed rural developed settings to be more dominant and evenly dispersed. Rural developed, rural natural and semi-primitive settings were all shown to be available in the overall inventory. In addition, rural developed settings were likely to be dispersed mostly in northern and central Florida, while rural natural settings appeared to be dispersed mostly in northern and panhandle Florida.

4.1 Management Implications

Overall, this study provided a baseline for inventorying water-based recreation resources and identifying the types of recreational opportunities available in major springs of

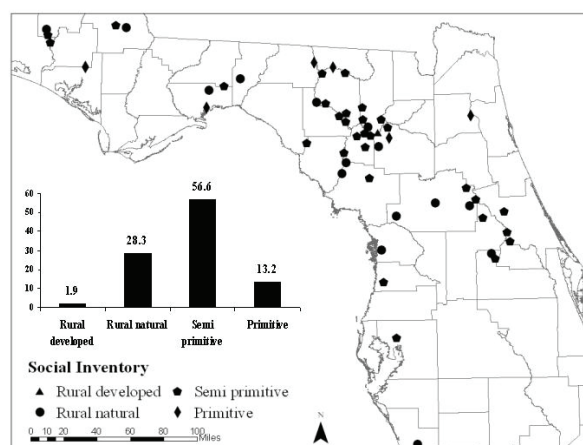


Figure 3.—Social inventory

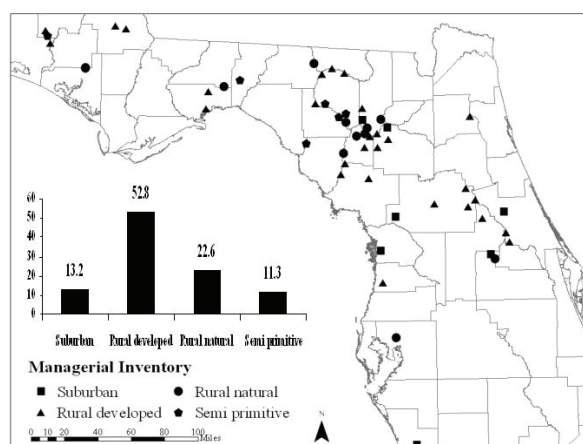


Figure 4. Managerial inventory

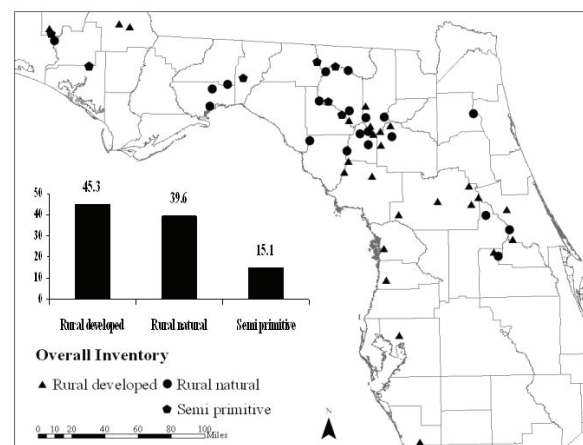


Figure 5.—Overall inventory

Florida. Based on WROS inventory results, more diverse recreation settings should be necessary for recreation managers and planners to consider providing to visitors to Florida spring sites. In other words, they should be urban, suburban and primitive settings, considering the fact that they are not currently available in major springs of Florida. This may secure quality in outdoor recreation. However, it should be noted that recreation management agencies may need more rural natural to primitive settings than urban to rural developed settings in a sense of reducing development level and protecting natural resources in major springs of Florida.

In terms of spatial distribution of recreational opportunities, recreation managers and planners should distribute diverse settings to be more evenly dispersed than being clustered in the study region. This would also assure quality in outdoor recreation that visitors and residents in Florida can have an equal access to choose from a diverse set of recreational opportunities. Regarding role of service providers, settings closer to urban settings may be allocated in private sector. Perhaps water parks may meet this need. Settings closer to primitive settings may be provided by public land agencies.

4.2 Future Research

This study obtained secondary data from multiple sources and used 10 setting indicators to identify what recreational classes are currently available in major springs of Florida. Limitations of this study may be related to subjective descriptions of setting indicators (e.g., natural resource modification, crowding) and a flexible approach to coding setting indicators (e.g., suitability of recreation activities). To overcome those issues and increase credibility of WROS inventory results, future research may obtain and use more setting indicators by inventorying onsite, and working closely with stakeholders and recreation resource managers.

It is more important to identify perceptions, attitudes and opinions of visitors and local communities about current and preferred physical, social, and managerial conditions in spring resource areas. This would better assist recreation managers and planners in making planning decisions to meet the needs of visitors and allocate their budgets more

appropriately. Not finding desirable situations, springs users may be displaced to other places better meeting their needs. Future research should make an effort to survey users to spring resource areas.

This study mapped overall physical, social, and managerial inventories to identify patterns of recreational classes. Future studies may include mapping each of the indicator settings for recreation managers and planners to better manage recreational water resources. For instance, degree of natural resource modification should be mapped for water-based agencies to understand its distributions and to consider taking management actions where the modification condition is extensively heavy. In mapping each setting indicator, it would be helpful to use GIS layers of land use and land cover classification for management decisions.

5.0 Citations

- Aukerman, R., and Haas, G. 2004. **Water recreation opportunity spectrum users' guidebook**. Denver Federal Center, Lakewood, Colorado: USDI, Bureau of Reclamation.
- Burch, W.R., Jr. 1964. **Two concepts for guiding recreation management decisions**. *Journal of Forestry*, 707-712.
- Carter, E.F., & Pearch, J.L. 1985. **A canoeing and kayaking guide to the streams of Florida**. Birmingham, AL: Menasha Ridge Press.
- Clark, R.N., and Stankey, G.H. 1979. **The recreation opportunity spectrum: A framework for planning, management, and research**. USDA Gen. Tech. Report PNW-98, pp. 1-32. Portland, OR: Pacific Northwest Forest and Range Experiment Station.
- Driver, B.L., Brown, P. J., Stankey, H.H., and Gregoire, T.G. 1987. **The ROS planning system: Evaluation, basic concepts, and research needed**. *Leisure Sciences*, 9: 201-212.
- Environmental Systems Research Institute. 2003. **ArcGIS software (version 8.3)**. St. Charles, MO: Environmental Systems Research Institute.

- Florida Department of Environmental Protection. 2004. **Florida springs**. Retrieved January 20, 2004, from <http://www.dep.state.fl.us/springs>
- Florida Geological Digital Library. 2004. **GIS data of springs**. Retrieved February 15, 2004, from <http://www.fgdl.org>
- Floyd, M., and Gramann, J. 1997. **Experience-based setting management: Implications for market segmentation of hunters**. *Leisure Sciences*, 19: 113-128.
- Harris, C., Driver, B., and Bergersen, E. 1985. **Do choices of sport fisheries reflect angler preferences for site attributes?** In G. H. Stankey and S. F. McCool, (compilers) *Proceedings-Symposium on Recreation Choice Behavior* (USDA Forest Service Gen. Tech. Report INT-184, pp.46-54). Ogden, UT: Intermountain Research Station.
- Heywood, J.L. 1991. **Visitor inputs to recreation opportunity spectrum allocation and monitoring**. *Journal of Park and Recreation Administration*, 9(4): 18-30.
- Heywood, J.L., Christensen, J. E., and Stankey, G. H. 1991. **The relationship between biophysical and social setting factors in the recreation opportunity spectrum**. *Leisure Sciences*, 13: 239-246.
- Manfredo, M., Driver, B., and Brown, P. 1983. **A test of concepts inherent in experience-based setting management for outdoor recreation areas**. *Journal of Leisure Research*, 15: 263-283.
- Shafer, C., and Hammitt, W. 1995. **Congruency among experience dimensions, cognitive indicators, and coping behaviors in wilderness**. *Leisure Sciences*, 17: 263-279.
- Stamm, D. 1994. **The springs of Florida**. Sarasota, Florida: Pineapple Press, Inc.
- Williams, D., and Knopf, R. 1985. **In search of the primitive-urban continuum-The dimensional structure of outdoor recreation settings**. *Environment and Behavior*, 17: 351-370.

EVALUATING THE EFFECTIVENESS OF WILDERNESS CAMPSITE MONITORING AT LINVILLE GORGE WILDERNESS

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Abstract

Effective monitoring programs are essential for wilderness managers to provide opportunities for high quality recreational experiences while preserving natural conditions in federally designated wilderness, as mandated by the Wilderness Act of 1964 (PL 88-577). Ecological impacts as a result of recreational use in the form of litter, development, tree damage, vegetation loss, and campsite area proliferation are ongoing challenges for managers. Onsite investigations were conducted to determine whether the monitoring instruments and baseline data used by managers of the Linville Gorge Wilderness, located in the Pisgah National Forest of North Carolina, were effective and reliable benchmarks for establishing a credible monitoring program. In order to evaluate the reliability and validity of both instruments used and monitoring program implemented, ground-truthing was implemented as a method to compare and to validate existing/legacy data to current onsite conditions and number of total campsites identified. Results indicate that the current campsite monitoring program is not adequate and a number of campsites have exceeded standards identified in the Land and Resource Management Plan.

1.0 Introduction and Literature Review

Since the passing of the Wilderness Act of 1964 (PL 88-577), wilderness managers have been challenged by the “compromising of mandates” in their effort to provide opportunities for high quality recreation experience opportunities while preserving natural conditions in federally designated wilderness. It was apparent early on, that the Wilderness Act of 1964 was not enough to preserve and protect the ecological and human values

for which these areas have been designated (Krumpe 2000). For example, the National Management Forest Act of 1974 further safeguarded incompatible usage on wilderness lands, imposed inventory and environmental assessment requirements, and increased the integration of public input in the wilderness planning process.

While myriad management actions have been implemented to address varying degrees of ecological impacts as a result of recreational use, there is often little information as to the degree of these impacts, how campsite and trail conditions have changed over time, and whether the management actions implemented to address them have been effective (Flood 2001). Impacts in the form of litter, improper disposal of human waste, degradation of water quality, erosion from extensive human use, tree damage, and vegetation impacts are ongoing challenges for managers. Because each area differs in its biological composition, unique problems, and types of visitor use, management approaches need to be specifically selected for each area (Cole 2000). Various planning frameworks have been designed in order to better manage protected areas by addressing concerns of carrying capacity and biophysical impacts while meeting the recreational demands of a diversified public. Two of the most widely used include the Recreational Opportunity Spectrum (ROS) and Limits of Acceptable Change (LAC). Researchers (Stankey et al. 1985; Cole and others 2001) have long held that effective monitoring is an essential component of any successful wilderness management program.

Landres et al. (2001: 4) define monitoring as “the process of repeatedly measuring an attribute over time to determine changes in location or condition.” Since monitoring is not required by law, not all wildernesses acquire this information to establish baseline data; even though any wilderness that receives overnight use probably needs monitoring (Cole 1989). Landres et al. (1994) identify that three primary purposes for wilderness monitoring are to improve: 1) wilderness management; 2) the acquisition and application of knowledge from wilderness; and 3) the assessment and status of trends

in the NWPS. While conducting a national evaluation of baseline data for all wildernesses in the National Wilderness Preservation System for the 20th century, Cole and Wright (2003) found that the distribution of data (trail, campsite, and social) is inequitable across the nation as well as the four agencies that manage wilderness. Only five wildernesses were identified as having complete baseline data. Linville Gorge Wilderness was identified as one of these.

2.0 Methods

This pilot study was conducted to assess baseline data on campsites and to determine the feasibility of using Linville Gorge Wilderness (LGW) as an area for research. LGW is located in the Mountain Region of western North Carolina. The roughly 13,000 acres of wilderness is part of the Pisgah National Forest and is managed by the Grandfather Ranger District. The rugged terrain ranging in elevation from 1,300 to 4,120 feet, with poor accessibility, was deemed too difficult and costly to log. Hence, the area is comprised of over 95 percent old growth/pre settlement dense hardwood, pine and hemlock forests. Over 30,000 visitors a year travel to LGW to view the scenery, day hike, backpack, rock climb, fish, and hunt. Twenty-two system trails, comprising 39 miles, attract hikers and backpackers throughout the year.

The study sample consisted of 15 campsites within the wilderness boundary. A campsite was identified as any site where human impacts were evident, provides a large enough area to place a tent, and impacts may or may not be centered around a fire ring. The indicators (vegetative loss, soil disturbance, fire scars, damage to overstory trees, and any development such as primitive or constructed seats) were used to measure the degree of impact caused by recreational use.

The first step conducted to investigate the monitoring program was the inspection and evaluation of existing legacy data for LGW located at the Grandfather Ranger District office. This included available campsite data, the implemented inventory system, and current and past management actions. Researchers developed an evaluation plan designed to determine the effectiveness of the inventory instrument, the reliability of past data

collection procedures, and the application of data to the management program. In order to evaluate campsites and compare existing campsite conditions to management standards, an inventory form adapted from the Bob Marshall Wilderness Complex Campsite Inventory (2002) was used. The indicators used to evaluate campsites were vegetation cover, vegetative loss, mineral soil increase, tree damage, root exposure, development, cleanliness, number of social trails, camp area and barren core camp area.

3.0 Results and Discussion

The current inventory instrument used at Linville Gorge Wilderness was determined to be inadequate and the inventory parameters used in the monitoring program were neither measurable nor objective. For example, the classifications for amount of litter were identified as light, medium, and heavy with no further definitive explanation for these parameters. To ensure accurate monitoring occurs over time, parameters must be defined and quantified. A lack of validity was identified based on a lack of comparison of current campsite conditions to a surrounding area with no impact, typically referred to as a control site. This site should be nearly identical in all physical attributes (soil type, vegetation type, topography and aspect) and used to make accurate measurements and comparisons of resource conditions over time. There was also a lack of relationship between the indicators of quality evaluated at a campsite and the objectives that the area was managed for. For example, one indicator to manage campsite densities at Linville Gorge Wilderness is by the number of campsites per mile, relative to its characterization as a primary, secondary, or tertiary trail. Although, the indicator used to evaluate campsite densities on the U.S. Forest Service inventory instrument is the number of campsites within view of one another. Locations and distance between campsites is an important indicator when evaluating opportunities for solitude while visitors are at their campsites. This important information was missing from the legacy data which is just one example indicative of the overall inadequacies of the pre-collected legacy data as well as the lack of reliability and limitations of the monitoring instrument. Moreover, no definitions for the indicators of quality were available, and methods for calculating indicators, such as mineral soil exposure were nonexistent. In order to have

reliable monitoring protocols over a period of years, it is important that the parameters are identified and measured as accurately and consistently as possible. LGW also lacks a classification system to determine the overall impact of each campsite which is critical for directing management attention to the area(s) with the highest overall impact.

In an attempt to develop accurate and reliable monitoring protocols, measurements were collected for each indicator of quality and compared to management standards to determine if current conditions were within acceptable limits for the area. Five of the 15 campsites exceeded the barren core standards of 200 square feet (Figure 1).

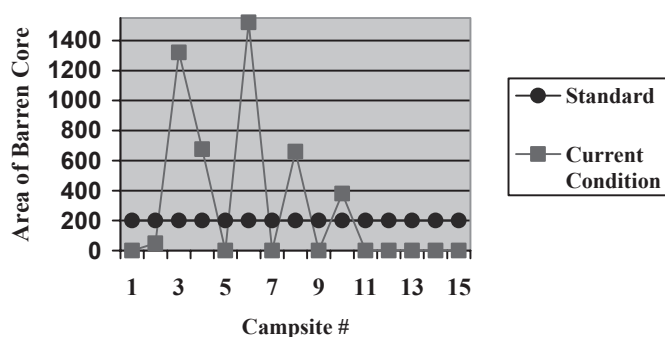


Figure 1.—Barren core area

Eleven of the 15 campsites exceeded standards of no more than four damaged trees (Figure 2). Seven campsites were identified on the 1.5-mile Pine Gap Trail, exceeding the standard of one campsite per mile. The Land and Resource Management Plan require a field survey be conducted every 2 years. The most recent survey was conducted in 2003, and prior to this, in 1990, although data for this year was unavailable. Moreover, limited visitor information is being provided at access points as required by the area management plan.

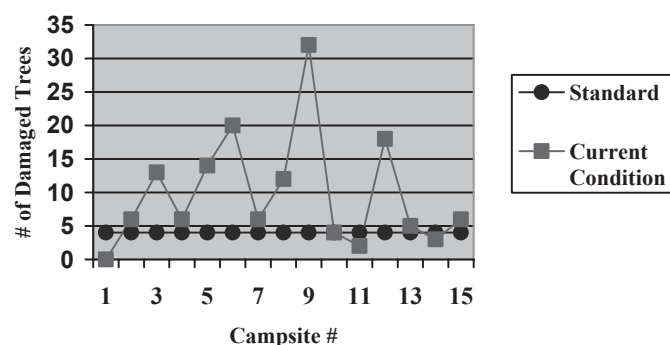


Figure 2.—Tree damage

Results indicate that the number of campsites inventoried within a given area has a direct relationship to the degree of impact. Furthermore, the number of campsites has increased within the area inventoried from six campsites in 1990, to 12 campsites in 2003, and 15 campsites in 2005 (Figure 3). LGW does currently have a permit system in place that limits use by individuals to 3 days and 2 nights and one weekend visit per month; group size is limited to 10.

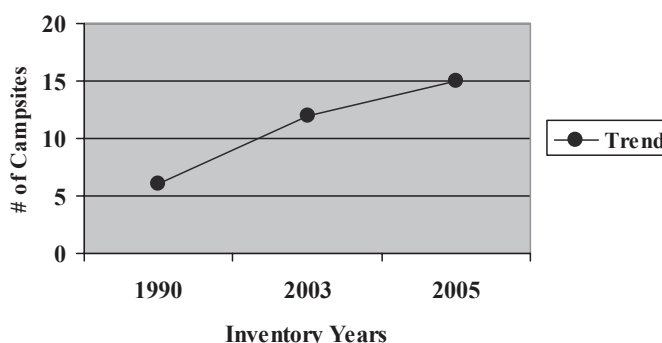


Figure 3.—Trend in campsite impacts

4.0 Conclusion

An effective monitoring program is essential in any management program as it identifies accurate indicators, provides information on existing resource conditions, alerts managers when acceptable standards have been reached or exceeded, provides feedback on the effectiveness of implemented management actions while improving the overall effectiveness of the wilderness management program. Results indicate that LGW lacks an effective campsite monitoring program. Although a number of problems have been identified and potential solutions presented to address them, there may be more to this story than meets the casual observer/researcher.

Upon broader investigation, some of the problems facing managers of the LGW may be the result of multiple barriers which may include: lack of funding, lack of trained personnel, lack of effective planning to implement a quality LAC planning process, and not embracing the importance of monitoring. Recommendations to managers include: improving monitoring procedures, restructuring the permit system, and implementing a campsite restoration program to address campsites exceeding the acceptable standards for Linville Gorge Wilderness.

5.0 Citations

- Cole, D.N. 1989. **Wilderness campsite monitoring methods: a sourcebook**. Gen. Tech. Rep. INT-259. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.
- Cole, D.N. 2000. **Biophysical impacts of wildland recreation use**. In W.C. Gartner & D.W. Lime, eds., Trends in outdoor recreation, leisure and tourism (Chap. 23). New York, NY: CABI Publishing.
- Cole, D.N., and Wright, V. 2003. **Wilderness visitors and recreation impacts: baseline data for twentieth century conditions**. Gen Tech Rep RMRS-GTR-117. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Flood, J.P. 2001. **The effectiveness of wilderness restoration: perceptions of visitors and managers**. Unpublished Doctoral Dissertation, University of Minnesota, Twin Cities.
- Krumpe, Edwin E. 2000. **The role of science in wilderness planning. A-state-of-knowledge-review**. In D.N. Cole, S.F. McCool, W.T. Borrie, J. O'Loughlin (Comps.), Wilderness science in a time of change conference-Wilderness visitors, experience, and visitor management (RMRS-P-15-Vol-4). U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Landres, P., Cole, D.N., and Watson, A. 1994. **A monitoring strategy for the national wilderness preservation system**. In J.C. Hendee and V.G. Martin, eds. International Wilderness Allocation, Management, and Research (pp. 192-197). Fort Collins, CO: International Wilderness Leadership (WILD) Foundation.
- Landres, P., Spilldie, D.R., and Queen, L.P. 2001. **GIS applications to wilderness management: potential uses and limitations**. Gen. Tech. Rep. RMRS-GTR-80. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Stankey, G., Cole, D., Lucas, R., Peterson, M., and Frissell, S. 1985. **The limits of acceptable change (LAC) system for wilderness planning**. General Technical Report INT-176. Ogden, UT: USDA Forest Service, Intermountain Forest and Range Experiment Station.
- Wilderness Act of 1964. Pub. L. No 88-577 § 2, 78 Stat. 890.

DEVELOPING A RESEARCH PROCESS TO MONITOR SOCIAL CONDITIONS IN FIVE ADIRONDACK PARK PROTECTED AREAS

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Abstract

Research on wilderness and protected area visitors supports the importance of social conditions to the experiences of visitors. Researchers from SUNY-ESF and Cornell University and managers from the New York State Department of Environmental Conservation developed a methodology for starting to implement the Limits of Acceptable Change (LAC) planning process to be used in the Adirondack Park of New York. The methodology is based on visitor studies conducted in five management areas in 2003 and 2004. Visitor use level data was collected with trail counters and trailhead registers. Visitor characteristics and preferences were collected with personal interviews in the field and follow-up mail questionnaires. Information from visitors in the five areas was used to: identify and measure perceived social and resource problems encountered on the trip; perceptions of visitor use levels; and preferences for management of visitor behavior. A recommended approach to researching social conditions was developed for these five areas. This approach can help wilderness and protected area managers using the LAC planning process to design social indicators and monitoring programs and to identify appropriate management actions.

1.0 Introduction

The Adirondack State Land Master Plan (APSLMP) was designed to guide preservation, management, and use of the public Forest Preserve lands by the Adirondack Park Agency (APA) and the New York State Department of Environmental Conservation (NYSDEC). The main goal

of the plan was to ensure protection and preservation of the natural resources of the Forest Preserve lands. The management of recreational visitation on the Forest Preserve lands was directed to achieve “a place for human use and enjoyment, so long as the resources in their physical and biological context as well as their social or psychological aspects are not degraded” (APSLMP 2001, p. 1).

The APSLMP directs the NYSDEC to develop, in consultation with the APA, individual management plans for each unit of land under DEC’s jurisdiction classified in the master plan (NYSDEC 2004). Each individual Unit Management Plan (UMP) must conform to the guidelines and criteria set forth in the master plan. These Umps are required to contain an inventory and assessment of the physical, biological, and social attributes and carrying capacity of each area. This study selected five areas based on the recommendations from the NYSDEC and APA staff to develop a process to support use of the Limits of Acceptable Change (LAC) as an approximation of a carrying capacity assessment.

Social conditions are important to visitors and their experiences (Manning 1999). Social conditions affecting the psychological and social satisfactions and benefits of a visitor experience include the perceptions and reactions of visitors to: contact with other individuals and groups; evidence of other users and their activity impacts on the resource; resource conditions; and managerial activities and conditions. Solitude or physical and sound separation from other visitor groups is one example of social conditions for wilderness areas (Dawson 2005). Other examples include but are not limited to: user density, visitor-to-visitor contact, evidence of littering, conflicts between different visitor activities, and presence of managerial facilities and infrastructure.

While the importance of social conditions is highlighted in this paper, it is emphasized that the resource and managerial conditions need to be included with social conditions to properly manage these Adirondack areas. All three types of conditions are not only important to

the visitors and their recreation experiences; they are also required under the APSLMP.

2.0 Site Descriptions

The five areas selected for study were meant to be a broad representation of the geographic region, different types of use and users, density and seasonality of use, resource and managerial conditions. Those five areas were: McKenzie Mountain Wilderness, West Canada Lake Wilderness, William C. Whitney Wilderness, Bog River Management Area, and the northern portion of Lake George Wild Forest.

McKenzie Mountain Wilderness area (MMWA) is located in the northeast corner of the Adirondack Park. There are numerous trailheads to the 37,616-acre wilderness area providing public access from all sides. MMWA is composed of steep and rugged terrain and the elevation ranges from 1,463 to 4,869 feet with excellent views from several mountain tops. Spring, summer, and fall use in this area include day hiking, rock climbing, hunting, and fishing; winter use is cross country skiing.

West Canada Lake Wilderness area (WCLWA) is located in the southwest corner of the Adirondack Park. Access to several trailheads within this wilderness area is limited to travel on seasonally maintained dirt roads. The elevation ranges from 1,390 to 3,899 feet. This 156,695-acre wilderness area contains 168 bodies of water including numerous pond, lakes, and streams. Eleven major trails provide access to destinations. Recreational activities in this area in the spring, summer, and fall months include hiking, backpack camping, hunting, and fishing.

William C. Whitney Wilderness (WCWW) is primarily known for the canoeing and kayaking opportunities on Little Tupper Lake and Lake Lila. This is the most recently designated wilderness in the Adirondack Park. This 20,560-acre area also has ponds with connecting streams in low forested hills. Spring, summer, and fall use in this area include canoeing/kayaking, hiking, camping from watercraft, hunting, and fishing; winter use is cross country skiing.

Bog River Management Area (BRMA) is most well known for canoeing and kayaking opportunities on the Bog River and access into Lowe's Lake and the Five Ponds Wilderness. This 36,100-acre area is a central access point for a mixture of roadside camping activities, primitive travel activities, and motorized use on gravel roads. Spring, summer, and fall use in this area include canoeing/kayaking, hiking, camping at roadsides and from watercraft, hunting, and fishing; winter use is snowmobiling.

The Lake George Wild Forest (LGWF) includes 62,000 acres with a northwestern and a southeastern portion on each side of Lake George. Only the northwestern portion is the subject of this study. Tongue Mountain peninsula in Lake George is the most well known and heavily used portion of the study area. Spring, summer, and fall use in this area is predominantly day hiking with motorized use on gravel and dirt roads that access small lakes and ponds.

3.0 Purpose of Study

The objectives of this study are to: 1) aid UMP planners in developing baseline visitor use data in support of Umps for each of the study areas (Connelly and others 2005; Peters and Dawson 2005); and 2) help establish a prototype for monitoring and implementation of visitor use assessments of carrying capacity within other units of the Adirondack Forest Preserve.

4.0 Methods

The authors adopted the Limits of Acceptable Change (LAC) as the planning framework for assessing carrying capacity since it has been widely used by federal agencies in protected areas and wilderness for this purpose (Hendee and Dawson 2002). Data collection methods were developed for later implementation of the LAC planning process in the Adirondack Umps (Table 1).

Research was conducted on recreational use in MMWA, WCLWA, and BRMA from May through November of 2003 and in WCWA and LGWF from Memorial Day through Labor in 2004 (Connelly and others 2005; Peters and Dawson 2005). The processes utilized to gather data for this study are outlined below:

Table 1.—10-Step LAC process and supporting research on social conditions.

LAC Process	Corresponding research inputs from five area studies
1. Define goals & desired conditions	
2. Identify area issues, concerns and threats	Focus Group meetings
3. Define acceptable conditions	Visitor surveys – social conditions
4. Select indicators of resource and social conditions	Visitor surveys – social conditions
5. Inventory existing social and resource conditions	Visitor surveys – social conditions Visitor use estimates
6. Specify standards for each indicator	
7. Identify alternative opportunity classes	
8. Identify management actions	Visitor surveys – preferences for management actions
9. Evaluate & select alternative	
10. Implement actions and monitor	

1. Focus group interview sessions were held in four of the study areas (not LGWF) with several APA and DEC staff members and up to 12 individuals who were invited to represent the diversity of visitor activities and uses in that area. The focus groups were used to scope the questions on visitor activities, equipment, problems, management preferences, and other factors to be used in the mail survey of visitors.

2. Estimations of recreational use with active infrared automated trail counters at all public access points in the five study areas. The trail counters recorded the date and time that the users entered or exited the wilderness area during the study dates in 2003 or 2004. Active infrared trail counters (sender and receiver units) were

installed within 50 feet on each side of the trails providing access to the areas studied. The counters were located and maintained to reduce any mechanical or systematic error (Yuan et al. 1995; Watson et al. 2000). Each set of counters was visited weekly to download the previous week of data for final analysis (Peters and Dawson 2005).

3. Brief field interviews were conducted systematically at all major public access points to the areas during the study time frame. Interview questions were used to determine use characteristics and trip related experiences and contact information was obtained to conduct a follow-up mail survey.
4. A mail survey was sent to all individuals interviewed to obtain more in-depth information about their trip- related experiences and their preferences for social, resource, and managerial conditions (Connelly and others 2005). Up to three reminders letters were sent as necessary to obtain a high response rate.
5. Visitor data were collected at NYSDEC self-registration sites at major trailheads to these five study areas to gain information regarding date, group size, length of stay, and trip destination. Not all public access sites have self-registration kiosks. Registers provide valuable information about use in the area; however, signing is voluntary so participation was a concern.

Using these combined techniques increased the validity of the data collected. Analysis and comparison of the results of each technique provided additional detailed information about recreational users in the areas studied, allowing for more management implications to be made regarding use in the area.

5.0 Results and Discussion

The field interview process and subsequent mail surveys to visitors in the five study areas were managed with follow up reminders to yield high survey response rates.

Table 2.—Number of mail surveys sent following field interviews in the five Adirondack management study areas and response rates during 2003 or 2004.

Study Area and Year of Survey	Number of Mail Surveys	Mail Survey Response Rate
McKenzie Mountain Wilderness—2003	74	74%
West Canada lake Wilderness—2003	94	80%
Bog River Area—2003	218	82%
Lake George Wild Forest (north)—2004	252	73%
Whitney Wilderness—2004	295	80%

The number of visitors sampled varied from 74 to 295 and response rates were from 73 percent to 82 percent (Table 2).

To illustrate the results obtained from this research process, we will present some of the information for the WCLWA through all phases and methods of research employed. The focus group results of the WCLWA discussion about issues, threats and concerns were characterized in four focus group observations:

- Increasing visitor use may be affecting perceptions of crowding and solitude experienced
- Some campsites and lean-to's maybe located too close together and may not be separated enough for solitude opportunities
- Poor trail conditions and locations may require relocation and trail closures
- Cedar Lakes dam is failing and may need to be removed or repaired, changing the water based experiences available

The focus group discussion about potential social indicator concepts to investigate was summarized in four observations:

- Visitor feelings about meeting other groups and large groups
- Evidence of previous users and impact on enjoyment

- Degraded resource conditions visitors saw and detracted from their experience
- Problems experienced by visitors on last trip due to other behavior of others

The focus group discussion about potential management actions to address some social conditions was summarized in five management concepts:

- Increase information and education program efforts
- Limit size of visitor groups
- prohibit or limit certain recreation uses and activities
- Change the number or type of access or camping facilities
- Reduce evidence of visitor resource impacts

The estimates of visitor use showed a variable temporal distribution of use in 2003 based on trail counter event dates and frequencies of visitor traffic for the WCLWA (Fig. 1). The x-axis dates represent Saturday of each week and the y-axis represents the number of events recorded per day. Seasonally, use levels were lower early in the season with use picking up mid-summer and dropping back off as summer temperatures decline and ending with fall backpacking and hunting. Weekends, especially with good weather, received higher levels of use than that of weekdays.

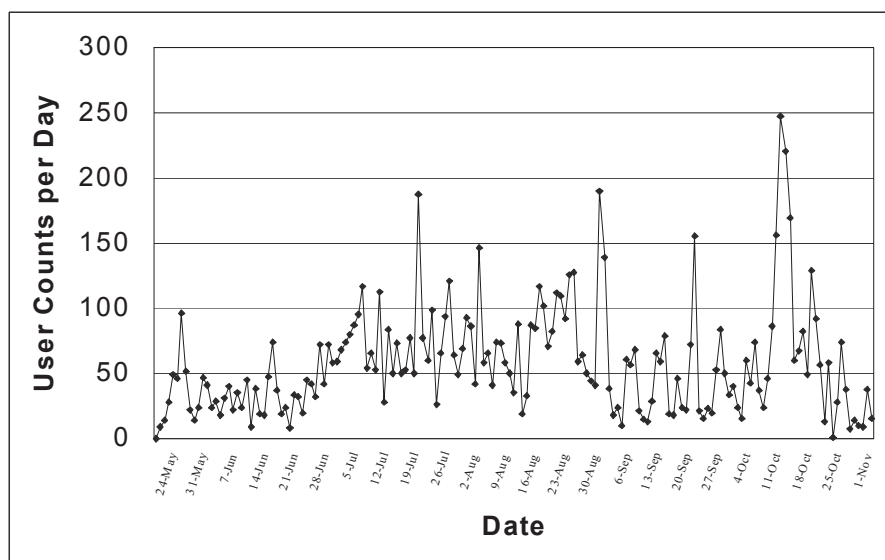


Figure 1.—West Canada Lake Wilderness temporal distribution from trail counter data.

The estimates of visitor use showed an uneven spatial distribution of use based on trail counter event dates and frequencies of visitor traffic and field interview data for the WCLWA (Fig. 2). More heavily used trail segments are represented by wider lines to show the relative amount of use during the weeks of the study in 2003.

From 7 to 23 percent of visitors interviewed reported experiencing a problem while on their trip in the WCLWA in 2003. Three of the top five problems experienced related to the number of other visitors: finding an unoccupied campsite (22.9%); encountering large visitor groups (12.9%); hearing noise from motorized equipment (11.1%); finding limited trailhead parking (9.9%); and seeing unattended or unleashed pets (7.0%).

From 16 to 66 percent of visitors reported they experienced a social or resource condition that detracted from their satisfaction during their trip in the WCLWA in 2003 (Table 3). Visitor perceptions of the resource impacts of other visitors (e.g., litter on ground) on the WCLWA were reported more often than were negative experiences from the number of other visitors (e.g., number of visitors near campsite) or their group size.

The percentage of visitors reporting too many other visitors (from 10 to 13%) was based on their perception of social conditions that they experienced during their trip in the WCLWA in 2003 (table 3). Notable was that from 13 to 38 percent of respondents reported that the number of other visitors and size of groups did not matter to them and they could neither report it as too many, neutral, or too few other visitors.

Table 3.—Percentage of visitors who reported they experienced a condition that detracted from their satisfaction during their trip in the WCLWA in 2003.

Conditions that could detract from trip experience in study area	Experienced not at all	Experienced a little	Experienced a lot
Litter on ground	33.9	42.9	23.2
Damaged or cut trees	43.1	35.3	21.6
Campsites with reduced vegetation due to use	56.9	31.4	11.8
Trails worn by heavy use	71.4	28.6	0.0
Number of groups near campsite	75.0	19.6	5.4
Number groups on trail	79.4	17.6	2.9
Inappropriate disposal of human waste	81.8	11.4	6.8
Many side or braided trails	82.0	16.0	2.0
Number groups 10 or more	84.3	3.9	11.8

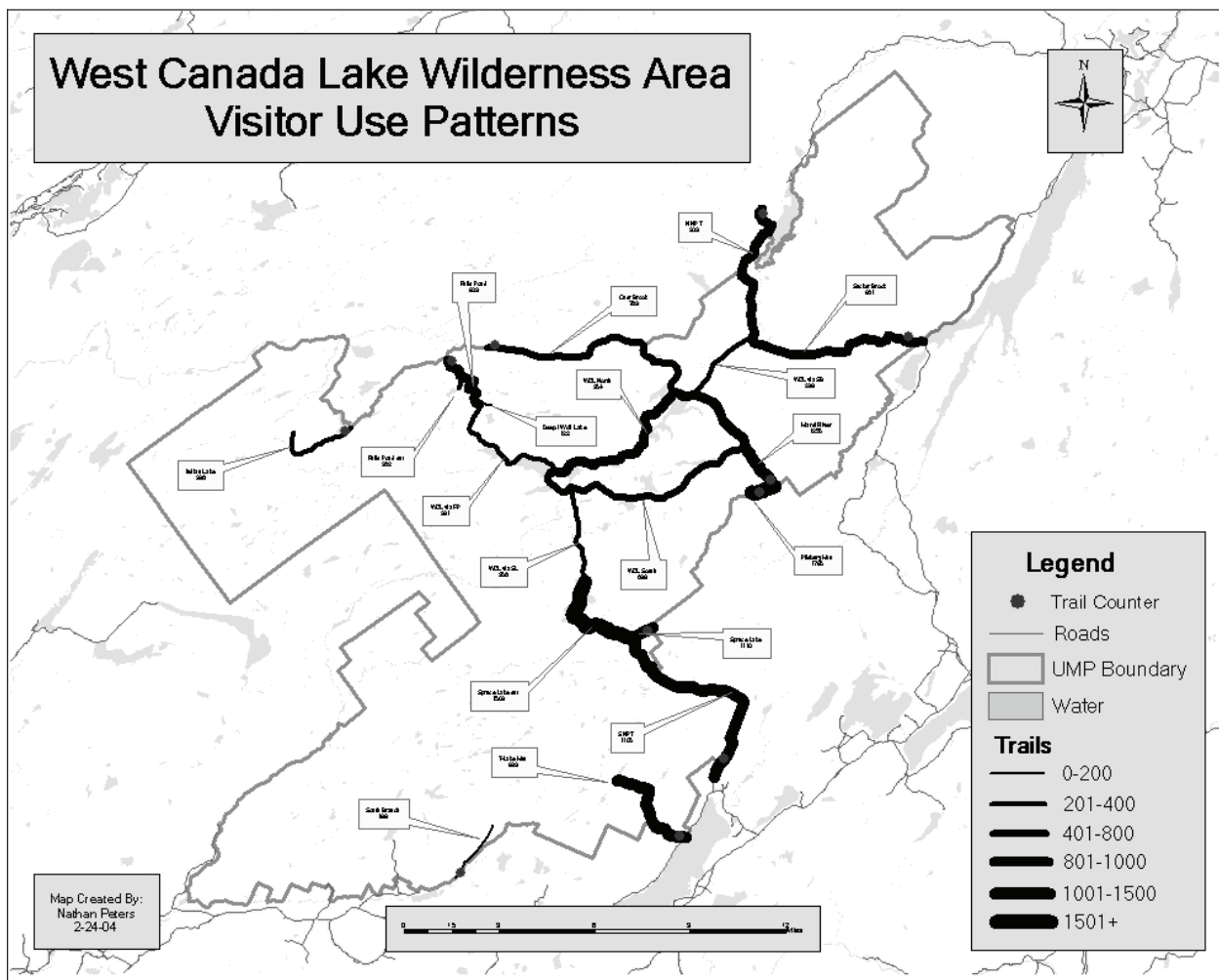


Figure 2:—West Canada Lake Wilderness spatial distribution from trail counter and interview data.

Table 4.—Percentage of visitors reporting their perception of conditions that that they experienced during their trip in the WCLWA in 2003.

Situation	Too few	About right	Too many	Did not matter
Number of hiking groups on trails	5.8	71.4	10.0	12.9
Number of camping groups near my site	5.1	55.9	11.9	27.1
Number of groups of 10 or more	7.5	41.5	13.2	37.7

Over 50 percent of visitors reported favoring four potential future management actions in the WCLWA (Table 5) to reduce visitor-related problems: limit camping group to eight persons; limit hiking and boating groups to 15 persons; bulletin boards for information;

and increase law enforcement. Visitors supported an additional two potential management actions in the WCLWA or they were neutral to the potential actions to reduce visitor-related problems: revegetate campsites and install pit toilets. A majority of visitors opposed three

Table 5.—Percentage of visitors reporting favoring, opposing, or neutral to potential future management actions in the WCLWA.

Potential Management Action	Favor	Neutral	Oppose
Limit camping group to 8 persons	65.8	24.7	9.5
Limit hiking and boating groups to 15 persons	58.3	26.4	15.2
Bulletin boards for information	58.3	26.4	15.3
Increase law enforcement	52.1	26.0	21.9
Revegetate campsites	47.3	30.6	22.2
Install pit toilets	37.5	27.8	34.7
Camping only at designated sites	34.7	15.3	50.0
Develop new lean-tos	23.6	26.4	50.0
Develop new campsites	18.1	23.6	58.4

potential management actions in the WCLWA to reduce visitor-related problems: camping only at designated sites; developing new lean-tos; and developing new campsites.

6.0 Conclusions

The data collected for these five studies are beneficial to the APA and the NYSDEC Unit Management Plan planners, as it will aid in developing the Limits of Acceptable Change planning process (Table 1). The baseline information collected emphasizes the areas that are currently receiving higher levels of use and the areas in which staffing and fiscal support may be needed for future management to maintain or improve the conditions of the resource and the recreational experience.

As illustrated with the WCLWA data, these studies conducted in 2003 and 2004 have highlighted that visitors are affected by evidence of the impacts on resources from other visitors and the number of other visitors present during their trip. The types of indicators that would monitor the social conditions found in these studies could be identified through the use of this research approach and be a direct aid to the implementation of the entire LAC process.

Since social conditions are important to visitors and their experiences, we measured the perceptions and reactions of visitors to: contact with other individuals and groups; evidence of other users and their activity impacts on the resource; resource conditions; and managerial activities and conditions. While the importance of social conditions is the central theme of this manuscript, we emphasize that the resource and managerial conditions need to be included with social conditions to properly manage these Adirondack areas. All three types of conditions are important to the visitors and their recreation experiences and are required under the APSLMP.

7.0 Acknowledgments

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8.0 Citations

Adirondack Park Agency; New York State Department of Environmental Conservation. 2001. **Adirondack Park State Land Master Plan**. Raybrook, NY.

- Connelly, N.A.; Dawson, C.P.; Brown, T.L. 2005. **Comparative analysis of visitor attitudes and preferences in three Adirondack management areas.** In K. Bricker (editor), Proceedings of the 2004 Northeastern Recreation Research Symposium, March 28-30, 2004 at Bolton Landing, NY. USDA Forest Service Gen. Tech. Rep. NE-326. Newton Square, PA. Pp 231-239.
- Dawson, C.P. 2005. **Monitoring Outstanding Opportunities for Solitude.** International Journal of Wilderness 10(3): 12-14.
- Hendee, J.C.; Dawson, C.P. 2002. **Wilderness management.** North American Press. Fulcrum Publishing, Golden CO.
- Manning, R.E. 1999. **Studies in outdoor recreation: search and research for satisfaction (second ed.).** Oregon Univ. Press, Corvallis, OR. 374 p.
- New York State Department of Environmental Conservation. 2004. **Unit Management Plans for State Lands.** March 15, 2004. "<http://www.dec.state.ny.us/website/dlf/publands/ump/index.html>."
- Peters, N.; Dawson, C.P. 2005. **Estimating visitor use and distribution in two Adirondack wilderness areas.** In K. Bricker (editor), Proceedings of the 2004 Northeastern Recreation Research Symposium, March 28-30, 2004 at Bolton Landing, NY. USDA Forest Service Gen. Tech. Rep. NE-326. Newton Square, PA. Pp 164-171.
- Watson, Alan E.; Cole, David N.; Turner, David L.; Reynolds, Penny S. 2000. **Wilderness recreation use estimation: A handbook of methods and systems.** Res. Pap. RMRS-GTR-56. Ogden, UT: USDA, Forest Service, Rocky Mountain Research Station.
- Yuan, Susan; Maiorano, Brian; Yuan, Michael; Kocis, Susan M.; Hoshide, Gary T. 1995. **Techniques and equipment for gathering visitor use data on recreation sites.** 2300-Recreation, 9523-2838-MTDC. Missoula, MT: USDA, Forest Service, Technology and Development Program.

Management Presentations

MANAGING VOLUNTEERS: DEVELOPING AND IMPLEMENTING AN EFFECTIVE PROGRAM

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Abstract

This paper is designed to help professionals in the Park and Recreation field as well as other organizations to identify the essential components of a sound volunteer program. The manual discusses volunteerism by addressing three core questions: Why should an organization manage volunteers? Where should an organization begin with the volunteer program process? And, what are the essential components of a volunteer program? This paper provides the basic foundation needed to develop and maintain a quality volunteer program. Beginning with a simple definition of volunteering, essential areas will be covered for developing and properly managing a volunteer program. All successful volunteer programs should begin with a needs assessment, have established goals and objectives, a sound risk management plan, clearly written volunteer job descriptions, marketing/recruitment plans, as well as retention and recognition guidelines to strengthen the volunteer program and ensure its longevity.

1.0 Introduction

Informal social control theories have suggested that voluntary service gradually draws a person to virtue. This can be further examined from the perspective of Tocqueville (1835) who posits that “by dint of working for one’s fellow citizens, the habit and taste for serving them is at length acquired” (p.197). Volunteers do play a vital role in many areas of the leisure service profession by providing essential work and know-how, which has become a considerable monetary advantage. Because

of today’s dwindling financial resources, the prudent development of a volunteer labor force has become essential. Most recreational professionals that have planned projects or events understand that they could not have been successful without the work, knowledge, and time donated by volunteers.

1.1 Volunteer Management Defined

Volunteer management has become a specialized form of personnel management. Today’s volunteer workforce is generally more highly motivated, better educated, more skilled, and more professional than in previous decades. Volunteers have now placed a greater value on the quality of life and the commitment to rebuilding and regenerating their communities. Recreational professionals working with volunteers must be able to operate efficiently and effectively. The future development of the recreation and park profession will be dependent on management, marketing, and information technology systems that can successfully implement a volunteer workforce. In addition, technical tools and built-in assessments as well as recognition and evaluation systems are also needed.

1.2 Why Manage Volunteers?

Productivity, high performance, positive attitudes, and good morale, result from an effective volunteer management system. Fischer and Schaffer (1993) define volunteering as, “the act of freely helping others without regard to financial and/or materialistic gain” (pg. 13). The services that volunteers provide on a daily basis create an atmosphere of continuous learning and sets precedents for future recreation and park professionals. For example, in 1927 Jane Adams influenced not only her neighborhood with the development of the Hull House, but provided a nation-wide standard for the treatment of people (Ilsley 1990). Volunteers often serve as a primary link between the consumers and the organization, making the training and management of volunteer personnel essential. Moreover, it is equally important to have properly trained professionals who know how to work with volunteers to create an atmosphere of productivity for the organization as well as the volunteers who freely

provide their services. Quality volunteers enable paid professionals to devote more of their time to performing needed functions vital to the survival of the organization (Lauffer & Gorodezky 1977).

2.0 Methods: Begin with a Needs Assessment

Before recruitment and interviews are conducted for volunteers, a needs assessment must be implemented. This process is vital to ensuring that the organization's needs are being addressed in an effective and efficient manner. A needs assessment distinguishes differences between the knowledge, skills, and abilities (KSAs) or capabilities people possess and those they need to acquire to do their job effectively (Learning and Development Training (n.d.) Retrieved August 6, 2004, from http://www.faa.gov/ahr/super/learn/training_needs.cfm). The needs assessment provides the company with training, information and other vital learning tools necessary to plan and budget for volunteers. Identifying potential learning opportunities and developing strategies helps the organization achieve its goals while reducing liability. The information gathered from the needs assessment is used to plan the next phase of education and continuous learning for volunteers and staff. A needs assessment often takes on different methods. The inquiry begins by interviewing recreation and park directors, managers, superintendents, and program supervisors in an attempt to understand their positions and future expectations. Additional program and facility surveys may be conducted to determine how volunteers will potentially enhance program implementation. Also, a taskforce can be used to determine the frequency and level of volunteer assistance that is needed. After completing the needs assessment the data must be analyzed, interpreted, and shared with the administrators who will make the ultimate decisions.

2.1 Developing Goals and Objectives

After completing the needs assessment, goals and objectives must be developed. Goals can be defined as the overall suggestions of how volunteers will function in the broad scope of the organizational plan. The objectives are the specific, yet simplistic strategies that are used to obtain the organizational goals. The goals and objectives assist in the planning and evaluation phase of volunteer

recruitment (Retrieved August 6, 2004, from <http://www.msu.edu/course/aec/806/syllabus/notes7.htm>).

2.2 Stages of Plan Development

To begin the process, activity plans need to be developed in an effort to accomplish program objectives. In essence, the objectives should drive the activity plans as well as programmatic outcomes. Several criteria should be considered when preparing activities. They need to include accommodating for a variety of learning styles, identifying needed resources (e.g., personnel, community, financial and technological resources), and be based upon participant needs (Khalil 1991). Every organization must have a functional administrative plan. An administrative plan is the basic principle which shapes the characteristics of an organization. Organizations that are successful at volunteer management develop clear directives while recognizing limitations. With this in mind, consideration must be given to program administration to ensure the successful delivery of the volunteer program. Effective planning of a volunteer program demands that administrative systems are put in place. Typical elements of program administration include the following: Policies and procedures; a financial plan for the program; adequate staffing; meetings that devise program strategy and development; and, distribution of reports. Similar to the survival of the fittest phenomenon, recreation and park organizations must compete with each other for resources.

2.3 Designing a Program Evaluation

Evaluation is an important process of program planning and has a direct correlation to the effectiveness of program goals and objectives. Evaluation can be defined as the assessment of a volunteer's performance in relationship to identified strengths and weaknesses as observed by the supervisor. Moreover, the evaluation gathers information to measure the achievement of program goals as it relates to volunteer performance. Evaluation may also be used to accomplish the following: Identify and examine program growth; validate, increase, or verify program worth; provide acknowledgment of program accomplishments; build integrity within the organization and surrounding community; provide precedence for future planning as seen by expenses and time requirements; and support the board in deciding a plan of action (Khalil 1991). Evaluation is designed to provide the organization with

data that will explain the following: How will volunteers impact the organization's relationship with consumer markets? Also, how will the volunteer program promote cost effective strategies for the organization? Equally important is the recognition that both organizational focus and the type of information being gathered determine the methodology of implementing the evaluation. After completing a survey phase, a written plan of work detailing the evaluation objectives and range is very important. One should begin by gathering information on the reasons for evaluation, and rank the information in order of importance. Before moving to the next step, an agreement must be reached, among the individual(s) responsible for the program, using the evaluation priorities. The next step is to determine what data needs to be collected and collect it efficiently. For each objective, the evaluation must state the desired outcomes to be measured, the data sources, and method of data collection. The desired outcome may relate to change in program participants, such as improving self image, improving income, and learning new skills. It may also relate to changes at the program level, such as depth of program or level of recipient satisfaction.

2.4 Report Development Phase

The evaluation results should be organized in a manner that facilitates making program decisions while, at the same time, demonstrating program accomplishments. An evaluation report should be organized around program objectives that were thoroughly evaluated. The report may include a brief summary, a statement of the evaluation's purpose, evaluation methods used, results and findings (listed by objective or decision), as well as conclusions and specific recommendations. Develop a plan of action that addresses the findings of the evaluation, if such a plan is needed. Program evaluations conducted by volunteers provides valuable feedback. During the final phase of the process staff members clarify the findings, present both conclusions and recommendations, develop a draft report, request an internal review of the contents, and upon receiving feedback, the members revise and finalize the draft report.

2.5 Risk Management and Legal Considerations

Risk is often defined as a measure of known and unknown threats to achieve overall program objectives

within defined cost, schedule, and technical restraint. Organizational risk contains two components: the probability of failing to achieve a particular outcome; and the consequences of failing to achieve that outcome (U.S. DOD 2001). Safety, legal considerations, and effective and efficient services are all components of any organizations risk management plan. Administrators and volunteer coordinators may obtain proficiency in the expansion of risk management techniques by implementing a few suggested approaches to decreasing liability. This can be accomplished by first assessing the organizations current insurance policy to determine if and how volunteers are covered in the plan. Next, send the insurance holder documentation outlining possible risk management issues related to volunteers, and discuss the policies the insurance company will put in place to secure coverage for these risk areas. Volunteers should complete a waiver form that ensures they acknowledge the organizations policies and procedures with regards to safety, insurance coverage, and other liability issues. The organizations by-laws should be posted and a copy given to the volunteers. The volunteer's status (e.g., "independent contractor" vs. "normal agent") should be clearly identified prior to the volunteer beginning service. Required trainings, supervision, and disciplinary action policies should be explained verbally and provided in writing to all new volunteers prior to initiation of services. All volunteers must sign a waiver stating that they understand the policies. Volunteers handling financial documents and/or money should understand the organizations policy/procedural controls regarding the handling of money and/or valuable items. Adequate screening tools are crucial to assist in protecting the organization from lawsuits and the consumers against liability from the volunteer's actions. Such screening should begin upon receipt of the initial application. The process should include a formal interview process (with two or more disciplines involved); reference checks; and personal, employment, and criminal background record checks. During the volunteers orientation/training phase, several key areas should be addressed. They include discussing: code of conduct procedures; organizational policies and procedures; conflict resolution procedures; volunteer and staff relations, and alcohol and substance abuse policies (Khalil 1991).

2.6 Internal and External Communication

Communication is the informal network that carries messages about work and social topics. Communication skills are of rising importance due to the enormous amount of information that must presently be disseminated, consumed, evaluated, and returned or discarded (O'Hair & Friedrich 1992). The level of communication influences the general atmosphere of an organization, as well as staff and volunteer efficiency. The administration of a volunteer program requires efficient verbal and written communication skills. The articulation of the organization's philosophy, team building, the management of change, and explanation of tasks and standards, requires highly developed communication skills. Important decisions need to be made by the agency as to what types of information will and will not be provided by volunteers to the public.

3.0 Results and Discussion: Volunteer Management 101

Volunteering without a job description is like driving a car without a steering wheel; an accident is waiting to happen. A job description identifies the key areas in a volunteer's position. Starting with the most intricate facts of the organizations work area, the job description covers important tasks, techniques to accomplish the tasks, purpose and responsibilities, and future skill development obtained through training. Job descriptions have two major roles which include hiring and managing. The necessity of having a volunteer job description is directly correlated to the organization's expectations of the volunteers. Volunteers need to know what is expected of them during their service time. To maintain efficiency, the job description must reflect the goals and objectives of the organization. The volunteer job description should clearly define: what service the volunteer will be asked to perform, qualifications the volunteer must have to provide such a service, time allotment the volunteer will be required to commit, and who will be responsible for supervising the volunteer activities. And, most importantly, how much training will be needed to prepare the volunteer to carry out the task successfully? Written job descriptions serve many functions which include marketing or selling the job to prospective volunteers, are important tools for screening volunteers and to clarify supervision protocols and

evaluations, which provide a formal agreement between the volunteer and the organization as well as information about job responsibilities. This information concerning job responsibilities needs to be analyzed with care, and divided into subtasks, which can be used to develop the job description.

3.1 Volunteer Training and Orientation

A volunteer manager needs to recognize that without the commitment, dedication, and hard work of volunteers, the organization would be hampered in carrying out its mission. In order to recognize the efforts of current volunteers and to increase the knowledge and ability of volunteers, managers need to provide a sound orientation and ongoing training. A well designed volunteer training program improves a volunteer's ability to perform specific job assignments. Volunteers often need thorough training which can include learning how to complete myriad forms which range from reporting injuries to correctly logging their hours. Dekker and Halman (2003) suggest that one of the reasons that volunteer turnover may be so great is the result of receiving insufficient training. Without good training, volunteers may not be able to do their assigned jobs well or to get the intrinsic rewards they expect. In order for volunteer training to be effective it needs to focus on the attitudes, knowledge and skills required to perform specific tasks. Even though volunteers have different investments in the agency than paid staff members, every volunteer appreciates the investment of training they receive in order to make them perform better at their jobs.

3.2 Marketing and Recruitment

Once a volunteer management program has developed clearly defined job descriptions and conducted a volunteer training and orientation, they are ready to move to the next step which is marketing and recruitment. Marketing, more than any other organizational function, deals directly with volunteers as customers. Understanding, creating, communicating and delivering volunteer value and satisfaction should be at the very heart of every recreation and park organization. Gatewood, Taylor, and Ferrell (1995) define marketing as the delivery of customer satisfaction at a profit. Typically, marketing is used to attract new volunteers by promising superior value while keeping current volunteers through the

delivery of quality experiences. Sound marketing is critical to the success of every volunteer management program. Behind the entire massive network of people and volunteer programs are agencies that are competing for your volunteer's attention. Volunteer managers must create a fundamentally sound marketing plan in order to attract valuable and talented volunteers. Volunteers are an important resource for which organizations constantly compete. For organizations to grow in size and expand their services, they must ensure adequate volunteer numbers.

3.3 Marketing Process

The marketing process explores the agency's capabilities and matches them to user needs. The foundation for this process examines what the agency's purpose is within the community. Does your agency have a mission statement, or a document that outlines the purpose of the organization and defines customer service? A primary goal for any marketing plan is to contribute to the agency's mission of serving the community, whatever that community may be, as well as the local area, worldwide on the Internet, or special user groups (Retrieved August 6, 2004.<http://www.olc.org/marketing/2process.htm>). To begin the process, the agency's capabilities should be assessed with a marketing audit and an internal assessment. Knowing what your agency is capable of and the services and resources you offer, are all critical to the marketing process. List both your agency's strengths and weaknesses? Determine the marketing mix (4 Ps): product, place, price, and promotion. Learn about your users through market research. Find out what your users want from your organization. Identify services or resources you have and/or need to promote, as well as the ones you need to acquire or create. Market research takes many forms (e.g., surveys, focus groups). Results help you select a target user group (market segment) and choose a specific product to promote or a problem on which to focus.

3.4 Marketing Plan

The single most powerful marketing tool for your organization is a good marketing plan. A marketing plan is a simple one page document that specifically describes who you are, what you do, who can benefit from your services, how you plan to attract volunteers to your agency, when you plan to do it and how you plan to pay for it, are all

things that everyone in your organization, network, and client base should clearly understand. Below is a list of questions that all volunteer managers should answer when developing their marketing plan. The marketing plan should address the following questions: What are the benefits of volunteering? Why the agency needs the support of volunteers? What are the target markets? What will be demanded from the volunteers? What are the program strategies and timelines? How can the organization build and establish relationships and partnerships in the community? And, what are the best avenues for recognizing and rewarding volunteer achievements? A detailed list of programs and services are needed to support volunteer efforts. Equally important to the volunteer's success is for each volunteer to know and understand the agency's history, mission, purpose, and goals.

3.5 Recruiting Volunteers

Recruiting can be defined as getting the right person in the right job with the right skills at the right time. A volunteer program is a two-way street: it must meet the needs of both the organization and the volunteer; a place where everyone wins. Recruiting volunteers should be a process rather than a problem. Securing volunteers should be done through a total recruitment process rather than just taking the first individual who walks through the door. The recruitment of volunteers in your organization whether it is to get someone to coach a tee ball team, or run the local Special Olympics, should not be handled any differently than recruitment of a paid staff member. Following the five steps listed below can make volunteer recruitment successful. They include:

Step 1 - Define the Job: The first step in recruiting volunteers is to define the job that needs to be done. This will help ensure that the volunteer program gets the right person to fill the position. Individuals responsible for recruiting and all potential volunteers should have a clear understanding of what the job involves.

Step 2 - Determine Job Qualifications: A job description is a useful tool that lists all the qualifications needed to do the job. This step clarifies for all those involved the expectations and

requirements of the volunteer position. Furthermore, it gives volunteers an idea of the role they play in the overall goals of the organization.

Step 3 - Develop a List of Potential Candidates:

Now that you understand what the job is, and what sort of person is required to do it, you need to list potential candidates who may be able to do the job. During your next step, refer to sources such as your membership lists, other community organizations, welcome wagon, schools, community colleges, universities or places where people gather (e.g., church meetings). It would be very useful if volunteer programs require all potential volunteers to complete a "Window of Work" when they join and refer to this information when recruiting the right volunteer for the right job. The window of work can be used as a primary means of locating a special place for your volunteers within the organization. Volunteer managers should also remember to have their volunteers to occasionally update this valuable information. This simple tool can help to quickly identify individuals with particular skills, knowledge and connections.

Step 4 - Interviewing the Volunteer: This is probably the most difficult step in the process because of the fear of rejection on the part of the volunteer. However, if you have followed steps 1 to 3 of the recruitment process, then you can be assured that the person being interviewed has the potential to be the right person for the job. In most cases, people will be flattered just to be asked.

Step 5 - Appoint the Volunteer: At this point in the interview, to ensure both parties understand what has taken place, summarize any decisions and actions that have been agreed upon. It may be necessary to have a formalized agreement, signatures, or application completed at this point. Also, offer additional training and orientation if deemed necessary in completing the volunteer's work.

3.6 Volunteer Placement

Since volunteers are not paid, it is especially important to provide them with a job that is worthwhile and

rewarding. Most organizations may wish to employ a volunteer coordinator to develop job descriptions and find people to fill each position. Volunteer placement must be done effectively and efficiently to maximize the skills and abilities of each volunteer. The following is a list of key elements in the success of volunteer placement. They include matching the volunteer to the job; assigning a supervisor for the volunteer; matching the volunteer to a specific program; providing adequate and appropriate orientation and training, and also following up with an evaluation and feedback process. Placement is an extension of the screening process. Poor matches will result in dissatisfied volunteers and staff members as well as increased volunteer turnover. Volunteers who are not placed in a comfortable role can potentially hurt future recruitment efforts if they leave with a negative experience and attitude. Placement should occur within a reasonable amount of time following the interview. Remember that not all volunteers recruited, screened, and interviewed, will be appropriate for the program. The volunteer may decide that the placement is not the right match. The agency, upon gathering information from reference and background checks, may decide that it is not in their best interest to place the volunteer. It is important to be truthful with volunteers and to offer other volunteer opportunities they may wish to pursue.

3.7 Supervision of Volunteers

When volunteers are fully integrated into a volunteer program, the volunteer's supervisor will generally be the volunteer coordinator or another paid worker whose efforts are extended by the volunteer. Many paid professionals may find it difficult to supervise volunteers. This is more evident when a volunteer's assignment is ambiguous and when little thought has been given to identifying the work to be performed. Another problem occurs when a volunteer has been improperly oriented to the agency or poorly trained for the work they are expected to accomplish. Supervision of volunteers can be either task oriented, developmentally oriented, or both. Task oriented supervision focuses on getting the job done. Developmentally oriented supervision focuses on the volunteer's improvement in both skill and ability while completing the task at hand. Both orientations are needed if the volunteer is to be satisfied and to ensure that s/he is doing what is required at an acceptable

level during the volunteer experience. Other important aspects of supervision are listed as: Adequate supervision conveys the message to volunteers that they are valuable players in the organization; supervision is a form of recognition demonstrating that the service a volunteer performs is significant enough to measure how well it is accomplished; and, supervision of volunteers provides consistency in the quality of service that is delivered. Assigning a staff supervisor to volunteers creates team spirit with paid staff, thus enabling volunteers to achieve the same quality of service. The volunteer retention rate is heightened by effective supervision of volunteers. Many volunteers expect to be supervised and evaluated professionally because they have either recently retired from a paid position or currently hold a position with other companies or agencies. In addition, effective risk management for the organization is ensured by adequate supervision of volunteers. Many personnel policies that apply to the paid staff often apply to volunteers as well. Therefore, supervisors must keep volunteers informed of volunteer and client rights, liability considerations, and safety precautions and codes.

3.8 Evaluation of Volunteers

Evaluation is essential to maintaining a high quality volunteer program. Evaluations can provide the volunteer coordinator with ways of measuring how the program is progressing both on an individual and programmatic level (Keith 2003). On the individual level, evaluation is often a component of supervision. It includes regularly scheduled feedback opportunities between the volunteer and the paid staff member. Evaluations focus primarily on the performance of the individual volunteer, concerning their areas of strength and the areas that need improvement as perceived by the volunteer, the supervisor, and other paid staff. At the programmatic level evaluation focuses on the effectiveness and efficiency of the volunteer program at contributing to the organization's mission. Effectiveness measures how close the program comes to meeting its stated goals and objectives, while efficiency measures the costs associated with the program in relation to its perceived benefits. For an evaluation to be meaningful, volunteers must know to whom they are responsible and what criteria are being used to measure their performance. Both the supervisor and the volunteer should have clear standards

of performance measures agreed upon in which they base their evaluation. These performance standards should be given to the volunteer along with the job description (Ilsley 1990). When a volunteer's behavior departs from an organization's policy or is detrimental to the volunteer program, the misconduct must be addressed. First, give a verbal warning that informs the volunteer of the infraction and describes the consequences of a second incident. In the event of a second incident, a written warning should be given to the volunteer with a copy placed in the volunteer's file. If corrective action has not resulted after the second warning, disciplinary action should include releasing a volunteer from a position. The volunteer coordinator or administrator must handle dismissal of a volunteer since the volunteer was recruited, interviewed and oriented through the volunteer program. Prior to dismissing a volunteer, the coordinator or administrator should consult the appropriate administrative staff for purposes of adhering to the organization's dismissal policies. Infractions such as breaking confidentiality, opposing the policies, rules and regulations, sexual harassment, and undesirable language are examples for taking the above-mentioned steps to dismissal. Immediate dismissal may be warranted by such extreme incidents as: reporting under the influence of alcohol or drugs, any form of child abuse, sexual misconduct, threatening or physical altercation, and theft. With few exceptions, as noted above, volunteers should not be dismissed without an in-depth investigation into the specific circumstances, making certain that proof of violation of organization policies or performance standards has occurred. The volunteer may be suspended while the investigation is in process. Determine if extenuating or excusable circumstances existed and always document the findings and conclusions. Releasing volunteers should be handled fairly and with diplomacy. Do not apologize for your decision. Allow for an appeals process. Provide notification to staff and others who need to be informed that the volunteer will no longer be working with the organization. Whenever possible, conduct an exit interview to gain information about the program and organization, take measures to bring closure to the relationship and thank the volunteer, if appropriate. The interview will reduce negative feedback from filtering out into the community at large. Whether a volunteer resigns or is dismissed from an organization,

accurate records of the events must be retained to provide documentation for grievance procedures or simply to document a volunteer's work history with the organization. Volunteers should be encouraged to complete an evaluation assessing their job satisfaction and willingness to volunteer again. The volunteer coordinator should also make an effort to assess the performance of each volunteer. This information should be kept on file for future reference.

3.9 Retaining, Motivating and Recognizing Volunteers

Retaining volunteers may be even more critical than recruitment for the survival of organizations that utilize volunteers. Reliable volunteers can be counted on both by their organizations and by those who receive their services. Conversely, volunteers who quit after a short time are costly. Motivation in its simplest form is finding out what people like to do -- and can do well -- and then letting them do it. The study of what motivates volunteers is one of our oldest disciplines. The sphere includes behavior, communications, conflict resolution, perceptions, attitudes, values, interpersonal skills, leadership and much more. Investigations on motivation fill mountains of books yet findings on what moves people are still inconclusive. There are no easy answers to motivating others, but there are a few ways to inspire folks to action. The intent of this segment is to give fundamental ideas and direction as you attempt to organize and motivate the members of your organization. The concepts reviewed here are basic and recognize some of the motivational challenges unique to volunteer organizations. Once volunteers have a good understanding of their duties they should be empowered to perform their tasks. Volunteers should be kept aware of developments and encouraged to share in decision making in order to feel like they are a part of the team. Understanding motivation is relevant to virtually all aspects of volunteer programs, from recruiting to maintaining the commitment of volunteers. A manager of volunteers is one who establishes and maintains a creative climate. Within this climate, volunteers choose to work cooperatively toward the accomplishment of goals and objectives, which are compatible with personal and organizational values. The failure to perceive what people really want and need is the biggest motivational problem. Volunteer programs must be able to use supervision or

the buddy system regularly to be a source of support, assurance, as well as redirection for your agency. Volunteers are very special people whose donation of time and effort warrants special consideration. They should always be encouraged to grow, learn, and seek fulfillment as they help an organization. This is important even if it means accepting the reality that not everyone is perfect for every job. A formal recognition system should be comprised of awards, certificates, plaques, pins, and recognition dinners or receptions to honor volunteer achievement. Many organizations hold an annual ceremony in which individual volunteers are singled out for their achievements. Formal recognition systems are helpful mainly in satisfying the needs of the volunteer who has a need for community approval. These volunteers may very well feel more motivated and honored by a system which recognizes the achievements of "their" clients, and also recognizes the contribution that the volunteer has made towards this achievement. It has been the authors' experience that the most effective volunteer recognition occurs in the day-to-day informal relationships between the volunteer and the organization through the staff expressing sincere appreciation and thanks for the work being done by the volunteer. This type of recognition is more powerful in part because it is much more frequent -- a once-a-year dinner does not carry the same impact as 365 days of good working relationships.

4.0 Conclusions

While volunteers provide a service out of personal desire, they do so in the absence of financial and materialistic gain. Because volunteers are often seen as the primary link between consumers and organizations, it is of the utmost importance that properly trained professionals within organizations work closely with the volunteer staff to create an environment of positive productivity for the organization as a whole. Having properly trained volunteers who work well independently, while feeling they are a vital part of the team, enables paid professionals to devote more of their time to performing the functions vital to the overall survival of the organization. Adherence to all the principles needed for developing and implementing an effective program will ensure that the primary link between the organization and the consumer (volunteers) stays positive and in tact. The

organization's needs assessment, goals and objectives, volunteer job description(s), communication, recruitment and marketing phases all set the precedent for a successful volunteer program. Having properly trained volunteers who work well independently, who know their role in the organization, and have a positive outlook on the service they provide ensures continued success for the organization. The development and implementation of a comprehensive volunteer management program is necessary in order for an organization, and the community it serves, to fully realize the benefits of volunteer service.

5.0 Acknowledgments

This paper would not be possible without all the volunteers who have worked diligently with us throughout our careers. We thank every volunteer for the gifts they have shared with us and society at large!

6.0 Citations

- Chambre, S.M. 1987. **Good Deeds in Old Age: Volunteering by the new leisure class.** Toronto, Canada: D. C. Heath and Company. Continuous Risk Management Definition. (n.d.). Retrieved August 7, 2004. http://www.sei.cmu.edu/programs/sepm/risk/definition_mgt.html
- Definition of communicating.** n.d. Retrieved August 8, 2004. http://ollie,dccd.edu/mgmt137/book_contents/3organizing/commun/discuss
- Definitions of Goals and Objectives.** n.d. Retrieved August 6, 2004, from <http://www.msu.edu/course/ace/806/syllabus/notes7.htm>
- Dekker, P. and Halman, L. 2003. **The values of volunteering: cross-cultural perspectives.** New York, NY: Kluwer Academic/Plenum Publishers.
- Development Training.** n.d. Retrieved August 6, 2004, from http://www.faa.gov/ahr/super/learn/training_needs.cfm
- Employee Job Description.** n.d. Retrieved August 8, 2004. <http://envision.ca/templates/resources.asp?IF=248>
- Fels, Lynn 1988. **Getting started - establishing a volunteer program.** Toronto Volunteer Centre of Metropolitan Toronto.
- Ferrell, O.C., Gatewood, R.D., and Taylor, R.R. 1995. **Management: comprehension, analysis, and application.** Chicago, IL: Austen Press.
- Fischer, L.R. and Schaffer, K.B. 1993. **Older volunteers: a guide to research and practice.** London, UK: Sage Publications.
- Friedrich, G. W. and O'Hair, D. 1992. **Strategic communication in business and the professions.** Boston, MA: Houghton Mifflin Company.
- Gorodezky, S. and Lauffer, A. 1977. **Volunteers.** Beverly Hills, CA: Sage Publications.
- Ilsley, P.J. 1990. **Enhancing the volunteer experience.** San Francisco: Jossey-Bass Publishers.
- Janikula, J. and Uggen, C. 1999. **Volunteerism and arrest in the transition to adulthood.** Social Forces, 78, 331-363.
- Keith, P.M. 2003. **Doing good for the aged: volunteers in an ombudsman program.** Westport, CT: Praeger.
- Khalil, E. 1991. **Handbook of volunteer management Rev. ed.** Indianapolis: Wiley Publishing Inc.
- Learning and Development Training.** n.d. Retrieved August 6, 2004, from http://www.faa.gov/ahr/super/learn/training_needs.cfm
- McGuckin, F. 1998. **Volunteerism.** New York, NY: The H. W. Wilson Company.
- Steps in the Marketing Process.** n.d. Retrieved August 6, 2004. <http://www.olc.org/marketing/2process.htm>
- Tocqueville, A. 1835. **Democracy in America.** Mentor Publishing.

LINKING RESEARCH, LEGAL MANDATES AND PUBLIC INPUT TO UPDATE MICHIGAN'S ORV PLAN

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Abstract

Michigan's only off-road vehicle (ORV) plan was written in 1979. Since then, ORV use and users have changed considerably. Michigan now has a 3,100 mile designated ORV trail system where there was no significant designated system in 1979. ORV licenses have increased from less than 100,000 in the mid-1990s to 175,000 in 2004. Public land ORV use in the Lower Peninsula is allowed only where posted open for ORVs on state and national forest trails and routes and at two parks. In the Upper Peninsula, ORVs may be ridden on public forest roads and trails not posted closed to ORVs. There was an estimated 4.2 million annual ORV use days in 1999. The plan update benefits from past research, public input and current surveys of key stakeholders and resource managers and regulators. The plan is designed to meet legal mandates to protect state resources from pollution or impairment while providing an integrated forest recreation system. Key draft recommendations include expanding the trail system, more aggressively identifying and restoring ORV caused environmental damage on public lands, involving county sheriffs in ORV safety education and increasing per mile reimbursement rates for ORV trail maintenance cooperators. The draft plan will undergo public review in summer 2005.

1.0 Introduction

This paper describes the process and substance of Michigan's ORV plan update as presented to a 2005 NERR Management Roundtable. ORVs are defined by law as motor vehicles capable of cross-country travel without the benefit of a road or trail. They include

motorcycles, all-terrain vehicles (ATVs), larger multi-wheeled or tracked vehicles, dune buggies and full size trucks and sport utility vehicles. The legislature delegated primary ORV management responsibility to the Michigan Department of Natural Resources (DNR). By legal mandate, this plan must integrate ORV management with the DNR's core mission to conserve, protect and provide for public use and enjoyment Michigan's natural resources for current and future generations.

2.0 Planning Process

The process began with a proposal by the senior author to update Michigan's ORV plan. Once accepted, the process publicly began with a presentation to the Michigan ORV Advisory Board, a seven member panel appointed by the DNR director to provide advice and input to the DNR on ORV matters, in May 2004. Since then there has been significant public involvement through three geographically distributed public information meetings, workshops with ORV trail maintenance and environmental restoration grant recipients, opportunities for written comment and mail surveys of Michigan county sheriffs, northern Michigan road commission managers and ORV coordinators from the other 49 states. Also, two meetings were held with DNR field personnel and one with the management team of the Forest, Mineral and Fire Management Division, the lead DNR division in ORV planning and administration. Finally the author reviewed legislative history and research concerning ORV use and users in Michigan and elsewhere.

3.0 Findings

Michigan's only formal ORV plan was published in 1979. That plan recommended minimizing social conflict, meeting outdoor recreation needs and protecting environmental integrity by confining ORV use on state public lands to the state forest roads and a system of designated ORV trails, routes and areas sited Michigan state forests and the lands of willing partners. It noted the need to have ORV riding facilities available to the public in southern Michigan where there were (and are) no state forest lands. Subsequently, the legislature, through

passage of Public Act 17 of 1991, further restricted the use of ORVs on Lower Peninsula public lands only to designated trails, routes and areas, closing undesignated forest roads to ORV use. This provided a “closed unless posted open” system in the Lower Peninsula, where 96 percent of the state’s population resides. However, in the Upper Peninsula, the use of unsigned forest roads was allowed unless ORVs were prohibited by signage. This provided an “open unless posted closed” system.

The rationale discussed at the public hearings for the difference in approach is the reduced opportunity for social conflict in the Upper Peninsula based on the small population and large proportion of public and forest products industry ownership.

3.1 Current ORV System

Today, there are 3,100 miles of signed, designated ORV trail and route in Michigan, with 73 percent on state forest lands, 14 percent on national forests and 13 percent on county or state roads for street legal motorcycles as part of the Michigan Cross Country Cycle Trail. Of the system not on county roads, 40 percent is 24 inches wide (at ground surface) motorcycle trail, 43 percent is 50 inches wide ATV trail (open to ATV and cycle use) and 17 percent is 72 inches or greater in width ORV route (open to all types of ORVs). In addition, thousands of miles of state and national forest roads in the Upper Peninsula are open for ORV use. There are five major scramble areas, encompassing more than 2,000 acres. Two are on state forests (St. Helen’s Motorsport Area and Black Lake Scramble Area), one at Silver Lake State Park, one at Bull Gap in the Huron National Forest, and one at The Mounds, a Genesee County Park.

3.2 ORV Use and Users

ORVs were initially required to be registered in 1975 and 3-year registration of resident machines with the Michigan Secretary of State was mandatory until 1991. Public Act 17 of 1991 shifted to a system of annual ORV licensing through the DNR of all ORVs operated on Michigan public lands or waters, regardless of one’s state of residence. In the 2003-04 license year there were 174,651 Michigan licensed ORVs. This is a 124 percent increase since the first year when all ORVs had to be licensed in 1994-95.

There have been three statewide studies of Michigan ORV use and users: 1977, 1989 and 2000 as well as a trends analysis (Nelson and Lynch 2001). The most recent (Nelson et al. 2000) estimated that for the approximately 125,000 licensed ORVs at the time, each was used an average of 34 days in Michigan during a 12-month period in 1998-99. This amounted to 4.2 million annual ORV uses. Of those uses, 44 percent were on private lands, 25 percent were on public or private lands exclusively to support hunting or fishing and 31 percent were on public lands with 88 percent of that public land riding on the designated trail system. If current annual use levels per licensed ORV are similar to 1998-99 and extrapolated to today’s number of licensed ORVs (approximately 175,000), this suggests there are 6.0 million ORV use days annually, with over 1.6 million on the designated ORV system, or approximately 1,900 uses annually per mile.

3.3 Michigan’s Current ORV Program

The ORV program in the DNR is administered through the Forest, Mineral and Fire Management Division (FMFM) and its sister divisions Law Enforcement and the Office of Contracts, Grants and Customer Service. Public Act 17 of 1991 established the ORV Trail Improvement Fund (a restricted fund with carry-over authority) to accomplish key ORV program tasks through a grants approach. The program is fully user-pay funded through the annual \$16.25 ORV license required for each ORV used on the public lands or waters of Michigan. Revenue per license is apportioned:

- Twenty-five cents to the license agent
- One dollar to ORV safety education (ORV Safety Education Fund); partners include county sheriffs, non-profits
- Of the remaining \$15 (ORV Trail Improvement Fund)
 - ◆ Not less than 50 percent to trail maintenance and development; partners include non-profits, DNR, Forest Service
 - ◆ Not less than 12.5 percent to restoring ORV damage to public lands; partners include DNR, Forest Service, non-profits

- ◆ Not less than 31.25 percent to ORV law enforcement; partners include DNR, county sheriffs
- ◆ Not more than 3.125 percent to administration
- ◆ Remaining 3.125 percent to either trails, damage restoration or enforcement

In 2003-04, ORV license revenue provided approximately \$2.8 for ORV program. None of the approximately \$1.0 million of state gasoline sales taxes annually generated by ORV use in Michigan (Nelson et al. 2000) is appropriated to the ORV program, although such appropriation was recommended by the initial ORV registration legislation (Public Act 319 of 1975).

3.4 Designated System Condition

An assessment by DNR field personnel with trail management responsibilities of 82 ORV trails/routes accounting for 2,705 miles of the designated trail system (did not include most of the Michigan Cross Country Cycle Trail, much of which is located on county roads for street legal motorcycles) showed that 67 percent of the mileage was in good shape (met trail maintenance standards over 95 percent of a trail or route's mileage), 31 percent was in fair condition (met standards on 75-95 percent of trail mileage) and 2 percent was in poor condition (met standards on less than 75 percent of mileage). This is an improvement from the last (1996) assessment (Lynch and Nelson 1997) when 61 percent was in good condition, 27 percent was in fair condition and 12 percent in poor condition. Key improvements needed include better brushing and signage and re-routes or boardwalks to protect against soil erosion or compaction in wet or steep areas.

Illegal uses were reported on 44 (54%) of the evaluated trails/routes. User made spur trails were the most common illegal use in the UP. In the LP there were a greater variety of illegal uses including illegal scramble areas and hill climbs, riding in wetlands or river/lake shorelines and riding non-street licensed ORVs on county and state roads, especially near campgrounds. A quarter of the trails had manager reported conflicts. These included conflicts between motorcycle and ATV riders on the designated ORV system, ORV riders and

non-motorized trail users on the designated ORV system and ORV riders and snowmobile trail groomers, graders and riders during the fall (just prior to snowmobile season) and during low snow periods in the winter.

3.5 ORV Fatalities and Safety

There is no single source for data regarding ORV accident and fatality statistics. The U.S.. Consumer Product Safety Commission (2003) reports that 1982-2002 there were a total of 224 ATV fatalities in Michigan. This does not cover off-road motorcycles or full size vehicles, nor 54 inch or 56 inch wide vehicles between ATVs and full-size vehicles. The Michigan State Police Office of Highway Safety Planning (2004) reported that 1994-2003 there were 2,528 ORV/ATV accidents on Michigan roadways, resulting in 77 fatalities. This apparently does not provide data regarding trails, private land use, etc.

3.6 ORV Safety Education

ORV safety education was transferred back to the DNR from the Department of Education in Public Act 111 of 2003. Records indicate that from 1998-2003, 12,156 youth received ORV safety certification. This is approximately 2,000 per year. The most recent statewide ORV licensee study suggested that 1/3 of youth 12-15 years old who rode a licensed ORV were certified and 1/6 of youth 10-11 years old who rode a licensed ORV were certified (Nelson et al. 2000). Currently DNR is not aggressively enforcing mandatory ORV safety certification for youth due to a lack of educational opportunities.

3.7 Public Comment and Opinion

During the 1989 and 2000 state-wide ORV registrant/licensee surveys (Nelson 1989; Nelson et al. 2000) respondents reported the one DNR action they felt would best improve the Michigan ORV program. In both studies, the most frequent response was providing more legal places to ride. Other top six suggestions noted in both studies were allowing the use of road shoulders by ORVs, improving trail maintenance and improving trail signage. In the most recent 2000 survey, the other two suggestions in the top six were reducing ORV license fees for those who only use their ORVs to fish or hunt and increasing ORV law enforcement.

In October 2004, three public information meetings were held to discuss the planning process and gather public input about future Michigan ORV management. The meetings were in Lansing (southern Lower Peninsula), Grayling (northern Lower Peninsula) and Marquette (central Upper Peninsula), with a total of 255 participants signing attendance sheets. After a brief overview of the planning process, all who wished to speak had an opportunity to provide input. Key themes across the meetings were:

- Support for designated long distance loop and point-to-point destination ORV trails to provide multi-day, tourism oriented riding opportunities
- Support for access from the designated ORV system to goods and services
- Support for additional riding opportunities targeted at specific vehicle types including vehicles between ATV and full-size)
- Support for continuing state forest roads open to ORV use in the UP and re-opening the state forest road system in the Lower Peninsula to ORV use
- Support for ORV program use of state gasoline sales tax revenue generated by ORVs
- More support for mandatory “hands-on” ORV safety education than a classroom oriented approach with optional “hands-on”

Only at the Marquette meeting did any presenters identify themselves as other than ORV riders. There, those people did not register opposition to the use of ORVs or of the designated system, but rather of trespass and damage to private property by ORV use. They advocated for increased law enforcement and challenged the ORV community to “clean up its act”. At the Grayling meeting, a number of riders suggested that the designated trail system be better maintained in regards to signage, grading and routing. In the Marquette meeting, grant sponsors and others wanted ORV signage compatibility with snowmobile programs (e.g. same size stop signs).

Additionally, 64 distinct individuals provided written input, including those who represented ORV organizations. A majority wanted to expand ORV riding

opportunity on public lands while a minority wanted to further restrict ORV use or keep it as it is. Their other points were similar to those provided in public input sessions.

In September 2004, two workshops were held with ORV grant recipients: trail maintenance and development and ORV damage restoration. At the trail maintenance and development workshop, some grant sponsors expressed concern that per mile reimbursement rates for maintenance did not equal costs. They noted that increased trail use was making maintenance more challenging and expensive. This was especially true if they hired workers to conduct manual labor. Other key concerns were that they strongly supported DNR sign regulatory sign plans for each trail to reduce their discretion and thus their liability in sign placement. Finally, they expressed concerns about the impact of timber harvest on the designated system by reducing trail challenge, mileage and increasing speeds through trail straightening.

Participants at the restoration workshop strongly supported maintaining DNR priorities for ORV damage restoration:

1. Reduce or eliminate erosion into any body of water
2. Restore damage in any designated roadless area, state natural river corridor or federal wild and scenic river corridor
3. Restore damage to aesthetically sensitive areas

However, they expressed concern at the slow pace of restoration. This concern focused on the need for a better system to identify ORV damage to public lands, the need to use practical soil erosion and revegetation techniques and a streamlined grant process. They also noted the need to involve a wider variety of organizations in damage restoration.

4.0 Draft Recommendations

The following draft recommendations were submitted to the Michigan DNR in December 2004. At the writing of the paper they are still involved in internal review. It is expected that they will undergo public review in summer of 2005.

4.1 Designated System

- Upgrade system to all trails/routes having maintenance rated as “good” (more than 95 percent of a trail’s mileage meets maintenance standards)
- Develop additional cycle and ATV trail and ORV route and scramble area with partner land managers to meet increasing demand
 - ◆ Destination point-to-point and loop routes
 - ◆ Parallel ATV or cycle trails in existing trail corridors of influence
 - ◆ Complete St. Helen’s Motorsport Area development plan
 - ◆ Develop one or more new scramble areas
- Use nationally recognized Forest Service standards for motorized trail signage
- Have no net loss of ORV trail quality and quantity from timber management
- Maintain “closed unless posted open” approach in Lower Peninsula
- Maintain forest roads open to ORV use without posting in the UP
- Encourage local units of government to target ORV use to selected county road shoulders to provide access to designated trail/route/area system
- Annually monitor the condition of the designated system using the 2004 assessment instrument
- Every 5 years conduct an assessment of ORV use and users

4.2 System Maintenance

- Increase the maximum rate of reimbursement to \$154 per mile for cycle and ATV trail maintenance and \$89 for ORV route maintenance while strictly enforcing maintenance standards
- Explore multi-year and competitive bid options for trail maintenance
- Open eligibility for trail maintenance grants to for-profit entities
- DNR to complete regulatory sign plan for each trail following Forest Service motorized trail standards

- DNR to provide ORV trailhead maintenance throughout snow free months

4.3 Enduro Motorcycle Events and Program Administration

- Locate events at sites of proposed timber harvest (1-2 years out)
- Clarify responsibilities and strengthen working relationships among DNR personnel/divisions involved in ORV program delivery
- Investigate streamlining grant processes to gain efficiency and cooperators

4.4 Damage Restoration

- Better and more systematically identify ORV damage on public lands
 - ◆ Broaden operations inventory to focus on full land stewardship mission
 - ◆ Seek partners and provide information conduits for reporting ORV damage
- More efficiently and effectively restore identified environmental damage
 - ◆ Use known techniques from agricultural erosion control and wildlife habitat restoration
 - ◆ Administer at the FMFM district level through recreation specialists

4.5 Law Enforcement

- Strengthen ORV enforcement by:
 - ◆ Fund additional MI Conservation Officer patrol hours at straight time
 - ◆ Fund additional sheriff patrol hours and reinstate ORV patrol equipment grants for eligible sheriffs
 - ◆ Forest Service becoming eligible to receive ORV enforcement grants for patrol
 - ◆ DNR State Parks (Silver Lake SP) becoming eligible to receive ORV enforcement grants for patrol
 - ◆ Involve Forest officers in ORV patrol at ORV trailheads to educate riders pre-ride and to provide safety checks
- Enforce ORV youth certification requirements after ORV safety education classes are available in a majority (42) of Michigan counties

4.6 Safety Education

- Follow a model similar to marine safety education for ORV safety education
 - ♦ County sheriffs are lead provider, educational and non-profit organizations can also provide
 - ♦ Classroom education mandatory with a focus on ORV safety and laws
 - ♦ Written, proctored exam mandatory
 - ♦ “Hands-on” training/test optional but encouraged
 - ♦ County sheriffs along with educational and non-profit organizations are eligible to apply to and receive ORV Safety Education Fund grants for costs associated with course up to \$20 per student
- ORV Safety Education required of anyone born on or after December 31, 1988 to ride an ORV on public lands or waters of Michigan
- DNR Law Enforcement Division to design and implement a system to track ORV fatalities patterned after current snowmobile fatality tracking system
- DNR comprehensive ORV safety education and training materials available on the internet at the DNR’s website

4.7 Licensing

- All ORV licensing should be done through the electronic license system
- All ORV license dealers shall provide a copy of the ORV rules and safety information to each licensee annually on their purchase of their ORV license

5.0 Conclusion

While the draft recommendations propose a number of fundamental changes requiring additional expenditures, unlike many other outdoor recreation management efforts, the Michigan ORV program has a fund balance of four million dollars as of the end of fiscal year 2003-04. This is a result of increased license sales over the past decade and appropriations not keeping pace. In

addition, some appropriated funds have not been spent in regards to grants for law enforcement, ORV damage restoration and ORV trail maintenance. This reservoir of funds coupled with a strong use pay program presents a unique opportunity for Michigan to make and sustain fundamental, positive shifts in ORV management to meet mandates to protect state resources from pollution or impairment while providing an integrated forest recreation system on the 3.9 million acre state forest system.

6.0 Citations

- Lynch, J. and Nelson, C. 1997. **ORV Trail and Route Assessment**. Michigan Department of Natural Resources, Lansing, Michigan.
- Michigan Office of Highway Safety Planning. 2004. **2003 Michigan traffic crash facts**. Michigan State Police, Lansing, Michigan.
- Nelson, C. 1989. **Registered Michigan off-road vehicle use and users**. Department of Park and Recreation Resources, Michigan State University, East Lansing, Michigan.
- Nelson, C., Lynch, J. and Stynes, D. 2000. **Michigan licensed off-road vehicle use and users: 1998-99**. Department of Park, Recreation and Tourism Resources, Michigan State University, East Lansing, Michigan.
- Nelson, C. and Lynch, J. 2001. **Trends in off-highway vehicle (OHV) use, users, regulations and trails in Michigan: 1975-2000**. The 5th Outdoor Recreation and Tourism Trends Symposium: 23-29. Department of Park, Recreation and Tourism Resources, Michigan State University, East Lansing, Michigan.
- US Consumer Products Safety Commission 2003. **2002 Annual Report of ATV Deaths and Injuries**. U.S. Consumer Products Safety Commission, Washington, DC.

THROW AWAY YOUR OLD ENVIRONMENTAL EDUCATION TRUNKS AND SURF INTO THE FUTURE

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Abstract

Traveling Environmental Education (EE) trunks have been one method used for improving environmental literacy; especially in rural areas where nature centers and museums are absent. In this absence, traveling trunks provide a set of tangible tools for students focusing on problems as well as developing potential solutions for addressing environmental issues. While EE trunks have been successful in providing teachers with resources and tools, significant increases in shipping costs, labor and storage costs, as well as disappearing federal agency funding, have prompted some agencies to seek alternative methods for providing educational services. Over the years, school teachers have become increasingly dependant on the Internet as a source of information. Determined to change how EE interfaces with the public, River Park North (RPN), a nature center located in Greenville, NC, collaborated with East Carolina University researchers to develop online EE lesson plans. A curriculum on Pond Ecosystems was developed to offer teachers a set of activities that their students could engage in prior to visiting the nature center. Lesson plans were evaluated by a pool of local educators prior to implementation. RPN managers believe that the more attainable EE information is for students prior to visiting the center, a higher EE literacy will be achieved and students will arrive at RPN asking informed questions.

1.0 Introduction

Recognizing increasing threats to human health and environmental quality, the United States Congress passed the National Environmental Education Act of 1990 to increase environmental literacy. The Act came in response to an increasing awareness of international environmental

problems such as global warming and declining species diversity, all of which influence human health and environmental sustainability. Traveling Environmental Education (EE) trunks have been one method used for improving environmental literacy; especially in rural areas where nature centers and museums are absent. In this absence, traveling trunks provide a set of tangible tools for students to focus on problems as well as developing potential solutions for addressing environmental issues. While trunks have been successful in providing teachers with EE resources and tools, significant increases in shipping costs, labor and storage costs, as well as disappearing federal agency funding, have prompted some agencies to seek alternative methods for providing educational services. With the increasing availability and use of computers in schools, students and teachers are becoming increasingly dependant on the Internet as a source of information.

Determined to change how EE interfaces with the general public and elementary schools in eastern North Carolina, River Park North (RPN), a nature center located in Greenville, NC, has been collaborating with East Carolina University researchers to develop online EE lesson plans to be made available from a RPN website. The EE curriculum was developed to offer teachers a set of activities that their students could engage in prior to visiting the nature center. If EE is a primary tool to inform students about the environment, and to empower them to ask good questions, then it may be equally important to engage in investigations about a nature center prior to visiting the site. If educators make EE easily attainable and understandable in the form of specific lesson plans for addressing environmental and social concerns, students will have easier access to this information, be able to conduct background investigations, and ask informed questions when they arrive.

2.0 Environmental Education

EE is a method for creating: (1) awareness; (2) knowledge; (3) attitudes; (4) skills; and (5) participation towards environmental sustainability. The basis for EE is

teaching individuals to become aware and knowledgeable of environmental issues that will awaken their sensitivity towards environmental stewardship. Increased awareness, knowledge, and sensitivity lead to the development of concern and motivational attitudes to participate in solving environmental issues (Iso-Ahola 1980). Identification of and attempts to solve environmental issues are often demonstrated through skills learned from an EE professional. Finally, advocates for the environment are prompted to create opportunities for individuals who wish to be actively involved.

An early definition, appearing in the first issue of Environmental Education (Stapp 1969) has served as a basis for many subsequent efforts. Environmental education is generally focused on “producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution” (p 54). A number of evolving and expanding definitions have appeared since that time. In 1996, the U.S. EPA’s Office of Environmental Education provided the following definition: Environmental education enhances critical-thinking, problem-solving, and effective decision-making skills. It also teaches individuals to weight various sides of an environmental issue to make informed and responsible decisions. Environmental education does not advocate a particular viewpoint or course of action (Federal Register, Tuesday, December 10, 1996, p. 65106).

Agreement concerning the definition of environmental education has not been reached. The Tbilisi Declaration, a document generated from the 1977 intergovernmental conference on environmental education, defines the objective of knowledge as, “helping individuals and social groups gain a variety of experiences with the total environment and to acquire a basic understanding of the environment, its associated problems and humanity’s critical responsible presence and role in it” (Unesco 1968). Attitudes are described as any enduring complex of descriptive and evaluative propositions which an individual generates, consciously or otherwise, about select attributes of a given situation, and which predisposes that individual to feel about and/or

respond to that situation in a given fashion (Ajzen & Fishbein 1980; Fishbein & Ajzen 1975; Hines 1985; Marcinkowski 1989).

According to Marcinkowski (1989) beliefs are defined as, “descriptive propositions which represent personal recommendations about some more desirable state of affairs or some condition (e.g., about physical conditions, other’s beliefs and values)” (p. 58). Hungerford and Peyton (1976) offer a definition of “an environmentally literate citizenry that is both competent to take action on critical environmental issues and willing to take that action” (p. 11). Responsible environmental behavior (REB) has been presented as “activities that have been suggested as ways people can help solve environmental problems” (Van Liere & Dunlap 1981, p. 662). Maloney and Ward (1973) defined REB in terms of what commitments people do make. In a broad context, Sia (1985) and Hines (1985) argued that REB is equivalent to other terms appearing in the literature such as pro-ecological behavior, pro-environmental behavior, environmental action and environmental problem-solving.

Recognizing increased threats to human health and environmental quality, the United States Congress passed the National Environmental Education Act of 1990 (NEEA) to increase environmental literacy. This Act was a response to an increasing awareness of international environmental problems such as global warming and declines in species diversity; all of which influence human health and environmental sustainability. In addition to these threats, as noted in the Act, insufficient funding for educational resources and training for learning relationships between the natural and built environment, environmental problems and their origins, and skills to address environmental literacy implemented were all very problematic.

The NEEA first established the Office of Environmental Education within the Environmental Protection Agency (EPA), which became responsible for awarding grants to develop environmental curricula and training teachers; supporting fellowships to encourage the pursuit of environmental professions; awarding those contributing

to the betterment of the environment; and sponsoring workshops and conferences. By implementing these actions, the agency became the leader in advancing both environmental awareness and provider of education materials.

3.0 EE “Traveling Trunks”

EE traveling trunks are sturdy boxes typically 36 x 21 x 21 inches with nearly 16,000 cubic inches of storage space that are sealed and shipped around the nation. Trunks were some of the first forms of tangible tools for providing information to students regarding the natural world. The trunks presented components varying by theme - containing theme based (Wolves, Threatened & Endangered species, Butter flies etc.) items such as: lesson plans tied to educational standards, educational books, videos, audio cassettes, posters, puppets, puzzles, activity materials, and various specimens. They were first introduced to rural teachers who lacked environmental education resources with necessary materials for giving lessons in the classroom (Interview: Anita Maxwell, April 24, 2005). Trunks became very successful based on their ability to reach these rural communities where little resources were available for traveling to environmental education centers. For those who could not visit such centers, trunks brought a piece of the natural world into the classroom along with “hands-on” learning experiences.

Agencies currently practicing this method of distributing EE materials in trunks are mainly at the Federal level, due to the high cost of creation, maintenance, and shipping (EPA 2005). Some of the more renowned federal agencies who circulate traveling trunks are the National Park Service, Environmental Protection Agency, U.S. Fish & Wildlife Service, and the USDA Forest Service. Most agencies ship the trunks to schools and other organizations free of charge, leaving recipients responsible for shipping them back, which can cost \$30 - \$50. Additional issues surrounding traveling trunks are maintenance and shipping costs, component replacement, sanitation hazards, the lack of personal contact with an EE professional, and the arduous task of moving 40-50 lb. trunks. With overall funding reductions, agencies are searching for alternative methods for distributing EE materials and resources. Providing

web-based education to students is one way to accomplish EE goals.

4.0 Pond Ecosystem Curriculum for River Park North addresses the following themes:

-Amphibians & Reptiles	-Birds of Prey
-Snakes	-Aquatic Mammals
-Migratory Waterfowl	-Cavity Nesters
-Threatened and Endangered Species	-Beavers
-Birds of Eastern Swamps	-Wetland Ecology
-Historical Tar River	-Hurricane Floyd
-Pond Life	-Somebody's Trash
-Animal Adaptations	-Trees of Eastern Swamps
-Leaf Printing	-Nest Identification
-Poisonous vs. Nonpoisonous Species	-Animal Signs
-Benefits of Swamps	-Spiders
-Littering	-Leave No Trace
-Carrying Capacity	-Reduce, Reuse, Recycle
-Owls in the Food Chain	

4.1 Sample of Lesson Plan

Owls in the Food Chain (Grades 5-8)

Rationale:

Each animal species plays an important role in the food chain by transferring energy from one organism to another while maintaining balance and diversity of species within an ecosystem. This lesson plan discusses the role of the owl in the food chain.

Objectives/Intended Learning Outcomes:

- Students will learn about the owl's role in the food chain as a predator
- Students will learn about the owl's lifecycle
- Students will learn about the owl's breeding habits
- Students will learn where owls nest
- Students will learn about the owl's physiology and the significance body parts
- Students will learn what nocturnal and diurnal means and what kinds of animals fall within each category

- Students will learn the theory behind the owl's ability to see in the dark
- Students will learn about the owl's eating habits and digestion
- Students will learn about the owl's predators

Materials:

- owl pellets
- construction paper
- pencils or crayons
- glue
- small animal bone chart
- tooth picks

Background:

A food chain is a food pathway that links different species in a community. In a food chain, energy and nutrients are passed from one organism to another in order to keep an ecosystem diverse and balanced. There are more than 200 species of owls in the world living in many different ecosystems who share common physiological traits, but each having its own form of camouflage for adapting to their environment. The lifecycle of all owls are similar; once a male owl is a year old it begins a quest to find a hunting area to claim. Owls typically find an area within close proximity of their birth, but they are also known for traveling long distances for a sustainable hunting area. Once an owl reaches the age of two and has claimed an area for hunting, it begins to search for a mate. He will start making a noise that sounds like whoo-who... who-who; which he repeats over and over until he gets a response from a female owl, who responds in a higher pitched "who." Both the male and female "who" back and forth for several weeks until their "whoos" are synchronized. This form of communication continues for a while as they get closer and closer to one another until they finally meet. Once in close contact, both hop around tree branches, communicating through screeches. The male owl then makes a gesture by catching prey and offering it to the female. Once the female accepts the meal, the male himself, and his hunting area, they begin to search for a nest together. The final decision about which nest is acceptable is made by the female. Owls inhabit nests on tree limbs, trees that have been hollowed, nests on the ground, or in rock cavities; all of which have

been constructed by some other animal. Occasionally, the female will make some improvements to the nest and once they settled in and the climate is right (usually after February) they begin to breed. First, the male catches some food for the female and offers it to her as a gift.

Next, they begin to court by hopping around tree limbs while making grunting noises. They nuzzle for a while until the male hops on the female's back and inseminates the female. The number of eggs laid by the female depends on the specie of owl. Small owls can lay up to seven eggs while large owls lay between two and three. After laying the eggs, the female incubates them by sitting on them usually for about 21-35 days. During this time, the male catches food for her and protects the nest from predators looking to attack the nest for the eggs. Baby owls are born naked, and usually have enough feathers to keep them warm by the time they are 2 weeks old. Once all of their feathers have grown in they begin to venture out of the nest exploring their new environment, usually hopping around tree limbs near the nest until they finally make it to the ground. Depending on the breed, owls begin to fly between eight and ten weeks old; small owls fly sooner than large owls. Once the owls have grown in enough feathers, they start flapping their wings to build up the strength to fly. The next phase of their development is learning how to hunt prey, beginning with insects. While they are learning to hunt, their parents continue to feed them larger prey as well; usually through the first winter.

The owl's role in the food chain is that of a predator, a carnivore that preys on smaller animals by catching and killing them. Most predators are larger than their prey; they have special adaptations to help them find and catch their food including enhanced vision and hearing, keen sense of smell, and strong physiques for rapid movement. As predators, owls control the populations of small rodents such as, but not limited to: rats, rabbits, insects, mice, frogs, fish, salamanders, and other birds. They feed during night hours, usually after dark because they are nocturnal. Nocturnal animals (e.g., owls, raccoons, opossums) come out at night because they can see in the dark, while diurnal animals (e.g., humans, deer,) are out during the day when they have enough light to see. One theory about how owls developed the ability to see

in the dark is that they were forced to adapt to an era of darkness which began at the end of the Mesozoic era and continued through the Cenozoic era. Their eyes change shape from day and night. During hours of light their eye balls are round in shape, while during night hours, their eye balls change to a tubular shape so they can see in further in the dark. Their eyes are protected by an upper, lower, and a translucent eyelid. The translucent eyelid moistens and protects the eye when exposed. Owls see in 3-D, which enables them to see objects that are both close and far away so they can navigate around things in their path without crashing into them. The owl has developed such good vision that they can see a mouse from two hundred yards away. This ability combined with a neck that allows them to rotate their heads 270 degrees provides them with an extreme range of vision. In the event of extreme darkness, owls rely on hearing to lead them to prey.

Feathers surrounding the owl's eyes are shaped like funnels, which direct sound into their ears like a satellite receiving signals from outer space. The owl's beak is shaped like a hook so they can grip prey and they have a tremendous amount of biting pressure, which allows them to kill their prey once caught. The claws of an owl are also sharp, and long so they can get a good grip on whatever they try to catch. Owls have feathers with comb like edges designed to muffle flapping noises so prey cannot hear them coming. All of these physical characteristics allow them to hunt, catch, and eat their prey. Owls have a different method for eating than we do, they don't chew, they swallow prey whole. Special chemicals in their stomach breakdown the food and retain their nutritional value, but they can't pass what they have eaten because it isn't broken down enough. Instead of passing whatever they have eaten as most species do, owls spit out the bones and fur of their prey. Their digestion system is build so they can do this without choking. The stomach compacts the food, balling it up, so it won't get stuck in their throat. This process produces a "pellet", which can be examined to determine what the owl had eaten.

The main predator of owls is humans. Owls are shot, trapped, hit by cars because they are blinded by headlights, electrocuted by power lines, poisoned by

pesticides, and starved because of clear cutting which results in loss of habitat. Goshawks and gangs of crows are some of the predators who try to eat owl eggs. There are many species of owls protected by the Threatened and Endangered Species Act of 1973 as a result of their dwindling numbers.

Procedure:

1. Anticipatory Sets

- a. The lesson can be administered to a group following a discussion on the food chain and food web. It will allow participants to dive deeper into these topics by teaching them about a well known predator and its food chain.

2. Introduction

- a. Teacher
 - i. Explain to the students that they will be learning one of the most important processes of living species. Ask them what they know about the food chain and why it is important to sustaining a balanced ecosystem. This will help students to think about the topic and to allow them to vocalize what they have learned from similar lessons.

3. Body of Lesson:

- a. Teacher
 - i. Begin by opening the PowerPoint presentation on owls and describe the body parts which allow them to hunt, catch, and eat their food (e.g., feathers, talons, beaks, and eyes). Ask them what they remember about the significance of each body part. Talk about how they communicate, where they nest, and who their predators are.
 - ii. Next, show the food chain diagram with the owl and describe it eats (i.e., rats, rabbits, insects, mice, frogs, fish, salamanders, and other birds). Point the size difference between the owl (big) and what it eats (small).
 - iii. Pass out construction paper and crayons and let them be creative by drawing the food chain with the owl as the predator.
 - iv. Pass out copies of a chart depicting small animal bones and describe each of the bones in their bodies. After they have looked them

over, break them into groups of three or four and give them a pellet that has been moistened with some water and tooth picks. Have them “pick” through the contents and ask them to identify the body parts. Next, tell them to see if they can put together a full skeleton, glue the bones that they find to a piece of construction paper and have them identify the animal that was eaten by the owl. Finally, let them describe what they found with to their classmates. This activity is also available online; refer to Virtual Pellet Dissection link.

4. Closure

- a. Start some group discussions about what they had learned and experience by participating in this lesson. Ask them:
 - i. What is the food chain and food web?
 - ii. Where does the owl fit in the food chain?
 - iii. What does the owl eat?
 - iv. What is significant about the owl's
 1. eyes
 2. beak
 3. feathers
 4. claws
 5. ears
 - v. What is the theory that explains how owls can see in the dark?
 - vi. Where does the owl live?
 - vii. What are nocturnal and diurnal animal species?
 - viii. How does the owl eat its food and how does it dispose of its waste?
 - ix. How do owls communicate with on another?
 - x. Ask them how they felt about picking through the pellets to hear “yucky.” Finally, let them know that this is the process of only one animal species and that there are many others to discover.

5. Special Considerations

- a. Make sure the discussions remain focused on the lesson, don't allow them to stray too far from the topic. Also, make sure that everyone who wants to say something is able to by keeping

responses brief. This activity should be done in a classroom, where participants have plenty of table space to work. If you plan on using real pellets, make sure they are not eaten by the students and make sure they wash their hands afterwards.

6. Assessment/Evaluation

- a. Assessment and evaluation of learned materials should be verified through feedback from students once questions are asked after the lesson and activity. Students could be given a homework project where the assignment is to create a web chain with their choice of predator at the top. This assignment could be handed in for a grade or presented to the rest of the class at a later date.

4.2 The following NC Environmental Education Standards that are met with this lesson:

Competency Goal 2: 2.06; Competency Goal 3: 3.01, 3.05; Competency Goal 4: 4.01, 4.03, 4.05; Competency Goal 5: 5.01, 5.03, 5.05

4.3 Links to further exploration:

Virtual Owl Pellet Dissection - <http://www.kidwings.com/owl/pellets/barnowl/index.htm>

www.Owlpages.com - Regurgitation Show

http://owlpages.com/physiology/gho_pellet.html - Online Food Chain Activity <http://www.domtar.com/arb/eng/lish/biodiv/section3/jeu3a.html>

Johnsgard, Paul A. (2002). North American Owls: Biology and Natural History. Washington (D.C.): Smithsonian Institution Press

Becking, Jan-Hedrik; Claus, Konig; Weick, Friedhelm (1999). Owls: A guide to the owls of the world. New Haven: Yale University Press

5.0 Methods

River Park north was devastated by Hurricane Floyd and the subsequent flooding in 1999, where the low lying area was located near major rivers and tributaries were nearly all washed away. The park borders the Tar River, which feeds 45 acres of water used for fishing and boating, and is also home to the Walter L. Stasavich

Science & Nature Center. Every year the park floods from an influx of upstream water entering the park through a tributary, which is circulated among four large ponds. Hurricane rains from two major storms saturated soils in the region leaving it no where to go but up. The Tar River rose 24 feet above flood stage following Hurricane Floyd, destroying the center in 1999 (Daily Reflector 1999).

With the reopening of the Walter L. Stasavich Science & Nature Center less than 1 year away, park administrators began to assess how they could improve the delivery of environmental education. The park coordinator, a graduate from the Recreation & Leisure Studies Department at East Carolina University, expressed the need to create a more diverse spectrum of programs while organizing materials for delivering environmental education. ECU researchers discussed creating "Traveling Trunks" with various themes for staff to take with them to schools deliver programs. The idea quickly transformed into creating storage space within the facility to organize the newly developed lessons and required materials due to expenses accompanying trunks and outreach programs. River Park North staff had a new vision; that vision was to ultimately reduce the amount of resources used for outreach programs while continuing to expand it ability to teach students in the region about the natural world; and especially, Pond Ecology at RPN.

6.0 Results/Conclusions

During the fall academic school year of 2005, teachers and students will be able to begin accessing the web-based EE curriculum on Pond Ecosystems. The program will continue to be monitoring and upgraded as both students and teachers provide feedback on the EE curriculum based program administered through RPN. As technology and students' appetite continues to move toward an expanding plethora of online resources, it can be expected that offering EE information online like the ones presented by RPN has the potential to be very successful.

7.0 Citations

- Ajzen, I., and Fishbein, M. 1980. **Understanding attitudes and predicting social behavior.** New Jersey: Prentice-Hall.
- Daily Reflector. 1999. **Flooding destroys River Park North.**
- Federal Register, December 10, 1996. p.65106.
- Fishbein, I., and Ajzen, M. 1975. **Understanding attitudes and predicting social behavior.** Reading, MA: Addison-Wesley.
- Hines, J. 1985. **An analysis and synthesis of research on responsible environmental behavior.** (Doctoral dissertation, Southern Illinois University at Carbondale, 1984). Dissertation Abstracts International, 46(3): 665-A.
- Hungerford, H., and Peyton, R. 1976. **Teaching environmental education.** Portland, Maine: J. Weston Walsh.
- Iso-Ahola, S. 1980. **The social psychology of leisure and recreation.** Dubuque, IA: William C. Brown.
- Maloney, M., and Ward, M. 1973. **Ecology: Let's hear from the people.** American Psychologist, 28(7): 583-586.
- Marcinkowski, T. 1989. **An analysis of correlates and predictors of responsible environmental behavior.** (Doctoral Dissertation, Southern Illinois University at Carbondale.
- Maxwell, A. (personal communication, April 24, 2005). Director, Montana Natural History Museum, Missoula, Montana.
- Sia, A. 1985. **An investigation of selected predictors of overt responsible environmental behavior.**

(Doctoral dissertation, Southern Illinois University at Carbondale, 1984). Dissertation Abstracts International, 46(3): 667-A.

Stapp, W. 1969. **The concept of environmental education.** The Journal of Environmental Education, 1(3): 31-36.

UNESCO. 1978. **Final report: Intergovernmental Conference on Environmental Education**, Tbilisi,

USSR. 14-26 October, 1977. Connet. Paris: Unesco/ UNEP.

Van Liere, K, and Dunlap, R. 1981. **Environmental concern: Does it make a difference how it is measured.** Environment and Behavior, 13(6): 651-676.

USING PARTICIPANT OBSERVATION TO STUDY RECREATION MANAGEMENT DECISION-MAKING

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Abstract

Participant observation, negative case analysis (Kidder 1981) has been the research design used in a series of recreational carrying capacity decision situations. The studies discussed here began in 1972 at Ozark National Scenic Riverways. After 7 years of research, a series of steps was identified for determining recreation capacities for large scale land and water areas. That nine-step process was used as a hypothesis for testing in similar decision situations on other recreation management areas including Lake Tahoe Basin. The process hypothesis was modified to a five-step process and tested on several Corps of Engineers lakes in the 1990s. The key step in the process appeared to be the recreation visitor inventory step to provide managers with systematic, place-specific visitor inventory data about numbers of different types of visitors to various parts of an area and their perceptions of conditions. These numbers in the framework of the recreation opportunity spectrum (ROS) concept can then be used to formulate alternatives for discussions in public meetings about capacity decisions.

A four-step inventory process has been developed for training and discussion purposes.

Because participant observation does not appear to have been used in other recreation research, this paper includes discussion of facets of the method as applied in recreation decision research.

1.0 Introduction

Increasing conflicts about recreation management decisions, especially recreational carrying capacity decisions, invite study of how such decisions are made and how conflicts may be reduced. Because capacity decisions are complex processes involving several participants, including various individuals in the management organization, user groups, concessionaires,

community representatives and others, participation of researchers with managers was necessary to understand the decision process.

Participant observation is described in social research textbooks, along with experiments, surveys, and evaluation research (Kidder 1981). It has been utilized for many years in such fields of study as anthropology, business management, and public administration (Whyte 1984). However, it does not appear to have been used in other recreation research studies.

The research reported here discusses the use of participant observation in a series of case studies. A hypothesis was generated about a sequence of events utilized in capacity decision-making in a national river situation (Chilman and others 1996). The hypothesis was tested in other capacity decision situations, modified and retested over a period of some 30 years.

The hypothesis evolved from a nine-step capacity decision process to a five-step process (to aid management communications in public meetings) and then to focus on the recreation visitor inventory step as the key element for capacity management decisions.

The visitor inventory process for large land and water areas is outlined. Also findings about aspects of using participant observation in recreation management decision research are discussed.

2.0 Methods

The research reported here centered around four research questions:

1. What kinds of decisions do recreation managers make?
2. What kinds of information is useful for such decisions?
3. How can such information be collected systematically and inexpensively?
4. How can managers be trained to collect and utilize the information?

These questions originated from the author's work experience with the U.S. Forest Service in the central Sierra Nevada in California from 1956-1965. That was a time of rapidly increasing recreational use of wildland areas (ORRRC 1962). Decisions were needed about how to accommodate and manage diverse uses from development of major ski area facilities to high density wilderness visitation. Decisions were becoming complex as more parties were becoming involved: user groups, environmental organizations, communities, local governments and others.

The author had the opportunity to return to the University of Michigan in 1965, where program recreation research were being initiated. Studies in public administration provided theoretical and methodological training to research organizational decision making. Dissertation research involved comparative case study research on land use decision procedures for ski area developments (Chilman 1972).

Recreational carrying capacity decisions were then identified as problematic and an important topic for research. As recreational use of an area increases, environmental damage or deterioration of recreation visit quality may occur. Calls for limiting use result in conflicting opinions from various parties involved. Court cases may occur.

To study these complex situations over time, participation with the managers involved was necessary. Participant observation, negative case analysis (Kidder 1981) was selected as the research design. With this design, the researcher participated with the managers as a visitor information specialist to contribute systematic data to the decision process. Discussions took place about information needed, how to collect it, and how it would be used in decision-making.

Hypotheses were generated about steps in the process of making decisions, and the hypotheses were tested in a series of case studies. Negative case analysis means that if something unexpected shows up in testing the process hypothesis, the hypothesis will be modified and tested in following cases.

Participant observation does not have the explicit research design structure that survey research does. However, observation methods and examples of applications are described in detail in various texts (Whyte 1984; Whyte 1997; Wolcott 1995; and Rossman and Ralls 1998). In Whyte's 1997 book, three important considerations, - gaining access to the field, systematizing participant observation, and interviewing in the field – are addressed. How those aspects have worked in the series of studies reported here will be commented on in the Discussion section of this paper.

3.0 Results

Decision-making is a process by which a person, group, or organization identifies a choice to be made, gathers and evaluates information about alternatives, and selects from among the alternatives (Carroll and Johnson 1990). The research reported here began with a recreational carrying capacity choice to be made at Ozark National Scenic Riverways (ONSR) in south central Missouri in 1972.

ONSR had been established in 1964 as the first national scenic riverway in the U.S. It included 134 miles of the Current and Jacks Fork rivers and is administered by the National Park Service (NPS). The very clear free-flowing waters and scenic Ozark mountains began to attract large numbers of canoeists.

Dr. Leo Marnell, a fisheries biologist who had worked at Yellowstone and Yosemite national parks before arriving at ONSR, began a research program in 1972 to gather information for capacity decision-making (Chilman and others 1996). Through that research, a nine-step process was identified for capacity decisions (Chilman and others 1981). That process and subsequent rationale for limiting river use was thoroughly tested in a federal court case in St. Louis in 1982 and found to be valid.

This process hypothesis was subsequently tested in a series of capacity studies on the land areas of Lake Tahoe Basin Management Unit in California in the 1980s. The land area managed by the U.S. Forest Service within the Basin was a major portion of about 100 square miles. Methods were developed for visitor use data collection for undeveloped beach areas, Desolation Wilderness

(a very heavily used wilderness area), and for off-road vehicle riding areas. A concept of using systematic, place-specific visitor use data within the recreation opportunity spectrum (ROS) framework began to emerge as a strategy for capacity management. The capacity process emphasized improving recreational quality (rather than just imposing limits) and was titled Quality Upgrading and Learning (QUAL) (Chilman and others 1989).

The QUAL hypothesis was then tested in a series of studies at Corps of Engineers (COE) managed lakes during the 1990s. The process hypothesis was shortened to five steps to be more easily communicated to the various decision participants (Chilman and others 1990, Chilman and others 1995). In the COE lakes studies, the particular focus of interest became the systematic, place-specific visitor inventories part of Step II – Inventory Existing Conditions. This information allowed managers to understand visitors' perceptions of conditions and also frequently suggested alternatives to resolve capacity situations as management actions rather than long-drawn-out and expensive capacity planning processes.

An opportunity to replicate this inventory hypothesis took place on the St. Croix National Scenic Riverway along the Minnesota and Wisconsin state line from 1999-2002. The St. Croix National Scenic Riverway encompasses 252 miles of the St. Croix and Namekagon rivers, and is located near the Minneapolis-St. Paul metropolitan area. Within funding limits, river user data collection could be done on approximately one-third of St. Croix NSR each year, including repeat measurements on the 98-mile-long Namekagon River in 2002. Different river user densities on various river sections offered the opportunity for managers to maintain choices for river visitors related to their particular preferences for quality visits.

It can be seen from the above that the research began with the development of a process hypothesis, testing of the hypothesis, modification, and retesting. During this sequence, intensive discussions of the decision process took place with individual managers and groups of managers and other decision participants. Aspects of the participant observation research during that time are discussed in the following section.

4.0 Discussion

What have we learned from this series of capacity decision studies? We started with four research questions. First, we identified recreational carrying capacity decisions as probably the most problematic that managers face, and selected them as focus for these studies.

Second, we identified a sequence of steps involved in the process of making a capacity decision on a national scenic riverway. This nine-step process was then used as a hypothesis for testing at various large land, lake and river situations across the U.S. That process was shortened to five steps to aid management communications. The key information gathering step appeared to be systematic, place-specific visitor inventories (counts and short interviews) that were lacking for the areas studied.

Third, we developed visitor inventory methods that could be applied in short time frames of a few weeks or months and relatively inexpensively. We have tested them on 30 large and diverse land, lake and river situations. We developed a four-step inventory system to help managers understand and explain the information gathering process to other parties involved in the capacity decision process (Appendix A). Managers tell us that this systematic inventory information helps them by giving them credibility in meetings with specific and current data about what is happening on the areas being considered.

Fourth, we are now in the process of developing an inventory procedures manual for recreation area managers to use when concerns about whether to limit use of an area begin to arise.

Finally, some reflection on the use of participant observation in recreation research is in order. Why has this research method not been used more frequently?

Participation with managers in decision situations take considerable field time and travel time. The work and time requirements for young university researchers may make the method prohibitive. Participant observation has less explicit designs than survey research. As qualitative research, it has been difficult to get published.

From more than 40 years of using participant observation as a research method in various settings, Whyte (1997) identifies three basic aspects of the method to be considered. These aspects are discussed here as they have worked in the recreation decision research.

The first aspect is “gaining access to the field,” he states that “Before you can decide what and how you will observe, you must find your way into the organization or community you want to study” (Whyte 1997).

For recreation decision research, this means time involved in learning where capacity decisions may be a concern and then gaining acceptance by managers involved that the researcher can provide useful information. Managers frequently communicate or meet with managers in other organizations or places. From some early small scale studies on Missouri state forests Dr. Leo Marnell at ONSR learned about the author’s visitor information studies and asked the author to participate in the ONSR capacity research program. Then through intensive discussions and presentations at research meetings, other managers invited participation in their situations.

Identifying a controversial topic where managers are looking for help – in this case recreation capacity decisions – is important in “gaining access to the field.”

Whyte also “soon discovered that acceptance of my study depended on people’s reaction to me. If Bill Whyte was all right, then my study must be all right.” A sincere interest in these wildland places and what is happening there is important. He further states that “it is important to make it clear that you are not trying to pass judgment on the people you meet. You are trying to understand them.”

The second aspect is “systematizing participant observation,” Whyte’s approach places structure first (who interacts with whom, for how long and how frequently), then contents conveyed, and finally an overall interpretation of the sequence of behaviors. For the decision research discussed in this paper, that means daily recording in a journal of interactions of participants in the process (including the researcher),

what information is discussed and what information is utilized and in what way, and an interpretation of what actions to expect (hypothesis) and look for in the next decision situation.

Whyte advocates writing “in full detail” what was observed. Even if the notes may not seem important at the time, they may be important in unanticipated ways later. One further item: make notes of phone conversations when not on-site.

The third aspect is “interviewing in the field.” Whyte says that “as a participant observer, most of your interviewing will be done informally, simply listening to what people are saying and sometimes asking them to explain” something. He says “When you are well established in your relations with a particular group, it may be helpful to get a key informant aside” for an hour or so to discuss the topics of key interest. Guidelines include “not to argue with the informant, not to express disapproval – or interrupt statements made.”

Again, try to make detailed notes on the conversation as soon afterward as possible. In some cases, group interviews (sometimes during informational meetings) can provide different perspectives.

Why learn to practice participant observation research in the study of capacity decisions? Why study decision-making? Carroll and Johnson (1990) suggest: 1) It is not obvious how decision makers make decisions; 2) Years of practice in making decisions do not necessarily perfect decision quality; 3) It may be useful to consider how decisions are made in terms of the information used; and 4) It may be useful to think of how to improve decision-making.

The research program outlined above has attempted to provide insight into these questions in the realm of recreational carrying capacity decision-making for large wildland and water areas.

5.0 Citations

Carroll, J. and Johnson, E. 1990. **Decision Research: A Field Guide**. Thousand Oaks, CA: Sage Publications

- Chilman, K. 1972. **Land Use Decision Processes in Administrative Organizations: A Ski Area Land Allocation Model.** Dissertation on file at University of Michigan: Ann Arbor, Michigan.
- Chilman, K., Marnell, L. and Pope, R. 1977. **Developing a research capacity in field organizations to aid in management decision-making.** Proceedings: River Recreation Management and Research Symposium. USDA Forest Service, Gen. Tech. Rep. NC-28, 163-167.
- Chilman, K., Marnell, L., and Foster, D. 1981. **Putting river research to work: A carrying capacity strategy.** Some Recent Products of River Recreation Research. USDA Forest Service, Gen. Tech. Rep. NC-63, 56-61.
- Chilman K., Ladley, J. and Wickle, T. 1989. **Refining existing recreation carrying capacity systems: Emphasis on recreational quality.** Proceedings of the 1988 Southeastern Recreation Research Conference, (pp. 118-123). Athens, GA: University of Georgia.
- Chilman, K., Lane, D. Foster, D., Everson, A., and Lannoy, M. 1990. **Monitoring social conditions on wildlands: Designing low-cost systems.** Managing America's Enduring Wilderness Resource. (pp, 163-169). St. Paul, MN: University of Minnesota.
- Chilman, K., Foster, D., and Everson, A. 1990. **Updating the recreational carrying capacity process: Recent refinements.** Managing America's Enduring Wilderness Resource. (pp. 234-238). St. Paul, MN: University of Minnesota
- Chilman, K., Titre, J. and Vogel J. 1995. **Adapting recreational carrying capacity processes for short-term decision-making.** Proceeding of the Fourth International Outdoor Recreation and Tourism Trends Symposium. (pp. 342-347) St. Paul, MN: University of Minnesota.
- Chilman, K., Foster, D., and Aley, T. 1996. **River management at Ozark National Scenic Riverways.** Science and Ecosystem Management in the National Parks (pp. 295-317) (Halvorson, W. and Davis, G., ed.). Tucson, AZ: University of Arizona Press.
- Chilman, K., Vogel, J. and Brown, G. 2003. **Recreation visitor inventories: Key information for capacity management.** Proceedings of the 2003 Northeastern Recreation Research Symposium. USDA Forest Service, Gen. Tech. Rep. NE-317, 48-52.
- Kidder, L. 1981. **Research Methods in Social Relations (4th ed.).** New York: Holt, Rinehart and Winston.
- Outdoor Recreation Resources Review Commission. 1962. **Outdoor Recreation for America.** Washington DC: U.S. Government Printing Office.
- Rossmann, G., and Ralls, S. 1998. **Learning in The Field.** Thousand Oaks, CA: Sage Publications.
- Whyte, W. 1984. **Learning From The Field: A Guide from Experience.** Newbury Park, CA: Sage Publications.
- Whyte, W. 1997. **Creative Problem Solving in The Field: Reflections on a Career.** Walnut Creek, CA: Altamira Press.
- Wolcott, H. 1995. **The Art of Fieldwork.** Walnut Creek, CA: Altamira Press.

Appendix A

Recreation Visitor Inventory System (RVIS)

A Systematic Process for Gathering and Utilizing Visitor Data for Recreation
Area Management Decisions

STEP I. DESIGN THE STUDY

1. Identify concerns/questions
2. Examine study area – user groups, sampling points
3. Develop sampling plan
4. Develop count forms, questionnaires

STEP II. DATA COLLECTION

1. Train data collectors
2. Do counts and exit interviews
3. Data coding and data entry

STEP III. DATA ANALYSIS/REPORTING

1. Tabulation of counts, interviews
2. Prepare maps of user distribution
3. Prepare preliminary report

STEP IV. DISCUSSION OF DATA WITH MANAGERS

1. Are data, methods clearly understood?
2. Implications for management issues
3. Develop plan for monitoring re-measurements
4. Prepare final report

Founder's Forum

BACK TO THE FUTURE: TRENDS IN NORTHEAST RECREATION, TOURISM AND FUTURE RESEARCH A FOUNDERS' FORUM PRESENTATION

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Abstract

The purpose of this Founders' Forum presentation was to examine recreation and tourism trends in the Northeast over the period of 1993 through 2003 and to review some future research trends that will affect the region. Activities examined were assigned into four major groups and included community based; resource-based; water-based and winter-based activities. The data sets analyzed were the National Sporting Goods Association and the Standard Rate and Data Service's Lifestyle Market Analyst. Trend patterns were presented and activities were examined to determine if patterns in the selected activities occurred. Fourteen of 40 recreational activities increased by overall market size in the Northeast. Resource-based activities and, in particular, trail-based activities revealed strong growth trend patterns. Tourism trend reviews in the Northeast revealed that only foreign travel increased in the Northeast markets among the six travel variables examined. Most forms of travel in the Northeast declined and pleasure and business travel declined the most after 9/11 in 2001.

1.0 Introduction

What are the trends in recreation and tourism in the Northeast? With more activity choices, trends likely to change in a variety of ways. Some trends are likely to be gradual in nature while others more dramatic. The examination of trends over time is a fundamental necessity to determine our status as a region. In this presentation, a review of trend patterns will be reviewed for four clusters of recreation activities in the Northeast from 1993 through 2003, a brief review of travel and tourism trends will also be examined and then this presentation will be closed with a discussion of future recreation research issues that will confront the region in the coming decade.

In recent years, the compilation of the National Sporting Goods Association (NSGA) data (2004) and the United States Forest Service's (USFS) National Survey on Recreation and the Environment (2004) data have provided new insights into the changes of a variety of activities. However, it is critical in these studies to both continue the monitoring of specific activities and to examine if these national trends are reflected in regional and local areas. Over the years there have been a number of problems monitoring activity trends. One is finding data sets that have consistently and routinely collected activity participation year in and year out. The consistent and routine data collection has been a challenge. Data sources such as Simmons Market Research Bureau's Study of Media and Markets and Mediamark's Topline Reports have provided long-term data collection, but they both suffer from not being current (1997-1998 in the most recent available as of this writing) for access by university researchers. Recreation and tourism activity data can be analyzed when available by using such techniques as lines of best fit; however, this technique only reveals the direction of the trend and does not account for a broader review of the actual changes within the data. Time series analysis likewise offers some promise in monitoring trend data over time; however, it requires 30 data points until reliable analysis can occur. So, in this case, activities have been monitored and guidelines developed for tracking trends (Warnick 2004).

Shifts and interests in recreational and tourism activities are indeed likely to occur. Some of the shifts in activity patterns will also be reflected in how our populations in various regional areas change and evolve in the coming decades. Other changes may also be the result of activity promotion, marketing and improvements in technology or even dramatic social/political events (i.e., 9/11) or economic impacts (i.e., cost of fuel and transportation). Many will react to these shifts by devising marketing strategies by concentrating on selected profitable markets. However, these differences and changes, both gradual and dramatic, will clearly provide some

evidence of future demand for the agencies supplying the management of resources for these recreation and tourism/travel pursuits.

Recent studies (Warnick 2004, 2000, 1998, 1997a, 1997b; Warnick and Kelly 2000) indicated recreation activity trends in the Northeast and New England had become both mature and evolving as new activities replaced older common placed pursuits. Other studies (Warnick 2002) have examined how New England's travel markets were also highly linked to active recreational pursuits. For many of the Northeast and New England attractions, the careful monitoring of trends in activities and markets is critical to these tourism-based economies.

2.0 Purpose of Study

The purpose of this study is to: 1) to first examine, suggest and assign typical trend patterns; 2) to examine the recreation trends of selected recreational activities in the Northeast over the time period of 1993 through 2003; 3) to briefly examine travel and tourism trends in the Northeast; and 4) to discussion a number of research trends that the Northeast will experience in the coming decade.

3.0 Methods

In this presentation, two data sets were explored which contained ten years of trend data from 1993 through 2003. The recreation activity data came from the NGSAs sport business research network (www.sgrnet.com, 2004) and it was supplied to NGSAs through the National Family Opinion (NFO) Research Group via this consumer research panel. The NFO's Consumer Panel Research Study is an annual survey of 20,000 households and is balanced and weighted to actual household regional distribution. The response rates exceed 70 percent and confidence intervals exceed 95 percent. The National Sporting Goods Association contracts from NFO to complete their annual study of sports and recreational activities. The data are compiled and made available to contracting universities for teaching and research purposes. The data are presented in tabular form, but there is no trend analysis. There is only a compilation of year participation totals of the market size

and corresponding information the demographics and regional distribution of the markets.

The travel and tourism data came from Standard Rate and Data Service's (SRDS) Lifestyle Market Analyst (1993 to 2003). The SRDS Lifestyle Market Analyst data is collected through a joint venture between SRDS and Polk, Inc. The profiles of households and lifestyle participation data are collected and updated annually and all data are summarized and weighted according to the 1990/2000 U.S. Census data profiles of communities and DMAs (designated market areas). The household counts and demographic estimates are obtained by Polk from Claritas. Polk collects the data from U.S. households by inserting consumer information questionnaires into the packaging of a variety of consumer goods, including electronic equipment, appliances, apparel, sporting and camping goods and numerous other products. This database annually generates over 38 million questionnaires that serve as the basis for the lifestyle information. From these, SRDS and Polk sample over 8 million each year to represent the target lifestyle activities and the geographic markets nationwide. The actual lifestyle behaviors included in this study come from their grouping called the "Good Life" and include six travel-related variables of interest to this study and the data are collected by households (SRDS 2003, p. A-22).

The types of travel variables included six different household participation kinds of travel: 1) USA domestic travel; 2) travel for pleasure; 3) travel for business; 4) foreign travel; 5) cruise ship travel; and, 6) second home ownership. Data for all 11 years (1993 through 2003) were available for the travel variables for trend analyses; however, the data for pleasure travel, business travel and second home ownership were limited to fewer years (1995 through 2002) and cruise ship travel from only the period 1999 through 2002. All participation rate data were collected on the basis of households.. The data collected represent a period of November to November; so, 2002 data represent data collected between November 2001 and November 2002.

The descriptive statistics used included an average annual adjusted percent change rate in the NSGA and SRDS

data. The average annual adjusted percent change rate examines the change from each year to the next (1994 to 1993, 1995 to 1994 and so on through 2002 to 2003) and averages the year-to-year changes over the entire period. Participation is measured by the number of participants (in millions) who participated in the activity in the previous 12-month period for the recreation data and by the number of households who participated in the travel activities in the previous 12-month period. The focus was the change in the activity markets and assignment of trend patterns of the Northeast markets. The Northeast is defined as states north of Maryland including the six New England states (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut) plus New York, Pennsylvania and New Jersey for both data sets. The 40 selected recreational activities were grouped into sets of activities based on the classification and configuration of activities by Kelly and Warnick (1999) and NSRE (2004). These included 12 community-based activities, nine resource-based activities, 12 water-based activities, and seven winter-based activities. All of the travel activities were examined individually.

To compare both national and regional trends, 10 patterns were reviewed, explored and assigned to each activity. For a full discussion of these trend patterns, see Warnick (2004). These trend patterns were further refined with an analysis of four rules that quantify: 1) the quantity of the market; 2) the actual trend pattern direction; 3) the statistical measure of the average annual change percentage; and 4) the direction of trend of the volume segment.

4.0 Selected Findings

4.1 National Trends in Activity Participation

When individual activities were examined the five most popular activities in 2003 for the general population that covers all adults from age 7 years through adulthood were: 1) exercise walking – 79.5 million participants, up from 71.2 million in 2001; 2) overnight camping – 51.4 million, up from 45.5 million in 2001; 3) exercising with equipment – 48.6 million participants; 4) swimming – 47 million that has held steady since the early 2000, but declined since 1993; 5) bowling – 39.4 million participants – down from 43 million in 2002.

4.2 Northeast Community-Based Activities

Eleven different activities were examined in the group of community-based activities. Four of the 11 activities declined in the Northeast – bowling, bicycling, tennis and, racquetball. One combination activity experienced a mature/stable stage -- running and jogging and one activity experienced a classic peaking phase (inline skating). All of the other five activities either grew or rebounded during the period. Fitness club participation/use, inline skating, golf and participation in paint ball games each experienced a substantial growth in the 10-year period. Exercise walking was found to be the region's most popular activity and had actually rebounded after a decline in 2001. The community-based activity trend patterns and data are presented in Table 1.

4.3 Northeast Resource-Based Activities

Nine different activities were examined in the group of resource-based activities. Four (backpacking, off- and on-road mountain biking and target shooting) of the activities experienced growth in market size in the Northeast. Two activities declined – hunting and target archery. Other activities – hiking, camping and archery hunting were either stable, stable/rebound or no growth.

Off-road mountain biking, although largely a niche market activity, experienced rather dramatic growth (8.7% average annual growth rate). This rate of growth was higher than the national average annual growth rate of 7.2 percent per year. This activity nearly doubled in market size from 1993 through 2003 – increasing from 1 million participants to 1.9 million participants in the Northeast. Although figures are not available by frequent off-road mountain bikers in the Northeast, the growth nationally in this segment is substantial and the trend is likely to be also pronounced in the Northeast had the trend data been made available through NSGA and NFO.

One activity experienced a decline – hunting; however, its decline was not steady but one following a spike pattern. In 1993, there were 3.4 million hunters in the Northeast and by 2003, the number had declined to 3.1 million. This constitutes a decline of about 2 percent per year although there were spike patterns in this activity in

Table 1.—Community-based recreation activity trends in the Northeast, 1993-2003.

Activity	1993	1998	2003	Change rate	Trend type
Bicycling	10.3	8.7	7.4	-2.65	Decline
Bowling	9.3	8.4	7.4	-1.65	Decline
Ex. Walking	13.2	14.7	14.9	1.8%	Growth/Mass Appeal
Golf	4.3	4.6	4.6	1.2%	Growth
Inline Skating	2.4	45.6	3.7	6.7%	–Peaking
Paint Games	n/a	n/a	3.7	10.9%	Growth (Fad)
Racquetball	1.0	0.7	0.4	-4.8%	Decline (Niche)
Running/Jog	3.5	3.6	3.9	1.7%	Mature -Stable
Skateboarding	1.1	1.1	1.9	7.7%	Growth (Niche)
Tennis	3.4	2.1	1.4	-5.6%	–Decline
Fitness Club	4.0	5.1	5.7%	4.4%	Growth

Participation is listed in millions of participants in 1993, 1998 and 2003.

Note: Due to space limitations, only 1993 - 1998 - 2003 years shown in trend sequence.

Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.

Table 2.—Resource-Based Recreation Activity Trends in the Northeast, 1993-2003.

Activity	1993	1998	2003	Change Rate	Trend Type
Archery – Hunting	n/a	1.0	1.0	-0.7%	No Growth/Stable
Archery – Targeting	n/a	1.1	0.8	-1.2%	Decline
Backpacking	1.6	2.4	2.4	6.6%	Growth
Hiking	3.6	4.7	4.7	0.0%	Stable
Camping	7.0	7.6	9.2	3.7%	Stable/Rebound
Hunting	3.4	2.5	3.1	0.2%	Decline/Spiking
Off-Road Biking	1.0	1.8	1.9	8.7%	Growth Niche
On-Road Biking	1.8	2.8	2.6	7.6%	Growth/Peaking
Target Shooting	2.2	1.7	2.8	5.4%	Growth (Rebound)

Participation is listed in millions for 1993, 1998 and 2003.

Note: Due to space limitations, only 1993 - 1998 - 2003 years shown in trend sequence.

Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.

the Northeast. However, hunting appears to be affected largely by spike years and patterns. The spike years in the Northeast were 1993, 1996 and 2001 with declines in the number of hunters in the years following each of these spike years.

4.3 Northeast Water-Based Activities

Twelve different activities were examined in the group of water-based activities. Four of the niche activities (those activities that have relatively small markets of less than 2 million participants) experienced decline in the overall

Table 3.—Water-Based Recreation Activity Trends in the Northeast, 1993-2003.

Activity	1993	1998	2001 or 2003	Change Rate	Trend Type
Canoeing	2.3	1.7	1.9	-0.8%	Fluctuating/Decline
Kayak-Rafting	0.4	0.7	1.6*	16.0%	Growth (Niche)
Freshwater Fishing	6.8	5.2	4.6	-3.3%	Decline
Saltwater Fishing	2.5	2.7	2.7	1.2%	Growth
Sailing	1.1	1.0	0.4*	-9.7%	Decline (Niche)
Power Boating	3.6	4.4	4.2	2.3%	Growth
Scuba Diving	0.4	0.4	0.3	-0.9%	Decline (Niche)
Snorkeling	1.1	1.6	1.1*	1.9%	Peaking/Growth (Niche)
Swimming	14.6	12.5	9.8	-3.6%	Decline (Mass)
Wakeboarding	N/A	N/A	0.4	-22.1%	Decline (Niche)
Water Skiing	1.3	0.8	0.7	-3.8%	Decline (Niche)
Wind Surfing	0.1	0.1	0.0*	-7.1%	Decline (Niche)

Participation is listed in millions for 1993, 1998 and 2001/2003.

Note: Due to space limitations, only 1993 - 1998 – 2001/2003 years shown in trend sequence.

Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.

* For kayak-rafting, sailing, power boating, snorkeling and wind surfing; trend data were available only through 2001.

size of the markets – sailing, scuba diving, wakeboarding and wind surfing in the Northeast Region. Two large market size activities, swimming and freshwater fishing, also declined in market size overall in the Northeast. Two niche market activities, kayak-rafting and snorkeling (peaking), also grew in overall market size. The only other activities to grow during the period were power boating and saltwater fishing. Demand for canoeing fluctuated substantially over the period and declined overall in average annual change rate. Swimming remains the most popular of all water-based activities with 9.8 million regular participants in the Northeast in 2003, but this number has declined from a peak of 14.6 million swimmers in 1993. The water-based activity trend patterns and data are presented in Table 3.

4.4 Northeast Winter-Based Activities

Seven different activities were examined in the group of winter-based activities. Two of the activities experienced strong growth during the 1993-2001/2003 period – snowboarding and snowmobiling. Snowboarding grew by 15.4 percent per year and increased from .4 million participants in 1993 to 1.7 million participants in 2003.

The time period for snowmobiling was shorter, 1995 through 2001; but the number of riders has increase in the Northeast from 1.5 million to 2 million. Three of the remaining activities experienced decline in the overall numbers of participants, including cross-country skiing (decline of 4.7% per year), ice skating (decline of 3.3% per year), and downhill skiing (decline of 4.8% per year). While the ice skating market has declined in size in the Northeast, still nearly a third of all ice skaters are from the Northeast. While the market of people who play ice hockey has also declined in the Northeast, it is still a substantial market. The market for ice hockey has actually grown nationally at an average annual rate of 3.8 percent per year. In fact, all regions outside of the Northeast have grown at a rate faster than the Northeast.

Evidence also suggests that a portion of those people who were once downhill skiers may have convert to snowboarding. However, more likely it is the pattern that youth who learned to snowboard in the late 80s and 90s and who are now in the 18- to 34-year-old demographic is where the largest increase in snowboarders occurs. In

Table 4.—Winter-based recreation activity trends in the northeast, 1993-2003.

Activity	1993	1997	2001/2002	Change Rate	Trend Type
Cross Country Skiing	1.3	0.8	0.7	-4.7	Decline
Ice Skating	2.6	2.5	1.9	-3.3%*	Decline
Ice Hockey	0.8	0.9	0.9	3.8%	Fluctuating (Niche)
Downhill Skiing	3.3	1.9	1.7	-4.8%	Decline
Snowboarding	0.4	1.0	1.7	15.4%	Growth
Snowmobiling	n/a	1.5	2.0	9.2%*	Growth
Snow shoeing	n/a	0.2	0.5	14.2%	Growth (Niche)

Participation is listed in millions for 1993, 1998 and 2001/2003.

Note: Due to space limitations, only 1993 - 1998 – 2001/2003 years shown in trend sequence.

Change rate is an average annual change rate based on number of participants. Northeast includes Mid-Atlantic Region and New England Region.

* Snowmobiling includes data only from 1997 through 2001.

* Ice skating includes data only from 1993 through 2001.

contrast, the only age segments where downhill skiing decreased were from the same demographic – the 18- to 34-year-olds.

There was not enough data to document sustained trend changes for snow shoeing. Although the evidence suggests some increase in the activity in the Northeast, there was only four years of data collected and the most recent information was collected in 2000. The winter-based activity trend patterns and data are presented in Table 4.

4.5 Travel Trends in the Northeast

Six travel variables were examined from data taken from the SRDS Lifestyle Market Analyst. Those travel variables included USA domestic travel, pleasure or vacation travel, business travel, foreign travel, second home ownership, and cruise ship travel. Four of the travel activities experienced declines over the period from 1993 through 2003, including pleasure travel, business travel, second home ownership and cruise ship travel. Only one activity actually grew during this period – foreign travel. This activity market grew by 1.8 percent per year and foreign travel reached its highest household participation rate in 2002 at 17.9 percent up from 14.5 percent in 1993. USA domestic travel experienced no overall change with growth only up by 0.6 percent over the period. In

1993, 36.4 percent of all Northeast households engaged in domestic travel and by 2003 the rate was 38 percent. It was clear that 9/11 did have an impact on pleasure and business travel. The impact was most dramatic for business travel where participation decline from 19.6 percent in 2001 to 13.7 percent in 2002. Table 5 contains all of the trend data for each of the travel variables from 1993 through 2003.

5.0 Conclusions and Implications

In general, recreation activity markets in the Northeast have rebounded from previous study findings of stability or limited numbers of growing activities. Of 40 activities examined, 14 activities were found to have exhibited real growth patterns in overall market sizes during the period of 1993 through 2003, while 17 activities are declining in real numbers. Especially strong growth was revealed in resource-based activities, such as backpacking, hiking, mountain biking, and winter-based activity of snowboarding. One other new activity, playing paint ball games, also demonstrated the strongest sustained growth trend patterns even though data were only available for the period 1999 to 2003.

These findings also continued to support the changes in activity segmentation. For example, biking as an activity has continued to become more specialized with

Table 5.—Travel trends in the Northeast U.S.

Year	Households	USA Domestic	Pleasure Travel	Business Travel	Foreign Travel	Sec. Home Ownership	Cruise Ship Travel
1993	94,254,662	36.4%	N/A	N/A	14.5%	N/A	N/A
1994	95,883,242	36.1%	N/A	N/A	14.6%	N/A	N/A
1995	96,594,092	34.9%	37.5%	19.4%	14.2%	11.0%	N/A
1996	97,466,492	34.5%	37.6%	19.8%	14.0%	10.7%	N/A
1997	98,935,243	36.5%	37.9%	20.5%	14.3%	10.5%	N/A
1998	98,741,235	37.4%	42.6%	18.9%	14.3%	10.2%	N/A
1999	100,657,594	37.9%	45.0%	17.7%	15.2%	10.1%	13.6%
2000	102,048,273	42.5%	37.9%	22.0%	17.4%	10.5%	14.3%
2001	103,192,355	41.4%	34.2%	19.6%	17.2%	10.2%	14.3%
2002	107,023,996	41.2%	35.1%	13.7%	17.9%	10.0%	15.5%
2003	107,745,450	38.0%	30.5%	13.4%	16.8%	10.1%	15.3%
Chge Rate	1.4%	0.6%	-2.1%	-3.9%	1.8%	-1.2%	-0.2%
Chge Type	Base Rate	No Change	Decline	Decline	Growth	Decline	Decline

N/A = data not available. Source. Standard Rate and Data Service. 1993-2003. Lifestyle Market Analyst

the continued growth of off- and on-road mountain biking and the decline in the general biking category. As a group, the resource-based activities grew overall the most with more people participating in outdoor-based recreational pursuits. This supports trends similar to the trends found in the NSRE (2004).

In one particular case, snowboarding may have displaced downhill skiing as some participants have converted from downhill skiing to snowboarding. Other winter-based activities found general declines in the overall market size – including cross country skiing, ice skating and even ice hockey. The fitness movement does appear to be gaining strength both nationally and in the Northeast. Two strong indicators, working out at a club and exercise/fitness walking, each increased substantially during the 1993 to 2002 period.

Resource management issues for the management of wildlife in such activities as hunting and fishing may continue appear to be problematic in the Northeast. Hunting and freshwater fishing markets continued to decline in the Northeast based on these research findings. With some wildlife herds—deer, turkey and even bears

in the Northeast—the ability to manage these animals through increasing number of hunters will likely not occur and herd or wildlife management will become increasingly a challenge. On a positive note for those freshwater fishing areas that have been over-fished in the past, the decrease in the size of the freshwater fishing market may actually help the fish stock to rebound. However, it is also likely that the unwanted interaction and nuisance encounters between humans and wildlife in fringe suburban and rural areas that has been found to occur in the Northeast will likely continue to increase with a declining overall market of hunting participants and increasingly larger wildlife herd sizes. For those who do hunt, increased bag limits and increased length of seasons will likely continue to occur in order to offset the declining hunting market and to assist in the management of various types of wildlife. Managed hunts are also likely options to be observed in areas with the continued pressure of the rapid growth in wildlife herds.

An emerging trend that is beginning to appear is the presence of more individualized or personal recreational pursuits. Snowboarding, skateboarding and even paint ball games are examples of new evolving, but

individualized markets. Participation in paint ball games is an especially noteworthy example. Just in the past few years has these data become available and been monitored. During the brief four years of data analysis for paint ball games, the market growth was sustained and the largest of any activity monitored here. It is likely that games and activities created in virtual reality frameworks, such as in computer games, may actually evolve into simulated active reality games like participation in paint ball games. The “reality activity programming trends” need particularly close monitoring in the future.

5.1 Future of Research in Northeast

In conclusion of this presentation, it was felt appropriate to offer some insights of what the future for research holds in the Northeast in the coming decade. Here are some thoughts on the future of recreation and travel activity research.

One of the biggest changes in the coming decade will likely be in “real time research.” Currently, most of our research is transaction or cross sectional that means data is collect at one point in time. However, the biggest change in recreation activity and tourism research in the near future will be a switch from transactional (one time) data collection to interaction research. This means that participation data will be collected in real time and will be on-going. This is likely to first appear in the health care area where recreation and lifestyle activity patterns and data will be collected on an on-going basis as part of a health-care monitoring system. Part of this will be possible with new integrated hand held devices. These devices will both collect, monitor and transmit data to a central collection agency. Here the use of wireless technology will play an important role. The new devices that will collect these data will be new and may be similar to current devices that just now coming online. The devices may be a cross between the PSP (Portable Playstation™), i-Pod™, and TiVo™. Each of these devices have the technology to collect and transmit data, including digital video, preferences, and behavior/choice information. Recently, the Conference on Information and Technology (2005) indicated that the five biggest technology improvements were the i-Pod™, TiVo™ (DVRs), instant messaging (IM) and global positioning

technology (GPS). These technology devices will be important in collecting real time data and will allow researchers to develop new ways to collect and involve participants in activity monitoring. Some of these may include data collected through health monitoring and perhaps even more research case studies and experiments that collect data in an interaction format. Other technologies will see data made available through global identity and travel cards and loyalty type of programs. Yet, more unknowns remain. These may include such more natural disasters, continued and unknown increases in energy prices and terrorism in the U.S. and in the Northeast. Other unknowns include whether youth will increase outdoor recreation participation and change their habits regarding the use of indoor technology.

Finally, the careful monitoring of trends over time and in a consistent format does reveal changes in consumer preferences and activity selection and involvement. New trend patterns are emerging and implications for management can be identified. Furthermore, activity changes in today’s market will impact future trends in the coming decades.

6.0 Citations

Conference on Information and Technology. 2005.
CSPAN. April 2005.

Kelly, John P. and Rodney B. Warnick. 1999. **Recreation Trends and Markets: The 21st Century**. Champaign, Illinois: Sagamore Publishing Company. 198 pp.

Web Site: <www.sgrnet.com> The Sporting Business Research Network. 2004.

Web Site: <www.sportlink.com> Sporting Goods Manufacturing Association site. 2004.

United States Forest Service. 2004. **National Survey on Recreation and Environment**. Athens, GA. Website: <<http://www.srs.fs.usda.gov/trends/Nsre>>.

Warnick, Rodney B. 2004. **Northeast’s Recreation Trends and Markets – A New Data Source In:** Proceedings of the 2004 Northeastern Recreation Research Symposium. (Kelly Bricker, comp. ed.).

- April 2004. Gen. Tech. Rep. NE-326. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.
- Warnick, Rodney B. 2002. **Travel and Outdoor Recreation Activities in New England: Trends and Tendencies.** In: Proceedings of the 2002 Northeastern Recreation Research Symposium. (Rudy Schuster, comp. ed.). April 2002. Gen. Tech. Rep. NE-302. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.
- Warnick, Rodney B. 2000. **Recreation Participation Trends: Generational Patterns and Change.** In: Trends 2000 – Fifth Outdoor Recreation and Tourism Trends Symposium – Shaping the Future. Michigan State University: Department of Recreation, Parks and Tourism. East Lansing, Michigan. Website Publication — www.prr.msu.edu.
- Warnick, Rodney B and John R. Kelly. 2000. **Recreation Activity Trends and Markets: The 21st Century.** In: Trends 2000 – Fifth Outdoor Recreation and Tourism Trends Symposium – Shaping the Future. Michigan State University: Department of Recreation, Parks and Tourism. East Lansing, Michigan. Conference Plenary Session Paper and Abstract.
- Warnick, Rodney B. 1998. **Volume Segmentation of Selected Recreation Activities in the Northeastern United States: 1982-1996.** In: Proceedings of the 1998 Northeastern Recreation Research Symposium. (Hans Vogel, comp. ed.). April 1998. Gen. Tech. Rep. NE-255. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. pp. 177-183.
- Warnick, Rodney B. 1997a. **New England's Northeast Recreation Activity Markets: Trends in the 90s.** In: Proceedings of the 1997 Northeastern Recreation Research Symposium. (Hans Vogel, comp. ed.). April 6-8, 1997. Bolton Landing, New York. Gen. Tech. Rep. NE-241. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. pp. 246-251.
- Warnick, Rodney B. 1997b. **Outdoor Recreation Trends in the Northeast: Markets and Issues — Future Demand for Recreation.** Proceedings of the 1997 New England Society of American Foresters. (Lloyd Irland, ed.). March 13-15, 1997. Radisson Eastland Hotel, Portland, Maine. 15 pp. (Peer reviewed conference proceeding).

Poster Session

ETHICAL ISSUES IN RECREATION RESEARCH AS PERCEIVED BY RECREATION, PARK RESOURCES, AND LEISURE SERVICES FACULTY

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Abstract

This survey explored selected ethical issues related to research and publication within the recreation, park resources, and leisure services profession. A national random sample of recreation, park resources, and leisure services academicians at graduate degree-granting programs completed a 32-item survey, assessing 21 scenarios addressing ethical issues in research and publishing. Selected ethical issues examined included (a) authorship, (b) conflict of interest, (c) plagiarism, (d) fraud, (e) duplication, (f) fragmentation, (g) collegiality, (h) participant protection, and (i) the use of Institutional Review Boards. Standard descriptive statistical analysis indicated that considerable variance exists among recreation, park resources, and leisure services academicians in relation to the ethical status of scenarios addressing the aforementioned areas of research conduct/misconduct. Of the 21 scenarios analyzed, only three were considered ethical and seven unethical by a majority of respondents.

1.0 Introduction

Ethics is defined as conforming to the standards of conduct of a given profession (Leach 1998). Applied to research, ethics serve as guidelines that define acceptable decisions and actions taken in the execution of research (Riddick & Russell 1999). While the application of a profession's ethical principals are important when providing services to individuals, their application to research and publishing efforts are equally important (Parker & Szymanski 1996). This is because research and publication are central to the advancement of a profession, as well as the careers of academicians and practitioners (Luey 1996; Rumrill & Bellini 1999).

For many professionals, the pressure to present and publish may lead researchers to make errors in judgment (Sawyer 1995). Often such error is inadvertent, and in many cases the result of misunderstanding, misinformation, or miscommunication (Pigg 1994). Further, errors of judgment can commonly be categorized within a narrow realm of misconduct (Price, Dake, & Islam 2001), including but not limited to: authorship, conflict of interest, plagiarism, fraud, duplication, fragmentation, collegiality, participant protection, and the use of Institutional Review Boards (Erlen 2002; Fain & Gillespie 1990; Leach 1998; King, McGuire, Longman, & Carroll-Johnson 1997; Luey 1996; Pigg 1994; Rumrill & Bellini 1999).

Ethical issues related to authorship most commonly arise when multiple individuals consider writing a manuscript (Erlen 2002). While single authorship is still prevalent, collaborative research publications have steadily increased over the last two decades (Crase & Rosato 1992; Iammarino, O'Rourke, Pigg, & Weinberg 1989; Price, Dake, & Oden 2000). Often in collaborative research situations questions arise related to who should be considered as an author of a manuscript and how authorship should be ordered (Erlen 2002). Two common ethical issues that may arise during the publication of collaborative research are "ghost authorship" and "guest authorship". According to Price et al. (2000) these two actions of research misconduct involve the omission of a collaborator from authorship that has made a significant contribution to a manuscript (ghost) or the recognition of authorship of an individual that made no substantial contribution to a manuscript (guest). Often honorary or ghost authorship is extended to well established peers to increase the possibility of manuscript acceptance (Goodyear, Crego, & Johnston 1992). A second type of collaborative research that deserves attention is the issue of student and academician collaboration on scholarly work worthy of publication (e.g., thesis or dissertation). One ethical issue that can occur in this type of collaborative research is an academician taking credit for authorship earned by a student (Fine & Kurdek 1993).

Conflict of interest has the potential to become an ethical issue when a researcher receives external support, usually financial, to conduct a research study (Pigg 1994). Specifically, conflict of interest becomes an ethical issue when a researcher does not disclose potential conflicts that could influence the researcher's ability to be impartial in reporting findings (Oermann 2002). Plagiarism is the unauthorized reproduction of work without proper permission of, or credit to, the original work's author (Iammarino et al. 1989). Recently the issue of self-plagiarism has been addressed. Self-plagiarism occurs when an author has assigned copyright to a manuscript's publisher, and subsequently uses the same, or slightly modified, verbiage from the copyrighted work in a subsequent publication (Sawyer 1995). For a better understanding of copyright law, consider reading "Ethics of Multiple Submissions and Copyright Concerns" by Sawyer (1995). Fraud encompasses not only plagiarism but also the fabrication or falsification of results (King 2001). Duplication becomes an ethical concern when a researcher publishes the same manuscript, or a slight variation of a manuscript, in more than one scholarly publication (King et al. 1997). Like self-plagiarism, duplicating the same manuscript in more than one journal is likely to compromise any copyright agreement between an author and a publisher. A second form of duplication relates to the practice of simultaneously submitting manuscripts for editorial review (Leach 1998). Multiple submissions of manuscripts have been argued to violate the trust between editor and author (Erlen 2002), and are considered an ethical compromise by journal editors (Leach 1998) and professional organizations (American Psychological Association [APA] 2001).

Fragmentation is generating a series of studies from one original piece of research (Iammarino 1989; Pigg 1994). While fragmentation is a question of editorial judgment (Rumrill & Bellini 1999), most editors and scholars perceive fragmentation to be an ethical compromise (Luey 1996). APA publishing guidelines also discourage the fragmentation of research (APA 2001). Collegiality refers to sharing research findings with other colleagues who wish to reanalyze or verify research findings (Parker & Szymanski 1996). If warranted, the sharing of data could include fair compensation as deemed

appropriate by the individual who produced the original research (Price et al. 2001). While the sharing of data is encouraged, issues such as confidentiality, perceived questionable use of the information by the requesting individual, or other legal issues may justify a researcher's decision to decline sharing research findings (Parker & Szymanski 1996). Participant protection deals with participant privacy or the responsibility of a researcher to assure anonymity or confidentiality of study participants. This includes both the identity of participants and participant information (Henderson & Baileschki 2002). Also linked to the issue of participant protection is the use of Institutional Review Boards (IRBs). The use of IRBs is less an issue of ethics as it is an issue of law. Based on the National Research Act of 1974 universities and agencies conducting research with human subjects must have in place an IRB responsible for reviewing research proposals and monitoring that research is conducted in accordance to the law (Wiersma 1995).

The presentation and publication of research is an important endeavor for recreation, park resources, and leisure services practitioners and academicians. For most academicians, research is required for the attainment of tenure and promotion (Crane & Rosato 1992; Sawyer 1995). Likewise, for many practitioners, involvement at professional conferences and the publication of research can also increase opportunities for career advancement (Rumrill & Bellini 1999). While the presentation and publication of research is highly regarded within the field of recreation, park resources, and leisure services, little has been stated by the field in regard to the ethical principles that should be followed when conducting, presenting, and publishing research. For example, codes of ethics published by the National Recreation and Parks Association (NRPA) and the American Therapeutic Recreation Association (ATRA) are directed toward professional practice, and do not address research and publishing issues (NRPA 2004a; ATRA 2004). Currently, selected ethical issues related to the publication of research in the field can be identified in submission guidelines of the field's professional journals and the Code of Ethics for the American Association of Health, Physical Education, Recreation, and Dance (AAHPERD) Research Consortium. These guidelines are extremely limited however, primarily only addressing issues

related to manuscript content and style, simultaneous publication, and plagiarism (NRPA 2004b; American Academy for Park and Recreation Administration 2004; Society of Park and Recreation Educators [SPRE] 2004; AAHPERD 2003, 2004). Further, research related to the ethical standards that should be followed when conducting, presenting, and publishing research is limited within the field's professional journals. A comprehensive review of literature identified only two research articles in recreation, park resources, and leisure services journals identifying selected ethical issues related to research publication (Fain & Gillespie 1990; Sawyer 1995). Both articles were limited in the scope of ethical issues examined, focusing primarily on intellectual property and copyright concerns.

Given the apparent dearth in information related to conducting, presenting, and publishing research in the field of recreation, park resources and leisure services, the purpose of this study was to measure the perceptions of recreation, park resources, and leisure service academicians regarding ethical issues specific to research and publishing. Specifically, the study addressed perceptions of ethical/unethical behavior related to (a) authorship, (b) conflict of interest, (c) plagiarism, (d) fraud, (e) duplication, (f) fragmentation, (g) collegiality, (h) participant protection, and (i) the use of Institutional Review Boards.

2.0 Methods

2.1 Subjects

Sixty-nine institutions purporting to have graduate programs in recreation, park resources, and leisure services were identified through NRPA online institutional directories to be included in the study. To facilitate mailing of the measurement instrument, two full-time academicians instructing within recreation, park resources, and leisure service programs at each identified institution were randomly selected to participate in the study. Identification of academicians was done using NRPA online institutional directories and individual institution/department web pages. Out of the 138 academicians randomly solicited to participate in the study, 94 completed measurement instruments were received, yielding a 68 percent response rate. Demographic information indicated that a majority

of respondents were male (67%), age 41 to 60 (76%), Associate or full professors (75%), tenured (74%), had graduate faculty status (97%), chaired a thesis or dissertation (80%), presented original research at conferences (88%), were published (88%) in recreation, park resources, and leisure service journals, and had instructed between 11 and 30 years (66%). Table 1 presents subject demographics.

2.2 Instrumentation

The survey questionnaire was developed based on a survey designed by Price et al. (2001) that was used to examine research ethics in health education. Since many of the objectives of this study were similar to the Price et al. study, the researchers's requested, and were granted, permission to duplicate and modify the original Price et al. survey instrument. The only modification made to the survey was the replacement of recreation, park resources, and leisure service terminology in place of health education terminology. The final survey questionnaire consisted of 11 demographic items and 21 research ethic items. For each of the 21 research ethic items, respondents were asked to provide their perception of whether the action taken in each research ethic item was ethical, questionable, unethical, or not an ethical issue. The four-page instrument required 15 to 20 minutes to complete. Internal reliability of the survey questionnaire for use with academicians was tested in the original Price et al. study using Chronbach's alpha. The survey was found to have acceptable reliability within an academician population (.70).

2.3 Procedure

The researcher's Human Subjects Review Committee granted approval of the measurement instrument and permission to engage in the study. Academicians were solicited to participate in the study winter of 2000. Initial and follow-up mailings were instituted to maximize response rate (Dillman 1978). Both solicitations included: a personalized cover letter indicating participant identification procedures, confidentiality procedures, and information pertaining to the study's purpose; a copy of the survey questionnaire; and a coded self-addressed, pre-stamped, envelope for survey questionnaire return.

Table 1.—Subject demographics

Item	N	%
Sex (n=92)		
Male	62	67
Female	30	33
Age (n=92)		
30-40	13	14
41-50	43	47
51-60	27	29
61-70	7	10
Over 70	2	2
Academic rank (n=93)		
Instructor	2	2
Assistant professor	21	23
Associate professor	38	41
Professor	32	34
Have Tenure (n=92)	68	74
Number of years teaching college level (n=94)		
1-10	28	30
11-20	32	34
21-30	30	32
Over 30	4	4
Have graduate faculty status (n=93)	90	97
Have chaired thesis/dissertation (n=93)	74	80
Have presented research at conferences (n=93)	82	88
Number of Presentations (n=65)		
0-20	50	77
21-40	9	14
41-60	2	3
Over 60	4	6
Published in recreation journals (n=91)	80	88
Number of recreation publications (n=71)		
0-10	43	61
11-20	15	21
21-30	9	12
Over 30	4	6
Program has course on research ethics (n=93)	48	52

2.4 Statistical Analysis

Measurement instruments were analyzed using the Statistical Package for Social Sciences (SPSS). All datum reported in this article were analyzed and reported as grouped data. Not all academicians responded to all applicable measurement instrument items, resulting in some points of missing data. As such, the total number of respondents per item is noted within each results scenario. Data analysis was done using standard descriptive statistical methods.

3.0 Results

The survey questionnaire included 21 scenarios, presented in a paragraph format, addressing ethical issues in research and publishing. Of the 21 scenarios analyzed, only three were considered ethical and seven unethical by a majority of respondents. Scenarios perceived as ethical publication/research practice by a majority of respondents included: (1) a recreation faculty member conducts a large study on two different groups of professionals, clinical recreational therapy practitioners and community special population practitioners. The data set is sufficiently large enough to result in two separate publications. One article is published on clinical therapy. The second manuscript (on community special population recreation) contains the exact same verbiage as the original manuscript for the methods section of the paper. The two studies are going to be published in two different fields (a recreational therapy journal and a city government journal); (2) a recreation faculty member conducts what he/she considers to be an important piece of research on behavior change in regard to creativity and recreation. Before the study is published, the author presents the study at a national recreation conference and at a regional and a state conference; and (3) a recreation educator is conducting research on insurance payments for recreational therapy in psychiatric facilities. As he/she designs the study on the impact of length of stay on therapeutic programming, he/she is approached by a national HMO and offered \$10,000 to fund the study. The HMO places no contractual restrictions on the publishing of the data. No one else is interested in currently funding the study so the recreation educator accepts the offer.

In contrast, Scenarios perceived as unethical publication/research practice by a majority of respondents included: (1) a graduate student completes a thesis/dissertation in which the advisor has had significant input. The student leaves for a job shortly after completing the degree. The student has no interest in helping to write a manuscript from the study. Subsequently, the advisor loses contact with the student and no further communication attempts are made. Six months after the student graduated, the advisor writes and submits a manuscript from the thesis/dissertation for publication with the advisor's name first and the student as a second author even though the student was not contacted; (2) a graduate student completes a thesis/dissertation in which the advisor has had significant input. The student leaves for a job shortly after completing the degree. The student has no interest in helping to write a manuscript from the study. Subsequently, the advisor loses contact with the student and no further communication attempts are made. The chairperson of the department supports the advisor going ahead and publishing a study from the thesis/dissertation and offers editorial assistance on the final manuscript. The advisor identifies the authors as the student, then him/herself, then decides to put the chairperson on the manuscript as third author; (3) a recreation faculty member has been funded by a playground equipment company to conduct a national study of equipment safety. After the study, the author must submit the final manuscript for review to the company. The company requires the author to drop two lines of results because it indicates something which could affect the company's sales of playground equipment. The author complies before submitting the manuscript to a national recreation journal; (4) an author publishes a manuscript in a recreation journal that contains instances in which he/she deliberately falsifies or fabricates data or information; (5) a department has a job candidate in for an interview. He/She answers a question before the faculty on future research. The candidate identifies an interesting study he/she is going to do next fall. A faculty member finds the topic of interest and decides to do the study immediately; (6) a recreation educator sends out a questionnaire with a cover letter. The cover letter informs potential respondents that individual responses will be kept anonymous and confidential. To reduce the costs of follow-up mailings, the recreation educator secretly

codes the questionnaire, which eliminates anonymity but maintains confidentiality; and (7) a recreation educator is in a hurry to conduct a survey before the holidays. Because of the slowness of the local Institutional Review Board (IRB) he/she does not send the questionnaire to the IRB before doing the study, even though it is the policy of that institution that all surveys be reviewed. Of the remaining 11 scenarios, academicians' opinions varied considerably. Scenarios that were not found to be ethical, questionable, unethical, or not an ethical issue, by a majority of respondents included various issues related to: authorship, presentation submissions, fragmentation, duplication, collegiality, disclosure of funding, and participant protection. Table 2 presents the comprehensive results for each research ethic item.

4.0 Discussion and Conclusion

The present research determined that considerable variation exists among recreation, park resources, and leisure service academicians regarding what are ethical or unethical research practices. Results of the present study also indicate that considerable variation exists among academicians in regard to what even constitutes an ethical issue in research. Of particular concern is the high number of "questionable" responses indicated for many of the scenarios. This appears to indicate that currently a fair amount of confusion exists within the profession regarding what is acceptable research practice. Variations in the perceptions of respondents should not be surprising however, given that the present research found that only 52 percent of respondent's graduate programs included a unit or course on research ethics. This suggests that the confusion that currently exists with regard to ethical research practice could stem from inconsistent graduate training in research. Further, results from this study indicate that the recreation, park resources, and leisure service field lacks a comprehensive formalized code of ethics with regard to research practice. Currently it appears that the only recreation, park resources, and leisure services-related professional organization to formally address selected issues related to ethical research practice is the Research Consortium of AAHPERD (AAHPERD 2003). While this code of ethics is helpful in reminding professionals about issues related to professional practice and issues related to authorship, plagiarism, and the submission of scholarly

Table 2.—Respondents’ perceptions of ethical issues related to research and publishing

<u>Ethical Scenarios</u>	Ethical	Question	Unethical	No Issue
1. A graduate student completes a thesis/dissertation in which the advisor has had significant input. The student leaves for a job shortly after completing the degree. The student has no interest in helping to write a manuscript from the study. Subsequently, the advisor loses contact with the student and no further communication attempts are made.	N (%)	N (%)	N (%)	N (%)
1a. Six months after the student graduated, the advisor writes and submits a manuscript from the thesis/dissertation for publication with the advisor’s name first and the student second even though the student was not contacted. (N=94)	10 (11)	22 (23)	62 (66)	0 (0)
1b. Six months after the student graduated, the advisor writes and submits a manuscript from the thesis/dissertation even though the student was not contacted. The student’s name appears first and the advisor’s name second. (N=94)	18 (19)	39 (42)	33 (35)	4 (4)
1c. The chairperson of the department supports the advisor going ahead and publishing a study from the thesis/dissertation and offers editorial assistance on the final manuscript. The advisor identifies the authors as the student, then him/herself, then decides to put the chairperson on the manuscript as third author. (N=93)	15 (16)	26 (28)	48 (52)	4 (4)
2. A recreation faculty member has been funded by a playground equipment company to conduct a national study of equipment safety. After the study, the author must submit the final manuscript for review to the company. The company requires the author to drop two lines of results because it indicates something which could affect the company=s sales of playground equipment. The author complies before submitting the manuscript to a national recreation journal. (N=93)	6 (7)	17 (19)	64 (72)	2 (2)
3. An author publishes a manuscript in a recreation journal that contains instances in which he/she deliberately falsifies or fabricates data or information. (N=94)	0 (0)	1 (1)	93 (99)	0 (0)
4. A recreation faculty member submits an abstract for presentation at a national conference. The abstract is accepted, but the faculty member had no intention of attending the conference to present the study. The faculty member has a colleague, not a co-author, present the study since the colleague was already planning on attending. (N=93)	5 (5)	34 (37)	38 (41)	16 (17)
5. A recreation educator has conducted a study and is going to attempt to write three or four publications from it. The majority of the data from the study has already been published by the author in a recreation journal. The subsequent manuscripts used parts of the original data not published in the original article. Furthermore, it could have strengthened the original article had the author chose to include all of the data. (N=94)	27 (29)	36 (38)	7 (7)	24 (26)

6. A recreation faculty member conducts a large study on two different groups of professionals, clinical RT practitioners and community special population practitioners. The data set is sufficiently large enough to result in two separate publications. One article is published on clinical therapy. The second manuscript (on community special recreation) contains the exact same verbiage as the original manuscript for the methods section of the paper. The two studies are going to be published in two different fields (a recreational therapy journal and a city government journal). (N=94)	48 (51)	19 (20)	6 (7)	21 (22)
7. A recreation faculty member conducts what he/she considers to be an important piece of research on behavior change in regard to creativity and recreation. The study is published in the Journal of Creative Behavior.				
7a. The faculty member is concerned that many recreation educators may not see the article. Thus, the faculty member submits a slight variation of the same article to a recreation journal for publication. (N=89)	17 (19)	37 (42)	26 (29)	9 (10)
7b. Three months after publishing the article in a recreation journal, the author submits the study for presentation at a national recreation conference. (N=91)	40 (44)	17 (19)	13 (14)	21 (23)
7c. Before the study is published, the author presents the same study at two different national recreation conferences. (N=92)	42 (46)	18 (20)	12 (13)	20 (21)
7d. Before the study is published, the author presents the same study at a national recreation conference and at a regional and a state conference. (N=92)	46 (50)	17 (18)	7 (8)	22 (24)
8. A recreation educator publishes a study on a topic of widespread interest in recreation. Several researchers contact the author to request copies of the instrument. The author declines to share his/her instrument with others. (N=91)	18 (20)	19 (21)	15 (16)	39 (43)
9. A recreation faculty member conducts a national study of perceived barriers to recreation participation. The faculty member lacks sufficient skill to conduct the data analysis and is not sure exactly what statistical tests should be performed. Furthermore, the recreation educator is not certain exactly how to present some of the data in the manuscript. The recreation educator writes the manuscript and has a colleague conduct the data analysis and help write the results. No discussion occurs regarding authorship. The recreation educator publishes the paper under his/her name which includes an acknowledgment of his/her colleague. (N=93)	27 (29)	30 (32)	31 (33)	5 (6)
10. A recreation faculty member conducts a national study of perceived barriers to recreation participation. Since the faculty member lacks sufficient skill to do the data analysis and is not sure exactly what statistical tests should be conducted, he/she hires (\$1,000) a graduate student to do the data analysis. Furthermore, the recreation educator is not certain exactly how to present some of the data in the manuscript. The recreation educator writes the manuscript with the graduate student helping to write the results. The recreation educator then publishes the paper under his/her name which includes an acknowledgment of the graduate student for his/her assistance. (N=94)	40 (43)	18 (19)	30 (32)	6 (6)

11. A department has a job candidate in for an interview. He/She answers a question before the faculty on future research. The candidate identifies an interesting study he/she is going to do next fall. A faculty member finds the topic of interest and decides to do the study immediately. (N=94)	4 (4)	17 (18)	69 (74)	4 (4)
12. The author (recreation educator) of a study published in a professional recreation journal did not acknowledge the source of funding for his/her study. (N=92)	1 (1)	31 (34)	29 (31)	31 (34)
13. A recreation educator is conducting research on insurance payments for recreational therapy in psychiatric facilities. As he/she designs the study on the impact of length of stay on therapeutic programming, he/she is approached by a HMO and offered \$10,000 to fund the study. The HMO places no contractual restrictions on the publishing of the data. No one else is interested in currently funding the study so the recreation educator accepts the offer. (N=93)	48 (51)	19 (20)	6 (7)	21 (22)
14. A recreation educator sends out a questionnaire with a cover letter. The cover letter informs potential respondents that individual responses will be kept anonymous and confidential. To reduce the costs of follow-up mailings, the recreation educator secretly codes the questionnaire, which eliminates anonymity but maintains confidentiality. (N=93)	15 (16)	25 (27)	47 (50)	6 (7)
15. A recreation educator is in a hurry to conduct a survey before the holidays. Because of the slowness of the local Institutional Review Board (IRB) he/she does not send the questionnaire to the IRB before doing the study, even though it is the policy of that institution that all surveys be reviewed. (N=93)	1 (1)	12 (13)	65 (70)	15 (16)
16. A recreation educator obtains written consent from a group of college students who each agree to participate in a study on knowledge of recreation risk factors. The college students are not informed that the data gathered on risk factors is not going to be used. In reality, the study is examining cheating behaviors on college tests.	21 (23)	27 (29)	38 (41)	6 (7)

work for presentation and publication, the codes do not specifically indicate what constitutes research misconduct. It is not the intention of the author's to criticize the work of the Research Consortium, only to point out that results from the current study indicate that while the field's professional organizations may agree on what is ethical research practice, academicians within the field may not agree or understand what may constitute unethical research conduct. For example, results from the current study indicated that only 7 percent of study respondents viewed self-plagiarism as an unethical practice, despite copyright law. While not an issue of criminal wrongdoing, results from the current study also indicated that a plurality of academicians perceived the practice of presenting the same research study at more

than one conference ethical. Typically such action serves not to disseminate important information but to increase personal credentials (e.g., increasing faculty vita). Given the variation in responses to a majority of the ethical scenarios presented in this study the author's make the following recommendations: (1) that action is taken within the recreation, park resources, and leisure services field to develop a comprehensive set of ethical standards with regard to research. This responsibility should be undertaken by branches of professional associations whose members are consistently involved in research-related activity; and (2) that recreation, park resources and leisure service education programs not providing courses or units on research ethics in their graduate curriculums establish research ethics related courses

or units and require these courses or units be taken by graduate students. Based on the findings of this research, future research could include studies identifying: the prevalence of unethical research behavior by recreation, park resources, and leisure services academicians and practitioners; the ethical issues that are most commonly encountered by recreation, park resources, and leisure services researchers; and the extent to which recreation, park resources, and leisure services academicians and practitioners confront ethical research issues.

While the results of the current study have implications to all stakeholders in the field of recreation, park resources, and leisure services involved in research or the editorial review of research, there are a number of limitations to this study. One limitation is the response rate (68%) for the study. As a result, threats to external validity may exist due to nonresponse bias. A second limitation is that the questionnaire was self-administered, thus potential threats to internal validity may exist if respondents provided desirable rather than accurate data. A third limitation was that academicians selected to participate in the study were from graduate degree-granting programs and may not be representative of all recreation, park resources, and leisure services academicians or all practitioner researchers. As a result, external validity may be limited.

5.0 Citations

American Academy for Park and Recreation

Administration 2004. **Guidelines for contributors to the Journal of Park and Recreation Administration [Electronic Version]**. Journal of Park and Recreation Administration. 22(1): 129.

American Association of Health, Physical Education, Recreation, and Dance 2003. **Code of ethics for the Research Consortium**. Retrieved November 5, 2003, from: <http://www.aahperd.org>

American Association of Health, Physical Education, Recreation, and Dance 2004. **Guidelines for Contributors**. Retrieved October 25, 2004, from: <http://www.aahperd.org/aahperd/template.cfm?template=joperd-submission.html#guidelines>

American Psychological Association 2001. **Publication Manual of the American Psychological Association (5th ed.)**. Washington, DC: Author.

American Therapeutic Recreation Association 2004. **Code of Ethics**. Retrieved October 25, 2004, from: <http://www.atra-tr.org/ethics.html>

Crase, D., and Rosato, F.D. 1992. **Single versus multiple authorship in professional journals**. Journal of Physical Education, Recreation, & Dance. 63(7): 28-31.

Dillman, D.A. 1978. **Mail and telephone surveys: The total design method**. New York, NY: John Wiley & Sons.

Erlen, J.A. 2002. **Writing for publication: Ethical considerations**. Orthopedic Nursing. 12(6): 68-71.

Fain, G.S., and Gillespie, K.A. 1990. **Professional ethics and intellectual property: A national study**. Journal of Physical Education, Recreation, & Dance. 16(3): 88-95.

Fine, M.A., and Kurdek, L.A. 1993. **Reflections on determining authorship credit and authorship order on faculty-student collaborations**. American Psychologist. 48: 1141-1147.

Goodyear, R.K., Crego, C.A. and Johnston, M.W. 1992. **Ethical issues in the supervision of student research: A study of critical incidents**. Professional Psychology Research and Practice. 23, 203-210.

Henderson, K.A., and Bialeschki, M.D. 2002. **Evaluating leisure services: Making enlightened decisions. (2nd ed.)**. State College, PA: Venture.

Iammarino, N.K., O'Rourke, T.W., Pigg, R.M., and Weinberg, A.D. 1989. **Ethical issues in research and publication**. Journal of School Health. 59: 101-105.

King, C.R. 2003. **Ethical issues in writing and publishing**. Clinical Journal of Oncology Nursing. 7(3): 19-23.

- King, C.R., McGuire, D.B., Longman, A.J., and Carroll-Johnson, R.M. 1997. **Peer review, authorship, ethics, and conflict of interest.** *Image: Journal of Nursing Scholarship.* 29: 163-167.
- Leach, R.E. 1998. **Editorial: Ethics.** *The American Journal of Sports Medicine.* 26(3): 349.
- Luey, B. 1996. **The librarian's role in teaching academic authors about publishing procedures and ethics.** *Serials Review.* 22(1): 39-46.
- National Recreation and Park Association 2004a. **NRPA professional code of ethics.** Retrieved October 25, 2004, from: <http://www.nrpa.org/content/default.aspx?documentId=493>
- National Recreation and Park Association 2004b. **Guidelines for contributors.** *Journal of Leisure Research.* 36(2): 293.
- Oermann, M.H. 2002. **Writing for publication in nursing.** Philadelphia, PA: Lippinott.
- Parker, R.M., and Szymanski, E.M. 1996. **Ethics and publication.** *Rehabilitation Counseling Bulletin.* 39(3): 162-164.
- Pigg, R.M. 1994. **Ethical issues in writing for scientific publications.** *ESG Mono.* 12(2): 31-42.
- Price, J.H., Dake, J.A., and Islam, R. 2001. **Selected ethical issues in research and publication: Perceptions of health education faculty.** *Health Education & Behavior.* 28(1): 51-64.
- Price, J.H., Dake, J.A., and Oden, L. 2000. **Authorship of health education articles: Guests, ghosts, and trends.** *American Journal of Health Behavior.* 24: 290-299.
- Riddick, C.C., and Russell, R.V. 1999. **Evaluating research in recreation, park, and sport settings: Searching for useful information.** Champaign, IL: Sagamore.
- Rumrill, P.D., Bellini, J.L. 1999. **Ethical considerations in reporting and publishing rehabilitation research.** *Journal of Vocational Rehabilitation.* 12(2): 71-74.
- Sawyer, T.H. 1995. **Ethics of multiple submissions and copyright concerns.** *Journal of Health, Physical Education, Recreation, & Dance.* 66(3): 14-16.
- Society of Park and Recreation Educators 2002. **Call for papers.** *SCHOLE* 17, 202.
- Wiersma, W. 1995. **Research methods in education: An introduction. (6th ed.).** Boston, MA: Allyn and Bacon.

JUST DON'T TELL ME NO: MANAGING OHV RECREATIONAL USE ON NATIONAL FORESTS

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Abstract

Impacts to natural resources from Off Highway Vehicle (OHV) use on national forest lands are a growing concern for U.S. Forest Service managers. Research strongly indicates that impacts occurring in “non-designated areas” are causing damage to sensitive plant and wildlife species, eroding soils, and exceeding road density standards. Surveys were sent to 600 OHV users from 11 counties in eastern North Carolina, with a 12 percent response rate. Findings suggest that the majority of OHV users live in the country, are primarily middle-aged males, have moderate to above average incomes, have received safety training and support future efforts to do so, especially for beginning riders. Even when riders indicated that they are satisfied with OHV opportunities and support non-government management of OHV areas, they do not want their use restricted nor do they support annual registration or user fees. Although managers can expect support for OHV safety programs, there appears to be little support for increasing regulations, user fees, or government involvement.

1.0 Introduction

With the growing popularity of OHV use in the United States, there have been increasing impacts to natural resource conditions on national forest lands. Between 1976 and 2000 the number of OHV users increased from 5 million to 36 million, creating conflicts with other users as well as with the growing number of homeowners who live adjacent to national forests. Unmanaged OHV use has resulted in miles of unauthorized roads that cause erosion, degradation to watersheds, and damage to cultural resource sites (Cordell et al. 2004).

On July 7, 2004, the Forest Service issued a national OHV policy restricting OHVs to designated roads and

trails on federal forests and grasslands as part of an effort to curb both environmental damage and ease conflict with visitors (36 CFR Parts 212, 251, 261, & 295). Under the proposal, each forest and grasslands district manager was asked to work with the public to identify routes, trails, and other areas suitable for OHVs. As the result of extensive national forest road and trail inventories, managers have identified areas where OHV users are developing new user-created trails, which are both exceeding the allowable trail/road density standards for the area. Such activity potentially impacts threatened and endangered plant and wildlife species that are being compromised by extensive erosion and noise problems in riparian areas (USDA Forest Service, Washington D.C. News Release No. FS-0418). On July 15, 2004, the Forest Service published proposed regulations in the Federal Register to govern OHVs and other motor vehicle use on national forests and grasslands. Forest Service Chief, Dale Bosworth, stated:

“We believe that off-highway vehicles are a legitimate use in the right place. That includes many places on national forest land. But it’s a use that’s got to be managed if we want to keep it. That’s what our proposed new rule for OHV use on national forest land is all about: managing that use now to sustain it in the future. And if we want to sustain that use, then we’ve got to work together.” (<http://www.fs.fed.us/recreation/programs/ohv/>)

1.01 Proposed OHV Rule

The proposed ruling, if implemented, will require designation of roads, trails, and areas open to motor vehicles. Designation would include class of vehicle and, if appropriate, time of year for motor vehicle use. A given route, for example, could be designated for use by motorcycles, ATVs, or street-legal vehicles. Once these areas have been designated, the rule would prohibit motor vehicle use off the designated system or those areas inconsistent with the designations. Stakeholder involvement will be facilitated by Forest Service managers in an effort to enlist local residents

in the decision making process. This collaborative effort between local residents and special interest groups, together with state, local, and tribal governments will address identified problems and create potential solutions to develop effective OHV programs.

1.02 Future Collaboration

Many motor vehicle users, and non-users, agree that a designated system of motor vehicle routes is desperately needed. Effective partnerships with state and local governments and user groups are already generating collaborative planning, maintenance, and shared resources to better manage OHV use. Sustainable OHV recreation will require continuing partnerships to address road and trail maintenance, enforcement, and protection of natural resources (<http://www.fs.fed.us/recreation/programs/ohv/index.shtml>).

Based on current national forest trail and road inventories, national forest managers believe that OHV users are developing new user-created trails, which are both exceeding the allowable trail/road density standards for the area, impacting threatened and endangered plant species, and causing extensive erosion problems in riparian areas (Cordell 2001). Although National Forest managers and resource planners are required to document OHV use, and determine the impact OHV use is having on forest resources, little information is available. Moreover, a clearer understanding of OHV use on National Forests is critical because federal agency resource managers are increasingly required to adhere to the following: enforce guidelines and standards written in forest plans, work with stakeholders regarding management of natural resources, and respond to concerns relating to Threatened and Endangered Species designation and protection. Without research fostering a better mutual understanding between federal land managers and OHV users, it is likely that conflict will continue concerning quality land stewardship, environmental impacts, and the overall influence OHV use has on the quality of visitor experience for non OHV users (Fisher et al. 2001).

Table 1.—Demographic information on OHV riders

Rider characteristics	Group	N	% used for recreation	% used for work
	M	62		
Gender	F	2	80	20
Household income	\$75,000 - \$100,000			
Mean age	43 years old			
Place you are from	88% live in country/small town			

2.0 Methods

The research area for this study included a 150 mile radius in eastern North Carolina from Highway 93 east to the Atlantic Ocean. Using OHV dealer mailing lists of individuals who either purchased an OHV, or OHV parts, researchers sent out a survey during January 2005 to 600 OHV users from nearly every county in eastern North Carolina. Of the total surveys mailed, 74 were completed and returned for a response rate of 12.3 percent. Data were entered and analyzed using SPSS 13.0. Table 1 shows frequency distributions based on Likert scale survey questions.

3.0 Results and Discussion

Surveys were conducted to characterize OHV users in eastern North Carolina, identify their perceptions of the current situation, and determine their level of support for the implementation of a future OHV recreation programs that will potentially implement use restrictions, user fees, and annual registration while improving OHV opportunities in managed areas. Preliminary findings suggest that the majority of OHV users are male, have moderate to above-average incomes, live in the country, and are primarily middle-aged.

When asked to express their opinions about proposed programs, many indicated that they strongly support rider safety programs and non-governmental run OHV programs while opposing annual registration fees, and programs run exclusively by government agencies. Furthermore, many expressed a reluctance to support a number of the proposed OHV programs. There seems to be at least a perception among respondents that increased government participation equates to increased regulations and restrictions for OHV riders (Table 2).

Table 2.—Opinions about proposed OHV programs

Do you support or oppose?	N	M	SD
Operator safety certification	64	4.8	.22
Annual registration fee	63	2.3	1.2
Household income	\$75,000 - \$100,000		
Gov program to manage areas	64	2.0	.66
Non-government management	62	4.2	.39

Scale 1=strongly oppose, 3=neutral, 5=strongly support

Table 3.—Satisfaction of OHV riders

Rider opinions	N	M	SD	NA
Opportunities in NC	55	3.1	1.39	9
Management in NC	55	3.9	1.13	9
Experiences in NC	58	3.5	.89	9

1=very unsatisfied, 3=neutral, 5=very satisfied

Table 4.—OHV Riders willingness to pay

How much will you pay \$?	\$0	\$5	\$7.5	\$10	\$15	\$20
Daily per vehicle use fee	14	13	0	22	6	5
How much will you pay \$?	\$0	\$20	\$30	\$40	\$50	\$75
For a yearly fee	9	13	6	5	17	12
How much will you pay \$?	\$0	\$20	\$30	\$40	\$50	\$75
For an annual license fee	32	18	1	3	3	5

When respondents were asked their opinion of how satisfied they are with OHV riding opportunities in North Carolina, a significant number indicated that they are neutral or satisfied with current opportunities. It is equally surprising given the respondent's reluctant support for improving management, that many riders endorsed support for current management of areas as well as indicating they are satisfied with their current riding experiences (Table 3). These results might partially reflect the absence of management or enforcement of existing regulations/laws in the study areas during the past decade.

In an effort for eastern North Carolina Forest Service land managers to better understand and manage OHV use, riders were given a set of questions in order to assess their willingness to pay for specific OHV programs. Responses clearly indicate that while riders seem to

understand that funding is necessary to pay for daily user fee programs and facilities, they are extremely reluctant to support an annual license fee (Table 4). It seems that a long history of no user fees in addition to little monitoring of use by Forest Service managers has left many users reluctant to support new programs, especially if they restrict use or include user fees.

While it is the goal of Forest Service managers to provide quality experience opportunities for OHV riders, there is equal interest in determining whether there is support for proposed actions for reducing user conflicts while protecting the environment. Again, riders strongly endorse efforts to educate riders in order to reduce environmental impacts, but show little support for actions that either reduce user numbers or mandate where riders can and cannot go (Table 5).

Table 5.—Management actions to reduce conflicts and environmental impacts

Level of support or opposition	N	M	SD	NA
Education to reduce impacts	55	3.9	.89	9
Reduce user numbers	55	2.6	1.13	9
Where riders can go	58	2.7	.89	9

1=strongly oppose, 3=neutral, 5=strongly support

Overall, riders indicated that they recognize OHV riding is potentially dangerous, can cause environmental damage, and do support a well managed OHV program by non-governmental entities. Even though riders indicated that they would like to see state and federal land managers provide more opportunities, how such a program can be developed and implemented, with a minimum willingness of OHV riders to pay for an annual registration or user fees, is less clear. Moreover, some respondents indicated that poor communication of rules and regulations causes problems regarding littering and impacts to soil and vegetation. These types of responses strongly suggest that myriad benefits may result from educational programs implemented to address responsible OHV use.

With little regulation currently in place to address the widespread OHV use in eastern North Carolina, managers are recognizing the need to address this issue while implementing actions that better monitor use. And although it is important to provide OHV riders more appropriate areas in order to minimize their impacts, it is equally important to set limits on where and when they can recreate on National Forest lands. Possibly the best avenues for accomplishing this task are twofold: to implement annual registration fees, and offer expanded opportunities in developed areas while enforcing restrictions in some sensitive areas where natural resource damage and conflict between user groups might occur.

4.0 Conclusions

These findings provide a clearer understanding of OHV use on national forests in eastern North Carolina. This preliminary investigation is the first stage of an ongoing investigation to identify preferences by users and the level support for managing OHV use in eastern North

Carolina. These findings are important because Forest Service resource managers are increasingly required to work with stakeholders regarding management of natural resources while addressing problems occurring on national forests. Without research that creates a better understanding between federal land managers and OHV users, it is likely that conflict will continue concerning both environmental impacts and effects on other user groups. From this preliminary investigation, it is apparent that eastern North Carolina OHV riders, although somewhat satisfied with existing OHV opportunities, currently are not supportive of management efforts to better manage use in eastern North Carolina. One productive avenue to improve the situation is in the development and implementation of an extensive OHV educational program. Forest Service managers need to utilize existing Treadlightly! curriculum in an effort to educate and inform users of potential future opportunities as well as the limitations of when and where OHV use can take place.

5.0 Acknowledgments

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6.0 Citations

Cordell, K.H. 2001. **Outdoor recreation for 21st century America**. State College, PA: Venture Publishing Inc.

Cordell, K., Owens, M., Green, G., Betz, C., Fly, M., Stephens, B., Gregory Super, G., Thompson, F. **Recreation statistics update no. 3: Trends and demographics of off-road vehicle users** 2004, October. Retrieved March 15, 2005, from <http://www.srs.fs.usda.gov/trends/RecStatUpdate3.pdf>.

Fisher, A.L., Blahna, D.J., and Bahr, R. 2001. **Off-highway vehicle uses and owner preferences in Utah** (Professional report IORT PR2001-02). Logan, UT: Institute for Outdoor Recreation and Tourism, Department of Forest Resources, Utah State University.

USDA Forest Service Washington D.C. news release No. FS-0418. **Forest Service releases draft policy on off-highway vehicle use in National Forest and grasslands** 2004, July. Retrieved May 7, 2005

from <http://www.fs.fed.us/news/2004/releases/07/off-hjighway-vehicle.shtml>.

USDA Forest Service off-highway program. 2004, October. Retrieved May 2, 2005 from <http://www.fs.fed.us/recreation/programs/ohv/>.

USDA Forest Service: 36 CFR Parts 212, 251, 261 & 295. **Travel management: Designated routes and areas for motor vehicle use** RIN 0596-ac11 p. 10.

EMERGENCY PREPAREDNESS AND TOURISM: BOTH WIN WITH HELP OF THE AMATEUR METEOROLOGIST

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Abstract

Weather is an important aspect of tourism. Ample snow and cold are needed for cross country skiing while beachgoers prefer the other extreme. In both cases individuals seek information about the weather in order to prepare for a recreation experience. The amateur weather hobbyist can serve that need. These individuals establish a home weather station in the backyard. The opportunity then arises, how can this weather data get to the end user – the tourist? This paper examines the potential of using the Internet to link all of these amateur weather stations in order to provide a more complete picture of our atmosphere. In addition to the interest by tourists, emergency preparedness agencies gain valuable information from this data.

Keywords: Hobbyist, partnerships, emergency preparedness.

1.0 Introduction

The fall 2004 Atlantic hurricane season was one the most severe in recent times. Several named storms caused considerable damage and loss of life in the Caribbean and Gulf States. What became apparent was the role of amateur meteorologists in alerting the public about the advancing rain and wind. Just like the Amateur Radio operator has helped emergency preparedness, this new network of weather stations staffed by hobbyists can do the same (Gagnon 2000). Weather volunteers serve that need by filling in the gaps of weather coverage across the nation (Gnatek 2004).

Serving the needs of a hungry population starved for current weather data, these hobbyists do their duty by maintaining a weather station in their backyard or rooftop and broadcast that data to the world via the Internet. Even the popular press has recognized the importance of this hobby and offers instruction for the amateur meteorologist in the process (Williams 2004). Weather is so ingrained in our daily lives that it links individuals by some common interest. Weather is something someone will talk about while waiting in line at the grocery store or in a casual conversation with an acquaintance. We may comment on the temperature (e.g., too hot or too cold), precipitation (too much or not enough) or other atmospheric variables (wind, clouds). It is this casual component of weather that links us all and has fueled interest in collecting weather data and then broadcast this information to a demanding citizenry.

Taken to the extreme, weather enthusiasts may risk life and limb to experience first hand a hurricane or tornado. In fact a brand new form of tourism was born from the interest in chasing tornadoes. See Bristow and Cantillon's (2000) study of tornado chasing tours in the American Midwest. Weather attracts people beyond a casual interest. Yet in even more tranquil environments, the tourist wants to know if it might rain or not during a vacation.

1.1 History

Organized efforts in linking the hobbyist and the nation's demand for weather data is not new. The National Weather Service created the Cooperative Observing Program (COOP) to meet such a demand. The COOP is a nationwide weather and climate monitoring network for nearly 12,000 volunteers maintaining a 24/7 vigilance. Temperature and precipitation (including snowfall) are the basic data collected. Its roots can be traced to Thomas Jefferson who had envisioned the nation would be covered by weather observations with at least one person per county (COOP 2000).

So what is the Cooperative Observing Program? The Cooperative Observing Program has long history of service in the United States. The COOP serves two goals: (1) provide daily data usually maximum and minimum temperature and 24-hour precipitation totals) required to define the United States climate; and (2) provide real time data support the National Weather Service (NWS) in areas of forecasts and warning.

Specifically a cooperative station is a site at which observations are taken by volunteers. Actually there may be some automatic stations providing this service as well. While Cooperative observers may serve on either a paid or unpaid basis, the services frequently consist of taking and recording temperature and precipitation daily and reporting to the National Climatic Data Center or an NWS office at the end of each month (Citizen Weather Observer Program 2004). The United States is not alone in the volunteer weather data collection. In the United Kingdom, amateur meteorologists can visit the Met Office at <http://www.meto.gov.uk/bookshelf/observations/index.html> to learn how they may join the effort in that country.

1.2 Current Situation

Weather forecasting and hobbyists have grown hand in hand in the last decade. Notess (1994) summarized the advancing linkages that the World Wide Web provided in connecting the weather data resources at universities of the world together. This early information was crude by today's standards, although the tabular data and raw satellite imagery was essential for the professional meteorologists and early weather enthusiasts alike. This early taste of world wide weather data is akin to the anticipation phase of the recreation experience (Clawson and Knetsch 1996). That is, any advance information about the weather could inspire a traveler to take a sweater or umbrella on the next trip. It might even deter a tourist from the trip, should the current or predicted weather conditions be viewed as not so conducive for the planned experience. A contemporary example of this is best illustrated by travel cancellation insurance. Imagine planning a trip to southeast U.S. or the Caribbean during hurricane season; it is best to plan that trip a few days in advance due to the likelihood of tropical storms. And

this information is all made possible for the tourist via the Internet. Bristow (1999) noted that the information found on the web might actually increase or decrease tourism based on the type of information found about the destination.

The downhill skier will be interested in current weather conditions as much as the number of operating lifts. It is for this reason that we find weather information on ski resort websites, often linked with live cams of the slopes. This paper illustrates the usefulness in providing a more complete coverage of weather observatories managed volunteers. The weather hobbyists have the potential to help citizens during times of extreme weather. During periods of relative calm, this information could serve the need of tourism by providing that same expanded coverage.

2.0 Methods

The National Weather Service's Cooperative Observer Program is a partnership between the nation's weather observing network and more than 11,000 volunteers who take observations on at farms, in urban and suburban areas, National Parks, seashores, and mountaintops. If we add the Internet and low cost electronic weather stations, the potential for expanding weather reports with a relative ease of access, blanket the nation. In order to understand the usefulness, an inventory of personal weather stations is mapped along with the official stations administered by the National Weather Service. Information about the personal volunteer stations includes location and types of weather data collected, including temperature, wind direction and speed, atmospheric pressure and rainfall. Additionally, the stations archive this data for future retrieval. The Weather Underground is encouraging more hobbyists to join the effort (Weather Underground 2004).

For the purpose of this analysis, Connecticut was selected. While Connecticut is a fairly uniform shaped area (rectangular), it was still necessary to collect weather data from the neighboring states of New York, Massachusetts and Rhode Island. With this additional coverage, our analysis includes atmospheric factors outside the political boundary since weather is not

dependent on administrative boundaries. The data were collected on 2 February 2005 and include temperatures for midnight, 0600 and 1200 (noon) local time (EST). See Figure 1 for the coverage in all of New England.

The location of the weather sites were geocoded on base maps of New England, referenced by the latitude and longitude. Using ESRI's ArcGIS software (ArcView 8.3) and geography data, the maps created show the distribution of the weather data sites in the region. Both official National Weather Sites and Personal Weather Sites are mapped. The Personal Weather sites were collected from the Weather Underground web site available at <http://www.wunderground.com/>. To create the isothermal maps (maps connecting areas of equal atmospheric temperature), the spatial analyst extension of the software employed interpolating to a raster image, then a kriging technique to create a surface map of weather temperatures for Connecticut. Kriging is a geostatistical technique for interpolation that uses information about the spatial autocorrelation in the vicinity of each point to provide 'optimal' interpolation (<http://en.mimi.hu/gis/kriging.html>).

3.0 Results

Compare Figure 2 and Figure 3. These maps represent the temperature data collected at 6 a.m. on 2 February 2005 at the National Weather Service's official sites and the Personal Weather Sites. For Figure 2, an isothermal map is shown using only the data from the National Weather Service sites. For Figure 3, our temperature map is generated from the Personal Weather Sites. Even the casual observer will note the additional data provided by the amateur sites. Based on our sample, the additional information provided by these volunteer meteorologists provide a more complete and accurate picture of the atmosphere. These data are useful for a better understanding of the microclimate of the area and may provide useful information for the tourist.

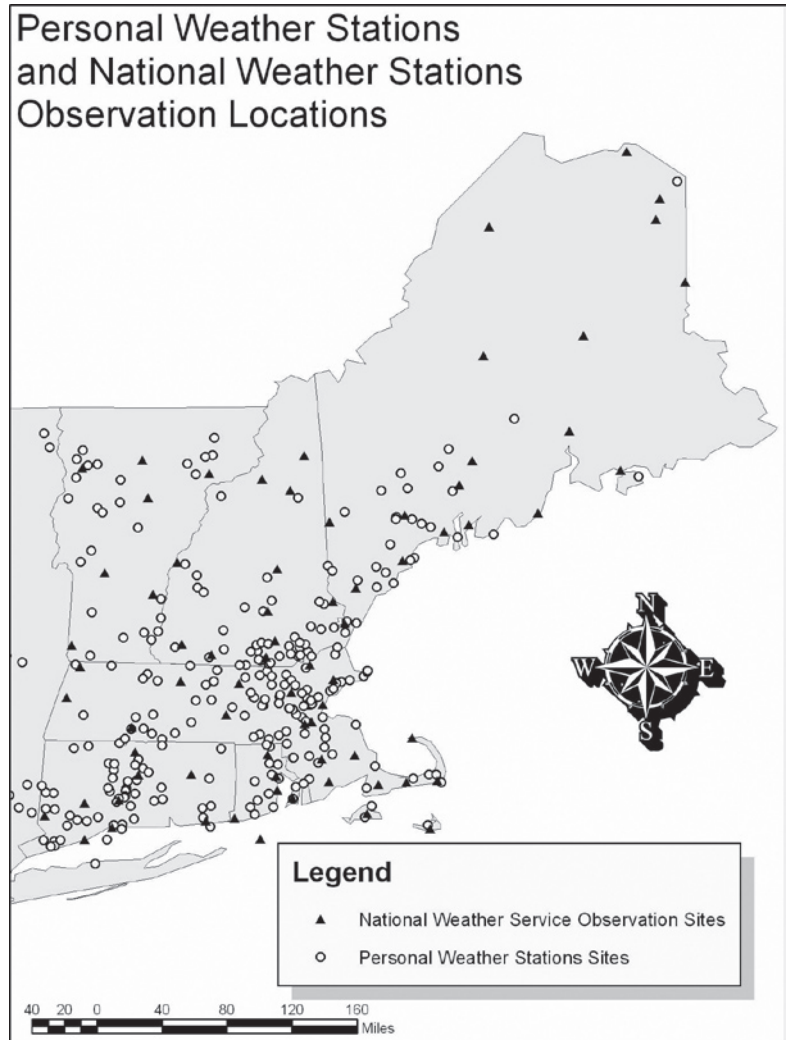


Figure 1.—Sampling Sites for data collected 2 February 2005.

Figures 4 and 5 illustrate the variation at noon. Still the reader will observe the additional data provided by the more complete coverage of the personal weather sites. We note that local conditions may influence the ambient air temperature. This "Urban Heat Island" effect recognizes that the built up environment of our cities will contribute to higher temperatures than the surrounding countryside. Further we must recognize that elevation will mean that the hilly regions may experience lower temperatures than sea level stations. But what remains clear in our analysis is the increase level of detail offered by the increased coverage provided by the amateur enthusiasts.

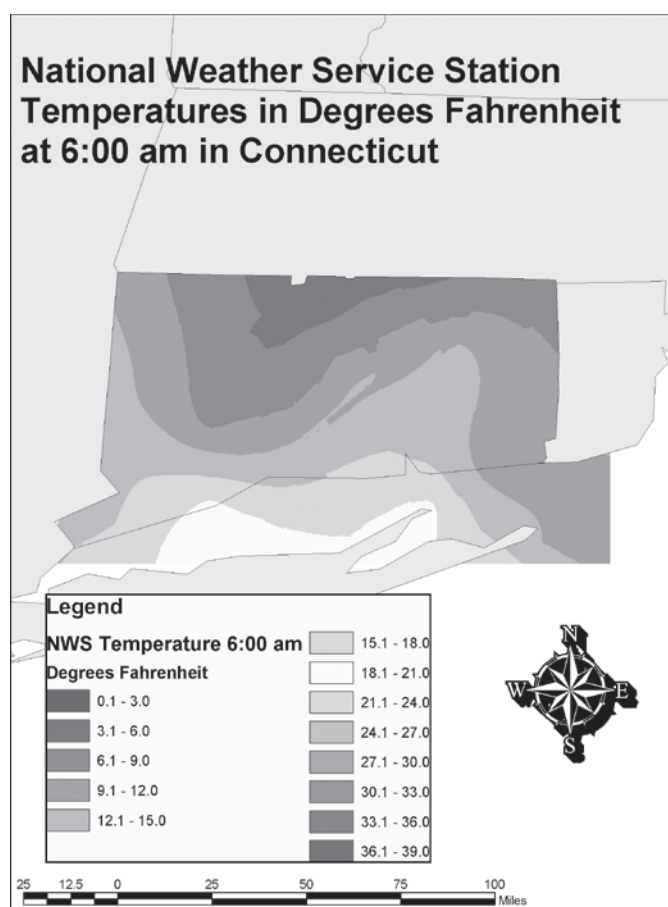


Figure 2.—National Weather Sites 0600 hours.

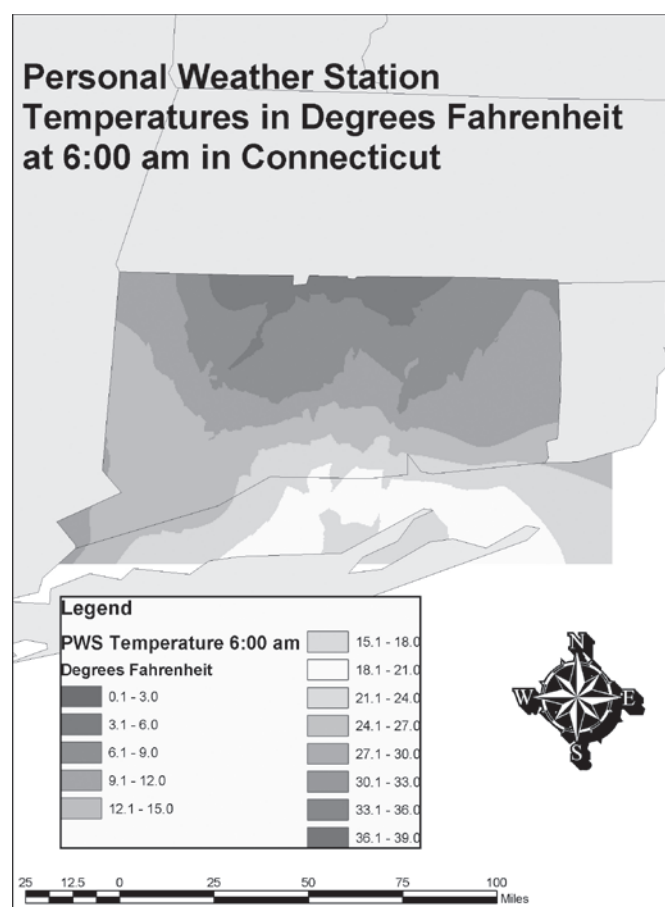


Figure 3.—Personal Weather Sites 0600 hours.

4.0 Discussion

The importance of linking these amateur weather stations can certainly be justified by any plan to address emergency preparedness. The private public partnership is not new in this arena. The American Red Cross has an active list of volunteers on-call and ready to serve. Ham radio operators will provide emergency communications. And the amateur meteorologist can provide through these internet links, the comprehensive coverage needed to supply the public with much needed atmospheric data.

Geographic Information Systems technology is certainly relevant for this kind of service. Johnson (2000) provides a useful background for emergency preparedness applications with a GIS. Linking weather monitoring stations, with the analytical techniques employed in GIS and broadcasting this information to the world on the web can serve multiple users, including the tourist.

A citizenry now demands 24/7 information and that includes the weather. Can you imagine telling the

television viewers thirty years ago that a television network would be devoted to weather? Our insatiable hunger for weather, especially severe weather, will encourage future meteorologists to reach out even further. So for the tourist, during the calm between storms, if advance information can be help better plan a leisure experience, time and money can be saved.

5.0 Citations

- Bristow, R.S. 1999. **Virtual Tourism: the Ultimate Ecotourism**. *Tourism Geographies*. 1(2): 219-25.
- Bristow, R. and H. Cantillon. 2000. **Tornado Chasing: The Ultimate Risk Tourism**. *Parks and Recreation*. September, pp. 98-106.
- Citizen Weather Observer Program. 2004. **Citizen Weather Observer Program**. Retrieved 10 December 2004, from <http://www.wxqa.com/>

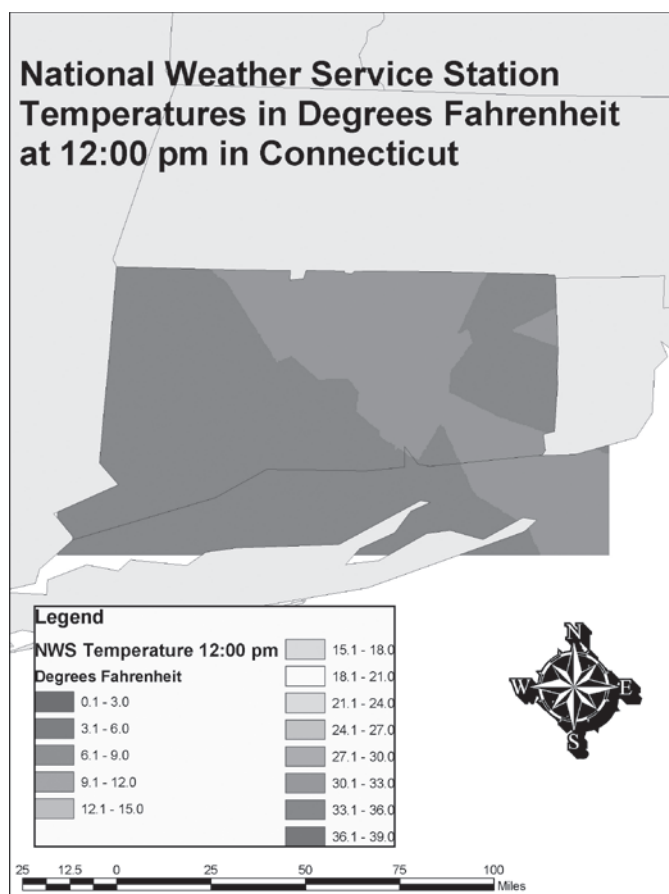


Figure 4.—National Weather Sites 1200 hours.

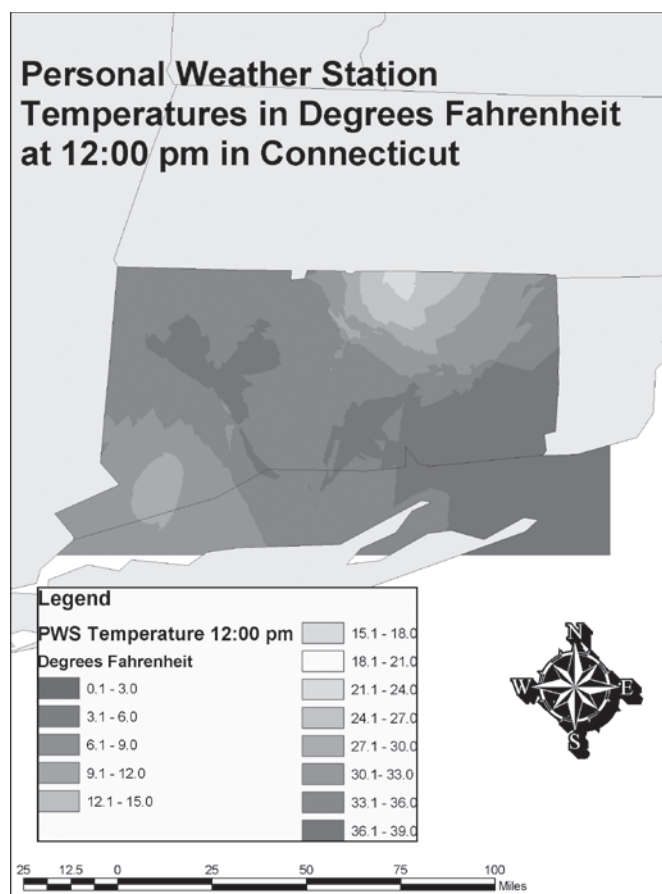


Figure 5.—Personal Weather Sites 1200 hours.

Clawson, M. and J. Knetsch. 1966. **Economics of Outdoor Recreation**. Baltimore: Johns Hopkins Press.

Cooperative Observer Program (COOP) 2000. **Cooperative Observer Program**. Retrieved 19 February 2005 from <http://www.coop.nws.noaa.gov>

Weather Underground. 2004. **Personal Weather Station Project**. Retrieved 25 October 2004 from <http://www.wunderground.com/weatherstation/>

Gagnon, J. F. 2000. **Canwarn: A Volunteer Canadian Severe Weather Reporting Program**. Retrieved 19 February 2005 from <http://shell.pubnix.net/~wiarc/canwarn.doc>

Gnatek, T. 2004. **Sharing the Weather**. New York Times. 30 December 2004.

Johnson, R. 2000. **GIS Technology for Disasters and Emergency Management**. An ESRI White Paper. Retrieved 10 October 2004 from <http://www.esri.com>

National Weather Service. 2005 **Cooperative Observer Program**. Retrieved 19 February 2005 from <http://www.nws.noaa.gov/om/coop/>

Notess, G. 1994. **The Internet Weather Channel**. Database Magazine, Vol. 17, issue 5 p 95-98.

Williams, J. 2004. **How to Become a volunteer weather observer**. USA Today. Retrieved 25 October 2004 from <http://www.usatoday.com/weather/tornadato/wskywarn.htm>

Watching the Weather in UK. 2005. **Watching the Weather in UK** Retrieved 1 May 2005 <http://www.meto.gov.uk/bookshelf/observations/index.html>

ASSESSING THE PUBLIC'S ATTITUDE TOWARD FEES AT WILDLAND RECREATION SITES

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Abstract

This study was conducted to assess the current attitudes of wildland recreation participants toward user fee programs and to identify social variables that could predict attitudes. A survey of 124 respondents was conducted in southern West Virginia and southwestern Virginia. Regression analysis indicated that most social and demographic variables are poor predictors of attitudes toward fees. Respondents held mixed attitudes toward fee programs but indicated increasing support as fees are identified as specific to a purpose or site.

1.0 Introduction

The Recreation Fee Demonstration Program was established in 1996 to “improve recreation opportunities to the American public” (Watson 1999). Since the program’s implementation, approximately 104 recreation areas in 34 states including West Virginia, Virginia, Kentucky, and Tennessee have taken part in the Fee Demo program as an effort to better their facilities. Managers charge user fees for things such as entry to the recreation area, parking, and day use of trails and facilities as a means to maintain or improve the existing condition of the recreation site. However since the Fee Demo program was applied, there has been an ongoing debate among researchers and the public as to the more appropriate reason why the Fee Demo program was established.

Research completed on the Recreation Fee Demonstration program suggests that recreation users are polarized regarding the program. Users who support the Fee Demo program feel that the fees can mean better facilities, while those who oppose the program feel that people who already live on a limited budget will not be able

to participate in the outdoor recreation activities that they enjoy the best. Users who oppose the Fee Demo program also believe that the program is double taxation and that the Fee Demo program is just a plan by the government to restrict land that rightfully belongs to the public.

2.0 Purpose Statement

The purpose of our research is to explore public acceptance of the Fee Demonstration Program in southern West Virginia and Southwest Virginia using different variables to measure overall acceptance to the fee program. The variables include, age, income, years of experience, and the distance an individual lives from a recreation area. Our theory is that older, lower income, more experienced people, and people who live close to a recreation area are less accepting of fees than people who have the opposite characteristics.

3.0 History of Recreation Fees

In the early development of parks and recreation, outdoor recreation was thought of as a public good, a good that everyone should be able to enjoy at no cost. However, as the amount of visitors increased and the funds allocated for outdoor recreation began to decrease (Krannich et. al 1999), many of the recreational facilities began to deteriorate due to overuse and lack of funding to make the appropriate repairs. In 1996, Congress passed the Recreation Fee Demonstration Program that enabled the National Parks Service (NPS), Bureau of Land Management (BLM), U.S. Forest Service (FS), and the U.S. Fish and Wildlife service (FWS) to “test a variety new recreation user fees including general use fees and access and use fees for specific sites, facilities, and programs” (Krannich, et. al 1999). Under the Fee Demo program, land managers can use the fees as a means to make necessary repairs in their facility so that they meet the expectations of the visitor. Since the Fee Demo program was implemented, there have been mixed responses among the public as to who should pay and who should not.

4.0 Age and Years of Experience's Influence on Customary Pricing

In the book, *Financing, Managing and Marketing Recreation and Park Resources*, authors Dennis Howard and John Crompton, define customary pricing as “client groups expecting a certain price to be charged for particular services” (Howard and Crompton 1980), in which instance “people expect parks to be free” (Howard and Crompton, 1980). Howard and Crompton go on to say that during periods of rising costs, customary prices become problematic due to the fact that it becomes more difficult to keep the costs low enough to offer the same product at the regular prices (Howard and Crompton 1980). Therefore, if an individual in an older demographic accustomed to paying nothing when visiting a recreational site suddenly has to pay user fees, it is very likely that the individual will not be as accepting toward paying user fees as an individual of a younger demographic who is accustomed to paying fees for various reasons.

Individuals with a lower income will not be able to participate as much in outdoor recreation as opposed to individuals with a higher income. At national parks in the Pacific Coastal region, 62 percent of all visits are by people with a high to very high income (More 1999), while only six percent of visitors at the parks had a low income (More 1999).

Martin (1999) points out those local users who visit the recreation site more frequently will end up paying more fees than other users because the local users utilize the resources more often. This leads them to be less supportive of the Fee Demo program than other users (Williams, Vogt, and Vitterso 1999). Additional fees tend to reduce recreational visits among frequent users who live nearby the recreation site (Williams, Vogt, and Vitterso 1999). At the Desolation Wilderness Area in California, recreation users who live near the wilderness area are less supportive of the Fee Demo program than users who live farther away (Williams, Vogt, and Vitterso 1999). A possible reason for this is because local users are less likely to see positive benefits from the Fee Demo program (Williams Vogt and Vitterso 1999), and local users are the ones who “mainly suffer from living a tourist area” (Lee and Pearce 2002). Local recreation users also

believe that they should not have to pay user fees because they pay property taxes and many of them volunteer in the recreation areas, therefore doing their deed to better the recreation area.

5.0 Methods

We collected 124 surveys from individuals at Cascades falls in Pembroke, VA, part of the Washington-Jefferson National Forest, which is the closest Fee Demonstration program in this area, and, from faculty, staff, and students at Concord University. Once the surveys were collected, the data was entered into SPSS and analyzed.

6.0 Sample Description

For the sample, 124 surveys were collected and out of the 124 surveys, 46 respondents were male and 76 were female and two respondents did not reply. As for age, 64.5 percent were between the ages of 18-24, 4.8 percent were ages 25-31, 6.5 percent of respondents were 32-38 years of age, 5.6 percent were between the ages of 39-45, 9.7 percent were between the ages of 46-52 years, and 8.1 percent of respondents were ages 53 years or older. One participant, however, did not respond.

The one activity that respondents most commonly enjoyed in the outdoors was walking/hiking with 52.4 percent, the second popular choice was camping with 12.9 percent, and both fishing and scenic drives were selected by 7.3 percent as their most enjoyable activity. Respondents were also asked how many times per month they participated in outdoor activities. The average number of times participated was 6.1, with the numbers ranging from zero times per month to 30 times per month. Respondents were also asked how many years they have participated in outdoor activities. The average number of years they participated was 21.1 years, with the numbers ranging from one year to 60 years.

When respondents were asked how far they lived from an outdoor recreation area, most, about 58.9 percent stated they lived between zero to 10 miles away from an outdoor recreation area. In an ethnic breakdown, 7.3 percent were African American (black), 84.7 percent were Caucasian American (white), 0.8 percent were Native American, 4.8 percent selected other, and 2.4 percent did not respond.

Table 1.—Descriptives for fee attitudes

Question	Min	Max	Mean	Std. Dev.
Do you support fees at public recreation sites	1.00	10.00	5.71	2.48
Would support fees more if they were for specific projects	3.00	10.00	7.45	1.90
Believe fees may be necessary to improve trails & facilities	1.00	10.00	7.66	1.94

7.0 Results

All of the attitude questions were based on a Likert scale with “1” representing no support of the position and “10” representing the strongest support for the position. In response to a global fee support question the sample mean was 5.71 with a standard deviation of 2.48. We had initially expected a more polarized distribution in this attitude. Consistent with previous studies, the public was more supportive of dedicated fees – in response to a question of supporting fees for specific projects the mean was 7.45 with a standard deviation of 1.9 (Table 1).

8.0 Discussion

The people who responded to this survey were generally young and considered outdoor recreation opportunities to be important. The sample population was not supportive of fees in general but became more supportive of fees dedicated to specific projects. Results indicate that respondents tend to believe that fees may often be necessary if improvements are to be made at recreation facilities. This seems to be consistent with attitudes found in other studies of recreation site fees. The regression model initially proposed was tested using stepwise multiple regression (Table 2). The goodness of fit between the model and the data was poor – the model predicting only 11 percent of the variance in attitudes toward fees. Three of the proposed independent variables (years of participation, income and proximity to the site) had no significant ability to predict attitudes toward fees. One independent variable (age) was a significant predictor, however, not in the way that we had initially

assumed. During the development of the model it was assumed that individuals who were older would remember when recreation site use was traditionally free and would be less supportive of fees. In fact, older participants proved to be more supportive of fees than younger participants. One of the purposes of this study was to examine some easily assessed demographic variables which could be used by site managers to predict public response to new or altered fee systems at recreation sites. The variables examined in this study are not good predictors of the public’s response to fees and the assumption that attitudes toward fees may be predicted well with demographic variables is, at best, questionable. Undoubtedly more complex instruments measuring a variety of demographic variables in conjunction with attitudinal measures would provide more satisfactory results. It would not, however, achieve our initial purpose of finding a simple tool for assessing the public’s attitude toward fees.

9.0 Citations

Howard, Dennis R. and Crompton, John L. 1980.

Financing, Managing and Marketing Recreation and Park Resources. Wm.C. Brown Company Publishers.

Krannich, Richard S., Eishenhauer, Brian W., Field, Donald R., Pratt, Christina, and Luloff, A.E.

1999. **Implications of the National Park Service Recreation Fee Demonstration Program for Park Operations and Management: Perceptions of**

Table 2.—Analysis of the regression model

Dependent Variable: Do you support charging user fees at recreation sites on public land?

Model 1	R	R Square	Adjusted R Square	Std Error of Estimate		
ANOVA	.340	.116	.108	2.354	Sig.	Regression
	Sum of Squares	df	Mean Square	F		
	78.52	1	78.52	14.16	.000	
Residual	598.96	108	5.56			
Total	677.49	109				
Significant Variable	B	Standard Error	Beta	t	Sig.	
Constant	4.66	.353	13.22	.000		
Age	.497	.132	.340	3.76	.000	
Excluded Variable	Beta In	t	Sig.			
Years of participation	.085	.615	.540			
Yearly income	-.001	-.009	.993			
Distance	-.037	-.401	.689			

NPS Managers. Journal of Park and Recreation Administration. 17(4): 35-52.

Lee, Diane and Pearce, Philip L. 2002. **Community Attitudes to the Acceptability of User Fees in Natural Settings.** Journal of Tourism and Hospitality Research. 4(2): 158-173.

Martin, Dr. Steven R. 1999. **A Policy Implementation Analysis of the Recreation Fee Demonstration Program: Convergence of Public Sentiment, Agency Programs, and Policy Principles?** Journal of Park and Recreation Administration. 17(4): 15-34.

More, Thomas A. 1999. **A Functionalist Approach to User Fees.** Journal of Leisure Research. 31(3): 227-244.

Watson, Alan E. 1999. **Recreation Fees and Pricing Issues in the Public Sector, Societal Response to Recreation Fees on Public Lands.** Journal of Park and Recreation Administration and Journal of Leisure Research. 31(3): 203.

Williams, Daniel R., Vogt, Christine A., and Vitterso, Joar 1999. **Structural Equation Modeling of Users' Response to Wilderness Recreation Fees.** Journal of Leisure Research. 31(3): 245-268.

BALANCING LEISURE AND WORK: EVIDENCE FROM THE SEASONAL HOME

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Abstract

Seasonal homes are used during leisure time for many recreational activities, yet recent technological innovations have diminished the separation between the work place and the seasonal home. In a survey of Walworth County seasonal home owners, most who work full time report they seldom work during vacations and weekends from their seasonal home. Yet there is a distinct subgroup who do mix work into weekends and vacations for a variety of reasons. The most frequent reasons given by these people for working from the seasonal home were related to the expectations of co-workers and clients. Understanding more about the habits and motivations of those who frequently work during weekends and on vacations could provide a new perspective on the obstacles everyone faces in balancing work and leisure.

1.0 Introduction

Balancing work and leisure is often a challenge because it involves many people and complex circumstances that change over time. Failure to achieve the right balance can carry serious consequences including diminished career opportunities, family problems, and stress-related mental and physical ailments. The difficulty of balancing leisure and work make it a source of frequent concern for some, and a focus of thought, planning, inventiveness, and effort for many others.

The relationship between work and leisure changes as society changes. Women's participation in the labor force, the growing variety of work arrangements (e.g., flexible scheduling, job sharing), technological advances in communications (including voicemail, e-mail, cell phones, and other wireless technologies), increased time

spent commuting, and the growing diversity of family configurations all affect what people can do, and what they need to do, to balance work and leisure.

Seasonal homes are one component of a strategy for achieving the work-leisure balance. They are used as family retreats, places separate from everyday life, and in particular, places separate from work. They are special places where people escape from work, retire from their job, or retreat for solitude and contemplation. Weekend, summer, and holiday use – that is, time periods traditionally devoted to non-work activities – dominate patterns of seasonal home use. Summer holiday and weekend occupancy rates at seasonal homes in Michigan are estimated to range from 50 to 80 percent (Stynes et al. 1997). Seasonal home buyers reported the three most important reasons for purchasing their homes were to get away and relax, to be with friends and family, and to recreate outdoors (Stynes et al. 1997). Seasonal home concentrations in areas with extensive outdoor recreation opportunities (Beale and Johnson 1998) and the wide assortment of recreational equipment kept at second homes (Stynes et al. 1997) further underscore the link between second homes and resource-based recreation. However, recent technological developments that facilitate contact with the workplace raise new questions about how completely seasonal home owners are able to or willing to retreat from work activities. This paper explores the relationship between work-related activities and attitudes and seasonal homes using a survey of seasonal home owners in an urban-proximate, resource rich county in southern Wisconsin.

1.1 Previous Research

The balance between work and leisure is often an implicit theme in leisure research, but is seldom directly studied. Kelly and Kelly (1994) set out to determine whether work, leisure, and family are domains that people clearly distinguish in meaning and function. Based on surveys and interviews, they conclude that the meanings people associate with these three domains overlap, particularly across family and leisure domains.

Time use studies take a different approach, questioning people about how they allocate their time to a wide range of activities, then assigning activities to categories such as paid work, unpaid work, or leisure (Gershuny 2000); or productive, maintenance, expressive, or travel time (Robinson and Godbey 1997). The information obtained in time-use diaries is used to construct a portrait of how time is spent and to explore the social implications of these time allocations. Success or failure in balancing work, leisure, and family is a prominent theme emerging from time use studies (Robinson and Godbey 1997; c.f., Hochschild 1989). Time use studies have also identified covariates, including age, sex, race, marital status and whether there are children living at home. Some of the disputes over interpretation of time use data concerns the origin and true extent of differences between these covariate groups, particularly between men and women, and the amount of time each group devotes to housework and childcare.

Another perspective on the work-leisure balance comes from occupational behavior research. Concerns about work-related stress and job satisfaction have focused attention on coping strategies (Latack and Havlovic 1992), work/family role conflicts (Kopelman et al. 1983), and work-related attitudes such as job involvement and work centrality (Paullay et al. 1994). In examining work/family role conflicts, the concept of the permeability of work and family domains is important (Eagle et al. 1997). Permeability is the extent to which time during the work day is used for personal or family duties; and conversely, the extent to which family time is used for work duties. It is useful for describing the effectiveness of divisions between leisure and work time. Like Kelly and Kelly's work (1994), it suggests that clean distinctions between work and leisure are illusive. Work from home is classified as telecommuting, where work at home replaces work at the office; or supplemental work-at-home (SWAH), which augments time in the office (Duxbury et al. 1996). Second home owners who work from their second home are more likely to be engaged in SWAH, because telecommuting involves maintaining a regular schedule of work from one place; though data are not available to determine the specific types of work being conducted from seasonal homes.

1.2 Study Area

Walworth County is located in southeastern Wisconsin just beyond the fringe of the Milwaukee and Chicago metropolitan areas (the cities are 40 and 72 miles from Walworth County's center, respectively). More than 10 million urban residents live within a 2-hour drive of the county. It is an attractive resource-based recreation area with a long history as a seasonal homes area, one now experiencing growth and change and the challenges to resource management that often accompany rural growth. Some 25 percent of local property tax bills are sent to addresses in Illinois (Betts 1997). Managers, planners and extension agents in the county are working to better understand all the factors that drive growth in the area, including the demand for seasonal homes near the cities, and the gradual conversion of seasonal homes to permanent residences.

2.0 Methods

Data on work activities from the seasonal home come from a mailed, self-administered survey with a probability sampling strategy designed to maximize the number of seasonal homeowners and amenity migrants without specifically identifying them (e.g., through property tax records, c.f. Stynes and Stewart 1994b). The primary recreational areas in Walworth County surround 12 lakes. With the exception of Lake Geneva, each of these have special lake management districts that are taxing bodies responsible for preserving and maintaining the lakes. The districts include both lakefront properties and other properties in very close proximity to the lake (e.g., across the road from the lake).

The sample was selected from the residential tax records for the lake management districts. The selection process for Lake Geneva was more complex because it lacked a lake management district. The initial sample pool for Lake Geneva included properties that were residential with a fair market value of at least \$150,000, a value set in consultation with the county assessor to include all properties near the lake. Combining the lake management districts and the properties in the Lake Geneva area resulted in an initial pool of 14,686 properties. A random sample of 1,440 was selected from these, and the initial sample was screened to ensure the property was not a vacant lot, and was in close proximity

to one of the lakes. This screening process resulted in 984 cases. Questionnaires with cover letters were mailed to each of the 984 households. Two follow-up mailings were sent to those who did not respond. A total of 519 surveys were returned resulting in an adjusted response rate of 54 percent. A comparison of the value of the property and the improvements (homes and related buildings) by those who responded to the survey and those who did not shows no significant difference between the two groups. Thus, there is good reason to believe that the sample is broadly representative of residents of lake areas in the county. The analysis here is limited to seasonal home owners who currently work full time (n=180).

2.1 Survey Development

Original measures of work-related behavior and attitudes about working from a second home were developed for this survey. Following a comprehensive review of literature on current patterns and types of work from home, coping with work stress, and role conflicts between work and family, a survey was drafted to elicit information about technology used to work from home, the frequency of engaging in work-related tasks from Walworth County, and attitudes toward working from the Walworth County home. Informal discussions with peers, friends and family about their work habits during non-work time or from a second home helped us to reduce the number and scope of questions. The questions were pre-test using a cover letter and brief survey given to a purposive sample of 35 people. The pre-test sample represented people from a wide range of occupations, male and female, of different ages and family situations. Discussions with many pre-test participants indicated some initial skepticism because they “never work from home.” However, once they read the questions everyone we surveyed realized they did at least a modest amount of work from home during weekends and vacations. Based on the pre-test results and reliability analysis several questions were revised or dropped.

In addition to the work-related items, the Walworth County survey asked basic demographic questions and the location of the primary residence. Selected items from prior surveys of seasonal home owners (Stewart and Stynes 1994a, Stynes et al. 1997, Williams and Van Patten 1997) were also included. Because occupation is

so important to the opportunities and pressures affecting work from home, we used an open-ended question adopted from Salant, Carley and Dillman (1996) that asks the respondent to describe exactly what kind of work they do in their main job. Responses to the question were then coded using the Standard Occupational Classification system (U.S. Department of Labor 2004).

3.0 Results

Our analysis focuses on determining whether and how much seasonal home owners worked from their second home, what role technology played in facilitating that work, and on their attitudes about working from home. Gender, income, marital status, children at home, and occupation were considered as potential covariates or independent variables.

The sample of 138 seasonal home owners who work full time was mostly male (78%) and married or partnered (87%). One-third had children under 18 living at home. Most lived in households with significant income; only 30 percent had household incomes below \$100,000 in 1999. Seventy-three percent rated recreation a very important factor in their decision to purchase their seasonal home. Proximity to Chicago was a very important factor for 75 percent of them in the purchase decision, and for 80 percent, the drive to reach their seasonal home typically took less than 2 hours.

Only two respondents reported having all the work-related technological devices and services we asked about (telephone, cell phone, pager, fax, voicemail or answering machine, Internet access, computer, and e-mail), and six did not own any of them. As a group they averaged 3.4 devices, usually including telephone, voicemail, and cell phone. Only 33 percent had computers, and 25 percent had e-mail (the reader should recall that the data were collected in 2000).

Our sample of full-time workers mirrors the larger Walworth County study which shows a broad mix of occupations, including white and blue collar work (Table 1). It is interesting to note that permanent and seasonal residents, working or retired, are more alike in their occupations than any of the Walworth County groups is to workers nationwide. A higher percentage of

Table 1.—Occupations of Walworth County residents by retirement and seasonal status

2000 Standard Occupation Classification Groups	Walworth County, WI				Nationwide ¹
	Working Full Time		Retired		
	Seasonal	Permanent	Seasonal	Permanent	
Management occupations	24%	4%	8%	20%	
Business & financial operations	17%	18%	4%	15%	
Computer & mathematical	3%	8%	6%	0%	
Architecture, engineering	3%	1%	4%	2%	
Life, physical, social sciences	1%	4%	4%	0%	
Community & social services	2%	4%	4%	0%	
Legal	6%	1%	0%	5%	
Education, training & library	3%	6%	17%	8%	
Arts, design, entertain., sports & media	1%	4%	2%	0%	
Healthcare practitioners & technicians	9%	7%	8%	8%	
All Management and Professional Services	68%	55%	56%	59%	34%
Healthcare support	1%	1%	2%	1%	
Protective services	6%	1%	2%	6%	
Food preparation & serving	1%	6%	2%	0%	
Personal care, service	1%	5%	2%	1%	
All Service Occupations	8%	13%	8%	8%	15%
Sales	13%	9%	15%	5%	
Office & administrative support	1%	5%	6%	14%	
All Sales and office occupations	14%	14%	21%	19%	27%
Construction, extraction	5%	12%	8%	4%	
Installation repair & maintenance	3%	6%	0%	5%	
All Construction, extraction, and maintenance	8%	18%	8%	8%	9%
Production	3%	8%	4%	4%	
Transportation & material moving	2%	4%	4%	2%	
All Production, transport., & material moving	4%	12%	8%	6%	15%

¹Source: Occupations 2000, Census 2000 Brief, <http://www.census.gov/hhes/www/ioindex/reports.html>

those living in Walworth County are in management and professional services occupations, and a lower percentage are in production and transportation, and service occupations.

Respondents were asked how often they engaged in several work-related behaviors. The five-point response scale ranged from never to very often. The average across

items and respondents is 2.0, or “seldom.” Participation in leisure activities was assessed by asking respondents how many of the listed recreational activities they had engaged at the Walworth County home over the past 12 months. The average number of activities checked was 7.2, with individual responses ranging from 0 to 15 activities. Overall, most of our respondents use their seasonal home for recreation, not work. However, there

Table 2.—Attitudes toward working from the seasonal home by frequency of work

	All Workers	Less Frequent Workers	More Frequent Workers ¹		
Statements about reasons for working from the seasonal home	n=138	n=98	n=40	F-test ²	Sig.
My clients, co-workers or employees have to be able to reach me quickly.	3.14	2.88	3.79	15.62	0.00
I enjoy my job and choose to work whenever I can.	3.07	2.96	3.33	3.49	0.06
My co-workers or employees seek out my advice and guidance even when I'm not working.	2.98	2.65	3.79	28.03	0.00
I monitor workplace activity to avoid surprises upon my return.	2.97	2.66	3.74	23.14	0.00
I work extra hours to catch up.	2.79	2.64	3.15	5.35	0.02
My employees/manager expect me to check in when I'm away.	2.69	2.47	3.23	10.40	0.00
I can spend more time away from my workplace if I work during time off.	2.64	2.39	3.28	18.46	0.00
I cannot keep up with my job without working extra hours.	2.64	2.45	3.10	7.79	0.01
I can be required to report to my workplace on short notice.	2.45	2.39	2.59	0.67	0.41
I have to monitor workplace politics when I'm away.	2.42	2.12	3.18	20.80	0.00
I work during my time off to get ahead.	2.40	2.20	2.90	11.21	0.00
I recruit new customers or clients in every setting, at every opportunity.	2.29	1.96	3.13	31.05	0.00
I am preoccupied with my job.	2.29	2.11	2.74	10.06	0.00

Note. Statements were rated on a 5-point scale from 1=strongly disagree to 5=strongly agree.

¹More frequent workers are those whose average response to questions of work frequency were in the top quartile.

²The F-test measures the equality of more and less frequent workers' mean ratings.

were people who reported working more frequently. The 40 "frequent workers" whose average response on frequency of work items was in the top quartile at 2.5 or higher (where 2 is seldom and 3 is sometimes) were very likely to be in the highest income category (81% versus 68% of less frequent workers), male (85% vs. 76%), and in management, business or finance occupations (55% vs. 35%). They also visited Walworth County more during the course of the year (90 vs. 81 visits) and spent more money on the Walworth County home (about \$20,000 vs. \$15,000). They engaged in more recreational activities (8.2 vs. 7.2, $F=3.34$, $p=.07$), and

reported owning more home technology items (5.1 vs. 3.0, $F=43.8$, $p=.000$).

The most consistent and interesting differences between frequent workers and the rest of the sample were responses to statements about why work from the second home was necessary, advisable, or desirable. Thirteen items were listed and respondents were asked to mark how strongly they agreed or disagreed, using a five-point scale. The items and mean responses for frequent and less frequent workers and for the whole sample are shown in Table 2. Frequent workers consistently express more

agreement with these statements, and give their highest ratings to a different set of statements than those who did not frequently work from home. For frequent workers, the most compelling reasons to work from the seasonal home related to doing what others wanted them to do. This may reflect genuine social interdependency in the workplace, or it could be the least guilt-inducing answer regarding behavior the respondent senses is not socially ideal (i.e., working while on vacation). It could also be a reflection of how co-workers actually behave. We can only speculate about why these frequent workers agreed most strongly with those items that are most socially oriented, in a list that otherwise emphasizes very personal reasons for needing and choosing to work.

4.0 Conclusions

Seasonal homes are settings for leisure where the classic issues and conflicts over how time is spent are played out. Seasonal or second homes research has emerged as an important area of study because tourism and recreation are both involved; seasonal home use is a window into both leisure activities. This study demonstrates that the realms of work and leisure overlap in the seasonal home setting. Previous research documented the relationship between retirement and seasonal homes (Stewart 1994), and this study adds active work life as a potential component of seasonal home use. To the extent that the ability to work from a seasonal home facilitates early or partial retirement, or long-distance commuting, these findings also have implications for amenity migration and the community growth and land use pressures it entails.

While time use studies have been a major focus of interest and disagreement among leisure scholars, occupational behavior research is equally useful for understanding how work relates to leisure. The skills and strategies people develop to cope with work-related stresses and demands is particularly relevant to the study of the leisure repertoire and leisure over the lifespan. The measures of attitudes toward work are meant to capture coping strategies, and the differences we found between those who do and do not frequently mix work into weekends and vacations suggest that motivations for work during leisure time deserve closer examination. Stress is endemic in many workplaces,

which can make working during unobligated time ultimately more relaxing, or at least a better mitigation for stress, than recreation. Understanding more about the habits and motivations of those who frequently work during weekends and on vacations could provide a new perspective on the obstacles everyone faces in balancing work and leisure.

5.0 Citations

- Beale, C.L. and K.M. Johnson. 1998. **The Identification of Recreational Counties in Nonmetropolitan Areas of the U.S.A.** Population Research and Policy Review. 17: 37-53.
- Betts, G.T. 1997. **Lake Geneva Area Study.** Wisconsin Agricultural Extension Service.
- Duxbury, E., Higgins, C.A., and D.R. Thomas. 1996. **Work and family environments and the adoption of computer-supported supplemental work-at-home.** Journal of Vocational Behavior. 49: 1-23.
- Eagle, B., Miles, E.W., and Icenogle, M.L. 1997. **Interrole conflict and the permeability of work and family domains: Are there gender differences?** Journal of Vocational Behavior. 50: 168-184.
- Gershuny, J. 2000. **Changing times: Work and leisure in postindustrial society.** New York: Oxford University Press.
- Hochschild, A. 1989. **The Second Shift.** New York: Avon Books.
- Kelly, J.R. and Kelly, J.R. 1994. **Multiple dimensions of meaning in the domains of work, family, and leisure.** Journal of Leisure Research. 26: 250-274.
- Kopelman, R.E., Greenhaus, J.H., and Connolly, T.F. 1983. **A model of work, family, and interrole conflict: A construct validation study.** Organizational Behavior and Human Performance. 32: 198-215.
- Latack, J.C and Havlovic, S.J. 1992. **Coping with job stress: A conceptual evaluation framework for**

- coping measures.** Journal of Organizational Behavior. 13: 479-508.
- Paullay, I.M., Alliger, G.M., and Stone-Romeo, E.F. 1994. **Construct validation of two instruments designed to measure job involvement and work centrality.** Journal of Applied Psychology. 79(2): 224-228
- Robinson, J.P. and Godbey, G. 1997. **Time for Life: The surprising ways Americans use their time (2nd ed.).** University Park, PA: The Pennsylvania State University Press.
- Salant, P., L.R. Carley and D.A. Dillman. 1996. **Estimating the Contribution of 'Lone Eagles' to Metro and Nonmetro Migration.** Technical Report #96-19, Social & Economic Science Research Center, Washington State University, Pullman, WA.
- Stewart, S.I. 1994. **The seasonal home location decision process: Toward a dynamic model.** Unpublished doctoral dissertation, Michigan State University Department of Park and Recreation Resources.
- Stewart, S.I. and D.J. Stynes. 1994a. **Toward a Dynamic Model of Complex Tourism Choices: The Seasonal Home Location Decision.** Journal of Travel and Tourism Marketing. 3(3): 69-88.
- Stewart, S.I. and D.J. Stynes. 1994b. **Understanding seasonal home use: a recommended research agenda.** In: Vander Stoep, Gail, ed., 1995. Proceedings of the 1994 Northeastern Recreation Research Symposium. GTR NE-198. Radnor, PA: USDA Forest Service Research, Northeastern Research Station.
- Stynes, D.J., J. Zheng and S.I. Stewart. 1997. **Seasonal Homes and Natural Resources: Patterns of Use and Impact in Michigan.** U.S. Forest Service, North Central Forest Experiment Station, Gen. Tech. Rep. NC-194.
- U.S. Department of Labor, Bureau of Labor Statistics. 2004. **Standard Occupational Classification System.** Accessed online at <http://www.bls.gov/soc/home.htm>.
- Williams, D.R. and S.R. Van Patten. 1997. **Survey of Residents and Seasonal Homeowners of the Hayward Lakes Area.** Unpublished research report available from author.

SUSTAINABLE TOURISM INFRASTRUCTURE PLANNING: A GIS BASED APPROACH

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Abstract

This paper presents a conceptual GIS-supported sustainable tourism infrastructure planning approach (STIP). This approach aims at integrating a comprehensive set of sustainability criteria (i.e., dealing with development objectives, preferred visitor experiences, and carrying capacity standards) in tourism planning, using GIS. STIP involves three phases: a visitor segmentation phase, a zoning phase, and a transportation network planning phase. To demonstrate the integration of these phases, STIP was applied to the Sinharaja Forest Reserve, a tropical rainforest in Sri Lanka's southwestern wet-zone. The area is experiencing increasing visitor use and requires additional trail development, as to mitigate resource stress. The resulting trail networks, which were mapped conform the sustainability criteria, provide directives for the area's sustainable development.

1.0 Introduction

For many decades, tourism destination development has been dominated by a philosophy of "promoting established attraction- and service facilities." The assumption was that the development of transportation facilities would follow (Gunn 1994). However, as transportation facilities are in general not revenue producing, common property, and governmental business, new destinations usually lack new transportation facilities. At the same time commercial attraction and service facilities establish themselves, independent of other developments and sectors, along transportation routes that formerly used to serve general community and economic development needs (Inskeep 1991). Nowadays, it is generally acknowledged that these 'unplanned' types of development are the ones most likely to be associated with low levels of visitor satisfaction and adverse impacts on resources. Since visitor experiences

depend upon these very resources, 'too much' resource degradation leads to a decrease in visitor satisfaction, implying declining visitor arrivals. Unfortunately, tourists seem to require ever more specialized and spatially dispersed forms of development, aggravating the above mentioned problems (Williams 1998).

In response to threats ensuing from poor planning, considerable advancements have been made in the development of methodological processes for planning tourism destinations (e.g., Gunn 1965, 1972, 1994; Inskeep 1988, 1991; Lawson and Boyd-Bovy 1977). Nevertheless, today's tourism planners cope with a lack of spatial concepts, models and theories that they can draw from (Dredge 1999). An explanation hereto lies according to Pearce (1995) in the fact that many have been developed independently of one another, with little or no recognition of or attempt to build on previous efforts. Fagence (1995) adds that these models have merely established the relevance of geographical concepts, rather than that they conclude on rules regarding these concepts' functioning. In the absence of such geographical models, researchers (e.g., Itami, Raulings, Maclaren, Hirst, Gimblett, Zanon, & Chladek 2002; van der Knaap 1997) studied the factors (e.g., visitor education and information, regulation and enforcement, and markers and guides) that determine 'visitor network-use.' While these studies contribute to understanding revealed visitor behavior, their use in identifying spatially preferred visitor transportation network structures remains limited. Up till now destination-planning research has not reached much further than identifying the spatial entities (e.g., nodes, paths, and networks) that make up a destination's tourism infrastructure and explaining what is where and why. However, destination planning requires knowledge of the entities' 'sustainable' spatial configurations (i.e., considering the nature of and hierarchies within the entities, and the functional relationships among them).

To acquire better insights in the structure and functioning of sustainable visitor transportation networks and to plan more sustainable forms of tourism development, geographic information systems (GIS) are believed to

have great potential (Culbertson, Hershberger, Jackson, Mullen, & Olson 1994). GIS can be described as hardware, software, and procedures, which support the collection, input, storage, retrieval, manipulation, transformation, analysis, and presentation of geo-referenced data (Malczewski 1999). GIS technology couples common database operations such as query and statistical analysis to geographically represented object and field data and hence can be thought of as a decision support system involving spatially referenced data in a problem-solving environment (Malczewski 1999).

Although GIS has yet served a variety of tourism analysis purposes (see Bahaire & Elliott-White 1999) tailor-made GIS-applications with respect to tourism planning are scarce, and so is their use (McAdam 1999). However, GIS allow particularly for tourism planning, as tourism is above all a spatial phenomenon; it implies travel from one place to another. Consequently, tourism planning requires much spatial data collecting and processing, as all locations and their interrelations should be defined and analyzed within a spatial context. For this purpose GIS can describe and identify tourism infrastructure elements geometrically, thematically, and topologically. Moreover, GIS can deal with both object data (e.g., visitor centers, trails, forest patches) as well as field data (e.g., humidity, slope, altitude) of which both types can be represented in either grid or vector data format (Malczewski 1999).

In this paper, elements of both tourism and geo-information sciences are integrated to set out a new GIS-supported tourism planning approach. Tourism planning refers to the integrated planning of attraction (i.e., natural, cultural, man-made), service- (e.g., accommodation, shops, restaurants, visitor information, tour and travel operations, money exchange, medical facilities, postal services, entry and exit facilitation, etc.), and transportation facilities (i.e., both material infrastructure and transportation services) here referred to as 'tourism infrastructure' (Gunn 1994).

Sustainable tourism infrastructure planning (STIP) is introduced as the GIS-supported approach for planning sustainable tourism infrastructure. A "sustainable tourism infrastructure" can be defined as tourism infrastructure

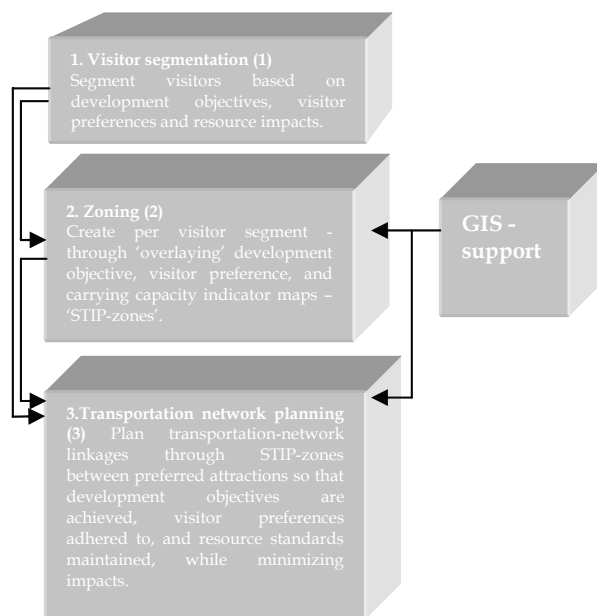


Figure 1.—STIP's three-phase methodology

that enables sustainable tourism development. By means of this approach natural, cultural, and economic resources can be allocated or used in a sustainable manner. 'Sustainable' tourism development achieves its prime objectives, enables visitors to realize desired and expected experiences, while maintaining 'carrying capacity standards' and limiting overall resource impacts.

2.0 Purpose

The purpose of this paper is to investigate STIP's potential—as a tourism planning approach—to incorporate 'sustainability criteria': realize development objectives; enable desired and expected visitor experiences; do not exceed carrying capacity standards; and minimize overall resource impacts. The overall goal was to map sustainable trail development locations by integrating (i.e., using a GIS) social (visitor preferences and managerial objectives) with biological (natural resource) data. When the three-phase GIS-supported methodology (Figure 1) set forward here allows realizing these goals, STIP can be considered a comprehensive and operational sustainable tourism planning tool.

3.0 Methods

During a field visit to Sri Lanka's Sinharaja Forest Reserve (SFR) (February - April 2000), case study data were acquired via personal observations, informal stakeholder interviews, and a quantitative exploratory

survey to profile visitors at SFR. However, as data were not originally collected to set up a STIP-approach, data quality is limited and only suitable to illustrate STIP's methodology. Non-reliable or incomplete data was either omitted or fictively included for demonstration. Hence, the purpose of this case study is not to make recommendations for tourism infrastructure development in SFR, but to demonstrate a comprehensive and operational STIP-approach for planning sustainable tourism infrastructure in protected areas.

STIP integrates the 1) visitor segmentation; 2) zoning; and 3) visitor transportation network planning phases (see Figure 1). The integration of these phases allows for directing visitors through preferred zones, to undertake preferred activities at preferred facility locations, while accounting for development objectives and resource constraints.

3.1 Phase 1 - Visitor Segmentation

The notion of accounting for visitor characteristics in destination planning is not new. In 1979, Cohen was among the first to recognize that tourists vary in terms of needs and motivations, and thus behavioral patterns. Hence, the incorporation of such differences in destination planning is likely to result in higher visitor satisfaction levels, and may even reduce resource impacts, or induce protected area (PA) benefits (Haider 2002). Even though (post-hoc) visitor segmentation techniques - to group visitors on the basis of common characteristics - have already proven their relevance to the planning of tourism development, and the management of its facilities, these are seldom used in destination planning (McVetty 2002).

A visitor survey (n=60) was conducted at the Kudawe entrance, prior to visitors entering the SFR. First, principle component analysis (PCA) was used to derive orthogonal components from a set of ten variables dealing with desired and expected experiences, expected visitor impacts, and expected PA benefits. Next hierarchical cluster analysis was applied to group the respondents on the basis of similarity in principle component scores. PCA and hierarchical cluster analysis were used since these techniques provide better insights for matching desired and expected experiences with the

area-specific opportunities that provide these experiences, resulting in enhanced visitor satisfaction (Smith 1995).

From the PCA three factors with eigenvalues over 1.0 were extracted. Accumulated these components explained 65 percent of the variance in the data. These were interpreted as follows: factor 1—preferences for cultural activities; factor 2—preferences for nature-related activities; and factor 3—preferences for bird-watching. The first two components were used for this case-study since factor 3 had items loading on factor 1 and 2 with factor scores >.40. Cluster-analysis using Ward's method with a five-cluster (segment) solution turned out to be the most meaningful. When comparing respondents per cluster with their principle component scores, a 'culture' and 'nature' segment were selected for planning trail networks due to management goals to provide nature and cultural experiences in the area. A birdwatcher segment was not included because they can use the same trails as the other two segments, since they tend to visit the forest at different times during the day. The 'nature' segment has a strong preference for learning about nature; both through education as well as through real-life experiences, yet not a lot of physical activity. The 'culture' segment wants to visit local communities, cultural markers, and viewpoints, and use food and beverage facilities at various instances. This information was used to locate, per segment, SFR's places of interest. These can be attraction and service facilities (i.e., to plan trails in between in phase 3) or zones of interest (i.e., to use as input for creating STIP zones in phase 2).

3.2 Phase 2 - Zoning

The purpose of zoning is to demarcate specific areas for different types of land use and the development of standards to be applied within each land use zone to control land use according to the plan and to ensure standard compliance (Inskeep 1991). Zoning is particularly important since locations, regions, resources, amenities, and infrastructure have unequal potential and capacity for particular forms, types and scales of development (Fagence 1991). When planning for sustainable tourism infrastructure, it is argued that zones should be planned on the basis of twofold criteria groups 'carrying capacity criteria' and 'visitor opportunity criteria,' both having their own purpose and applying

their own set of indicators and standards. Once these criteria are combined, zones useful in guiding the planning of sustainable tourism infrastructure can be derived (Lindberg & Hawkins 1993).

In the context of this paper carrying capacity is defined as “the types, densities, and patterns of tourism infrastructure development a ‘zone’ can sustain indefinitely without degrading its natural, cultural, and economic resources beyond certain thresholds.” The purpose of carrying capacity-based zoning can subsequently be described “to protect natural, cultural, and economic resources through letting future development depend upon the most sensitive natural, cultural, and economic indicators (Ceballos-Lascuráin 1996). These premises have also been incorporated in STIP. However, STIP makes use of indicators, which can be expressed as ‘maximum infrastructure density’.¹ Each indicator is supposed to possess a ‘maximum infrastructure density value’ for each PA-grid cell.² Next, these indicator maps are superimposed (i.e., overlaid in Arc/Info 8.1) computing for each cell the lowest maximum infrastructure density value. Carrying capacity zones can then be derived through classifying these lowest maximum infrastructure density values, and depicting these classes - as ‘zones’³ of contiguous cells - geographically in a GIS.

Which indicators to be included in the process depends on managers’ choice of relevant and available data, and the indicators’ suitability to be expressed in terms of

¹Defining maximum infrastructure density, the types and patterns of infrastructure to be developed should be considered.

²For all indicator grid maps a cell-size of 30 x 30 meters was applied.

³A zone in tourism terminology (i.e., the terminology of this paper) is called a region in GIS-terminology.

⁴The processes of creating, standardizing, and merging (composite) indicators require considerable follow-up research.

Table 1.—“Forest cover” and “slope gradient” maximum infrastructure density values in square meters infrastructure per hectare - per visitor segment

Forest cover	Nature Visitor	Culture Visitor	Slope gradient	Nature Visitor	Culture Visitor
Primary forest	20	14	0 – 5	100	100
Secondary forest	33	25	5 – 10	50	50
Degraded forest	25	20	10 – 14	33	33
Encroachment	33	33	14 – 19	25	25
Forest plantation	13	13	19 – 24	20	20
Ridge forest	11	11	24 – 29	17	17
Agriculture	17	17	29 – 33	14	14
Scrubland / grassland	25	25	33 – 38	13	13

infrastructure density and being merged⁴ with other indicators. It is recommended to define composite indicators through conjoint analysis (i.e., composite indicators represent multiple environmental processes or conditions) as these render a more meaningful result. For example, setting maximum infrastructure density values for the variables ‘precipitation’ and ‘slope’ as two separate indicators for visitor-induced soil runoff is not that meaningful, as this approach does not tackle the detrimental effects of visitors trampling on steep slopes with high precipitation levels.

For the SFR case-study, carrying capacity-based zoning relied on two natural indicators: forest cover and slope gradient. Hard-copy forest cover data were drawn from a reprinted (1997) thematic map (1:40,000) published by Sri Lanka’s Department of Forestry. Slope data were derived from a digital elevation model (DEM) based on a reprinted (1966) topographic map (1:63,360) of the Rakwana region. Maximum infrastructure density values, attached to the various classes of forest cover, were abstracted from the visitor survey. For the indicator ‘slope’ these were fictively included (Table 1).

Although carrying capacity zones provide the natural, cultural, and economic guidelines for STIP, they provide no insights in visitor preference areas. Consequently, tourism infrastructure development, guided primarily by carrying capacity zones, would most likely not meet

the needs of visitors or host regions. To provide ‘all’ visitors the experiences that most closely match their reason of visit, STIP not only considers zones of carrying capacities, but also zones of “visitor opportunities.” Visitor opportunity is defined as a preferred attraction, service, or transportation facility within a setting that allows the realization of desired and expected experiences (Ceballos-Lascuráin 1996).

Visitor opportunities can be described along four different setting or zoning perspectives, all of which contribute to the overall visitor opportunity: the experience setting, social setting, physical setting, and managerial setting (Lindberg and Hawkins 1993). This case-study however only incorporates the experience and managerial setting perspectives, as these can, unlike the social and physical setting perspectives, easily be represented by typical ‘zonal’ features such as lines and polygons⁵ within a GIS. Experience setting zones can be described as geographical zones that indicate (i.e., for one or more criteria or indicators) the extent to which desired and expected visitor experiences can be realized by one or more existing or latent available attraction, service, and transportation facilities. Managerial setting zones merely represent PA management’s development objectives through pointing out preferred development areas.

Similar to carrying capacity, visitor opportunities can be defined with respect to various indicators or ‘setting attributes’, expressed for each PA grid cell (i.e., in terms of ‘relative importance’ weights) the visitor or managerial ‘preference’ for that particular setting attribute. Overall opportunity zones result from overlaying (i.e., compute per cell the accumulated weight of the individual setting attribute weights) the various setting attribute weight maps, classifying the weights in the resulting weight map, and depicting these classes, as ‘zones’ of contiguous cells, geographically in a GIS.

For the SFR case-study, polygon-featured experience setting zones (i.e., visitor preference areas) were derived through attaching an experience setting weight to the various types of forest cover for the ‘nature’ and

Table 2.—Experience setting weights, per visitor segment, for setting attribute ‘forest cover’ (i.e., lower the weight the higher the preference)

Forest cover Preferences	Visitor Segments	
	Nature	Culture
Primary forest	100	300
Secondary forest	200	400
Degraded forest	300	200
Encroachment	600	500
Forest plantation	800	200
Ridge forest	400	100
Agriculture	500	100
Scrubland / grassland	700	100

‘culture’ visitor segment (Table 2). These weights were extrapolated from the visitor segment profiles.

Next, line- and polygon-featured managerial setting zones were created through attaching purely hypothetical managerial setting weights (Table 3) to the various managerial setting attributes. Since setting attributes do not necessarily cover every PA’s grid cell, the managerial setting attributes were attached a ‘weight if’ and a ‘weight if not’, in case certain setting attributes ‘did’ or ‘did not’ occur.

Line features: existing roads and trails to minimize both environmental impact as well as capital investments; rivers avoided as much as possible to minimize additional infrastructure costs.

Polygon features: a 1000 meter buffer in- and outside the SFR to stimulate tourism development on the peripheries so as to protect the core area and minimize forest fragmentation; a 250 meter buffer on the river plains of SFR’s major rivers, as these plains are well-drained, have a lower ground water table and better-suited for infrastructure development; a 4000 meter buffer around both entrances, especially for high-use attraction features, in order to prevent transportation facility development in the PA’s backcountry areas; a 500 meter buffer on encroachments to stimulate tourism development in these highly forest-dependent regions and to provide

⁵Vector features such as lines and polygons were converted to grid maps prior to the overlaying process.

Table 3.—Managerial setting weights (i.e., the lower the weight, the higher the managerial preference)

	Weight if	Weight if not
Roads and trails (line)		
Foot path	5	500
Logging road	10	500
Cart track	50	500
Minor road	100	500
Former logging road	100	500
Rivers (line)		
Stream	400	0
River	1000	0
Buffers (polygon)		
River plain buffer	0	400
Medical centre buffer	0	500
Encroachment buffer	0	600
Entrance point buffer	0	800
PA-boundary buffer	0	1000

local communities with a substitute source of income for their current activities, and to open up the market economy through better access to outside markets and better facilities on the village level; and a 5000 meter buffer around SFR's nearest medical centre, to stimulate development in places where visitor safety can be guaranteed.

In order to plan segment specific trail networks (phase 3), carrying capacities zones need to be overlaid with visitor opportunity zones. It is suggested that PA-development objectives guide the relative importance to be awarded to carrying capacity- and visitor opportunity zones in the overlaying process, to obtain a 'STIP-zone' map (see Lindberg and Hawkins 1993). Having development objectives direct the relative influence of carrying capacities versus visitor opportunities allows future costs and benefits associated with tourism development to arise in the right places and in the right proportions. In this case-study maximum infrastructure density values were translated into 'appropriate' weights by 10,000 / maximum infrastructure density. The lower the STIP-zone's weight, the higher the zone's potential for sustainable tourism infrastructure development.

3.3 Phase 3 - Transportation Network Planning

Once visitor segments have been identified (phase 1), and STIP-zones have been created (phase 2), visitor segments need to be directed to these STIP-zones that together provide a satisfying experience. However, in practice not all preferred zones will or can, due to visitor and resource constraints (see Hägerstrand 1979), be made accessible. Consequently, just these zones that are expected to result in a management-preferred composition and spatial distribution of costs and benefits should be connected through a 'visitor transportation network'. A visitor transportation network refers to the coherently organized transportation facility linkages in between STIP-zones (i.e., with attraction- and service facilities) enabling the transportation of visitors between these zones (Ritsema van Eck 1993).

In this definition 'coherently' refers to visitor preferences on three interwoven coherence levels (see Elands 2002). A substantial (i.e., considering the preferred combination of preferred attraction- and service facilities), spatial (i.e., considering the preferred spatial characteristics of preferred attraction- and service facilities), and temporal (i.e., considering the preferred temporal characteristics of preferred attraction- and service facilities) coherence level. However, segmenting visitors integrating these levels of coherence is currently impossible, as there is yet no statistical technique available that can deal with the many combinations of variables that this would require (Elands 2002). As a consequence, STIP is restricted to incorporating substantial coherence level information only. With respect to the SFR case-study, this information is 'captured' (i.e., Phase 1) in the 'nature' and 'culture' visitor segment profiles.

Since tourism transportation network development implies various costs (e.g., construction, maintenance, and resource-related) STIP should account for these in terms of impedance or resistance weights.⁶ This is

⁶Closely related to 'network resistance' is 'network capacity'. Although this relationship greatly depends on the types of attraction-, service- and transportation facilities to be planned, and the types of visitors for whom these are planned, generally it could be stated that the higher the required capacity, the stronger the resistance. Network capacity is not further considered here.

achieved through the application of Arc/Info's grid-based 'minimum cost path' function, which computes 'minimum cost paths' in between visitor preferred attraction- and service facilities (i.e., phase 1), using STIP-zone weights (i.e., phase 2) as a measure of resistance. However, while computing minimum cost paths on a cell-by-cell basis, this function does not allow integrating 'zonal' side conditions. Therefore, the concept of carrying capacity (i.e., read maximum infrastructure density), which applies to zones of contiguous cells, could not be implemented as originally intended.⁷ Instead, cells with a low carrying capacity value were simply attached a 'high-resistance' weight (see section 3.2) to reduce the chance of being selected - by the minimum cost-path function for trail development. This drawback can possibly be resolved through adaptation of the minimum cost-path algorithm. However, this is beyond the scope of this paper.

For each computed minimum cost path the accumulated costs (i.e., resistance) were divided by the path's length. Subsequently, the paths were classified into six interval-scaled 'cost' classes (i.e., the same for both visitor segments). However, as these classes do not represent the costs associated with transportation network development, but rather from an indicator for trail sustainability, these were attached via an ordinal scale, ranging from 'sustainable' to 'non-sustainable'.

4.0 Results

A PCA-cluster analysis procedure, using visitor survey data, rendered a 'nature' and 'culture' visitor segment. Segment specific preferences and associated behavior served, next to natural resource conditions and managerial objectives, as input for the development of carrying capacity and visitor opportunity zones. These were created through grid-overlays in Arc/Info 8.1. In addition, visitor preferences were directly translated into the SFR's attraction and service facility locations. Together, these zones and locations served as input for computing, using Arc/Info's minimum cost-path

⁷In case zonal side-conditions could have been implemented, carrying capacity zones would not have been overlaid with visitor opportunity zones.

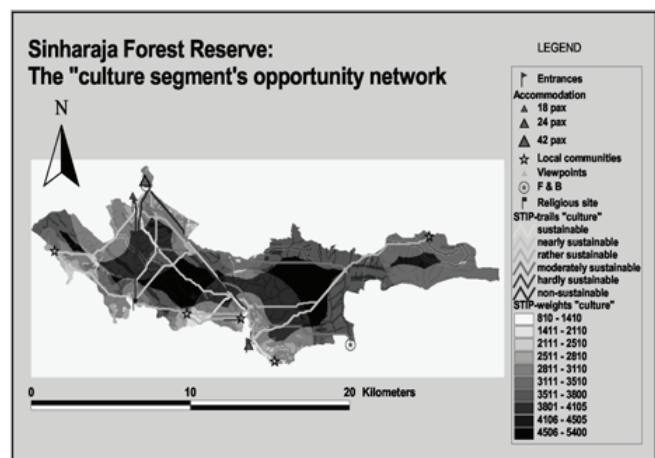


Figure 2.—The culture segment's opportunity network (i.e., consisting of preferred attractions, and trails based upon STIP-zone weights)

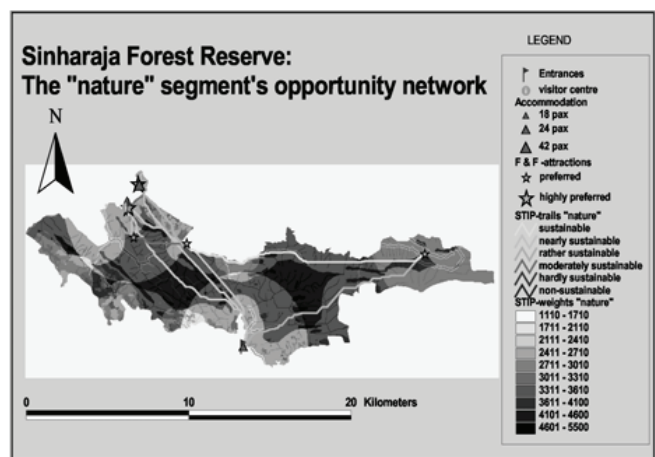


Figure 3.—The nature segment's opportunity network (i.e., consisting of preferred attractions, and trails based upon STIP-zone weights)

function, the most 'sustainable' trail routes (colored light green) to accommodate 'nature' and 'culture' visitors' experiential needs (Figures 2-3).

5.0 Conclusions

This study was done to investigate STIP's potential as a tourism planning approach to incorporate the sustainability criteria. Through integrating social with natural resource data STIP aims at planning infrastructure at sustainable locations (identified spatially) rather than planning tourism development along existing transportation structures, which are not necessarily sustainable.

Although the generated maps depict for two visitor segments the most 'sustainable' trail development locations, a number of problems still need to be resolved. First, literature reviewed shows a lack of understanding about 'network morphology' and 'network connectivity' in relation to visitor satisfaction in specific and sustainable tourism development in general. Further research on these topics is required to come to sustainable trail networks. Second, there is no statistical technique available for analyzing visitor preferences on a substantial, spatial, and temporal coherence level simultaneously (see Elands 2002). Consequently, spatial and temporal visitor preferences were not accounted for in the depicted trail networks. The integration of spatial-temporal preferences is a prerequisite for sustainable trail development. Third, current GIS (Arc/Info 8.1) do not allow computing minimum cost-paths while applying zonal side-conditions. Hence, the concept of carrying capacity could not be fully implemented. However, this 'sustainability' constraint can possibly be resolved through adaptation of the minimum cost-path algorithm.

Considering the above-mentioned constraints, and the poor quality and availability of case-study data, no conclusions should be drawn regarding sustainable tourism infrastructure development in SFR. This does not mean STIP has no potential as a tourism planning tool. STIP's three-phase GIS-supported methodology does yet (up to a certain level) allow incorporating the sustainability criteria in tourism planning. Provided that identified constraints are overcome, STIP allows directing visitors to preferred attraction and service facilities, using trails that: accommodate visitors' experiential needs; minimize adverse impacts on resources; and have been developed in line with PA development objectives. Hence, higher levels of visitor satisfaction can be achieved and sustained, while development-associated costs and benefits can be directed to the right places.

Furthermore, STIP can readily be improved through the inclusion of additional indicators in the zoning process. The more indicators included in the zoning process, the more variation in the STIP-zone weight map, and curvature in the transportation network linkages can be observed (i.e., which is more interesting from a visitor

point of view). However, the inclusion of additional indicators does not necessarily improve the reliability of the output zones. This depends among other factors on the indicator's comprehensiveness. Although indicators that represent for example a single environmental process or condition can be overlaid relatively easily, this does not yet account for the interrelations between the various environmental processes or conditions. Therefore, to derive more reliable and meaningful carrying capacity and visitor opportunity zones, it is suggested rather to define composite indicators, through conjoint analysis, as an aggregate of environmental processes and conditions. A disadvantage of such analysis is that it requires considerably more effort in data acquisition, because such data is seldom available. The processes of creating, standardizing, and integrating (composite) indicators require considerable follow-up research. Obviously, there are theoretical and practical limits to these processes.

6.0 Recommendations

As shown in Figures 2 & 3, not all transportation network trails are equally sustainable. Hence, STIP's trail networks might be very useful in assisting managers to decide, on a substantial coherence level, which trails to develop and for whom. Optionally, PA management may impose a 'quality threshold' as a constraint to trail development. That is, a trail's accumulated experience setting weights (i.e., assuming non-reversed weights), are supposed to exceed this threshold in order to speak of satisfying visitor experience. If a trail does not exceed this threshold, it does not have enough potential to accommodate a segment's experiential needs. Similarly, PA-management may incorporate a 'resource impact upper limit' (or a 'quality threshold' in combination with a 'resource impact upper limit'). If a trail exceeds this limit, too many resources have been allocated to tourism infrastructure development.

7.0 Citations

- Bahaire, T. and Elliott-White, M. 1999. **The Application of Geographical Information Systems (GIS) in Sustainable Tourism Planning: A Review.** *Journal of Sustainable Tourism.* 7(2): 152-174.
- Ceballos-Lascuráin, H. 1996. **Tourism, ecotourism and protected areas – The state of nature-based**

- tourism around the world and guidelines for its development.** IUCN, Cambridge, UK.
- Cohen, E. 1979 **A phenomenology of tourist experiences.** Journal of the British Sociological Association. 13: 179-201.
- Culbertson, K., Hershberger, B., Jackson, S., Mullen, S., and Olson, H. 1994. **GIS as a tool for regional planning in mountain regions: Case studies from Canada, Brazil, Japan, and the USA.** In M.F. Price and D.I. Heywood, eds. Mountain Environments and GIS. pp. 99-118. London: Taylor and Francis.
- Dredge, D. 1999. **Destination Place Planning and Design.** Annals of Tourism Research. 26(4): 772-791.
- Elands, B. 2002. **De Toerist op het spoor - Onderzoek naar tijd-ruimtelijke samenhang in toeristisch gedrag als expressie van een zoektocht naar betekenisvolle ervaringen.** Proefschrift, Wageningen Universiteit.
- Fagence, M. 1991. **Geographic referencing of Public Policies in Tourism.** The Tourist Review. 3: 8-19.
- Fagence, M. 1995. **Changing Paradigms of Orthodoxy: The Case of Spatial Models in Tourism Planning.** Les Cahiers du Tourisme. Aix-en-Provence: Centre Des Hautes Etudes Touristiques.
- Hägerstrand, T. 1979. **What about people in regional science?** European Congress of Regional Science, Regional Science Association, Vol. 24.
- Haider, W. 2002. **Stated Preference & Choice Models — A Versatile Alternative to Traditional Recreation Research.** In: Arnberger, A., Brandenburg, C., and Muhar, A. (eds). Conference Proceedings, Monitoring and Management of Visitor Flows in Recreational and Protected Areas, Vienna January 30 - February 2, 2002. Bodenkultur University, Vienna.
- Itami, R., Raulings, R., Maclaren, G., Hirst, K., Gimblett, G., Zanon, D., and Chladek, P. 2002. **RBSim 2: Simulating the Complex Interactions between Human Movement and the Outdoor Recreation Environment.** In: Arnberger, A., Brandenburg, C., and A. Muhar (eds.). Conference Proceedings, Monitoring and Management of Visitor Flows in Recreational and Protected Areas, Vienna January 30 - February 2, 2002. Bodenkultur University, Vienna.
- Gunn, C.A. 1965. **A Concept for Design of a Tourism-Recreation Region.** Mason, MI: BJ Press.
- Gunn, C.A. 1972. **Vacationscape: Designing Tourist Regions.** Austin: University of Texas.
- Gunn, C.A. 1994. **Tourism Planning: Basics, Concepts and Cases.** Washington: Francis and Taylor.
- Inskeep, E. 1991. **Tourism Planning: An Integrated and Sustainable Development Approach.** Van Nostrand Reinhold, New York.
- Inskeep, E. 1988. **Tourism Planning: An Emerging Specialization.** Journal of the American Planning Association. 54: 360-372.
- Knaap, W. van der 1997. **The Tourist's Drives - GIS oriented methods for Analysing Tourist Recreation Complexes.** Unpublished Dissertation, Wageningen University, The Netherlands.
- Lawson, F. and Boyd-Bovy, M. 1977. **Tourism and Recreation Development.** London: Architectural Press.
- Lindberg, K. and Hawkins, D.E., eds. (1993). **Ecotourism - A Guide for Planners and Managers.** The Ecotourism Society, North Bennington, Vermont.
- Malczewski, J. 1999. **GIS and Multicriteria Decision Analysis.** Wiley, New York.
- McAdam, D. 1999. **The Value and Scope of Geographical Information Systems in Tourism Management.** Journal of Sustainable Tourism. 7(1): 77-92.

- McVetty, D. 2002. **Understanding Visitor Flows in Canada's National Parks: the Patterns of Visitor Use Study in Banff, Kootenay, and Yoho National Parks.** In: Arnberger, A., Brandenburg, C., and Muhar, A.(eds). Conference Proceedings, Monitoring and Management of Visitor Flows in Recreational and Protected Areas, Vienna January 30 - February 2, 2002. Bodenkultur University, Vienna.
- Pearce, D. 1995. **Tourism Today: A Geographical Analysis (2nd ed.)** New York, Longman.
- Ritsema van Eck, J.R. 1993. **Analyse van transportnetwerken in GIS voor sociaal - geografisch onderzoek.** Koninklijk Nederlands Aardrijkskundig Genootschap, Utrecht, The Netherlands.
- Smith, S.L.J. 1995. **Tourism Analysis: A Handbook.** London, Longman Group Limited.
- Williams, S. 1998. **Tourism Geography.** London, Routledge.

A PRELIMINARY INVESTIGATION OF SHOPPING PATTERNS AT A TOURIST FOCUSED OUTLET CENTER

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Abstract

Shopping is considered an important part of the tourist experience. This paper seeks to increase the understanding of the shopping experiences of visitors to a large outlet shopping mall in a major coastal tourism destination in Northwest Florida.

Overall, shoppers tended to be from the southern area of the country, shopped in family groups, visited five to ten stores and stayed about 3-4 hours. When the visitors were grouped into permanent residents, tourists and seasonal visitors, specific differences emerged with the permanent residents being different from the other groups.

1.0 Introduction

Shopping has long been recognized as an important part of the tourist experience and it is often used as a foundation for regional tourism development. (Che 2004) In recent studies released by Visit Florida (Florida's official tourism marketing organization) it was shown that shopping was the second most popular activity for domestic tourists (35.6%) and the leading activity for international tourists (90.2%). Though Florida may be most famous for its beaches and amusement parks, shopping is, in fact, the more popular statewide tourist activity.

Nationwide, there are about 46,990 shopping centers serving about 203 million shoppers annually. Shopping centers generate \$2 trillion in annual sales and employ 17.6 million people (International Council of Shopping Centers 2003).

In Walton County Florida, (the location of this study) it is estimated that tourists visiting the area spend \$33 million annually in retail sales which reduces to an average of about \$35 per person. The retail sector claims

2,839 employees which is about 21 percent of county employment (HASS Center 2001).

2.0 Purpose

Though the impacts of shopping on tourism are well documented, shopping mall managers' understanding of the tourism enterprise is more limited. This paper is part of a larger study conducted at "one of the nation's largest designer outlet centers", located near Destin, FL. The purpose of this paper is to present the data collected during an October 2004 survey period.

The data collected includes shoppers' home towns, local area visitation patterns and shopping patterns. Also included is an importance/performance analysis of the shopping center operations. Of particular interest were comparisons between shopping patterns of local residents, seasonal residents, pleasure travelers and business travelers.

3.0 Methodology

Data was collected using personal surveys of randomly selected shoppers visiting the Silver Sands Factory Stores during the study period. In order to meet the overall data collection goals, researchers were asked to attempt to complete 30 surveys per day. During some mid-week days, they fell short of the goals but additional surveys were collected during the weekends to make up the difference and to better represent the normal flow of business.

Each day, student researchers rotated through the different sections of the complex asking random visitors if they would be willing to be surveyed. As an incentive, students offered a packet containing Silver Sands information and discount coupons usable at Silver Sands Factory Stores and the shops at Grand Boulevard, a nearby shopping complex managed by the same organization.

The questionnaire used was generally based on previous surveys done at the outlet center but was modified based

upon comments and suggestions from the marketing staff. The questionnaire contained sections asking about demographics, visitation patterns, familiarity with promotional campaigns and advertising, shopping patterns, reasons they visited the area and how they felt about different parts of the silver sands operation. Responses were both forced choice and open ended.

After data was collected, it was entered into the SPSS statistical program for analysis.

4.0 Findings

In total, 311 completed and usable questionnaires were entered and analyzed. Responses were first descriptively analyzed then comparisons were run.

Table 1 indicates that respondents tended to be predominately female (64.3%), under age 29 (36.1%), and visited as part of a family group with the most common party size being two people. Most of the respondents were from the southern part of the United States (about 83%) with most people being on pleasure trips (58%) though 26 percent of the respondents were local residents.

As seen in Table 2, shoppers at the outlet mall were most often repeat visitors. About 77 percent of the respondents visited the shopping mall previously and about 62 percent and visited the mall more than once in the last year. While at the mall, shoppers tended to visit 5-10 stores and stayed about 3-4 hours.

Table 1.—Profile of Respondents

		Frequency	Percent
Gender	Male	111	35.7
	Female	200	64.3
	Total	311	100.0
Age	<29	112	36.0
	30-39	56	18.0
	40-49	67	21.5
	50-59	40	12.9
	60+	35	11.3
	Total	311	100.0
Type of group	Individual	54	17.4
	Family	139	44.7
	Friends	75	24.1
	Family & Friends	43	13.8
	Total	311	100.0
Reason in the area	Permanent resident	83	27.1
	Seasonal resident	16	5.2
	Own a vacation home	13	4.2
	Pleasure trip	178	58.0
	Business trip	17	5.5
	Total	307	100.0
Frequency of visits	1	50	16.8
	2	96	32.2
	3	38	12.8
	4	57	19.1
	5	16	5.4
	>5 visits	41	13.7
	Total	298	100.0
Home State	Florida	129	41.5
	Alabama	52	16.7
	Tennessee	24	7.7
	Georgia	20	6.4
	Mississippi	15	4.8
	Kentucky	13	4.2
	Ohio	11	3.5
	Arkansas	5	1.6
	Michigan	5	1.6
	Texas	5	1.6
	Other	23	7.1
	Total	311	100.0

Table 2.—Shopping Profile

		Frequency	Percent
How often have they visited?	First visit	64	23.0
	2 times	71	25.5
	3 times	53	19.1
	4+ times	90	32.4
	Total	278	100.0
Visits to SSFS in a Year	1	103	37.5
	2	54	19.6
	3	22	8.0
	4	24	8.7
	5	15	5.5
	6 - 19 visits	48	17.4
	20+	9	3.3
	Total	275	100.0
Visit how many stores today?	Less than 5 stores	68	22.2
	5-10 stores	105	34.3
	11-20 stores	71	23.2
	20+ stores	62	20.3
	Total	306	100.0
Length of stay today	Less than 1 hour	30	9.9
	1-2 hours	90	29.7
	3-4 hours	121	39.9
	5+ hours	62	20.5
	Total	303	100.0

In order to investigate differences that might exist between shopper types, the variable “Reason you are in the area” was recoded to describe the type of resident/visitor the respondents were. “Permanent residents” remained “permanent residents” while “Seasonal residents” and “Vacation home owners” were recoded as “Seasonal visitors”, and people on “business” and “pleasure” trips were recoded as “Transient tourists.” Table 3 indicates there are significant differences in every case except gender and length of stay at the shopping mall. Permanent residents tended to be younger than the seasonal residents and tourists and they were more likely to visit in smaller groups—with a high proportion visiting as singles. Permanent residents tended to shop at fewer stores than the other two groups.

In order to see if there were differences between business travelers and pleasure travelers who visited the shopping mall, an independent samples t-test was run. The only significant variation was in age – where the business traveler (mean 1.85) was younger than the pleasure visitor (2.80) ($t=2.645$, $df=196$, $p=.009$).

Additionally, an Importance/Performance Scale was developed to identify specific areas for the mall to focus their management and marketing efforts. Respondents were asked to rate issues such as “quality of merchandise”, “savings on merchandise”, “variety of stores”, “store service” and cleanliness and availability of specific facilities. As seen in Figure 1, overall, respondents were satisfied with the shopping at the outlet mall. They rated

Table 3.—Comparison of characteristics by residence type

		N	Mean	F	Sig.
Gender					
	Permanent Resident	80	1.60	0.476	0.621
	Seasonal Resident	29	1.66		
	Transient Tourist	198	1.66		
	Total	307	1.64		
Age					
	Permanent Resident	79	1.91	9.327	0.000
	Seasonal Resident	29	2.93		
	Transient Tourist	198	2.62		
	Total	306	2.46		
Size of party					
	Permanent Resident	78	2.17	6.647	0.002
	Seasonal Resident	29	2.90		
	Transient Tourist	187	4.90		
	Total	294	3.98		
Party Type					
	Permanent Resident	80	1.86	16.353	0.000
	Seasonal Resident	29	2.62		
	Transient Tourist	198	2.50		
	Total	307	2.35		
Visit how many stores					
	Permanent Resident	78	1.83	17.759	0.000
	Seasonal Resident	29	2.66		
	Transient Tourist	196	2.61		
	Total	303	2.41		
Length of stay					
	Permanent Resident	78	2.51	2.579	0.078
	Seasonal Resident	29	2.69		
	Transient Tourist	193	2.79		
	Total	300	2.71		

items such as “variety of stores”, “quality of merchandise”, and “savings on merchandise” very highly. The areas that they felt were low were “entertainment areas”, “dining facilities” and “play area for children.” Since these last items were low on both importance ratings and performance ratings there seems to be little reason to change them.

5.0 Conclusions

Overall, several distinct groups were identified as visitors to the outlet mall. The largest group was transient tourists, followed by permanent residents followed by seasonal home owners and visitors. In general, the permanent residents tended to visit in smaller groups, visit fewer stores and stay a shorter period of time than the non

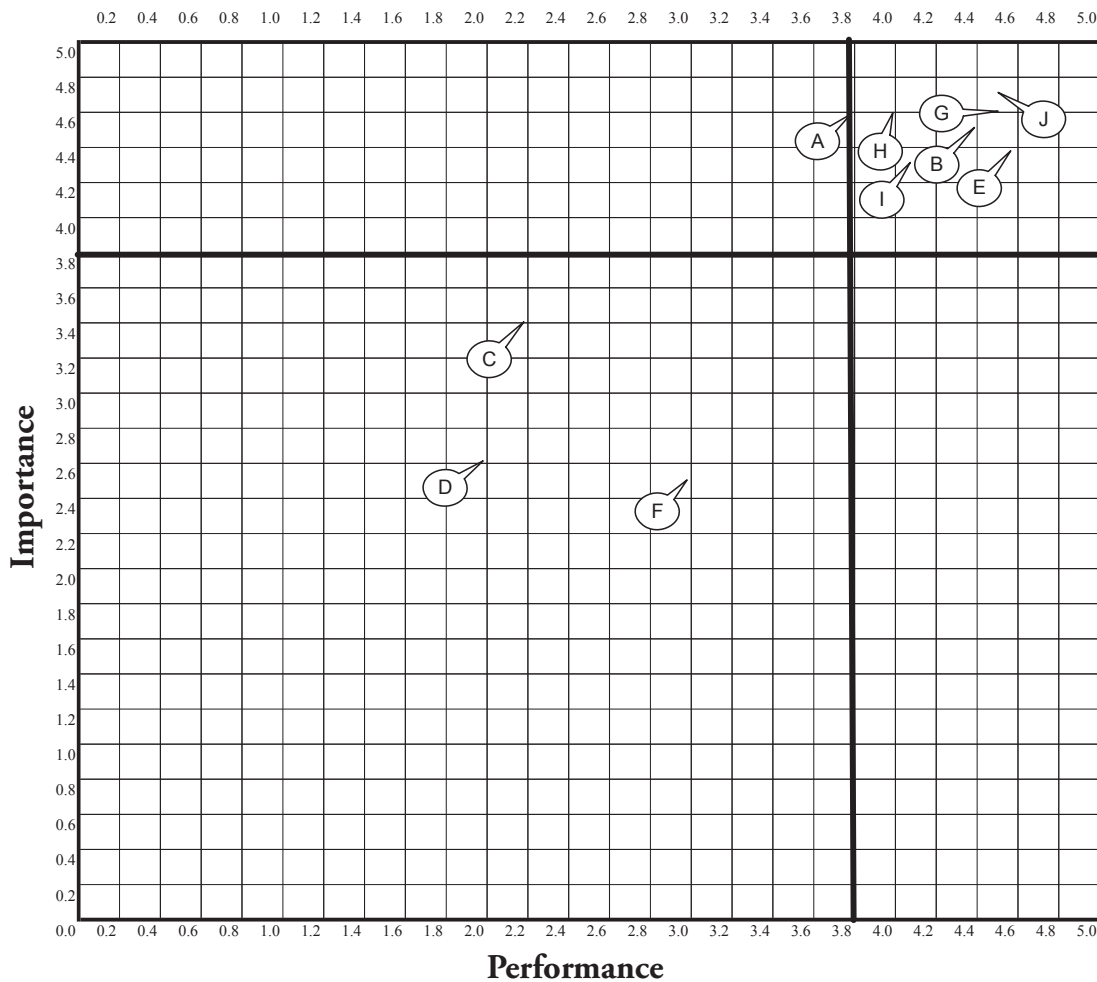


Figure 1.—Importance Performance Grid

resident groups. This is consistent with the identification and marketing of the outlet center as a tourist destination. Permanent residents are more likely to have visited the mall before so they are familiar with the specific stores and merchandise. When they visit, they most probably have specific purchases in mind rather than just going “shopping” as a recreational or tourist activity. This raises a question about marketing the mall to different groups.

Since about 27 percent of the mall shoppers are local residents, who have different shopping patterns than the tourist and seasonal visitors, perhaps a specific marketing campaign should be developed for them.

Respondents were generally favorable toward the mall and the overall experience so relatively little should be changed in terms of mall operations.

It should be pointed out that this survey was conducted during a special promotions period in the fall of the year. This sample represents “shoulder season” visitors rather than “high season summer guests” or “off season winter guests”. Additional samples should be taken at other times in order to better understand the overall visitor to the outlet mall.

6.0 Citations

Diane Sears. June 2004. **A Portrait of Florida’s Visitors.** Florida Trend Magazine.

The Impact of Tourism on the Walton County

Economy. 2001. Haas Center for Business Research and Economic Development.

International Council of Shopping Centers (ICSC)
<http://www.icsc.org/rsrch/research.shtml>

Deborah L. Che. March 2004. **Shopping/ Entertainment Complexes as Foundations for Regional Tourism Development: The Case of Great Lakes Crossing.** Journal of Travel Research.

Methodology I

CAPTURING THE HIKE EXPERIENCE ON VIDEO: A NEW METHODOLOGY FOR STUDYING HUMAN TRANSACTIONS WITH NATURE

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Abstract

A video methodology was developed to study nature experience in a real-world setting. Members of an outdoors club were recruited for a 5-mile hike along the Appalachian Trail in New York's Sterling Forest State Park. Separate hikes were conducted with six pairs of hike partners. One partner wore a forehead-mounted microvideo camera to record the hike from beginning to end. Participants were instructed to talk about environmental features they noticed during the hike; their conversations were recorded with a shotgun and wireless microphone. A questionnaire was administered immediately after each hike and follow-up interviews were later conducted to review excerpts from the videotapes. The HIKEN™ notation system was developed for visual analysis of the videotape data. Research findings confirm the need for new field methods to deepen our understanding of the human response to nature. Preliminary recommendations are made for enhancing nature experience through improved trail design.

1.0 The Study of Nature Experience: What's Missing?

What exactly is nature experience? Has it been adequately defined or operationalized in the literature? What research methods have been used to study how people experience nature? Has the complexity of this experience been captured with existing research methods or has its gestalt been lost through use of reductionist techniques?

Most empirical studies on human response to nature have been conducted through the lens of landscape perception. Research has traditionally been conducted in laboratory settings with photographs or slides as surrogates for natural environments. Questionnaires, rating scales, and physiological indicators have been used to evaluate

subject response to these stimuli, with emphasis on aesthetic preference and landscape assessment (see Sell, Taylor, & Zube 1984). Although the ecological validity of simulations has undoubtedly improved in recent years with use of video, computer-generated simulations and virtual reality (see Orland 1993, Bishop, Ye, & Karadaglis 2001), the underlying theoretical paradigm has been slow to change. The predominant paradigm continues to conceptualize nature as a visual landscape and one which is usually static and unchanged over time. This paradigm also conceptualizes the perceiver as a passive, visual observer rather than an embodied percipient who actively interacts with the environment.

As I reviewed the landscape perception literature, I began to wonder whether the prevailing theories and concepts would remain valid when applied to nature experience in a real-world setting. Moreover, I was not convinced that existing methodologies could accurately reflect how people perceive nature in the real world. Ultimately, I decided to develop an innovative research technique which would capture perceptual encounters in the field. I chose Ittelson's (1973) "environment perception" framework to replace the traditional theoretical paradigm. Within this framework, the environment would be re-conceptualized as having multisensory information rather than just visual information (i.e., as a "multisensory environment"). Further, the landscape would be re-conceptualized as dynamic rather than static, vis-a-vis both time and movement. The perceiver would be re-conceptualized as multimodal rather than just visual, and as embodied, moving in and through the environment. Based on the assumption that perception is a process which occurs over time and not a series of discrete events, human-nature transactions would be examined within a temporal framework.

2.0 Research Design: Capturing the Hike Experience on Video

I chose to study hiking as an activity which fosters perceptual encounters with nature. Members of an outdoors club were recruited for a 5-mile hike on the Appalachian Trail in New York's Sterling Forest State

Park. This was a linear hike, following the same 2 ½ mile trail section into and out of Sterling Forest. Six separate hikes were conducted in the autumn of 1999, each with a different pair of hike partners.

I purchased a 2-inch square microvideo camera with plastic housing unit and battery holder, all for less than \$200. I then purchased a miniature headlamp with adjustable headstrap, detached the headlamp from its back plate, and screwed the microvideo camera onto the back plate in its place. The camera was mounted on one hiker's forehead and attached by cable to a Hi-8 camcorder placed in a backpack worn by the same hiker. The camcorder was turned on at the beginning of each hike and, with the exception of the lunch break, remained on for its entire 4-plus hour duration. The most significant problem with this video technique was determining how to position the camera on each person's forehead. If the camera was aimed too low, the videotape showed excessive footage of the ground; if aimed too high, it omitted features of interest to the hikers. I eventually re-connected the camera to the headlamp's back plate with a hinge, making it possible to adjust the camera's angle to accommodate each person's height and upright posture on a flat surface. Further adjustment was made to account for a (universal) estimate of the hiker's forward-bending position while climbing uphill.

In future studies, a clinometer might be useful for measuring changes in the line of sight as captured on video. Since this instrument is designed to measure slope, by focusing on a stationary background object it could provide accurate readings to guide re-adjustment of the camera's angle for each hiker. Ideally, a technique would also be devised whereby the camera's angle would shift automatically and continuously throughout the hike to accommodate the perceiver's ever-changing body position.

External microphones were used to capture environmental sounds and conversation between the hikers. A shotgun microphone was mounted on the external frame backpack which held the Hi-8 camcorder, and a wireless microphone was attached to the other hiker's daypack. The shotgun mike was chosen to capture

environmental sounds as well as conversations between the partners, and the wireless mike was needed to capture individual comments and conversations which occurred when hikers were not walking side by side. Technical adjustments were made to eliminate any interference in audio reception between the two microphones. The most significant problem with external microphones was their vulnerability when hikers fell, bumped into trees, etc. Although the shotgun mike remained firmly attached to the backpack, the wireless microphone -- both receiver and transmitter-- got knocked off on occasion.

I was a participant-observer in this study, as I followed behind each pair of hikers while remaining outside their range of sight and sound. This allowed me to change the (120-minute) Hi-8 tape and batteries (for microvideo camera and wireless microphone) mid-way through each hike. I was also available in case of technical difficulties or medical emergencies. My presence on the hike had two additional advantages: 1) it strengthened my rapport with research participants, encouraging them to be more open during the hikes and in the follow-up interviews; and 2) my personal experience of the trail strengthened my ability to understand hikers' reactions to this environment.

At the trailhead, participants were instructed to talk to one another just as they normally did when hiking together. They were also encouraged to talk about anything along the trail which caught their attention "in a special way", especially "anything which captivates your senses". I did not ask participants to evaluate or explain these spontaneous reactions during the hike, since this would have interrupted the experience. Instead, I administered a brief questionnaire immediately afterwards and conducted follow-up interviews 2 weeks later. On the questionnaire I asked people to describe highlights of the hike as well as their perceptions of the hike's beginning and ending. I also asked participants to describe the trail in terms of "discrete segments" to guide my selection of video excerpts to be used in the follow-up interviews.

For every hike, I created a 30-minute sampling tape with approximately 35 video excerpts, each lasting from 10 seconds to 1 minute. Sampling tapes were designed to

track the entire length of each hike and to focus on the most important aspects of the experience for each pair of hike partners. Excerpts were selected to show participant-identified trail segments as mentioned above. Whenever possible, excerpts for these trail segments included highlights and beginning and ending points listed by participants on their questionnaires. Video excerpts were also selected according to researcher-defined “baseline” segments which reflected changes in the trail’s topography and vegetation. (Many researcher-defined segments overlapped with those identified by participants.) By using video excerpts, I was able to reduce over 4 hours of videotaped hiking to a manageable length for review in 1 ½- to 2-hour interviews.

The interviews were conducted jointly with both hike partners. One person held the remote control and paused the VCR when either party began to comment on features or scenes of interest, or to discuss other recollections spurred by the videotapes. The interviews were audiotaped with permission, and written notes were taken to record the timecodes from video excerpts being referenced in participant comments.

This interview format proved extremely effective. Although the microvideo camera primarily recorded perceptual encounters of the person wearing this equipment, the video seemed able to re-create the experience for both partners. While reviewing the sampling tape, participants were able to move back and forth between immersion and reflection. They explained comments made during the hike and captured on video, and also explored new revelations about what they had encountered on the hike. Indeed, some excerpts were able to trigger recollections of features, attributes, or scenes which did not even appear on the video being reviewed. Although there was a 2-week gap between each hike and follow-up interview, recall was extremely high.

3.0 Data Analysis

Transcription was primarily limited to those data of direct relevance to perceptual encounters with nature or to the overall hike experience. Data preparation was very complex, however, as videotapes were transcribed for both lexical and non-lexical vocalization as well as head

and whole body movement. Ideally, audio transcription should be done directly from the videotapes rather than from dubbed audiotapes, since there is much room for error when deciphering conversations which are spontaneous and stream-of-consciousness. Moreover, articulation can be unclear when people move as they speak, further challenging the researcher’s ability to transcribe accurately.

In order to analyze the hike experience in relation to perceptual encounters, I had to determine precisely where participants were located at any given point in their hike. To make this possible, I had to identify closely-spaced locations along the trail. To conduct cross-hike analysis, these locations or “trail markers” would have to be identifiable on all six hike videos.

This task was especially difficult in a rustic setting such as Sterling Forest, with few human-made landmarks. I sought to identify environmental features or groups of features on the videotapes, using them as geographic placement markers. When features were not readily identifiable across all videotapes, I identified trail blazes instead. Selection of trail markers was accomplished through repetitive review of the videotapes. GPS, used in conjunction with videotape review, could perhaps make this task more manageable. For example, a GPS unit could be linked to the camcorder to coordinate recording of time, and track points could be converted into waypoints to be used as trail markers. This procedure would work best in areas without significant leaf cover, where GPS accuracy is optimized.

My objective in conducting the data analysis was to examine theory and concepts from the existing literature in the context of real-world experience. Data analysis proceeded in two phases. In the initial phase, I extracted data from the videotape and interview transcripts which seemed relevant to questions addressed by work in the areas of environment perception, environmental experience, trail-building, and of course, landscape perception. In the second phase of analysis data were reorganized using a “grounded theory” approach (Glaser & Strauss 1967). This resulted in new categories which more closely reflected real-world experience: They

were less reductionistic and adopted a “transactional” rather than a deterministic stance toward the person-environment relationship (see Altman & Rogoff 1987).

Although manual data sorting was satisfactory for the exploratory thematic analysis conducted in this study, use of qualitative analysis software would be preferable for more detailed analysis and for work with larger data sets. Specifically, I would recommend software such as ATLAS.ti which permits analytical synthesis of video and textual data.

Following this thematic analysis, I developed a graphic notation to facilitate visual analysis of the video data. Notation was needed to condense and organize the enormous amount of information captured on videotape. Inspired by Appleyard, Lynch, and Myer’s (1964) notation for the automobile passenger’s “view from the road”, the Hiker’s Experiential Notation System (HIKEN™) was designed to reflect the hiker’s subjective, lived experience rather than a literal, objective recitation of the trail’s physical features. Appearing much like a dance or musical score, the notation had one staff for the environment and another for the hiker. In this way it could reveal the relationship between person and environment i.e., between the hiker’s experience and the natural features and attributes noticed along the trail. I created many new symbols for this notation and borrowed or adapted others from the sport of orienteering (see International Orienteering Federation 2000).

Ultimately, HIKEN™ was not used for extensive visual analysis of the hike experience in this study. However, significant conceptual insights were gleaned in the process of creating and categorizing the symbols, and while using these symbols to code and score sample trail sections from two different hikes. Further research is needed to evaluate the validity and inter-rater reliability of this notation system.

4.0 Research Findings: Did the Ends Justify the Means?

This new video technique proved effective for three important purposes: capturing multisensory environmental information; collecting data about the

perceiver’s movement in and through the environment; and capturing movement of natural features. This form of videography was also unique in its ability to capture temporal dimensions of the hike experience. Moreover, it retained the gestalt of the experience vis-a-vis hikers’ thoughts, actions, and emotions in relation to the physical environment. Both the questionnaire and follow-up interview were sources of rich secondary data needed to validate interpretations of the video data. Furthermore, data collected from the questionnaire and interviews provided important new insights into the hike experience.

Despite their effectiveness for data collection, the question remains as to whether these new techniques are worth the considerable effort involved. Given that data analysis exposed significant weaknesses in the traditional approach to this area of inquiry, I would contend that this research successfully demonstrated that the ends did justify the means.

Consistent with the underlying concept of nature-as-visual landscape, previous studies have emphasized the visual world and neglected its extra-visual attributes. In contrast, as might be expected, in this study the trail consistently afforded hikers with a combination of visual, auditory, olfactory, and tactile information. Importantly, extra-visual attributes such as the soft feel of moss or the sound of trickling seep water were often considered highlights of the hike experience.

The prevailing concept of nature as static landscape also proved problematic when applied to a real-world setting. Most research has focused on permanent environmental features, those which remain relatively constant from season to season, day to day, and moment to moment. Fleeting features or *ephemerals*, such as clouds, shadows, or the changing qualities of light, have received short shrift in this literature. Unlike more permanent features, ephemerals can change noticeably over time and are often in motion.

Aside from the methodological obstacles, perhaps there has been little interest in studying ephemerals because it is difficult, if not impossible, to control for these features when managing the landscape. Yet hiker reactions in this

study suggest that ephemerals were an essential part of their experience. People relished the soft lighting during late afternoon hours; enjoyed the colorful reflections in Little Dam Lake; and were mesmerized by clouds floating across the sky. Ephemerals may well be part of nature's phenomenological "essence" (Kockelmans 1971), that which distinguishes the natural from the non-natural world.

In using photographs or slides as simulations, traditional research methods also reflect the assumption that perception can be captured as a frozen moment in time. In contrast, findings from this study reveal how temporal dimensions can be fundamental to the hike experience. Along these lines, the sequence of features or scenes had significant impact on how people reacted to the trail environment. Additionally, most participants were able to conceptualize the hike as a sequence of events with distinct beginning, middle, and ending.

Traditional conceptualization of the perceiver as a passive observer also proved problematic when examined in a real-world context. Importantly, extant research has not considered how the individual's attention impacts what is perceived and, in turn, how those perceptions impact the experience of nature. Instead, (visual) attention has been artificially controlled through the researcher's selection of stimuli. Moreover, previous studies have ignored the likelihood that experience or learning may alter the focus of attention over time (see E. J. Gibson 1991). Findings from this study of the hike experience confirm that attention is far more than visual: It is a multi-dimensional phenomenon exhibited through a variety of actions across different perceptual modalities. In the tactile modality, for instance, attention might range from "obliviousness" to "heightened awareness" (Seamon 1979, p. 103) as revealed in actions such as grabbing, leaning, or rubbing.

Extant research has also failed to consider the many ways in which our bodies impact how we experience nature. Findings from this study indicate that both inner body state (e.g., temperature, energy level, hunger, thirst) and external body movement are extremely important to the hike experience. For example, changes of inner body state frequently led to changes in pace which, in turn, altered perception of the environment. Moreover, challenges

involved in moving through the trail environment had significant impact on perceptual encounters with nature. Hikers moved slowly and examined the treadway carefully to avoid slipping on wet leaves; they exerted great effort in hoisting themselves over large boulders to climb the rock scramble. Importantly, climbing over the boulders was a highlight of the hike for many people, as increased physical contact caused them to feel a close emotional connection to nature.

5.0 Recommendations: Designing Trails to Enhance Nature Experience

As discussed above, many concepts and theories from the existing literature on human response to nature proved problematic when examined in the context of real-world experience. Furthermore, the techniques used in this study revealed dimensions of nature experience which have not been explored through conventional methodologies. Although it was not my intention to explain participants' specific reactions to features, attributes or scenes on the Appalachian Trail section used for the research hikes, some theoretical and conceptual findings did have practical implications. The preliminary recommendations which follow encapsulate those implications.

Both hiker safety and ecological conditions must be primary considerations when designing and maintaining trails. Although the degree of landscape management will vary tremendously from manicured to more rustic settings, trail design and maintenance can have significant impact on how people experience nature in any setting. Respecting safety and environmental constraints, there may still be numerous alternatives which have the potential to expand dimensions of nature experience afforded to the hiker. While the five recommendations which follow are by no means radical, they do reflect a significant paradigmatic shift from the current norm.

1. Reveal Nature in its Multisensory Abundance

Whenever possible, take advantage of the full range of visual and extra-visual attributes of natural features along the trail. One technique for uncovering multisensory attributes is to examine the landscape in terms of dialectics or dualities (see Paterson 1992). Visual

dualities might include light/dark, monotone/colorful, or distant/close-up; auditory dualities might include loud/soft; and tactile dualities might include soft/hard, rough/smooth, or wet/dry. It is also possible to consider dualities related to person-environment transactions, such as inside/outside, near/far, or high/low. Additional design alternatives might be revealed through pairing of sensory dialectics with dialectics for person-environment transactions. For example, high/low and dark/light can be recombined into high/light and low/dark. In sum, to create trails which afford diverse nature experience, it is critical to move beyond the traditional focus on the visual world.

2. Expand Opportunities for Challenge

In hiking guidebooks, challenge is generally determined by environmental conditions: slope, mileage, and to a lesser extent, treadway surface. This study of the hike experience revealed a much broader range of factors which impact perceptions of challenge. Some hiker-related factors salient to research participants were physical strength and stamina; body-size in relation to scale of rock steps; coordination; and balance. By incorporating these and other factors in trail design, it may be possible to intensify the hike's challenge even for trails which are shorter and have few climbs. For example, a trail could be designed to require use of many different body movements, such as turning, squeezing through a narrow opening (i.e., the "lemon squeezer"), and stooping. Trails could also be designed to include difficult footing which would slow the hiker's pace and encourage increased concentration; easier footing could also be included to afford the satisfaction of moving quickly and covering more mileage. Additionally, stopping points could be sited to provide hikers with the opportunity to see where they have come from and acknowledge challenges which have been encountered.

Wayfinding represents yet another dimension of challenge. Hikers must be extra vigilant when trail blazes are not readily apparent: They must scan the environment for blazes, while simultaneously scanning the ground for visual cues to confirm that they are still on the treadway. This dimension of challenge can be diminished when there are too many blazes. While

respecting the recommended guidelines for placement of blazes (Birchard & Proudman 1981), perhaps it would be possible to vary their distance from time to time in order to heighten the level of challenge on a given trail. When the challenge of wayfinding is absent, people may become over-dependent on trail markers and begin hiking "blaze-to-blaze", allowing their minds to wander as they pay less attention to the immediate surroundings.

3. Lengthen the Hike Experience

Findings from this study indicate that the hike can be experienced as a sequence of events with beginning, middle, and ending. The experience begins when signs of the built world recede from awareness. People pass through an invisible door, like Alice in Wonderland stepping through the Looking Glass, as they enter into or move "inside" the experience. Passage through this portal represents a transition from being in the everyday world to being-in-nature. Once inside the hike experience, participants in this study had increased awareness of the natural features surrounding them.

When signs of the built world are evident beyond the trailhead, the hike's beginning may be delayed. If at all possible, therefore, trails should be designed to quickly remove people from the sights and sounds of civilization e.g., automobile traffic and built structures. In some instances, vegetation and slope can be used to create a buffer between the built and natural worlds. For participants in this study, the shift in body state which occurred while climbing the initial ascent (i.e., increased heart rate and change in body temperature), served as an important indicator that the hike had begun.

Once people are "inside" the hike, this experience can be extended by minimizing interruptions or intrusions and by delaying the transition back to the everyday world. Whereas reminders of civilization should quickly recede after leaving the trailhead at the beginning of the hike, signs of the built world should remain concealed until hikers are about to leave the trail. It is important to recognize that the hike experience can end long before people reach the trail's physical endpoint. Ideally, the trail should be designed to retain the hiker's focus on immediate perceptual encounters until they actually leave

the natural environment. One way to accomplish this might be to incorporate elements of challenge up to the end, or to site the trail's endpoint near features which can function as highlights and attract significant interest.

4. Minimize Intrusions and Interruptions

An effective way to maintain continuity of the hike experience i.e., to retain the feeling of "insideness", is to require that human-made artifacts be perceptually compatible with their natural surroundings (see Built Environment Image Guide 2001). Perceptual compatibility or "fittingness" (Wohlwill & Harris 1980) may be relevant to extra-visual attributes such as texture and sound, as well as visual attributes such as color, size and shape.

Findings from this study indicate that on occasion, inferred meaning may override lack of perceptual compatibility. This can occur when human-made artifacts are positively associated with the hiker's experience of that natural setting. For example, a memorial plaque for a trail maintainer enhanced participants' appreciation for work done on the trail, and a plastic water jug left for an Appalachian Trail thru-hiker, fostered a sense of connection with the Trail's esteemed history.

Both inadequate blazing and excessive blazing can also interrupt the hike experience. Too many blazes can distract from perceptual encounters with nature, ever-reminding people that they are on a human-made path. Paint drips, metal markers, or written signs may have a similar effect. Conversely, inadequate marking can detract from the experience by causing people to stop frequently in order to check their trail map. Clearly, a proper balance is needed—neither too few nor too many blazes—to maintain continuity of the hike experience.

5. Encourage Public Participation in Trail Design

Landscape perception research has embraced the theory that evolution drives human response to nature (see Kellert & Wilson 1993). It has been assumed that our instinctual survival needs—for shelter, food, and safety from harm—supersede the impact of personality, culture,

or past experience on how we relate to nature. As a result, these studies have sought to uncover commonalities in how people perceive and thus experience nature. Since this approach implies that experts and laypersons would perceive the environment in the same way and share a common experience of nature, it is not surprising that this research model has done little to encourage user input in trail design. Indeed, most trails have been designed by experts with little, if any, input from users.

However, there exists empirical evidence which challenges the assumption that experts and non-experts respond to nature in the same way (e.g., Murray & Aspinall 2001), and only limited evidence to support this assumption (e.g. Craik 1972). Therefore, it seems reasonable to conclude that increased public participation could result in improved trail design. In contrast with the current emphasis on a single, ideal landscape to satisfy all users under most circumstances, findings from this study highlight the need to maximize opportunities for diverse nature experience in order to accommodate the varied needs and preferences of different users under changing circumstances.

Public participation could be used to determine which features, attributes, or combinations thereof are considered highlights by users, since their reactions may differ from those of trail design professionals. These data could be especially useful for transforming underutilized areas into ones which attract greater numbers of people by providing more satisfying nature experience. Specifically, user studies might uncover ways to design linear trails which are regarded more favorably, rather than being seen as redundant and thus inferior to circular trails.

New techniques may be needed to facilitate the type of public participation recommended. Videography could be used as a research tool for studying hikers' spontaneous reactions to an existing trail. It could also be used by hikers to deliberately record features of interest as they assist in designing new trails or evaluating existing ones. Perhaps a simplified version of the HIKENTM notation system could facilitate public participation as well. This notation could be used in tandem with GPS

and GIS, tracking features of interest along with hikers' reactions to those features.

6.0 Concluding Remarks

As technological advances increase the availability and quality of equipment needed to conduct field studies, research no longer need be confined to the laboratory setting. Based on the findings from this study, I would submit that field studies are essential in order to gain a better understanding of nature experience. Microvideo cameras can provide unobtrusive and inexpensive means of capturing dynamic, multisensory information over a significant period of time. Follow-up techniques can be devised to validate and expand upon data collected in the field.

Clearly, this approach to research is more time-consuming (and thus more costly) than many laboratory techniques. Although large-scale use of the microvideo technique described in this paper may not be realistic or even desirable, this methodology could provide a powerful means of generating new theory and concepts. This technique could also be useful for pre-testing, e.g., for guiding selection and composition of simulations, and for hypothesis-testing about reactions to specific trail sections, features, or attributes.

Findings from this research exposed many weaknesses in the traditional approach to studying human response to nature, challenging many assumptions implicit in the extant literature. Moreover, this research has demonstrated that many theories and concepts which retain their relevance in a real-world context, will need to be adapted in order to deepen our understanding of human transactions with nature. Findings from this study also suggest that the current research agenda has been unduly constrained by limitations in the existing methodology. This is not surprising, given that theory and method are mutually reinforcing. As explained by Sommer and Sommer (1980/2002), "Research shapes a theory by bringing it into accord with the observable world. . . . Theories suggest additional questions to be examined and answered, which leads to further research and subsequent refinement of the underlying theory" (p. 3).

A methodological shift is under way in studies of human response to nature, capitalizing on new computer technologies to create more ecologically valid simulations which can replace static, two-dimensional stimuli. I would argue, however, that this shift will yield only limited results unless accompanied by a concomitant change in the underlying theoretical paradigm. Without a change in paradigm, advanced technological techniques will inevitably be used to address the same research questions albeit in new ways, and important dimensions of nature experience will remain unexamined. Ittelson's (1973) environment perception framework can serve as a guidepost for shaping a new research agenda to deepen our understanding of human-nature transactions. In embracing the tenets of Ittelson's framework, this exploratory study of the hike experience represents a tentative yet viable step forward. Moreover, the many conceptual and practical implications of this study are testament to the critical link between method and theory.

7.0 Citations

- Altman, I., and Rogoff, B. 1987. **World views in psychology: Trait, interactional, organismic, and transactional perspectives.** In D. Stokols and I. Altman, eds., *Handbook of environmental psychology*. Vol. 1 (pp. 7-40). New York: John Wiley & Sons.
- Appleyard, D., Lynch, K., and Myer, J.R. 1964. **The view from the road.** Cambridge, MA: MIT Press.
- Birchard, W., Jr., and Proudman, R.D. 1981. **Trail design, construction, and maintenance.** Harpers Ferry, WV: The Appalachian Trail Conference.
- Bishop, I.D., Ye, W.S., and Karadaglis, C. 2001. **Experiential approaches to perception response in virtual worlds.** *Landscape and Urban Planning*. 54: 117-125.
- Built Environment Image Guide.** 2001. Publication FS-710. Washington, DC: USDA Forest Service.
- Craik, K.H. 1972. **Appraising the objectivity of landscape dimensions.** In J. Krutilla, ed., *Natural environments: Studies in theoretical and applied*

- analysis (pp. 262-291). Baltimore, MD: Johns Hopkins University Press.
- Gibson, E.J. 1991. **Trends in perceptual development.** In E.J. Gibson, ed., *An odyssey in learning and perception* (pp. 365-385). Cambridge: MIT Press. (Reprinted from Gibson, E. J. (1969). *Principles of perceptual learning and development*. Englewood Cliffs, NJ: Prentice-Hall.)
- Glaser, B.G., and Strauss, A.L. 1967. **The discovery of grounded theory. Strategies for qualitative research.** New York: Aldine.
- International Orienteering Federation, **O Symbol Font.** Retrieved in February, 2000 from www.us.orienteering.org.
- Ittelson, W.H. 1973. **Environment perception and contemporary perceptual theory.** In Ittelson, W.H., ed., *Environment and cognition* (pp. 1-20). New York: Seminar Press.
- Kellert, S.R., and Wilson, E.O., eds. 1993. **The biophilia hypothesis.** Washington, DC: Island Press.
- Kockelmans, J.J. 1971. **Phenomenological psychology in the United States: A critical analysis of the actual situation.** *Journal of Phenomenological Psychology*. 1: 139-172.
- Murray, J., and Aspinall, P. 2001. **The experience of forests.** In T. Sievnen, C.C. Konijnendijk, L. Langner, and K. Nilsson, eds., *Forest and social services. The role of research* (pp. 79-94), (Research Paper 815). Vantaa, Finland: Finnish Forest Research Institute.
- Orland, B. 1993. **Synthetic landscapes. A review of video-imaging applications in environmental perception research, planning, and design.** In R. W. Marans and D. Stokols, eds., *Environmental simulation. Research and policy issues* (pp. 213-250). New York: Plenum Press.
- Paterson, D.D. 1992. **Dualities and dialectics in the experience of landscape.** CELA 1992: Design + Values. 147-166.
- Seamon, D. 1979. **A geography of the lifeworld: Movement, rest, and encounter.** New York: St. Martin's Press.
- Sell, J.L., Taylor, J.G., and Zube, E.H. 1984. Toward a theoretical framework for landscape perception. In T. F. Saarinen, D. Seamon, and J. L. Sell eds., *Environmental perception and behavior: An inventory and prospect* (pp. 61-83), (Research Paper No. 209). University of Chicago, Department of Geography.
- Sommer, R., and Sommer, B. 1980/2002. **A practical guide to behavioral research.** New York: Oxford University Press.
- Wohlwill, J.F., and Harris, G. 1980. **Response to congruity or contrast for man-made features in natural-recreation settings.** *Leisure Sciences*. 3(4): 349-365.

INTERPRETIVE THEME DEVELOPMENT FROM FIRST IMPRESSIONS AND VISITOR CENTER EVALUATIONS AT THE SPRUCE KNOB-SENECA ROCKS NATIONAL RECREATION AREA, WV

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Abstract

The typical visitor to the Spruce Knob-Seneca Rocks National Recreation Area (NRA), part of the Monongahela National Forest, WV, is two out of three times most likely a first time visitor (Siniscalchi, Pierskalla, and Selin, 2003). A majority of these first time visitors go to the Seneca Rocks Discovery Center (visitor center), which serves as a central hub of information and orientation. In addition, the NRA also anticipates a further influx of new visitors upon completion of Corridor H, a highway that will link the District of Columbia-metro area to many of the tourism offerings of the NRA. The purpose of this study is to compare first time and repeat visitors' first impressions of the Spruce-Knob Seneca Rocks NRA in order to develop interpretive themes that will highlight the offerings of the NRA. First impressions were collected during the summer of 2004, when a team from West Virginia University, in collaboration with the Forest Service, completed a visitor survey for the NRA management plan revision. According to Lewis and Schneider (2002), first impressions research can give an honest and accurate snapshot of the present, allowing for creative visualization of the future. Interpreting first impressions and visitor center data resulted in expanded interpretive themes detailing specific topics of importance to visitors, desired interpretive offerings, and increased opportunities for visitor center relevance. First impressions data also suggests that experience influences first impressions.

Interpreting first impressions will contribute to greater understanding of the messages extended by places and the role of visitor centers in contributing to the desired future impressions of places.

1.0 Introduction

Within the boundaries of the Monongahela National Forest, WV is the Spruce Knob-Seneca Rocks NRA. Established in 1965, the 100,000-acre Spruce Knob-Seneca Rocks NRA was the first NRA established within a national forest, and stands as a unique resource designed to highlight exceptional recreational opportunities (McKim 1970, p. 58). A National Recreation Area (NRA) is generally established to provide an area of recreation near a large concentration of population (Douglass 2000, p. 43). The NRA "lies within a day's drive of about one-third of the population of the United States." (Background Information, nd). However, the typical visitor to the Spruce Knob-Seneca Rocks NRA is two out of three times more likely a first time visitor (Siniscalchi, Pierskalla, and Selin 2003). The purpose of this study is to compare first time and repeat visitors' first impressions of the Spruce-Knob Seneca Rocks NRA in order to develop interpretive themes that will highlight the offerings of the NRA.

1.1 Nature of the Problem

Understanding visitor first impressions and evaluations of the Seneca Rocks Discovery Center are vital as the NRA anticipates the completion of Corridor H. Corridor H is a highway that will link the District of Columbia metro area to many of the tourism offerings of West Virginia. The influx of new visitors demands that the NRA understand their specific needs. Impressions are one way to discover some of the inherent and ascribed meanings that visitors associate with the resource (Larsen 2002). "The audience ultimately decides if the resource has value. The audience determines if they will care enough about the resource in order to support the care for the resource." (Larsen 2002, p. 19). The research questions developed to guide this study reflect the importance of understanding the NRA visitor as a first time or repeat visitor.

1.2 Research Questions

1. What are first-time and repeat visitors' first impressions of the Spruce Knob-Seneca Rocks NRA?
2. How do first-time and repeat visitors' evaluate the Seneca Rocks Discovery Center?
3. How can the NRA use first impressions data to aid the first time visitor in discovering their connection with the NRA as a place?

Though the purpose of this study weighs heavily on first impressions data, the value of the study also stems from information collected on Discovery Center use and general audience makeup. All aspects of the study work together to lend greater significance to the first impressions collected by increasing the contextual information base. The conceptual framework is based upon first impressions, sense of place and interpretation. The chi-square and t-test were used to compare first time and repeat visitors. To consider interpretation, first impressions, and sense of place as concepts that become stronger when interwoven, the following selection of literature highlights some of the many common threads among the three concepts.

1.3 Linking First Impressions, Interpretation, and Sense of Place

"While any individual can apply imagination to create a personal sense of place, much of what a person knows about places, or feels about places, or does in places, is initially mediated by others." (Stokowski 2002, p. 372). An opportunity may exist at any site to reach out to visitors by providing information in some form that mediates their development of a sense of place. According to Enos Mills, "Each interpreter should strive to communicate a sense of place or a sense of historic meaning in a personal, individualized manner." (Beck and Cable 2002, p. 2). If visitors are directed to the information they need to achieve their ideal experience, several events probably happened. It is likely that interpretive efforts were successful, impressions were of high quality and eventful, and ample opportunity to develop a sense of place existed.

"Just as solid interpretation helps the visitor begin to value the place, another benefit is preservation of

the area." (Beck and Cable 2002, p. 42). Noting that site stewardship may be one manifestation of sense of place, it seems that interpretation could likely spark the process. Goldman, Chen, and Larsen (2001) write that, "Interpretive outcomes such as care and responsible citizenship do not arise out of a void, however; they require a sense of relationship, a sense of being connected to something that is bigger than oneself" (p.4). The authors also write that incorporating the meanings found in the resource in interpretive efforts will likely increase visitors' ability to connect to the site. Therefore, good interpretation may become great after considering visitor impressions for theme development. Bridging between impressions, interpretation, and sense of place, thoughtfully developed themes present the best of a site to a diverse audience.

2.0 Method

This study sought to not only describe visitors, but also delve deeper into the visitor's mind for valuable, self-reported information. Employing methods that result in qualitative data require attentive strategies to accurately understand the meanings behind the results. Content analysis has been applied to achieve an increased understanding of some of the qualitative data critical to this study regarding first impressions.

The Spruce Knob-Seneca Rocks NRA is divided into two units, and a randomized sampling strategy sought to represent the many different recreational opportunities offered within each unit. Three sampling zones (total of eight study sites) were identified across the Spruce Knob unit. The remaining two sampling zones (total of 10 study sites) were included in the Seneca Rocks unit. A mixed-methods survey was developed as an instrument that combined open-ended, yes/no and Likert-type scale measurements. The instrument was issued as a semi-structured interview with a self-administered portion.

The instrument was designed to meet the four objectives outlined for this study: compile and analyze visitor first impressions for recurring topics; compare first time visitors' and repeat visitors' first impressions and evaluations of the Seneca Discovery Center; develop interpretive themes based upon first impression topics;

and increase the understanding of the Spruce Knob-Seneca Rocks NRA visitor. Quantitative analysis using SPSS reduced visitor data into specific informative segments. Suggested interpretive themes for the NRA were derived from participant's first impressions, after impressions were consolidated topically through content analysis.

2.1 Content Analysis

The coding of statements proceeded by placing them into initial topical categories, collapsing related categories, and finally into broad topical categories with a series of subtopics derived through emergent analysis. The statements coded were participant responses to the question, "What was your first impression of the NRA on this trip?" Analysis was computer aided, using WordStat 4.0, specifically QDA miner which allowed for coding within context. Each first impression was coded for the topical categories it represented. For example, the first impression, "I saw the rocks. Wow! They were magnificent. The most beautiful place on earth." was coded as follows: the statements "I saw the rocks", "Wow!", and "They were magnificent" were coded as Seneca Rocks. The remaining statement, "The most beautiful place on earth." was coded as beautiful. First impressions were not limited to fitting into one topical category, as this example illustrates.

To systematically collapse initial topical categories, two guidelines were followed. Topical categories were collapsed when frequencies were less than three, as Berg writes, "a safe rule of thumb to follow is the inclusion of at least three independent examples for each interpretation." (1989, p. 107). To help ensure the reliability of each topical category, two raters coded each statement, and the inter-rater reliability was 71 percent. All of these topics were compared against each other for frequency among first-time visitors and repeat visitors. Suggested themes for interpretation were then derived from the four broad topical categories, with the subtopics guiding additional possibilities for effective interpretive themes for that broad topic. These themes are indicative of possible interpretive programming/devices that would address the interests of the visitor, and can be modified to meet the different needs of first time or repeat visitors.

3.0 Results

The results of this study are organized into five main areas: survey participation and sampling, characteristics of the National Recreation Area visitors, comparing first time visitors to repeat visitors, visitor first impressions and themes, and visitor evaluations of the Discovery Center. Overall, 235 individuals were asked to participate in the visitor survey, and 176 (75%) gave consent. Of these, 164 completed the qualitative portion of the survey (70% of the consented participants) and 119 completed the qualitative and quantitative sections, resulting in a completion rate of 51 percent of those initially asked to participate and 68 percent of those that consented. The site sampling schedule resulted in nearly half (45%, n=79) of the respondents coming from the Seneca Rocks, zone 1, with smaller portions from Spruce Knob Lake, zone 4 (21%, n=36), Judy Springs/Gandy Creek, zone 5 (17%, n=30) and Smoke Hole and Spruce Knob (zones 2 and 3) having less than 10 percent of those sampled.

3.1 Characteristics of the National Recreation Area Visitors

The sample (n=172) was nearly evenly distributed among females (44%) and males (56%). Respondents varied in age from 18 to over 70, with the largest contributing age being 18. Nearly 95 percent (n=171) of respondents indicated their race as white. Most visitors were employed (61%, n=170), and student (20%) was the second highest employment category. Nearly 50 percent (n=168) of visitors were married with children. Most visitors (27%, n=167) reported their education level as some college and about 42 percent of visitors have a college degree. Visitors reported varied income levels, with just over 50 percent earning up to \$59,000 per year. Visitors typically traveled in groups, and West Virginia residents made up 47 percent (n=176) of the sample.

3.11 First-time Visitors Compared to Repeat Visitors

Nearly one-third of participants were new visitors to the NRA. The repeat visitors indicated how often they frequented the NRA in the past year, with 29 percent (n=118) reporting one additional visit. Repeat visitors also indicated if their rate of visitation in the past year was more, less, or about the same as when they first started visiting. Sixty-seven percent (n=101) of these

visitors felt their visitation was about the same rate. Repeat visitors were more likely to be employed, married with children, and report larger incomes. First-time visitors traveled in significantly larger groups. First-time visitors had a mean age of 33, and repeat visitors were older, with a mean age of 44.

3.12 Visitor First Impressions and Themes

Ninety-one percent (n=174) of study participants reported being aware that they were within a National Recreation Area. When asked to reveal how they became aware of the NRA, most visitors cited past experience, reading a sign/map, or learning from their family and friends. Fifty-six percent (n=164) of visitors agreed that knowing they were in a NRA influenced their impression of the area. Visitor first impressions were initially reviewed together, and Table 1 reports the frequency counts for all the codes. Four topical categories were developed as umbrellas for the 18 subtopics coded. The reliability of codes was checked and indicated a 71 percent inter-rater reliability. The raters agreed even more on the noncoded portions of first impressions at 89 percent frequency of agreement. An 83 percent frequency of agreement between all coding possibilities was realized.

Table 1 shows each of the 18 codes and the frequency of each for all visitors. The frequency count of codes for first time and repeat visitors is organized under the four main topical category headings that were later used for theme development. The four topical categories human experience, natural resources, aesthetics, and facilities and services and their accompanying subtopics formed the basis of theme development. The topical category of aesthetics has the highest frequency of all four topical categories. Under the topical category of aesthetics, the code beautiful (n=55) had the highest frequency out of all eighteen codes. Other codes that were high in frequency were tranquility (n=25), clean (n=24), and condition (n=24).

Significant results ($p \leq 0.05$) were found when comparing first time and repeat visitor first impressions between the four umbrella categories of human experience, natural resources, aesthetics, and facilities using a weighted chi-square statistic (Table 2 and

Table 1.—First Impression Category Frequencies

First impression topical categories	Visitor first impressions (n=167)	freq	(%)
	mean $\pm$ SD		
Human	19.0 $\pm$ 5.7	38	(12.9%)
Experience			
Travel		15	(39.5%)
Experience			
Prior Experience		23	(60.5%)
Natural Resources	9.7 $\pm$ 4.6	68	(23.1%)
Seneca Rocks		16	(23.5%)
Scenery		14	(20.6%)
Recreation		10	(14.7%)
Activities		4	(5.9%)
Water		9	(13.2%)
Climate		11	(16.2%)
Rural		4	(5.9%)
Flora and Fauna			
Aesthetics	31.3 $\pm$ 15.9	125	(42.5%)
Clean		24	(19.2%)
Beautiful		55	(44.0%)
Tranquility		25	(20.0%)
Attachment		21	(16.8%)
Facilities and Services	12.6 $\pm$ 8.6	63	(21.5%)
Condition		24	(38.1%)
Visitor Center		6	(9.5%)
Campsite		19	(30.2%)
Availability		10	(15.9%)
Regulations		4	(6.3%)

Figure 2). The chi-square was weighted by proportion of sample size by group to account for the different sample sizes. First time visitor impressions were higher than expected for the human experience category, and remained significant after applying the Bonferonni correction ($p=0.013$). Consequently, the chi-square statistic was applied to each individual subtopic code to check for significant differences (Table 3). Individual chi-squares were used because of the dependence of coding between topics and subtopics. The subtopics of prior experience ($p=0.002$) and tranquility ($p=0.032$) were significantly higher for first time visitors. After applying the Bonferonni correction ($p=0.013$), only the subtopic of prior experience remained significant.

Table 2.—First Impression Topical Categories Frequency and Significance†

First impression topical categories	First time visitor Freq (%)	Repeat visitor Freq (%)	χ^2	p
Human Experience	30 (88.2%)	4 (11.8%)	9.12	0.003* **
Natural Resources	39 (57.4%)	29 (42.6%)	1.02	0.312
Aesthetics	46 (56.1%)	36 (43.9%)	1.81	0.178
Facilities and Services	40 (65.6%)	21 (34.4%)	0.14	0.708

*values are significant at $p \leq 0.05$

**values remain significant after Bonferonni correction $p=0.013$

†Note: due to the dependence between topics and subtopics, these results should be interpreted with caution

Table 3.—First Impression Subtopic Frequency and Significance

First impression subtopics	First time visitor Freq (%)	Repeat visitor Freq (%)	χ^2	p
Human Experience (n=38)				
Travel Experience	9 (75.0%)	3 (25.0%)	0.71	0.399
Prior Experience	21 (95.5%)	1 (4.5%)	9.1	0.002* **
Natural Resources (n=68)				
Seneca Rocks	11 (68.8%)	5 (31.3%)	0.21	0.649
Scenery	7 (50.0%)	7 (50.0%)	1.06	0.303
Recreation Activities	5 (50.0%)	5 (50.0%)	0.76	0.384
Water	3 (75.0%)	1 (25.0%)	0.45	0.500
Climate	4 (57.1%)	3 (42.9%)	0.61	0.436
Rural	5 (45.5%)	6 (54.5%)	0.76	0.384
Flora and Fauna	4 (100.0%)	0 (0.0%)	2.32	0.128
Aesthetics (n=125)				
Clean	16 (69.6%)	7 (30.4%)	0.39	0.531
Beautiful	33 (61.1%)	21 (38.9%)	0.11	0.743
Tranquility	21 (84.0%)	4 (16.0%)	4.62	0.032*
Attachment	16 (80.0%)	4 (20.0%)	2.41	0.121
Facilities and Services (n=63)				
Condition	14 (58.3%)	10 (41.7%)	0.25	0.616
Visitor Center	4 (100.0%)	0 (0.0%)	2.32	0.128
Campsite	10 (52.6%)	9 (47.4%)	0.92	0.336
Availability	8 (80.0%)	2 (20.0%)	1.21	0.272
Regulations	4 (100.0%)	0 (0.0%)	2.32	0.128

*values are significant at $p \leq 0.05$

**values remain significant after Bonferonni correction $p=0.013$

The four resulting themes were derived from the topical categories of human experience, natural resources, aesthetics, and facilities and services.

Theme 1: Human Experience

Our own background and experience helps us connect to the Spruce Knob-Seneca Rocks National Recreation Area as a place.

Theme 2: Natural Resources

The resources of the Spruce Knob-Seneca Rocks National Recreation Area symbolize tangible experiences and intangible ideals.

Theme 3: Aesthetics

The Spruce Knob-Seneca Rocks National Recreation Area surrounds us with beauty and immerses us in tranquility.

Theme 4: Facilities and Services

The human footprint within the Spruce Knob-Seneca Rocks National Recreation Area is limited, but welcomes us in inviting ways.

3.2 Visitor Evaluations of the Discovery Center

Nearly 50 percent of the visitors to the NRA made the Visitor Center part of their trip. Most visitors frequent the center on their first or second day in the NRA. Visitors typically report spending a half hour in the center during their visit. The visitor center is well received, but only 52 percent of the participants agree that the hours are reasonable. An overwhelming 89 percent of visitors were satisfied with their time at the Visitor Center. Visitors were asked to indicate if any one display stood out in their mind (n=35), and 26 percent responded that the large relief map caught their eye. The children's sandprint box was the second most mentioned exhibit (17%). Visitors also suggested new ways for the Discovery Center to inform visitors, such as photo points and typical flora and fauna of the area. Comments on the Discovery Center were compiled, and were positive and supportive outside of concerns about the center's open hours

In order to evaluate the services provided by the Discovery Center specifically, several items were

compared for significance between first-time and repeat visitors, and can be seen in Table 13. Out of 55 total first-time visitors, a little over half (n=29) visited the Discovery Center. Only about one-third of repeat visitors (n=37) chose to frequent the Discovery Center again. However, the chi square test ($p < 0.05$) determined there was no significant difference between first-time and repeat visitors' choice to visit the Discovery Center. Both first-time and repeat visitors did not differ in their choice of day in trip to visit the Discovery Center or in how much time spent during their visit.

An 18-item inventory regarding Discovery Center services and effectiveness did reveal some differences between first time and repeat visitors. All of the significant items were higher for first time visitors. The significant items were: the exhibits enhanced my experience at the NRA, I was satisfied with my time at the Visitor Center, I enjoyed the displays at the Visitor Center, I would go to the Visitor Center again in the future, and the Visitor Center met my expectations. Only two items remained significant after the Bonferroni correction was applied; the exhibits enhanced my experience at the NRA and I would go to the Visitor Center again in the future. The complete 18 item inventory results can be seen in Table 4.

4.0 Discussion

Significant results were found when analyzing demographics, first impressions and the Discovery Center inventory. Regarding demographic variables, repeat visitors were more likely to be employed, report a household income ranging from \$20,000 to \$59,000, and report that they were married with children. Because repeat visitors are typically employed and indicate a reasonable income, they likely have sufficient resources to visit the NRA more than one time. Repeat visitors are likely more often married with children because they are slightly older, and at a different lifecycle stage than the first time visitors who are predominately single with no children. First-time visitors typically visited the NRA with a larger group than repeat visitors. New visitors may feel more comfortable exploring a new area with family/friends or visit the NRA with individuals who already have experience.

Table 4.—Comparison of First Time and Repeat Visitors Discovery Center Inventory

	First time visitor (n=29) mean ±SD	Repeat visitor (n=37) mean ±SD	t	p
The hours were reasonable	1.6 ± 1.5	1.5 ± 0.9	1.9	0.069
The Visitor Center was easy to find	2.2 ± 1.0	1.0 ± 2.6	1.9	0.064
The staff was approachable	1.9 ± 1.2	1.2 ± 1.9	0.3	0.792
The staff was easy to identify	2.4 ± 1.0	1.0 ± 2.4	0.2	0.845
The staff was knowledgeable	1.3 ± 1.6	1.6 ± 1.5	0.5	0.608
The staff was helpful	1.5 ± 1.7	1.7 ± 1.7	0.5	0.587
The staff was friendly	1.7 ± 1.3	1.3 ± 1.5	0.6	0.584
The staff suggested appropriate destinations based on my needs	0.4 ± 1.3	1.3 ± 0.7	0.9	0.366
Printed materials were organized	2.0 ± 1.4	1.4 ± 2.5	1.6	0.116
Printed materials were easy to read	1.9 ± 1.6	1.6 ± 2.3	1.3	0.209
Printed materials were helpful	1.5 ± 1.6	1.6 ± 2.1	1.7	0.093
The exhibits enhanced my experience at the NRA	1.7 ± 1.5	1.5 ± 2.5	2.4	0.018**
The exhibits generated thought about the resources of the NRA	1.4 ± 1.7	1.7 ± 1.8	1.0	0.334
I was satisfied with my time at the Visitor Center	2.1 ± 1.4	1.4 ± 2.7	2.2	0.038*
I enjoyed the displays at the Visitor Center	2.1 ± 1.3	1.3 ± 2.7	2.2	0.031*
I enjoyed the lectures/informational talks at the Visitor Center	0.8 ± 1.5	1.5 ± 0.3	1.5	0.133
I would go to the Visitor Center again in the future	1.8 ± 1.7	1.7 ± 2.6	2.7	0.011**
The Visitor Center met my expectations	2.0 ± 1.5	1.5 ± 2.7	2.3	0.026*

*values are significant at $p \leq 0.05$

**Bonferonni correction $p=0.025$

Note: The scale ranged from -3 to 3, completely disagree to completely agree, with a neutral choice as 0.

First impressions were compared after they were coded. The four main topics of human experience, natural resources, aesthetics, and facilities and services were compared for any differences between first time and repeat visitors. The topic of human experience was found to be significantly different from the other topics. Further investigation into the subtopics that comprise the human experience category showed that first time visitors would mention prior experience in their first impression more often than repeat visitors. This could be explained by the

efforts of first time visitors to find a way to relate to a new site by linking similar attributes to previously known experience. First time visitors also mentioned tranquility within their first impressions more often than repeat visitors.

The last category of significant results to explore deals with comparing first-time and repeat visitors' evaluations of the Discovery Center. All of the significant items for evaluation of the Discovery Center were higher for

first-time visitors. The significant items were: the exhibits enhanced my experience at the NRA, I was satisfied with my time at the Visitor Center, I enjoyed the displays at the Visitor Center, I would go to the Visitor Center again in the future, and the Visitor Center met my expectations. These items suggest that the Discovery Center is targeted to first time visitors, and may need to provide for opportunities for repeat visitors.

4.1 Management Implications

The study outlines the existing impressions of the NRA, and offers interpretive themes that management can use to script effective messages to the target audience. It is crucial to collect this information to further assist management in recognizing what aspects of the NRA are meaningful to visitors. In the interest of the Monongahela National Forest, the fact that sense of place can be ascribed in ways other than repeat visitation is vital.

Visitors to the NRA are complex, and are looking for and noticing the tangible and intangible resources of the NRA. Based on the differences among first time and repeat visitors impressions and Discovery Center evaluations, a few recommendations could expand the scope of NRA offerings. Managers should concentrate interpretive efforts around the themes identified in this study, and include themes not mentioned that are of particular importance to the enabling legislation of the NRA. Managers should consider rotating exhibits within the Discovery Center to benefit repeat visitors.

Because past experience is such a compelling contributor to first impressions, for managers to connect to visitors, interpretive efforts need to incorporate past experience. Considering that many visitors come from the D.C.-Baltimore area, and especially if they are first time visitors, interpretive products could relate D.C.-Baltimore area specific examples to Seneca Rocks to enhance visitors' connection to the NRA. For example, relating the height of famous and familiar structures such as the Washington monument to the height of Seneca Rocks makes a new site relevant.

Visitors are likely on vacation, and efforts to connect to visitors should be enjoyable, not intense or difficult to follow. Simply asking a visitor where they are from

validates their past experiences, and a savvy interpreter may be able to turn a simple question into an interpretive opportunity. To reach both first-time and repeat visitors, interpretive efforts should employ universal concepts. Ideas such as family, home, change, and survival are universal concepts. Interpretive themes that encompass universal concepts have a good chance at helping a visitor connect at some level. Finally, because the natural resources and aesthetics of the NRA are such popular topics in visitor first impressions, many visitors may be ready to understand the concepts driving regulations at the NRA to maintain these attributes. Perhaps repeat visitors would be even more likely to grasp onto management directives, because they appear to be comfortable with regulations. By collaborating with local communities and user groups, managers could enlist their help to incorporate the findings of this study. Managers should not underestimate the abilities of their audience to experience the variety of attributes associated with the NRA if they present any topic thematically and in an enjoyable, relevant and organized manner (Ham 1992).

4.2 Recommendations for Future Research

The benefits of content analysis to compress large amounts of data into understandable topics and themes will continue to benefit managers of all sites. Visitor comments on a variety of issues should be reported to managers after being consolidated through content analysis. The method of content analysis to handle qualitative data is not new, but could be applied as a fresh methodology for a variety of purposes, especially in the field of interpretation. At a basic level, continually applying content analysis to interpretive products could reveal and allow for the tracking of trends. In general, content analysis has been used as a qualitative method for theory development within the field of interpretation. However, WordStat can build on this by adding a quantitative grounding for empirical work in interpretation. For instance, the National Park Service qualifies interpreters by rating their products and services. Applying WordStat to analyze non-personal products would be one method to standardize ratings and remove subjective bias and/or confirm ratings reviewers give. Developing a dictionary of words for interpretive professionals to use consistently for content analysis would be a natural step to realize the benefits of this type

of analysis. This coding dictionary should be empirically derived, and would likely be amended when used in a site-specific manner. This study suggests content analysis as a method that adds a quantitative element to theme development, and this idea should be applied and tested across sites.

In conclusion, applying first impressions to the field of recreation has been a worthwhile approach to understanding how visitors interact with a site. First impressions are a snapshot in time, but they help site managers understand the image they currently portray, and can allow for innovative growth based on desired future conditions. Developing four themes for the Spruce Knob-Seneca Rocks NRA from the results of this study provide direction to managers in meeting the needs of their audience. The themes from this study can be tailored to first time or repeat visitors to enhance their experience. Two-thirds of the NRA visitors are coming for the first time, and the NRA anticipates more once Corridor H is completed. As these new visitors come to the NRA, managers need to be prepared to meet their needs, provide them opportunities to connect with the resources of the NRA, and to foster development of a sense of place.

5.0 Citations

Background Information on the Spruce Knob-Seneca Rocks National Recreation Area. Forest Service, no date.

Beck, L., and Cable, T. 2002. **Interpretation for the 21st Century (2nd ed.).** Champaign, IL: Sagamore Publishing.

Berg, B. 1989. **Qualitative Research Methods.** Needham Heights, MA: Allyn and Bacon.

Douglass, R. 2000. **Forest Recreation (5th ed.).** Prospect Heights, IL: Waveland Press, Inc.

Goldman, T., Chen, W., and Larsen, D. 2001. **Clicking the Icon: Exploring the Meanings Visitors Attach to Three National Capital Memorials.** *Journal of Interpretation Research.* 6: 3-29.

Ham, S. 1992. **Environmental Interpretation.** Golden, CO: North American Press.

Larsen, D. 2002. **Be Relevant or Become a Relic.** *Journal of Interpretation Research.* 7: 25-29.

Lewis, A., and Schneider, J. (rev. 2002) 1991. **First Impressions: A Program for Community Economic Development.** Retrieved April 26, 2004, from University of Wisconsin, Extension Service Web site: www.uwex.edu/li/andy/.firstimprevised.doc

McKim, C.R. 1970. **50 Year History of the Monongahela National Forest.** Forest Service.

Siniscalchi, J., Pierskalla, C., and Selin, S. 2003. **Social Assessment of the Monongahela National Forest.** Unpublished manuscript, West Virginia University.

Stokowski, P. 2002. **Languages of Place and Discourses of Power: Constructing New Senses of Place.** *Journal of Leisure Research.* 34: 368-382.

Environmentalism and Ethics

MEASUREMENT OF DIRECT-USE WILDERNESS VALUES: A QUALITATIVE STUDY

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1.0 Abstract

Our purpose was to investigate the interpretation of National Survey on Recreation and the Environment wilderness value questions. Qualitative methods were used to assess validity of the questions used in quantitative research. This paper addressed questions relating to developmental, therapeutic, and social wilderness values. Four themes emerged during the interviews and were labeled: wilderness as a solo or group experience, wilderness as a facilitated or non-facilitated experience, receptivity to wilderness experiences, and restorative environments. The receipt of a value was dependent on whether the wilderness visit was structured as a solo or group experience and/or if the experience was facilitated. The issue of personal receptivity was important; respondents indicated that society as a whole might not easily recognize these values. An interesting outcome was the concept of a personal receptivity continuum for receipt of wilderness values. Results indicated the need to make minor changes to question wording and instructions to clarify meanings.

2.0 Introduction

The National Survey on Recreation and the Environment (NSRE) is conducted periodically by the United States Department of Agriculture Forest Service as an attempt to understand and track recreation and public attitude trends toward the environment and public lands (Cordell et al. 2003). The NSRE is a random digit dial telephone survey of U.S. residents. As a part of the questioning about public lands, a sub-sample of

respondents is asked a set of questions specifically about wilderness values. The purpose of the study reported in this paper was to investigate how respondents interpret the NSRE wilderness value questions. Qualitative methods were used to provide a deeper understanding of responses to NSRE questions. Results indicating a divergence between the intended meaning and the interpreted meaning of each question can be viewed as an opportunity to expand and explore theoretical underpinnings of the wilderness value construct or modify and improve the existing NSRE measurement instrument. Emerging themes led to content analysis for convergence or divergence with the intended meanings and underlying theory of the NSRE questions.

3.0 Background

The NSRE has, in its various forms and over the course of its administration, asked questions relating to at least 24 wilderness values. This paper focuses on three of these 24 values in particular—developmental, therapeutic, and social values. Descriptions and analysis of these three values are provided below.

Developmental value refers to personal growth benefits presumed to follow from on-site wilderness experiences, specifically, desirable changes in a wilderness user's self-concept or skills. This was tested in the NSRE by the following statement: *spending time in wilderness helps people learn skills beneficial in everyday life such as leadership, overcoming challenges, and self-confidence*. There is support in the literature for the position that wilderness experiences can promote such personal development. Pohl and Borrie (2000) found that participants in all-woman wilderness experiences achieved several transferable outcomes including self-sufficiency through self-reliance. Scherl (1989) argued that wilderness experiences require individuals to respond to unfamiliar environments and situations which elevate self-confidence through an increased awareness of their own coping abilities. Burton (1981), in a review of 72 studies of personal development programs in wilderness settings, found convincing evidence that such programs have positive effects on self-perception. White

and Hendee (2000) called it the primal hypothesis, the idea that a natural setting free of diversions and social pressures could enable one to connect with their deeper self, realizing self-control, self-actualization, and other personal growth benefits. Their study found positive relationships between the naturalness and opportunities for solitude in wilderness areas and achievement of these personal benefits.

Therapeutic value refers to the healing and stress reduction benefits of wilderness use. This on-site, direct-use value was measured by the following two statements: *spending time in wilderness helps one recover from tragic life events or illness, such as death of a loved one, divorce, or depression and spending time in wilderness helps people escape the stresses of every-day life*. Stress reduction has long been identified as an important motivator for wilderness use. John Muir (1901), speaking in the transcendentalist tradition, saw the use of natural areas by city people as the cure to their “tired, nerve-shaken, overcivilized, [and] . . . half-insane” lives. Contemporary motivations research has identified stress reduction as a primary motivator for recreation generally (Driver et al. 1987) and wilderness recreation specifically (Hammit 1982). Kaplan (1995) described wilderness and wilderness-like settings as restorative environments which renew one’s capability for directed attention through immersion in interesting and inviting experiences. Such environments offer opportunities for fascination or involuntary attention. For example, birders experience process fascination when they follow the unpredictable interactions and appearances of birds. Visitors to Yellowstone National Park experience content fascination when they see a geyser for the first time. In addition to fascination, restorative environments require a sense of “being away”, extent (a rich and coherent world), and compatibility (the desired activity is carried out naturally in the setting). Alternatively, Ulrich et al. (1991) found natural environments to be restorative by reducing stressful stimuli. In this view, the relative absence of stimuli in a natural setting reduces arousal and the stress response that follows. Finally, the emerging field of ecopsychology is exploring the healing benefits of wilderness and wilderness-like settings for physical ailments (Beringer 2000).

Social value refers to the family bonding and friendship benefits sought when one enters a wilderness with a group. Formality and role barriers are reduced in wilderness settings, leading to higher group interdependence, trust, and communication (Driver 1987). The nature of a wilderness trip may predispose participants to behave in socially cohesive ways. For example, Arnould and Price (1993) found that wilderness river trip participants came to the experience in a communitarian fashion, ready to share in collective responsibilities and problem-solving. Such experiences among family members may contribute to long-term family stability, improved interactions, and increased family and marital satisfaction (Mannell and Kleiber 1997). Social values were measured by responses to this NSRE statement: *spending time in wilderness strengthens family bonds, values, and friendships*.

4.0 Methods

This research employed a qualitative approach to data collection and analysis (Taylor & Bogdan 1998). A qualitative in-depth interviewing methodology was useful because it allowed data to emerge throughout the interviewing process (Rubin & Rubin 1995). Interview questions were based on the 1994, 2000, and 2003 NSRE survey questions. The interview guide was created to reflect the original wording of the NSRE questions. Each participant was read the introduction to the wilderness module used on the NSRE and the individual value statements from the NSRE. Respondents were then asked to express their level of agreement using the same five-point scale used on the NSRE (1=strongly agree to 5=strongly disagree) to each individual value statement. Finally, interviewees were asked to elaborate on their answers. Interviews were conducted in the spring of 2004 and ran approximately from 30 to 60 minutes in length. Results discussed herein focus exclusively on the qualitative results and not on the quantitative responses. Fifteen total interviews were conducted. Interviews took place in libraries, workplaces, and in the homes of interviewees, depending on the interviewee’s preferences.

The NSRE sampling methods are designed to obtain a random sample of the American population. Specifically, NSRE methods do not target individuals who have

self-selected to participate in any specific recreation activities. The methods used for this qualitative study also attempted to focus on a diversity of people whether or not they were recreation participants. The pool of participants was generated through posting calls for subjects on internet chat rooms of local interest, in newsletters of volunteer organizations, and at local libraries. To ensure confidentiality, each participant was assigned a pseudonym. With the permission of the interviewees, each interview was digitally recorded and transcribed verbatim. From the transcribed interviews, content analysis uncovered themes relating to perceptions of wilderness value. Emerging themes led to the development of a coding system based on these themes and sub-themes.

5.0 Results

The results in this section summarize the four emerging themes that concern developmental, therapeutic, and social values. The remaining values were not discussed herein due to space constraints. The four themes that emerged during the interviews were labeled as follows: wilderness as a solo or group experience, wilderness as a facilitated or non-facilitated experience, receptivity to wilderness experiences, and restorative environments.

Study participants represented most phases of adult life and ranged from age 22 to age 77. Seven of the participants were female and eight were male. They included three professionals, three homemakers, two students, two retirees, and one self-employed merchant. The remaining four interviewees were employed in retail or service industries.

5.1 Wilderness as a solo or group experience

Whether one viewed the wilderness experience as a solo or group experience had an impact on their answers to the NSRE questions. For example, the statement dealing with the development of leadership skills and self-confidence elicited different responses according to whether the interviewee perceived the experience as solitary or social. Derick perceived wilderness as a solo experience when responding to the statement *spending time in wilderness helps people learn skills beneficial in everyday life such as leadership, overcoming challenges, and self-confidence*.

Those sound more like group things. And when I think of nature, I mean wilderness, I think of like myself and one other person, or small groups, you know. It's more like figuring stuff out for yourself rather than being ... it sounds more like the Boy Scouts or something, like you go out with your troop and you demonstrate leadership.

In response to probe questions, Derek, along with most respondents, made a distinction between the development of leadership skills and skills related to overcoming challenges and self-confidence. The development of the former was predicated on the group experience, while the latter could be accomplished in the solo context. As Barbara stated,

Well, the one thing I took an issue with is it's not necessarily leadership if you're there by yourself . . . the rest of it I agree with. The kids [referring to a summer camp where she once worked], I mean, definitely those traits were developed as they were in groups and tried to live in a wilderness . . . They develop all those skills. They have to be self-reliant.

Derek seemed to embrace the component of the statement that referred to self-confidence, but was unable to reconcile leadership development with his conception of the wilderness experience. As he stated,

At first I thought you were going to ask a question that was about how wilderness leads to a better sense of being, . . . I didn't really associate it with like the leadership end.

Mike also separated leadership development from self-confidence,

. . . wilderness does not teach you the skills, you have to learn those skills on your own. What wilderness can teach you though is a self-reliance that you wouldn't get otherwise. It can teach you some things that you can't learn outside of wilderness. But it doesn't teach you the basic skills to be a leader per se. I mean I have been in the wilderness a lot alone, OK, and that's not teaching me to lead anyone else. But it's teaching me how to

deal with myself and my self-confidence and those kinds of issues.

Many respondents perceived the separate issues of leadership development, overcoming challenges, and self-confidence as creating a double-barreled statement. That is, in one question there seemed to be measurement of two or more constructs. Which construct was addressed hinged on which term was heard and understood first, as well as the respondent's perception as to whether the wilderness experience was solo or not.

Similar issues also influenced responses to the therapeutic value statements. When read the statement *spending time in wilderness helps one recover from tragic life events or illness, such as death of a loved one, divorce, or depression*, Ted disagreed, stating,

I just think the feelings of isolation that you experience in wilderness don't do much to heal a damaged psyche which has been harmed by some sort of emotional trauma. Being alone is not a good thing for a real long time when you're hurt.

Because Ted perceived the wilderness experience as solitary, he neglected to consider the possibility that social interactions in wilderness could contribute to healing. Mary, however, while also viewing the experience as solitary, rated this NSRE statement as important because she saw a benefit to being alone,

I would think being out in the wilderness you'd have time to be alone and time to reflect on life and what your future would be.

Susan was the only respondent to expressly discount the therapeutic possibilities of a group experience,

Again, especially if you're alone, you're forced to look inside yourself, you don't have any distractions. You need to learn to cope with whatever's inside you or you need to learn to channel that energy into something productive or else you won't be able to survive ... If you're with other people you have other people to kind of take your mind away from whatever you're trying to cope with. If you're by

yourself, you don't. So it's like you're forced to deal with whatever's getting at you. If you don't have someone else to occupy your attention, you can focus on things.

Thus, each participant answered the questions according to their perceptions of the solitude or camaraderie of a wilderness experience. These perceptions, in turn, greatly influenced their initial attitude toward the wilderness value statements.

5.2 Wilderness as a facilitated or non-facilitated experience

A closely related theme dealt with the respondents' perceptions of the wilderness experience as facilitated or not. A facilitated experience includes The National Outdoor Leadership School, Boy Scouts, church groups, commercially guided trips, and summer camp programs. A non-facilitated experience includes solo trips and excursions with family or friends. The respondents in this study answered the NSRE questions according to whether the wilderness experience was interpreted as facilitated or not.

Laurie and Jennifer both felt that wilderness itself did not provide developmental benefits. They felt that acquisition of this benefit was a result of the group and that these groups may be found in wilderness. Lorie stated, "They have to want to learn those skills ... like Boy Scout or Girl Scout groups, but not just individuals."

Jennifer agreed,

If you just went to visit [wilderness areas] ... you wouldn't necessarily build those skills. To build those skills it would need to be more of an organized program.

When read the NSRE statement concerning developmental benefits, Heather put it this way,

That's hard, cause it can go either way. Depends on if there's – if there's a group of Boy Scouts there, then yeah, it could do that. If there's a bunch of tourists hanging out, having a beer party, I think it's not possible. Because they're only there to have fun.

A total of six of the interviewees responded in this fashion. While each of these eventually expressed support for at least one of the components of the statement (leadership, overcoming challenges, and self-confidence), their initial reactions to the statement were influenced by whether they viewed the experience as facilitated or not.

5.3 Receptivity to wilderness experiences

All of the respondents, when probed, agreed that they could personally realize developmental, therapeutic, and social benefits from direct wilderness experiences. Most, however, expressed doubt that such benefits were automatic. Twelve respondents mentioned that one's experience or predisposition to wilderness determined whether such values would be realized. Ten responses to these four NSRE statements included a hesitation to label wilderness experiences as important for all persons. Thus, although the respondents felt such values were personally important, they indicated that society as a whole might not easily realize these values.

When read the statement *spending time in wilderness helps people escape the stresses of everyday life*, Susan responded with a neutral attitude,

... I think it really depends. Some people might find it more stressful. Like if they're allergic to bees, or they're, you know, prone to get poison ivy or they don't know much about it.

Further probing resulted in Susan indicating that,

[stress] disappears in a wilderness cause the only thing you have to worry about is yourself, you don't worry about what other people are feeling, or what they're doing.

Susan made her initial response according to the values others might place on wilderness, rather than making her own value judgment. This was typical of most responses in the study. Likewise, Adam tempered his responses with an acknowledgement of alternative perspectives. On the subject of therapeutic values, he stated,

I wouldn't say that being in that environment would necessarily help all individuals. It may help certain

individuals, according to their lifestyle, if that's something they're used to doing or they believe in it, but not necessarily everyone. Especially if it doesn't mean anything to them or they haven't been exposed to it in the past. I don't think it's going to help them . . . If someone believes that getting back to nature and being secluded from your cell phone and your everyday way of life, that could be very relaxing for somebody, but it could also do the opposite. It could stress someone out being away in the wilderness, not knowing what to expect and not being able to rely on the amenities.

The issue of personal receptivity was especially important when discussing social values. Respondents were read this statement: *spending time in wilderness strengthens family bonds, values, and friendships*. Mike's response was typical,

I think it depends on what kind of person you are, cause some people get freaked out by nature. So like bringing them to the wilderness would build animosity. But I think if you have a family that can connect in that way it's definitely a positive thing and I like to think that people who spend time together in nature are happier as a family and get along better and have to communicate better just because they're out of their comfort zone and in a new environment.

Susan put it this way,

It depends on your family and the type of people you're friends with. The kind of families that do that often and have fun doing it, it would certainly make them stronger because they have to work with each other. If you have a family or friends where everyone is just out for themselves, it'll make everything worse. It's just going to heat up those problems even more.

Thus, NSRE statements were often judged as statements concerning the general public rather than personal values. Respondents felt their personal values more aligned with the intended meaning than the values of the general public. In general, respondents felt that wilderness can provide benefits; however, the individual must be receptive or even seeking the benefits in order to acquire them.

5.4 Restorative Environments

Two NSRE statements dealt with therapeutic value, one with recovery from tragic events or illness and one with escaping the stresses of everyday life. Responses to both were analyzed for their fit with restorative environments and stress reduction theories.

At first glance, the responses seemed to most closely align with Ulrich's (1991) conception of stress reduction in natural environments. This view holds that such environments are restorative because stressful stimuli are reduced. Nearly all respondents spoke of stress reduction through escape from urban and workplace stimuli. As Jim stated,

For me it's a place of serenity. It gives you a chance to get away from all the stress and pressure of the ongoing world, in the city. You get a chance to just really think. You can't think in the city.

Susan referred to the sensory overload of modern life,

You know, people having to meet deadlines or get up to go to work at a certain time. Sometimes when you're working, like in my job, you just have to deal with so many people, and fluorescent lighting and everything, it's just sensory overload.

Closer inspection of the data, however, also lends support to Kaplan's (1995) theory of restorative environments. The four components of restorative environments (fascination, being away, extent, and compatibility) are present in the responses. Both process and content fascination are found in responses such as Mary's,

You're so busy doing for yourself that you don't have time to reflect on what happened back home. Just surviving and taking in everything and not knowing what's going to happen next, dealing with the unfamiliar,

and Derek's,

I think the definition of wilderness is that it's so far away from everything that we find it comfortable, so in that case I guess it could be a cause of stress if

you get stuck or something, but if you're just sort of out for the afternoon, it can really take your mind off whatever living situation or work situation you're in right now and you're confronted with things you don't normally see in your everyday life . . . I'm most fascinated by when I go out in nature that this all happens on its own regardless of human intervention. Wilderness happens somewhat independent of us and it often vastly exceeds what we are capable of.

Extent is found in comments such as Laurie's,

When I see all the trees, it puts me at ease . . . I don't know, just the way the landscape is laid out in a natural way, it's aesthetically pleasing.

Derek referred to the consuming experience of wilderness recreation,

People go to find out about the world outside themselves and they tend to wander around and like discover new things and forget about themselves and look at other things. It's like they are totally immersed in another world.

The final component of restorative environments, compatibility, is expressed best by Nathan,

Going camping and hiking in wilderness is the most natural thing in the world. We've been doing it for thousands of years. You go there to relax and better yourself. You like it because it's almost effortless. I mean, it's work, but it's work you want to do and it's easy to do. It's what we're designed to do.

Support for wilderness as a restorative environment was found not only in comments regarding escape from urban pressures, but also in comments recognizing the complexities and uncertainties of the wilderness experience. While some people see the wilderness experience as an exercise in simplicity and escape, others find the experience restorative because they are exposed to complex, interesting, and uncertain stimuli. Thus, respondents concurred that therapeutic, developmental, and social values can be obtained through the restorative environment provided in wilderness.

6.0 Discussion

The purpose of this study was to investigate how respondents interpreted the three NSRE questions that referred to developmental, therapeutic, and social values of wilderness. Four themes emerged during the interviews. The themes were labeled wilderness as a solo or group experience, wilderness as a facilitated or non-facilitated experience, receptivity to wilderness experiences, and restorative environments. The primary findings are discussed below.

The respondents' perceptions of the structure of the wilderness experience influenced how questions were answered and subsequently the belief that a specific value could be received from wilderness experiences. Specifically, receipt of a value was dependent on whether the wilderness visit was structured as a solo or group experience and/or if the experience was facilitated. Respondents indicated that some values such as leadership skills were dependent upon leading a group in the wilderness or being part of a facilitated group such as the Boy Scouts or National Outdoor Leadership School. They felt that acquisition of this benefit was a result of the group and that wilderness provides a context for these groups.

Other values such as therapeutic values were more divided. Some respondents felt that social interaction was necessary to recover from tragic events and others thought that solitude was necessary. However, all agreed that wilderness provided the context for this value to be received.

Some respondents felt that the social value question, *spending time in wilderness helps people learn skills beneficial in everyday life such as leadership, overcoming challenges, and self-confidence*, may be double-barreled. The examples used in the question seemed to be measuring two or more constructs. Which construct was addressed hinged on which term was heard and understood first in addition to the perception of how the wilderness experience was structured.

Researchers should be aware of these distinctions when using the therapeutic and social value questions. If

the objective of the research is to understand global values relating to wilderness the questions can be used as they are stated. If the research design allows, more detailed questions can be designed to measure multiple dimensions of constructs associated with each value. Research questions might address the difference between solo and group trips or facilitated and non-facilitated trips in providing benefits.

Most respondents expressed doubt that benefits were automatically received from entering a wilderness. Twelve respondents mentioned that one's predisposition to wilderness determined whether such values would be realized; this was labeled personal receptivity to wilderness values. The issue of personal receptivity was especially important when discussing social values such as strengthening family bonds, values, and friendships. Although the respondents felt such values were personally important, they indicated that society as a whole might not easily recognize these values. This finding in-and-of itself is not surprising. Variation is to be expected in attitude and value surveys. The interesting outcome is the concept of a personal receptivity continuum for receipt of wilderness values. Does personal receptivity exist within the individual as a personality trait? Or, is it dependent on an understanding of and experience with wilderness? Can someone who has never been to a wilderness receive benefits on their first experience? This is a question that should be addressed in future research.

Respondents felt that wilderness environments are restorative because stressful stimuli are reduced. Nearly all respondents spoke of stress reduction through escape from urban and workplace stimuli. Support for wilderness as a restorative environment was found not only in comments regarding escape from urban pressures, but also in comments recognizing the complexities and uncertainties of the wilderness experience. The concept of restorative environments (Kaplan 1995; Ulrich 1991) provides a framework for understanding the process through which therapeutic and social values are received.

One objective of social survey research is to ask questions of individual people with a representative sample and generalize to a larger population. An assumption of validity is that the individual respondents are answering

the questions without bias. NSRE statements were often judged by individuals as statements concerning the general public rather than personal values. Respondents felt their personal values more aligned with the intended meaning than the values of other people. In general, respondents felt that wilderness can provide benefits; however, the individual must be receptive or even seeking the benefits in order to acquire them. These results suggest rephrasing the questions or instructions to help the respondent associate answers with their own values and not the perception of an external value or the other peoples' values of which the individual might not have an accurate understanding.

7.0 Citations

- Arnould, E.J., and Price, L.L. 1993. **River magic: Extraordinary experience and the extended service encounter.** *Journal of Consumer Research.* 20: 24-25.
- Beringer, A. 2000. **Being moved by nature: Healing through nature and implications for an ethics of care for nature.** Proceedings of the Eighth International Symposium for Society and Resource Management, Bellingham, Washington 17 - 22 June 2000.
- Burton, L.M. 1981. **A critical analysis and review of the research on Outward Bound and related programs.** New Brunswick, NJ: Rutgers University.
- Cordell, K.H., Tarrant, M.A., and Green, G.T. 2003. **Is the public viewpoint of wilderness shifting?** *International Journal of Wilderness.* 9(2): 27-32.
- Driver, B.L., Nash, R., and Haas, G. 1987. **Wilderness benefits: A state-of-knowledge review.** In Lucas, R. C., comp., Proceedings - national wilderness research conference: issues, state-of-knowledge, future directions (Gen. Tech. Rep. INT-220, pp. 294-319). Ogden, UT: U. S. Department of Agriculture, Forest Service, Intermountain Research Station.
- Hammitt, W.E. 1982. **Psychological dimensions of wilderness solitude.** *Environment and Behavior.* 14(4): 478-493.
- Kaplan, S. 1995. **The restorative benefits of nature: Toward an integrative framework.** *Journal of Environmental Psychology.* 15, 169-182.
- Mannell, R.C., and Kleiber, D.A. 1997. **A Social Psychology of Leisure.** State College: Venture. Muir, J. (1901). *Our national parks.* Boston: Houghton Mifflin.
- Pohl, S.L., and Borrie, W.T. 2000. **Women, wilderness, and everyday life: A documentation of the connection between wilderness recreation and women's everyday lives.** *Journal of Leisure Research.* 32: 415-434.
- Rubin, H.J. and Rubin, I. 1995. **Qualitative interviewing. The art of hearing data.** Thousand Oaks, CA: Sage Publications.
- Scherl, L.M. 1989. **Self in wilderness: Understanding the psychological benefits of individual-wilderness interaction through self-control.** *Leisure Sciences.* 11: 123-135.
- Taylor, S.J. and Bogdan, R. 1998. **Introduction to qualitative research methods: A guidebook and resource. (3rd ed.)** New York: John Wiley & Sons.
- Ulrich, R.S., Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A., and Zelson, J. 1991. **Stress recovery during exposure to natural and urban environments.** *Journal of Environmental Psychology.* 11: 201-230.
- White, Dave D. and Hendee, John C. 2000. **Primal hypotheses: the relationship between naturalness, solitude and the wilderness experience benefits of development of self (DOS), development of community (DOC) and spiritual development (SD).** In: McCool, Stephen F.; Cole, David N.; Borrie, William T.; O'Loughlin, Jennifer, comps. Proceedings; wilderness science in a time of change conference – volume 3: wilderness as a place for scientific inquiry; 1999 May 23-27; Missoula, MT. Proc. RMRS-P-15-VOL-3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 223-227.

THE MEANING OF “NATURE”: INSIGHTS FROM COGNITIVE LINGUISTICS

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Abstract

The field of cognitive linguistics studies how language and concepts are related to underlying processes of the human mind. In this paper, I explore some ideas from cognitive linguistics that might help us understand how people use the concept of nature. The concept of nature appears to have a radial structure, in which many different variations of meaning arise from a central, basic definition. The basic meaning of “nature” can be represented in a simple idealized cognitive model, which is mapped onto situations in various ways. Alternative definitions for a “natural” environment or system may be combined in a cluster model, giving rise to prototype effects. Recognizing that there is a common basis of meaning and a common conceptual structure underlying many different senses of the word “nature” may help us in understanding how people experience natural environments, and in communicating and negotiating new understandings of the human-nature relationship.

1.0 Introduction

My purpose in this paper is to look at the meaning of the word “nature”—that is, at the concept of nature. To provide a context for the discussion, I will first give a brief description of a controversial situation that occurred several years ago over the management of public forest preserve lands in the Chicago area. Then I will introduce some ideas from the field of cognitive linguistics that may help us in understanding how the concept of nature is structured and how different concepts of nature are related to each other. I will conclude with a brief discussion of what these ideas imply for “reconstructing” the concept of nature in environmental philosophy and practice.

1.1 The Chicago Restoration Controversy

County forest preserve lands are one of the most important outdoor recreation resources in the Chicago area. Millions of people visit forest preserves each year for

picnicking, hiking, horseback riding, nature appreciation, canoeing, fishing, and a variety of other activities. Before the European settlers arrived, these lands had been mostly prairie, oak savanna, and woodland environments. Over the years, with the elimination of fire and the introduction of exotic species, they have developed into dense forests with thick undergrowth that includes both native and non-native species.

About 25 years ago, groups of volunteers began doing ecosystem restoration work on selected sites on public forest preserve land around Chicago. Their goal was to bring back the threatened, native ecosystems of the region and ensure their survival into the future. Their work included pulling non-native weeds and reseeding with native species, burning to reduce competition from invasive plants, and cutting brush and certain trees which were not part of the original ecosystem. As a result of the volunteers’ efforts, the sites where they worked took on a more open character and native species began to reestablish themselves. From the volunteers’ points of view, the outcome of all this work was the restoration of nature in the forest preserves.

But as the scope of the restoration work in the forest preserves expanded, some residents of neighborhoods near the restoration areas saw the cutting and burning and became very upset. They did not see these management activities and the changes they were producing in the landscape as a restoration of nature but as just the opposite. For them it amounted to the destruction of nature in the forest preserves. The ensuing controversy was acrimonious and resulted in a moratorium on restoration activities in many of the areas where the volunteers were working. An in-depth account of the controversy and the issues it raised can be found in Gobster and Hull (2000). For the purposes of this paper, the most interesting aspect of this situation is that both factions, while vehemently opposed to each other, believed that they were acting on behalf of nature.

1.2 Different Natures?

A social constructionist would be quick to point out that, while these two groups were both using the same word,

“nature”, they were in fact talking about two different things. They had constructed different meanings for this word. When the restorationists said “nature” they were thinking about the original, native ecosystem as it was before the Europeans arrived. When the restoration opponents said “nature” they had in mind the present-day environment of the forest preserves, where a diversity of plants and animals were getting along with relatively little direct interference from human beings.

Situations like this have inspired a great deal of discussion and debate about the whole notion of “nature”. Many books have been written and articles published (e.g., Evernden 1992; Soule and Lease 1995; Hull et al. 2001; Katz 2000; Light 2000), exploring questions such as, “Does nature really exist, or is it simply a concept constructed by humans?” and “How do we decide what is natural and what is artificial, and is that distinction even meaningful?” These are not just ivory-tower, philosophical questions. Concepts of nature are part and parcel of the values and experiences that many people seek through outdoor recreation, and they are involved in many conflicts over management of recreation areas.

2.0 Cognitive Linguistics

The field of cognitive linguistics focuses on the relationship of language and concepts to the underlying processes of the human mind. George Lakoff, one of the founders of the field, and his colleagues have published several books exploring how concepts are structured and how this influences the ways in which people speak, categorize, and think about the world (Lakoff & Johnson 1980; Lakoff 1987; Lakoff & Turner 1989). In the rest of this paper, I will examine how some principles from Lakoff’s (1987) book, “Women, Fire, and Dangerous Things” might apply to the concept of nature.

2.1 “Nature” as a Radially Structured Concept

Nature is a complex concept. The American Heritage Dictionary (Morris 1976) lists 14 different senses of the word “nature”, 16 senses of the word “natural”, and another 19 entries based in one way or another on these two words. Williams (1985) further documents the wide range of meanings that “nature” and “natural” have had in Western culture. Some of the meanings of these words extend far beyond the field of natural environments

and resources, to include many other areas of human experience. This complex array of meanings may appear bewildering at first. To cite just a few examples, we speak of the “laws of nature”, the “natural sciences”, and “natural environments”. We apply the concept of nature to human beings when we speak of “human nature” or advise someone to “act natural”. In the political and legal spheres there are “natural rights” and “naturalized citizens”. In baseball, some players are “naturals”, while a roll of the dice that wins immediately in craps is also a “natural”. There are many other specialized, technical uses of terms derived from “nature” in various fields, such as “denatured alcohol” in chemistry, “natural logarithms” in mathematics, and the “key of A natural” (as opposed to sharp or flat) in music. These are just a few instances of how the concept of nature is applied by speakers of the English language.

Is there some orderly structure underlying the diverse and wide ranging senses of this concept? Reading through the diverse definitions of nature in the dictionary, one senses that they all are variations on a common, underlying theme. This suggests that the concept of nature has what cognitive linguists call a radial structure. In other words, there is a central, basic definition of the concept, with many different variations spinning off from it. Thus, the concept of a “natural environment” is just one of many variations derived from a more basic, underlying concept of nature.

The central definition of nature, which has given rise to the many particular uses of the concept cited above, can be stated like this: “Nature is the way things inherently are”. That is, the concept of nature refers to the intrinsic, original, or genuine characteristics of things, people, systems, processes, places, or whatever the concept is applied to. This is consistent with the etymology of the word “nature”, which is derived from the Latin word for birth (*natura*). Thus the nature of a person or other entity literally means the qualities that they were born with (Ayto 1990).

2.2 An Idealized Cognitive Model for Nature

Cognitive linguists have proposed that human thought is structured in terms of basic conceptual schemas or idealized cognitive models (ICMs). An ICM describes

how the key components or actors in a situation are related to each other. People use these models to think about and classify the things and events that they encounter in the world. The basic definition of nature that I gave in the previous section appears to be part of just such an ICM, which is shown in Figure 1.

The focus of this ICM is an entity of some kind, which could be an organism, an object, a person, a system, an environment, a process, or anything of interest. The “nature” of this entity is some set of characteristics or features that are presumed to be inherent or intrinsic to it. These characteristics are often regarded as being inward or internal to the entity, i.e., they arise from or are located inside the entity, in some sense. The schema also includes an agent or actor that is external to the entity of interest and which acts upon it in some way. The action of the external agent gives rise to modifications of the entity’s intrinsic characteristics, or to new characteristics that are added to the entity’s original characteristics. These modified or added characteristics are often regarded as “outward” or “superficial” to the entity.

This is a very general schema. Many of the particular definitions of nature found in English usage can be derived by assigning different things to the various roles in this model. For example, when we speak of the laws of nature, the entity in the ICM is the physical universe. The scientific laws that govern physical events and interactions are considered to be intrinsic to the universe and hence they are “natural”. In this case, the external agent would be something that stands outside of physical reality (e.g., a spirit or deity), and an “unnatural” event would mean a supernatural or miraculous occurrence caused by that agent. On the other hand, when we tell a person to “act natural,” the entity of concern is the person’s behavior. “Nature” in this case refers to the person’s own intrinsic behavioral patterns and predispositions. The external agent is the person’s conscious will, which is capable of altering their

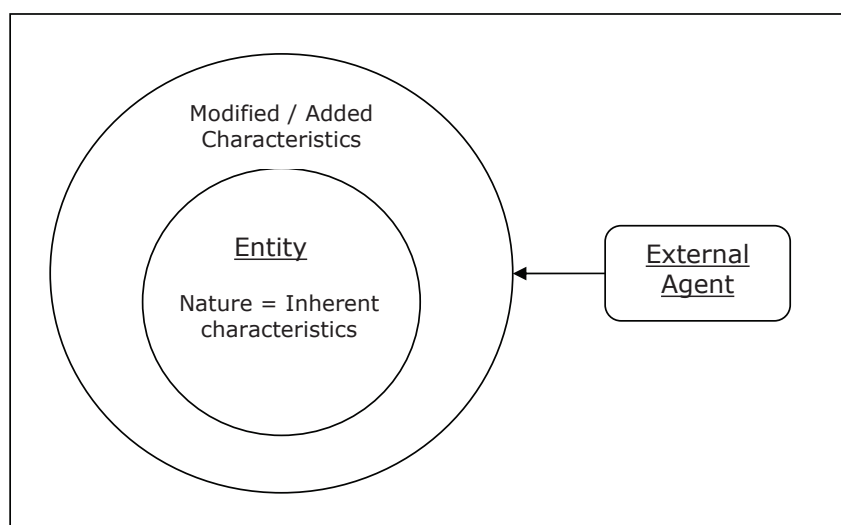


Figure 1.—An Idealized Cognitive Model for the concept of nature.

natural behavior pattern by deliberately imposing some other way of behaving (for example, to conform to social expectations). This altered behavior would be considered unnatural for the person.

Now let’s look specifically at how this idealized cognitive model for the concept of nature applies to the Chicago-area forest preserves, as seen by the two sides in the restoration controversy described above. The basic schema in Figure 1 can be used to represent the viewpoint of both groups. The entity of interest in the model for both groups is the forest preserve environment. For the restoration opponents, the nature of the forest preserves includes all the species of plants and animals presently existing there, which are carrying on their lives relatively free from direct human management and manipulation. They see the restorationists as external agents acting upon this environment, and the changes brought about by the restorationists’ work as an unnatural modification of the environment.

The restorationists, on the other hand, see the inherent or natural characteristics of the forest preserves as including only the native species that were there prior to European settlement. The external agent from their perspective is the exotic species, which have invaded the native ecosystem and have altered and degraded its natural characteristics. They see their work as a process of undoing the unnatural changes that were caused by

exotic species and other impacts of European settlement, so that the natural characteristics of the forest preserve environment can be reestablished. While they might not view their own activity as being “natural” per se, they do see it as supporting, defending, or helping the original nature of the forest preserves to survive (Schroeder 2000).

The key thing to note here is that both the restorationists and their opponents appear to be working with the same basic schema or model of nature, but they have assigned different players to the various roles in that basic model. In particular, the restoration opponents see the restorationists as external agents who are altering nature, while the restorationists have cast exotic species in the role of an external agent of unnatural change.

An idealized cognitive model is like a template. It provides a simple structure that can be mapped in various ways onto our experience. Different mappings give rise to different definitions of nature, but these definitions are not totally unrelated. They are motivated by the same basic, underlying definition of nature, and tend to follow the same basic structure provided by the nature ICM.

2.3 Metaphorical Models

Idealized cognitive models obtain their structure in a variety of ways. Metaphors are a very important source of structuring for many concepts (Lakoff and Johnson 1980). In a metaphor, the structure of one domain of experience is mapped onto another domain, providing a ready-made structure for that domain. Cognitive linguists have found that metaphorical mappings are fundamental and ubiquitous in human thought and speech. In particular, many of our ideas about nature appear to be derived from metaphors. For example, the idea of “Mother Nature” is a metaphor that draws upon our experience of family relationships to understand our relationship with the world of non-human nature. The popular notion of the “balance of nature” is also a metaphor, drawn from our experience of interacting with certain physical systems. Metaphors for nature such as these may add further structure and complexity to the simple schematic ICM for nature discussed above.

Literature generated by the restorationists and their opponents around the time of the Chicago controversy

illustrates how each group used different metaphors to elaborate upon the basic ICM for the nature concept. For example, the restorationists sometimes used metaphors of war and invasion to depict the effect of exotic species on native ecosystems. They saw themselves as an army on the battlefield, waging war against alien invaders to defend native ecosystems from destruction (Schroeder 2000). The restoration critics, on the other hand, employed metaphors of immigration and assimilation to portray the role of exotic species. In criticizing one county’s Natural Areas Management Plan (NAMP), which called for removing non-native plants, a restoration critic noted that

This is America, the melting pot. The greatest example of non-judgmental tolerance of all types in the world. But by NAMP standards, (being non-native) is justification for removal (Humpf 1996, p.3).

One implication of this immigration metaphor is that, like “naturalized citizens” in American society, exotic species in an ecosystem have the same right to be there as native species. The restorationists’ invasion metaphor, on the other hand, implies that the exotics are violating the “rights” of native species, which need to be protected and defended. Each metaphor highlights different aspects of the ecological interactions that can occur when exotic species enter an ecosystem, and each leads to different inferences about what actions are appropriate or ethical in response to exotic species.

Both the invasion metaphor and the immigration metaphor are compatible with the structure of the ICM in Figure 1, even though they conflict with each other. The basic ICM does not necessarily imply that changes caused by an external agent are harmful or negative. Such changes could be seen as either conflicting with and harming nature, or as harmonizing with and enhancing nature, depending on what additional meanings are brought to the model.

2.4 Cluster Models and Prototypes

Given the variety of ways in which the nature ICM can be mapped onto situations and the variety of metaphors and other sources of structure that can be added to it, it is clear that many different definitions for “nature” are

possible. This raises the possibility that, not only may different people define nature in different ways, but that the same person may define nature differently with respect to different situations. In cognitive linguistic terms, this suggests that the concept of nature as it applies to environments, landscapes, and ecosystems might best be represented as a cluster model.

A cluster model is an ICM that is composed of several submodels, each of which provides a somewhat different definition of the concept. Saying that “nature” is a cluster concept means that there is no single definition that provides necessary and sufficient conditions to fit all the cases where the concept of nature applies. Instead, when a person is deciding whether something is natural or not, they have several different submodels to draw upon. If an environment or system satisfies the conditions of one of the submodels, the person may consider it to be natural even though it does not satisfy all of the other models.

For example, consider the following set of possible submodels for the concept of nature as it applies to biophysical systems. (This example is for illustration only. I am not claiming that this is a complete or even a good formulation of a cluster ICM for nature.)

Native ecosystem submodel: A system is natural if it has the same structure and function as the ecosystem that was there prior to some key point in history (e.g. European settlement of North America).

Non-interference submodel: A system is natural if it is not being directly modified or manipulated by human beings.

Nurturance submodel: A system is natural if it gives rise to living organisms and provides the conditions and resources that living things (which may include humans) need to survive.

Autonomy submodel: A system is natural if it is capable of developing and sustaining its own organization without the need for design, management, or control from an outside source.

With this cluster ICM for nature, a person might consider a restored ecosystem to be an instance of “nature” because it meets the definition given by the native ecosystem model, even though it fails to satisfy the non-interference and perhaps also the autonomy submodels. An unmanaged forest with an understory of exotic invasive species fails to meet the native-ecosystem definition, but a person still might see it as natural because it satisfies the other submodels in the cluster. As a third example, a person could consider an agricultural landscape to be a type of nature via the nurturance submodel, although it does not fit the other three models. Under a cluster ICM, each of these cases could be classified as instances of nature in some sense (perhaps even by the same person), because they each satisfy one or more of the submodels in the cluster.

There may, in fact, be environments that satisfy all of the sub-definitions in this cluster model. For example, a virgin forest that has never been impacted by human activity or invaded by exotic species would likely be considered natural according to all 4 of these submodels. Environments such as this, for which all the submodels of a cluster ICM converge, function as prototypes for the overall concept. Prototypes are seen as the “best” instances of a concept. They are what a person is most likely to think of when asked to give examples of members of a conceptual category (Rosch 1978). The other examples given above, for which the various submodels diverge in their determination of naturalness, may still be regarded as instances of natural environments, but they are less prototypical. Some people might consider them to be special cases of the concept, but not “really” natural. Thus, it seems likely that the restorationists and their opponents in the Chicago controversy would agree that the prototypical case of a pristine, virgin forest is a good example of a natural environment, even though they disagree on whether the less prototypical case of a restored ecosystem is a genuine instance of nature.

Prototype effects are important for understanding how people use concepts. Prototypes may act as cognitive reference points used in drawing inferences about a concept (Rosch 1975). Thus, if you ask a person a very general question (e.g., “What is nature?”) without

providing them with any specific context, they may think and respond in terms of prototypes. But if you present them with an example of a specific environment, they may classify it as natural or unnatural based on a particular submodel that is most relevant to it. Their judgment about the specific case may then appear to conflict with their response to the general question about “nature”. This would not be a sign of irrationality or inconsistency on their part, but an indication of the underlying complexity in their concept of nature.

3.0 Conclusions

Concepts play an essential role in how people experience and interact with each other and with their environments. Concepts of nature and naturalness appear frequently in the field of resource management, and are at the center of many debates and controversies over the management of recreation lands. Different interest groups express different interpretations of the concept of nature in arguing for their preferred environmental management policies. Recently, philosophers, scientists, and practitioners in the fields of ecosystem restoration and management have engaged in a lively debate over what the words “nature” and “natural” mean, or ought to mean. Some of them are attempting to reconstruct the meaning of “nature” to accommodate a new vision of the human role in ecosystems, a vision which denies that there is any fundamental separation or distinction between humans and nature.

In the midst of these debates, it is important to recognize that the concept of a “natural environment” is just one variation on a much broader concept that is relevant to many areas of human life and experience. The ideas from cognitive linguistics presented in this paper suggest that there is an underlying structure and a basic, central meaning that connects the many different senses and definitions of the word “nature”. If this is so, it may imply that the concept of nature cannot be arbitrarily reconstructed to mean whatever we would like it to mean. New meanings of “nature” that do not relate in some way to the existing central meaning of the concept may not make sense to most people.

It is also important to recognize that conceptual meanings are intimately connected with people’s values, emotions, and experiences of the world. This is another reason why the meaning of a concept like “nature” cannot be reconstructed arbitrarily. Socially created concepts constitute a major part of the reality in which people live, but societies and groups of people do not construct concepts *ex nihilo*. People create conceptual meanings as part of the process of interacting with each other and with the environments in which they live. Conceptual meanings expressed in language are thus inseparable from perceptions, feelings, and other nonlinguistic facets of experience. When people make conceptual distinctions such as “natural versus human”, those distinctions are expressing something real and important about how they experience the world.

Change in the meaning of a concept is more likely to occur by extending its definition and developing new variations on it than by replacing the existing definition of the concept with a completely new one. For understanding the social and psychological processes by which concepts change and develop, “evolution” or “succession” might be better metaphors than “construction”. Inviting people to consider ways of extending and elaborating their concepts of nature may be more effective than insisting that they replace an “outmoded” concept of nature with a new meaning that is inconsistent with their own experiences and values.

Research drawing on the methods and ideas of cognitive linguistics could help us better understand how complex concepts like “nature” evolve in relation to people’s experiences and values. For example, future studies could investigate whether the concept of nature as applied to environments does in fact have a cluster model structure, how the submodels in such a structure are defined, and whether new submodels are developing in response to social, scientific, and technological change. Such research could provide valuable insights for environmental education, communication, and conflict resolution.

4.0 Citations

- Ayto, J. 1990. **Dictionary of word origins**. New York: Arcade.
- Evernden, N. 1992. **The social creation of nature**. Baltimore, MD: The Johns Hopkins University Press.
- Gobster, P.H., and Hull, R.B., eds. 2000. **Restoring nature: Perspectives from the social sciences and humanities**. Washington, DC: Island Press.
- Hull, R.B., Robertson, D.P., and Kendra, A. 2001. **Public understandings of nature: A case study of local knowledge about "natural" forest conditions**. *Society and Natural Resources*, 14, 325-340.
- Humpf, R. 1996. **Prairie/savanna restoration - Natural Areas Management Plan (NAMP)**. [Information sheet]. Burr Ridge, IL: Author.
- Katz, E. 2000. **Another look at restoration: Technology and artificial nature**. In P.H. Gobster and R.B. Hull eds., *Restoring nature: Perspectives from the social sciences and humanities* (pp. 37-48). Washington, DC: Island Press.
- Lakoff, G. 1987. **Women, fire, and dangerous things**. Chicago: University of Chicago Press.
- Lakoff, G. and Johnson, M. 1980. **Metaphors we live by**. Chicago: University of Chicago Press.
- Lakoff, G. and Turner, M. 1989. **More than cool reason: A field guide to poetic metaphor**. Chicago: University of Chicago Press.
- Light, A. 2000. **Ecological restoration and the culture of nature: A pragmatic perspective**. In P.H. Gobster & R.B. Hull (Eds.), *Restoring nature: Perspectives from the social sciences and humanities* (pp. 49-70). Washington, DC: Island Press.
- Morris, W., ed. 1976. **The American Heritage dictionary of the English language**. Boston: Houghton Mifflin.
- Rosch, E. 1975. **Cognitive reference points**. *Cognitive Psychology*. 7: 532-547.
- Rosch, E. 1978. **Principles of categorization**. In E. Rosch and B.B. Lloyd, eds., *Cognition and categorization* (pp. 27-48). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Schroeder, H.W. 2000. **The restoration experience: Volunteers' motives, values, and concepts of nature**. In P.H. Gobster and R.B. Hull, eds., *Restoring nature: Perspectives from the social sciences and humanities* (pp. 247-264). Washington, DC: Island Press.
- Soule, M.E. and Lease, G. 1995. **Reinventing nature? Responses to postmodern deconstruction**. Washington, DC: Island Press.
- Williams, R. 1985. **Keywords: A vocabulary of culture and society**. New York: Oxford University Press.

Crowding and Carrying Capacity

CLIMBERS' ATTITUDES TOWARD RECREATION RESOURCE IMPACTS IN THE ADIRONDACK PARK

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Abstract

Climbers arriving at trailheads to popular climbing areas in Adirondack Park, NY were surveyed as to the types of resource impacts they found to be offensive. Climbers were also asked about their degree of concern regarding crowding, noise and management of climbing areas. Some resource impacts, such as damage to trees as a result of poor climbing practices, are generally offensive to climbers, while other resource impacts common to climbing areas are less of a concern. Crowding was reported by the majority of climbers as an important concern, but noise appears to be less of an issue. The majority of those surveyed did not favor more active agency management of climbing areas.

1.0 Introduction

Managers of parks and protected areas continue to face challenges in maintaining a balance between visitor use and the protection of natural resources. These efforts are inherently dynamic as visitor numbers change and new activities emerge. To address these challenges, several approaches have been developed over the last twenty years to facilitate appropriate management decisions about visitor use and resource protection. These approaches are often collectively referred to as “carrying capacity” frameworks—procedures that often rely on indicators and standards of quality as central components of a management decision process (Manning 1999).

Numerous studies have examined the social, biophysical and managerial components of capacity (see Manning 1999 and Hammitt and Cole 1998 for reviews). Other efforts have reviewed and critiqued various framework

approaches and attempted to clarify the elements of the process (e.g., McCool and Cole 1997). A significant challenge in any of these contemporary approaches is the selection of meaningful indicators and standards of quality, particularly when “meaningful” is examined from the visitor experience standpoint. Some approaches have emphasized the use of information from visitor surveys as a means of both identifying important indicators and perhaps more importantly, using normative methods to determine standards (Manning et al. 2004). Others have suggested that descriptive information about visitors should only inform a standard selection process, and information from legal mandates, stakeholders, regional supply and demand, etc., is arguably of more importance (Stewart and Cole 2003). While this debate is ongoing, there is general concurrence that visitor-based information is useful to capacity decision processes. Understanding the specifics of which resource impacts are important to visitors and ultimately what level of impact is tolerable can at the very least inform appropriate management decisions.

It is in this spirit that this study of climbers' attitudes toward resource impacts was conducted. Although a substantial literature exists on visitor attitudes of specific indicators of quality, the vast majority of this knowledge is on social conditions (crowding, encounters, etc.) with relatively few studies examining resource conditions (Manning 1999). Manning et al. (2004) observed that early studies (c. 1970s) examining the perceptions of recreational impacts, found visitors rarely reported unacceptable recreation site conditions in backcountry settings. With the exception of litter, visitors appeared less concerned about environmental degradation of trails and sites than managers and researchers. For example, a study in the Boundary Waters Canoe Area found that there was no correlation between visitor ratings of site conditions and expert ratings of environmental impacts (Merriam and Smith 1974). More recent work suggests that visitors may now be more sensitive to the biophysical impacts of recreation (Manning et al. 2004) particularly as visitor impacts increase in severity and proliferate spatially. Moreover, visitors may now be more aware

of resource impacts as minimum impact educational information, such as Leave No Trace materials have become commonplace (LNT 2005). Re-examining visitor attitudes toward impact seems prudent, particularly in the context of specific recreation visitor groups, since most studies have focused on hikers and boaters (Manning 1999).

This study was initiated to examine the attitudes of rock climbers toward specific resource impacts that may be encountered in a climbing setting. Climbing is a unique wildland visitor activity in that many climbers often pursue well known, popular climbs in areas away from designated hiking trails. As such, climbers concentrate their activities on a few visitor created trails and at the base and tops of cliffs, often resulting in the formation of vegetation and soil impacts in these areas. In addition, some climbing practices such as the use of permanent and temporary fixed anchors (e.g., bolts and slings, respectively) are controversial to managers and often offensive when seen by other visitors (Jones and Hollenhorst 2002). Combined with a strong degree of specialization inherent in the activity and a popular focus on the type and degree of difficulty of the climb as essential for a satisfactory experience, it is reasonable to question whether climbers are at all concerned with certain resource conditions. For example, it is particularly unclear whether impacts not directly related to the activity of climbing such as soil and vegetation disturbance near cliffs, represent a concern for climbers.

To date, few studies have addressed climbers' attitudes toward associated resource impacts and no studies have examined attitudes towards impact to soils and vegetation commonplace in climbing areas. Waldrup and McEwen (1994) examined climber's attitudes toward wilderness and climbing impacts, their motivations in choosing a place to climb and their preferences for management regulation in Red Rock Canyon National conservation Area, Nevada. The resource impacts examined in this study were limited to impacts to the cliff face such as the placement of bolts, the use of chalk and creating holds by chipping and gluing. While some differences were observed based on the type of climber (determined by the style of climbing preferred), most climbers were not offended by the placement of fixed anchors on

the cliff face or the use of chalk—two impacts often cited by managers and other visitors as problematic. Crowding at the climbing site and alterations of the rock face by chipping and gluing of holds were rated at least moderately offensive by the vast majority of climbers surveyed. Similar results were reported on climbers' attitudes towards bolts and fixed anchors in a study conducted across 13 popular U.S. climbing areas (Schuster et al. 2001).

This study was specifically designed to collect preliminary information on climbers' attitudes toward resource impacts, crowding and the management of climbing. Most importantly, information was collected on attitudes toward impacts to soils and vegetation at the climbing site—important and prevalent associated impacts for which there is little information currently. Broadly, the goal of this project is to utilize this preliminary information to inform future work utilizing normative approaches for standards development. Results from this study will help determine indicators of resource quality significant to the visitor experience, to be followed by future studies examining the levels of acceptability of these indicators (Manning 1999; Manning et. al. 2004).

2.0 Methodology

Climbers were surveyed at access points in the Adirondack Park in northern New York State in the general vicinity of the town of Keene Valley. The Adirondack Park is a well known climbing destination primarily attracting climbers from throughout the northeast U.S. and eastern Canada. It is particularly popular with climbers looking for a more wilderness based climbing experience (Mellor 1990). Purposive sampling was utilized to select trailheads and days to survey based on the likelihood of interacting with climbers. Since most Adirondack climbers do not live locally, it was only practical to sample at popular trailheads and on fair weather weekend days. The study was conducted during the popular fall climbing season (2004) and concluded at the onset of winter weather (late November).

A survey instrument was developed that assessed demographic information, attitudes towards environmental impacts, importance of wilderness, and

attitudes towards the management of climbing areas including the allowance for the placement of fixed anchors and bolts. The questionnaire consisted mainly of quantitative questions using five point Likert-type scales. Climbers were also asked to describe the type of resource impacts they found most offensive in an initial interview style question, before they were given the survey. It was stressed to participants that this survey addressed the range of potential impacts that could be found at climbing sites, but was not intended as an evaluation of conditions at any particular area. Attitudes towards various environmental impacts were measured on a scale adapted from Waldrup and McEwen (1994) that asked respondents to rate each impact as to the degree of offensiveness (1 = not offensive to 5 = extremely offensive). Wilderness values (i.e., solitude, remoteness, etc.) and attitudes towards management were measured by asking respondents to rate their response to statements (1 = strongly disagree to 5 = strongly agree). Concepts for each of these categories of questions were developed apriori and tested for reliability (Cronbach's alpha). Scales for each of the concepts were calculated from the multiple items and these scales became the dependent variables in the analysis. All statistical tests were conducted using standard procedures with SPSS version 12.0

3.0 Results

A total of 66 surveys were completed. All the climbers approached agreed to participate in the survey, with the exception of one individual. Responses to the initial open-ended question regarding the impacts climbers found most offensive were categorized and summarized (Table 1). Among the most frequently reported was the appearance of litter (53%), general erosion around the site (28%), impacts to trees from climbing practices or erosion around the roots (27%), and cigarette butts around the climbing area (21%). Other impacts such as crowding, noise, and cell phone use were reported less frequently (12-16%). The impacts least reported as offensive were multiple trails and impacts to the rock face at 9 and 7 percent, respectively.

A total of six resource impact concepts (Table 2) and two social and three managerial concepts (Table 3) were found to be reliable measures (Cronbach's alpha > 0.6).

Table 1.—Frequency of reported resource impacts¹

Impact type	Frequency
Litter	53
General Erosion	28
Impacts to trees	27
Cigarette Butts	21
Noise	16
Crowding	16
Cell Phones	12
Multiple trails	9
Impacts to the rock face	7

¹Results from the initial open-ended question, N=66.

Frequency analysis of these concepts suggests that the majority of climbers report that resource impacts are at least somewhat offensive at climbing sites (≥ 3 ; Table 4). Of the impacts surveyed, damaged trees (80%), trampled vegetation (73%) and top of cliff impact (71%) were reported at least somewhat offensive most frequently. Erosion, multiple trails and bare soil were also reported as offensive by the majority of climbers (63%, 65% and 58% respectively). Conversely, a sizeable number of climbers were not offended by impacts such as bare soil (42%), erosion (36%) and multiple trails (35%).

Crowding was reported as affecting the climbing experience by the vast majority of participants (77%) while human made noise appears to be less of a concern (48%; Table 5). The majority of climbers report awareness of the wilderness system in the areas in which they climb and feel that wilderness is an important land management designation (54% and 89% respectively). Participants were more likely to be either opposed or neutral to official agency management of climbing areas including fixed anchor management (70%).

Examination of groups organized by experience level within the climbing population surveyed did not reveal significant differences. Climbers were categorized into three groups: climbers with < 2 years, climbers with 3-5 years, and climbers with >6 years of experience. No significant differences were found among the groups for the resource, social and management concepts examined. (Tables 6 and 7).

Table 2.—Reliability analysis of environmental impact concepts

Concept and Variable Identification	Item total correlation	Alpha if item deleted	Cronbach's alpha
Attitudes toward erosion at site			.85
Erosion at the base of the cliff	.60	.84	
Erosion around trees, exposing the roots	.65	.82	
Erosion at/near climbing site	.73	.76	
Erosion at the top of the cliff	.79	.76	
Attitudes toward multiple trail impacts at site			.61
Erosion at/near cliff	.53	.46	
Multiple trails from cliff to parking area	.61	.46	
Attitude toward dead/damaged trees at site			.81
Dead/damaged trees at the base of the cliff	.62	.80	
Dead/damaged trees at the top of the cliff due to anchors	.65	.76	
Dead/damaged trees at the top of the cliff from rappelling	.74	.67	
Attitudes toward trampled vegetation at the cliff			.74
Trampled vegetation at the base of the cliff	.59		
Trampled vegetation at the top of the cliff	.59		
Attitude toward bare soil at site			.77
Bare soil at the base of the cliff	.63		
Bare soil at the top of the cliff	.63		
Attitude toward impact at the top of the cliff			.89
Erosion at the top of the cliff	.82	.84	
Bare soil at the top of the cliff	.79	.85	
Trampled vegetation at the top of the cliff	.72	.86	
Dead/damaged trees at the top of the cliff due to top-rope anchors	.70	.87	
Dead/damaged trees at the top of the cliff from rappelling	.60	.89	

4.0 Discussion

These results shed some light on climbers' attitudes toward resource impacts associated with rock climbing. Heretofore little information was available that characterized climbers attitudes toward impacts, and the previous studies primarily examined impacts occurring

on the rock face (chalk marks and chipping holds) or the use and proliferation of fixed anchors (Waldrup and McEwen 1994; Schuster et al. 2001). This study is a preliminary step at assessing attitudes towards common associated impacts in locations other than the cliff face. These adjacent impacts are commonplace in popular

Table 3.—Reliability analysis of wilderness and management concepts

Concept and Variable Identification	Item total correlation	Alpha if item deleted	Cronbach's alpha
Attitudes toward crowding at climbing site			.65
Seeing a large party reduces the feeling that I am out in the wilderness	.44	.59	
Crowding at a climbing site affects my wilderness experience	.56	.41	
Solitude is important in choosing a climb	.39	.64	
Attitudes toward noise at climbing site			.65
Human-made noise inside the wilderness area reduces the feeling that I am out in the wilderness	.52		
Quiet is an important factor in choosing a place to climb	.52		
Wilderness awareness ¹			N/A
I am aware of the wilderness system in the areas I climb			
Wilderness importance			.76
Wilderness preservation is a worthwhile use of the land	.66	.59	
More land should be preserved as Wilderness	.57	.71	
Wilderness areas are important/valuable to me personally	.59	.71	
Attitudes toward management of climbing areas			.82
Official agency management of climbing areas is necessary	.62	.81	
There should be official regulations concerning where, when, and how bolts should be used.	.72	.70	
There should be official regulations concerning where, when, and how fixed anchors should be used.	.70	.73	

¹Single item indicator

climbing areas and can be of significant management concern.

Results indicate that the majority of climbers visiting the Adirondacks find resource impacts such as erosion, multiple training and damage to trees at least somewhat offensive (Table 4). Results were similar in an open

question format (Table 1), supporting that these impacts are generally of importance to climbers. In scaled responses, tree damage appears to be an overriding concern with the highest mean score reported ($M = 3.62$; Table 4) while bare soil is the least offensive with the lowest mean score ($M = 2.86$). Although not addressed by quantitative measures, litter is also a primary concern,

Table 4.—Frequencies of responses for resource impact concepts

Concept ¹	Frequency (%)			Mean ± SE
	Not/slightly offensive	Somewhat offensive	Moderately/extremely offensive	
Erosion	36	45	18	3.10 ± 0.11
Multiple Trails	35	36	29	3.22 ± 0.12
Damaged Trees	20	39	41	3.62 ± 0.11
Trampled Vegetation	27	41	32	3.30 ± 0.12
Bare soil	42	38	20	2.86 ± 0.12
Top of cliff impact	29	47	24	3.34 ± 0.11

¹Concepts are measured using scales calculated from multiple items (Table 2).

Table 5.—Frequencies of responses for social and management concepts

Concept ¹	Frequency (%)			Mean ± SE
	Strongly disagree/ disagree	Neutral	Agree/Strongly Agree	
Crowding	1	20	77	4.05 ± 0.08
Noise	11	39	48	3.85 ± 0.08
Wilderness Awareness	25	21	54	3.37 ± 0.14
Wilderness Importance	3	8	89	4.45 ± 0.08
Management	29	41	27	3.18 ± 0.12

¹Concepts are measured using scales calculated from multiple items (Table 3).

appearing most frequently (53%) in open responses (Table 1). These results suggest that climbers may be more accepting of impacts that are unavoidable in the context of pursuing the activity, such as soil exposure at the base of a climb, and less accepting of impacts deemed avoidable with proper minimum impact practices (i.e., damage to trees). This finding has important management implications as programs seeking to reduce the overall impact of climbing activities should consider beginning with initiatives well received by climbers.

Mellor (1995) proposes that the climbing in the Adirondack Park is markedly different than other climbing centers in the U.S., largely due to the wilderness character of the area and the ethics adopted by the climbing community. These results support this proposition, with the overwhelming majority of climbers (89%) agreeing on the importance of wilderness (Table 5). Other setting attributes associated with wilderness,

such as solitude and small party size (crowding concept) are also important to the majority (77%) of climbers ($M = 4.05$; Table 5). Human made noise is somewhat of an exception to this trend, which is less important to most climbers ($M = 3.85$). Perhaps climbers are accepting of this condition since many popular areas are within earshot of main roads.

Adirondack climbers are not strongly in support of more management of climbing areas, including official management of fixed anchors, with 70% of those surveyed either disagreeing or neutral in responses to the management questions (Table 5). These results are similar to those reported by Schuster et al. (2001) where climbers felt that managers did not adequately understand the activity and that climbing was not treated fairly in the management process. This has important implications to managers, particularly as the NY Department of Environmental Conservation continues

Table 6.—A comparison of resource impact attitudes by climbers' experience level

Concept ²	Experience Level ¹			f-value	p-value
	≤ 2 years	3-5 years	> 6 years		
Erosion	3.16	3.05	3.09	.07	.93
Multiple Trails	3.09	3.33	3.24	.29	.74
Damaged Trees	3.62	3.80	3.53	.50	.61
Trampled Vegetation	3.35	3.30	3.27	.03	.97
Bare soil	3.03	2.70	2.85	.48	.62
Top of cliff impact	3.35	3.40	3.31	.06	.95

¹Values are means.

²Concepts are measured with a five point scale from 1 = "not offensive" to 5 = "extremely offensive".

Table 7.—A comparison of social and management attitudes by climbers' experience level

Concept 2	Experience Level ¹			f-value	p-value
	≤ 2 years	3-5 years	> 6 years		
Crowding	3.90	3.96	4.18	1.45	.24
Noise	3.78	3.94	3.84	.29	.75
Wilderness Awareness	3.24	3.61	3.30	.54	.58
Wilderness Importance	4.59	4.42	4.38	.56	.57
Management	3.33	2.92	3.24	.92	.40

¹ Values are means.

² Concepts are measured with a five point scale from 1= "strongly disagree" to 5= "strongly agree".

the development and revision of unit management plans that involve climbing sites.

Unlike previous studies, no difference in responses among climbing subpopulations was found. This study examined subpopulations based on experience level in years (Tables 6 and 7) whereas previous research examined groups based on style of climbing, either traditional or sport. The Adirondacks tends to attract more traditional climbers who seek climbs without an abundance of fixed anchors and in this study nearly 90 percent of the climbers surveyed identified themselves as traditional climbers.

5.0 Conclusions

Climbers in the Adirondack Park report that some common resource impacts potentially found near climbing areas are of concern. Primary impact concerns

include litter, damage to trees, vegetation disturbance and crowding. Other common impacts, such as bare soil near cliffs and noise are less of a concern. Climbers tend to strongly value wilderness but tend not to support official management of climbing areas and activities. No significant differences were found in attitudes toward resource, social and managerial conditions based on climbers' experience level.

This work forms a basis for future work utilizing normative approaches to assess thresholds of acceptability in resource impact. These results suggest that some meaningful indicators of impact perceptions would be damage to trees, top of cliff impact, trampled vegetation and crowding. Future work should also address the issue of the acceptability of certain impacts, such as bare soil at the base of cliffs, in more detail.

6.0 Citations

- Hammitt, W.E. and Cole, D.N. 1998. **Wildland Recreation: Ecology and Management (Second ed.)**. New York: John Wiley.
- Jones, C.D. and Hollenhorst, S. J 2002. **Toward a resolution of the fixed anchors in wilderness debate**. International Journal of Wilderness. 8(3): 15-20.
- Leave No Trace (LNT), Center for Outdoor Ethics**. 2005. Available at website www.lnt.org. Verified June 2005.
- Manning, R.E. 1999 **Studies in Outdoor Recreation (Second ed.)**. Corvallis: Oregon State University Press.
- Manning, R.E., Lawson, S., Newman, P., Budrul, M., Vallerie, W., Laven, D. and Bacon, J. 2004. **Visitor perceptions of recreation-related resource impacts**. In: Buckley, R., ed. The Environmental Impacts of Ecotourism. CABI: London. p. 259-271.
- McCool, S.F. and Cole, D.N., comps. 1997. **Proceedings— Limits of Acceptable Change and related planning processes: progress and future directions**. Gen. Tech. Rep. INT-371. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 84p.
- Mellor, D. 1995. **Climbing in the Adirondacks: A Guide to Rock and Ice Routes in the Adirondack Park**. (Third ed.) Lake George, NY: Adirondack Mountain Club.
- Merriam, L. and Smith C. 1974. **Visitor impact on newly developed campsites in the Boundary Waters Canoe Area**. Journal of Forestry. 72: 627-630.
- Schuster, R.M., Thompson, J.G., and Hammitt, W.E. 2001. **Rock climbers' attitudes toward management of climbing and the use of bolts**. Environmental Management. 28(3): 403-412.
- Stewart, W.P. and Cole, D.N. 2003. **On the prescriptive utility of visitor survey research: A rejoinder to Manning**. Journal of Leisure Research. 35(1): 119-127.
- Waldrup, R., and McEwen, D. 1994. **Rock-climbing and wilderness: a study of climber's attitudes toward wilderness, climbing impacts and regulation**. Trends. 31(3): 38-42.

VISITOR PERCEPTIONS OF CROWDING: AN EXPLORATORY STUDY IN THE MOHONK PRESERVE

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Abstract

The Mohonk Preserve is New York State's largest member and visitor supported nature preserve with over 9,000 members and 150,000 visitors annually. The Preserve has experienced a slow and steady increase of visitors since the 1950s and in response to this increasing use and resource impacts, the Preserve developed a land management plan in 2000, which organized the Preserve into 11 units based on high and low visitor use. The purpose of this research was to identify visitor perceptions of crowding. Visitors were contacted in both high and low use areas of the Preserve to participate in an on-site study which included a field-based interview followed by a visual preference survey showing photographs of varying levels of usage on trails and carriage roads. Results indicated that almost half of respondents perceived crowded conditions at the Preserve. Respondents also indicated they had an awareness of temporal and spatial factors contributing to crowding within the Preserve.

1.0 Introduction

The Mohonk Preserve provides a wealth of recreation opportunities for its members and visitors including rock climbing, hiking, biking, cross-country skiing, snow shoeing, and horseback riding 365 days a year, as well as, a multitude of environmental education programs held at the visitor center and throughout the Preserve. The Shawangunk Mountains or "Gunks", as referred to by locals, are considered one of the premier rock climbing areas in the Northeast as 50,000 climbers annually take advantage of over 5 linear miles of cliff face and access to 1,000 climbing routes. In addition to its spectacular rock climbing, the Preserve maintains an extensive system

of some 40 miles of foot trails and 32 miles of carriage roads. Adding to the Preserve's extensive trail system are two neighbors: the 12,000-acre Minnewaska State Park with annual visitation of 250,000 and 56 miles of hiking opportunities and 25 miles of biking opportunities; and the 2,200-acre Mohonk Mountain House with more than 100,000 overnight guests, 50,000 day visitors (participating in meals or events) annually, and 85 miles of trails and carriage roads. Visitors paying to access any one of the sites have free access to the other two.

Based on its mission, two of the main objectives of the Mohonk Preserve are providing for contemplation, recreation, and visitor use in keeping with the peace and natural beauty of the land and promoting a concerned understanding of the relationship between humans and nature. As visitor numbers to the Preserve have steadily increased over that last few decades, this objective has become increasingly difficult to meet. During the 1950s only 50 climbers visited the Preserve per day while today that number has grown to 500-800 climbers per day. Parking lots at the Preserve, Minnewaska State Park, and the Mohonk Mountain House are typically full by mid-morning and on most weekends and holidays with good weather. These increasing use levels strongly suggest that visitors to the Preserve are being forced to alter the times and places they are recreating at the Preserve and in surrounding areas.

Within less than a 6-hour drive of 20 million people and located in the fastest growing county in New York, the Mohonk Preserve has experienced a slow and steady increase of visitors since the 1950s. Some areas of the Preserve have remained relatively unimpacted, while others such as the Trapps Zone have shown dramatic increases in visitation and use. In response to increasing use and impacts, the Preserve developed a land management plan in 2000, which organized the Preserve into 11 units based on low and high use. The perceptions of Preserve staff are that some of the low use areas are receiving a tremendous amount of visitation, no longer retaining a low use atmosphere.

Research has shown that even as visitation and use increases in many recreation settings, visitors continue to report having a satisfying recreational experience (Manning 1999). The question then is; how are visitors coping with these increases and conditions and what can the Preserve do to lessen these? Visitors to the Preserve who experience crowded parking lots, trails, and carriage roads on weekends may decide to visit the Preserve during the week, recreate in a lesser used area of the Preserve, or leave the Preserve entirely and pursue recreation experiences elsewhere. Preserve visitors may also rationalize their experience with crowded conditions based on the amount of time and money invested in their recreation pursuits. Visitors may also redefine their recreation experience at the Preserve based on the perceived conditions they experience. It is most likely that Preserve visitors are employing one or more of these coping mechanisms in order to maintain a satisfying experience at the Preserve.

Crowding has not only become a major concern of recreation managers, but visitors alike (Manning 1999). It is defined as the negative evaluation of a particular density in a particular setting that exceeds a certain point. Density refers to the number of individuals per unit area (Heberlein 1977; Shelby & Heberlein 1986). Empirical and theoretical studies have shown that significant numbers of visitors to outdoor recreation sites have experienced crowding although it is a difficult entity to measure, as it is not only subjective, but situation specific (Shelby & Heberlein 1986). Early satisfaction models based on the assumed inverse relationship between use level and satisfaction where “increased use causes decreased satisfaction” have yielded mixed results. Researchers and theorists have further suggested that users possess expectations about the kinds of experiences they desire and the amount of social interaction they seek (Stankey 1989). In order to meet those goals, users employ a variety of coping mechanisms to reduce perceptions of crowding (Manning 1999; Stankey 1989; Shelby & Heberlein 1986).

The purpose of the study was to identify variables Mohonk Preserve visitors associate as contributors to their perceptions of crowding and the extent to

which they are employing coping mechanisms to avoid that crowding. In addition, the research focused on identifying implications and recommendations for management strategies associated with crowding and social carrying capacities that can be applied to the Preserve’s Land Management Plan. This paper will examine perceptions of crowding and briefly touch on coping mechanisms employed.

2.0 Methods

The majority of research focused on perceptions of crowding and coping mechanisms has used traditional quantitative research methods, yielding mixed results (Stewart & Cole 1999). As the goals of this study seek to examine perceptions of crowding, coping mechanisms, and social carrying capacity issues; it is based on the positivist approach (seeking the facts or causes of social phenomena apart from the subjective states of individuals) and employs both qualitative and quantitative data collection and analysis techniques (Taylor & Bogdon 1998). This mixed-method approach included in-depth interviews and post interview surveys, based on the Johnson (2001) protocol, which included a series of visual preference photographs based on the Choi (2002) protocol and examples from Manning et al. (1999) as the later examined carriage roads, similar to those found at the Preserve.

Data was collected on-site at multiple locations of the Mohonk Preserve. The sampling protocol was determined through discussions with Preserve staff and SUNY ESF advisors, and included four perceived types of environments based on the Preserve’s land management plan: Group 2 areas (front-country/high use) that are perceived to receive high use; Group 2 areas that are perceived to receive low use; Group 1 areas (backcountry/low use) that are perceived to receive low use; Group 1 areas that are perceived to receive high use.

Interviews were structured with a series of standardized questions in order to provide consistency over the summer-long interviewing process. Interviews allowed participants to further explain their answers and reduce possibilities for misunderstanding between the researcher and participant. The semi-structured

design allowed for follow-up questions, based on the participant responses, in order to gather more detailed information. The interviews were intended to provide a better understanding of visitor perceptions of crowding and types of coping mechanisms employed, as respondents were able to comment on their present recreational experience as opposed to speculating on a past experience through a mail survey. Issues that were addressed included: location visiting from; past recreation experiences at the Preserve; expectations for recreation experience at the Preserve; experiences with crowding; perception of crowding; reactions to crowding; and coping mechanisms employed.

After initial contact with the recreationist, the study and researcher were briefly introduced, but limiting any detailed information about the project in order not to bias responses. After oral consent was obtained from the participant to be interviewed and have the interview recorded, a set of 19 standard questions were asked.

In order to determine if the respondent had any perceptions of crowding at the Preserve, a series of probing, questions were asked. Initial questions focused on Preserve experience including when, where, and how often did the respondent use particular areas of the Preserve. Following questions examined the respondents ideal area in the Preserve and if there are certain areas in the Preserve that the respondent no longer uses and why. At this point respondents were asked: "Have you ever felt crowded in an area of the Preserve and if so, what did you do about it?" Respondents were also asked to identify factors they consider when deciding a trip to the Preserve was ideal or not and if that definition of an ideal trip had ever changed and why. Based on each respondent's answers, qualitative analysis was used to determine each respondent's perceptions of crowding.

Interviews were concluded with a short survey, based on the Choi (2002) protocol, where participants were asked to rate a series of photographs, based on specific attributes of visitor use, showing a range of Preserve users in both number and type. The survey asked the participant to rate two series of photographs based on issues of preference, crowding, coping, and management. Each series contained four photographs of a specific

type of recreationist varying in number and density. The photographs in each series were taken from the same perspective and only varied in the number and type of recreationists shown. Series 1 represented a typical carriage road in a Group 2 area (front-country). The photograph was taken in the Trapps area, which is considered the most popular and crowded in the Preserve and is definitely perceived as having high use. Series 2 represented a typical trail in a Group 1 area (backcountry). The photograph was taken on the High Peters Kill trail and although this area is designated as a low use area, it is a fairly popular hiking trail that leads to the small climbing area of Lost City and eventually Minnewaska State Park.

As a mixed-method study using both qualitative and quantitative methods, this study utilized two types of data analysis. In-depth interviews conducted at the Preserve were first transcribed and then coded, based on emerging themes. Each interview was then carefully read and analyzed multiple times. These themes and data based on the on-site, post interview survey were then analyzed quantitatively using the Statistical Package for the Social Sciences software (SPSS version 13 for Windows). Results were then cross-tabulated and analyzed.

3.0 Results and Discussion

Between June 2004 and October 2004, 105 Mohonk Preserve recreationists were contacted on 50 interviewing days. On five occasions recreationists declined to be interviewed as the common response was: "I'm in a rush." An additional four interviewees declined to take the post interview, visual preference survey after being interviewed, stating similar reasons, for a total of 100 useable interviews. The first 33 respondents received a prototype of the visual preference survey, which contained four series of photographs. This survey was later reduced to two series for the final 67 respondents.

Of the 100 recreationists interviewed, 79 were male and 21 were female. The age of respondents ranged from 19 to 66 with a mean age of approximately 39 years. The majority of respondents were either rock climbers (n=43) or hikers (n=34). An additional 19 respondents considered themselves a multi-sport recreationist.

Seventeen respondents were not residents of New York State and 39 were not members of the Preserve. The majority of respondents (80%) had at least one year of prior experience at the Preserve with 67 respondents visiting the Preserve more than two times a year. Visitation was fairly split between weekdays and weekends as 18 respondents listed weekdays as their primary days of visit, 36 listed weekends, and 33 listed a combination of both weekdays and weekends.

Of the 97 respondents who answered the specific question about crowding in the Preserve, 59 said they had felt crowded in the Preserve at one time or another, while 38 had not. In addition, eight respondents noted that they only felt crowded in the parking lots. When identifying contributing factors in regards to the idealness of a trip to the Preserve, 14 respondents listed solitude and quietness, seven listed available parking, and 22 listed crowdedness or lack of crowds. These results were consistent with two previous visitor surveys conducted at the Preserve. First, Giammatteo et al.'s 1999 telephone survey of 149 members which asked: "to what degree do crowds affect your experience on the land?" of which 29 percent of members felt crowds "highly" affected their visit, 34 percent felt crowds had a "moderately significant" affect, 19 percent felt crowds "slightly" affected their visit, and 18 percent felt crowding was "insignificant". Secondly, Jakus et al.'s 1995 visitor survey included both mailed questionnaires to random members (892 of 2,500 returned) and 398 on-site surveys. When asked about crowding, 50 percent of all users said most trails and carriage roads are crowded on weekends with 25 percent stating that the Preserve was occasionally crowded or the crowds were not that bad. An additional 25 percent of respondents indicated that they have never encountered crowded conditions.

Although this manuscript does not specifically focus on coping mechanisms, it is important to note that of the 100 respondents, 72 had used at least one type of coping mechanism, while 28 had not. When further examining the 28 respondents who did not make use of a coping mechanism, 10 were found to have felt either crowded in general, in the parking lot, or mentioned

Table 1.—Comparison of percentages between perceptions of crowding and Preserve experience.

Preserve experience		Perceptions of crowding	
		No	Yes
6+ years experience	N	10	23
	% within perceptions of crowding	35.7%	59.0%
<1-5 years experience	N	18	16
	% within perceptions of crowding	64.3%	41.0%
Total	N	28	39
	% within perceptions of crowding	100.0%	100.0%

crowding as an important contributing factor to their Preserve experience. Cross-tabulations also provided some interesting results when looking at respondent's answers in regards to perceptions of crowding and whether or not they were using coping mechanisms. Of the 59 respondents who perceived the Preserve to be crowded in some regards, 53 were using at least one type of coping mechanism, while only 19 of 38 respondents who did not perceive the Preserve as crowded employed a coping mechanism.

As with coping mechanisms, one might expect to find some variation in perceptions of crowding in regards to Preserve experience, residency, frequency of visitation, specific days of visitation, type of recreationist, and for different recreation areas of the Preserve.

3.1 Preserve Experience

Those Preserve recreationists who have been recreating in the Preserve for multiple years appear to be more conscious of crowded conditions, thus perceiving crowded conditions more frequently than recreationists with none or minimal experience at the Preserve (Table 1). Chi-square results were 3.53 with 1 degree of freedom and were not significant with $p=0.60$ at alpha level=0.05.

3.2 Residency

As with Preserve experience it was theorized that Preserve visitors living in close proximity to the Preserve would frequent the Preserve more often than individuals

living substantial distances from the Preserve and again be more conscious of crowded conditions at the Preserve (Table 2). Chi-square results were 2.30 with 2 degrees of freedom and were not significant with $p=0.32$ at alpha level=0.05.

3.3 Days of Visitation

Respondents were asked to identify whether they primarily visit the Preserve on weekdays, weekends, or a combination of the two. Findings were very similar in terms of weekday and weekend users in terms of perceptions of crowding. However, those respondents who indicated that they visited the Preserve on both weekdays and weekends indicated more frequently that they perceived crowded conditions as compared to weekday and weekend users (Table 3). Chi-square results were 2.75 with 2 degrees of freedom and were not significant with $p=0.25$ at alpha level=0.05.

3.4 Type of Recreationist

Preserve estimates are that 50,000 rock climbers, hikers, and bikers respectively recreate in the Preserve per year. Rock climbing in the Preserve is limited to one main area called the Trapps, a secondary area in the Near Trapps, and a small back country area called Lost City. The first two are located in the Trapps management zone, the most heavily visited zone in the Preserve receiving approximately 70 percent of the overall use. As hiking and biking trails and carriage roads are spread throughout the Preserve and rock climbing is limited to a few areas, it was theorized that rock climbers would have greater perceptions of crowding than other types of recreationists (Table 4). Chi-square results were 20.68 with 2 degrees of freedom and were significant with $p=0.00$ at alpha level=0.05.

4.0 Visual Preference Photos

The following are the visual preference photos that were used in the post-interview survey (Fig. 1). Participants were asked to rate a series of photographs, based on

Table 2.—Comparison of percentages between perceptions of crowding and residency.

Residency		Perceptions of Crowding	
		No	Yes
1-30 miles from Preserve	N % within perceptions of crowding	12 31.6%	26 44.1%
>30 miles from Preserve (NYS)	N % within perceptions of crowding	17 44.7%	25 42.4%
Non-NYS resident	N % within perceptions of crowding	9 23.7%	8 13.6%
Total	N % within perceptions of crowding	38 100.0%	59 100.0%

Table 3.—Comparison of percentages between perceptions of crowding and predominant days of visit to the Preserve.

Days of Visit		Perceptions of crowding	
		No	Yes
Weekdays	N % within perceptions of crowding	7 23.3%	11 19.6%
Weekends	N % within perceptions of crowding	15 50.0%	20 35.7%
Mix (weekends & weekdays)	N % within perceptions of crowding	8 26.7%	25 44.6%
Total	N % within perceptions of crowding	30 100.0%	56 100.0%

specific attributes of visitor use, showing a range of Preserve users in both number and type. The survey asked the participant to rate two series of photographs, with each series containing four photographs of a specific type of recreationist varying in number and density. Series 1 represented a typical carriage road in a Group 2 area (front-country). Series 2 represented a typical trail in a Group 1 area (backcountry).

The first question respondents were asked for the visual preference survey was: “Which photograph shows the highest amount of visitor use that you would prefer to see on the sections of carriage roads and trails?” Of the 67 responses to this question for Series 1, 41 individuals selected photo #1 and 17 selected photo #2 (Table 4). For Series 2, 53 of 67 selected photo #1 with 11 selecting photo #2 (Table 4).

The second question respondents were asked for the visual preference survey was: “Which photograph shows the highest amount of visitor use that you think most other visitors would find acceptable to see on these sections of carriage roads and trails?” These results were practically identical to the results in Table 5.

The third question respondents were asked for the visual preference survey was: “Which photograph shows the amount of visitor use that is so unacceptable that you would no longer use the carriage roads and/or trails or would shift your use of the carriage roads and/or trails to a different location or time?” Of the 67 respondents to this question for Series 1, 21 individuals selected photo #4, 14 selected photo #3 while 30 were unable to make a decision (Table 6). For Series 2, 13 of 67 selected photo #1, 22 selected photo #2 while 22 were unable to make a decision (Table 6).

The final question respondents were asked for the visual preference survey was: “Which photograph shows the highest amount of visitor use that the Preserve should allow on these sections of carriage roads and trails? In other words, at what point should carriage roads and/or trails be closed or visitor use restricted?” Of the 67 respondents to this question for Series 1, 12 individuals selected photo #4, 11 selected photo #3 while 41

Table 4.—Comparison of percentages between perceptions of crowding and type of recreationist.

Type of Recreationist		Perceptions of crowding	
		No	Yes
Rock climber	N		
	% within perceptions of crowding	7 18.4%	35 59.3%
Hiker	N		
	% within perceptions of crowding	22 57.9%	10 16.9%
Mix (multiple recreation activities) & others	N		
	% within perceptions of crowding	9 23.7%	14 23.7%
Total	N		
	% within perceptions of crowding	38 100.0%	59 100.0%

Table 5. Frequency of user preferences for photos in Figure 1 and 2.

Series 1 - Carriage Roads			Series 2 - Trails		
Selection	Frequency	Percent	Selection	Frequency	Percent
Scenario #1	41	61.2%	Scenario #1	53	79.1%
Scenario #2	17	25.4%	Scenario #2	11	16.4%
Scenario #3	6	9.0%	Scenario #3	1	1.5%
Scenario #4	1	1.5%	Scenario #4	0	0.0%
No selection	2	3.0%	No selection	2	3.0%
Total	67	100.0%	Total	67	100.0%

respondents were unable to make a decision (Table 7). For Series 2, 12 of 67 selected photo #4, 14 selected photo #3 while 34 individuals could not make a decision (Table 7).

5.0 Study Implications

With over 50 percent of respondents indicating they had perceived crowded conditions at the Preserve, coupled with the fact that the majority of those respondents who indicated perceiving crowded conditions had made use of coping mechanisms, this indicates a relationship between perceptions of crowding and coping as expected. Although a large percentage of Preserve visitors do in fact perceive the Preserve to be crowded, particularly on weekends and holidays, most continue to visit



Scenario 1



Scenario 2



Scenario 3



Scenario 4

Figure 1.—Carriage Roads in High-Use Areas/Front Country Areas

regardless and are employing a number of coping mechanisms in response to dissatisfying conditions such as crowded parking lots, trails, cliffs, and carriage roads. More experienced visitors were more aware of crowded conditions as were those respondents who lived in close proximity to the Preserve. These visitor groups had more experience at the Preserve and frequently visited the Preserve, thus exposing them to a large and diverse range of social situations at the Preserve. Similarly, rock climbers perceived crowded conditions more than hikers as climbers are confined to particular cliffs typically located in the most heavily used area of the Preserve while hikers have access to numerous trails and carriage roads throughout the Preserve.

Visual preference photographs provided insight into levels of use visitors preferred and what use levels

would displace them from trails and carriage roads. The photographs did lend themselves to some confusion in regard to visitor comprehension of use levels and seemed to be more applicable to destination type settings, such as lookouts or campgrounds. Some respondents were cognoscente that use levels on carriage roads and trails typically fluctuate and are not constant. Use levels may be heavy in certain areas, particularly near trailheads or points of interest, and then tail off in other sections. In this study, photographs of carriage roads provided a more realistic look at use levels in particular, due to the location of the photographs, as opposed to trails. Photographs were taken in the popular climbing area of the Trapps where cliffs are typically accessed directly from carriage roads. On busy weekends sections of this carriage road are extremely crowded with climbers, hikers, and bikers. Thus conclusions would be that visual preference



Scenario 1



Scenario 2



Scenario 3



Scenario 4

Figure 2.—Trails in Low-Use Areas/Back Country Areas

photograph surveys are more useful in high-use areas that see significant amounts of visitors as opposed to infrequently visited areas such as back country trails.

Results of this study support conclusions from other researchers and studies that although recreationists may be satisfied with their recreational experiences, they do perceive crowded conditions and employ coping mechanisms to combat dissatisfying conditions. Differences in responses also vary significantly among demographics and specific recreation groups.

6.0 Acknowledgments

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7.0 Citations

- Choi, K. 2002. **A model of recreation user decision-making: Predicting recreation campsite choice at state campgrounds in New York's Adirondack Park.** Doctoral dissertation. State University of New York, College of Environmental Science, Syracuse, NY.
- Giammatteo, P., Hartman, L., Baxter, S., Callahan, D., and Clark, T. 1999. **Mohonk Preserve Membership Survey.** New Paltz, New York.
- Heberlein, T.A. 1977. **Density, crowding, and satisfaction: sociological studies for determining carrying capacities.** Proceedings: River Recreation Management and Research Symposium. Gen.

Table 6.—Frequency of users changing or halting use for photos in Figure 1 and 2.

Series 1 – Carriage Roads			Series 2 - Trails		
Selection	Frequency	Percent	Selection	Frequency	Percent
Scenario #1	0	0.0%	Scenario #1	0	0.0%
Scenario #2	2	3.0%	Scenario #2	10	14.9%
Scenario #3	14	20.9%	Scenario #3	22	32.8%
Scenario #4	21	31.3%	Scenario #4	13	19.4%
No selection	30	44.8%	No selection	22	32.8%
Total	67	100.0%	Total	67	100.0%

Table 7.—Frequency of user selections for restricting use for photos in Figure 1 and 2.

Series 1 – Carriage Roads			Series 2 - Trails		
Selection	Frequency	Percent	Selection	Frequency	Percent
Scenario #1	0	0.0%	Scenario #1	0	0.0%
Scenario #2	3	4.5%	Scenario #2	7	10.4%
Scenario #3	11	16.4%	Scenario #3	14	20.9%
Scenario #4	12	17.9%	Scenario #4	12	17.9%
No selection	41	61.2%	No selection	34	50.7%
Total	67	100.0%	Total	67	100.0%

Tech. Rep. NC-28. St. Paul, MN: North Central Experiment Station, USDA Forest Service, 67-76.

Mohonk Preserve. 2000. **Mohonk Preserve Land Management Plan.** New Paltz, New York.

Jakus, P., Shaw, D., and DeLeo, J. 1995. **Mohonk Preserve Recreational User Survey.** New Paltz, New York.

Shelby, B., and Heberlein, T.A. 1986. **Carrying Capacity in Recreation Settings.** Corvallis, Oregon: Oregon State University Press.

Johnson, A.K. 2001. **Coping, crowding and satisfaction: A study of Adirondack Wilderness hikers.** Master's thesis. State University of New York, College of Environmental Science, Syracuse, NY.

Stankey, G. 1989. **Solitude for the multitudes: managing recreational use in wilderness.** Public places and spaces. New York: Plenum Press, 277-299.

Manning, R.E. 1999. **Studies in Outdoor Recreation: Search and Research for Satisfaction.** Corvallis, Oregon: Oregon State University Press.

Stewart, W.P., and Cole, D.N. 1999. **In search of situational effects in outdoor recreation: Different methods, different results.** Leisure Sciences. 21: 269-286.

Manning, R.E., Valliere, W.A., Wang, B., and Jacobi, C. 1999. **Crowding norms: Alternative measurement approaches.** Leisure Sciences. 21: 97-115.

Taylor, S.J., and Bogdon, R. 1998. **Introduction to Qualitative Research Methods: A Guidebook and Resource.** New York, NY: John Wiley & Sons, Inc.

Management Issues

EMPLOYEE PERCEPTIONS OF PROTECTED AREA LAW ENFORCEMENT

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Abstract

It is widely accepted that criminal activity negatively impacts visitors' recreation experiences in the nation's parks and forests (Fletcher 1983). To further understand how law enforcement can effectively manage criminal activity in protected areas, this study was designed to describe law enforcement and non-law enforcement rangers' perceptions of a range of law enforcement issues. The data for this study were collected through a web-based survey of National Park Service full-time rangers and superintendents (n=527). Analysis indicated differing perceptions of crime and law enforcement in the parks among respondents with and without law enforcement experience. Also, results indicated a preference for harder (arrest and citation versus educational) levels of enforcement among rangers employed at parks closer to urban areas. These results seem to agree with literature in both the recreation field and the law enforcement field in terms of the relationship between urban encroachment, crime, and law enforcement on protected areas.

1.0 Introduction

The decisions faced by land agencies during much of the last century focused on facility development and resource protection. Over the past thirty years, land-agency policy expanded to include the management of visitor behaviors, recreation and educational programming, and visitor safety. Presently, there are many issues facing the country's parks, forests, and preserves, one being safety and law enforcement. After the events of September 11, 2001 there has been a decline in number of visitor days at some parks and forests; however there has been an increased demand for safety. In turn, the need to

understand security issues, crime, and law enforcement has become even more important.

Criminal activity in protected areas (land maintained by federal, state, local, and non-governmental agencies for the purposes of resource protection and recreation) is on the rise. "Such [activities] can have adverse psychological effects on visitors, as well as major impacts on organizational budgets" (Gramann, Bonifield, & Kim 1995, p. 31). Fletcher (1983) and Coble, Selin, & Erickson (2003) all indicate that as visitors' perceptions of fear of criminal activity increase, visitors will stop using an area or modify their use. To ensure visitor safety and a decrease in perceptions of crime, law enforcement has had to become more of an integral part of resource management (Heinrichs 1982).

Research into law enforcement has been an understudied area in public land management agencies, including the United States National Park Service (NPS). To better understand the needs of law enforcement in protected areas, relevant literature was reviewed and conversations were held with NPS and US Forest Service rangers and management. From these conversations the following theme arose: there is a need to understand the differing perceptions of administrative management and law enforcement rangers. The purpose of this research is twofold. First, the study seeks to understand if perceptions of park rangers with law enforcement experience are different from those rangers without law enforcement experience on a range of law enforcement management issues. Secondly, this study describes the relationship between proximity of a National Park unit to an urban area (population greater than 75,000) and the level of enforcement advocated by rangers in that unit. Level of enforcement is operationalized as either hard enforcement (arrests and citations) or soft enforcement (educational).

2.0 Related Research

2.1 Recreation and Crime

It could be assumed that crime and recreation are not strongly related in any manner. However, Pendleton (2000) writes "the meaning of crime and the meaning

of leisure are determined by interactions between people and between people and the settings in which they find themselves” (p. 113). The interaction between people and crime is the basis of many studies on visitor perceptions of safety and how those perceptions change visitors’ behavior. Fletcher (1983) found that crime impacts an individual’s recreation in the following ways: “(1) . . . actual and perceived safety and security problems appeared to affect negatively the use and enjoyment of parks; . . . (2) safety and security concerns were reasons for reduced use and enjoyment of the parks by a minority of those users interviewed . . .” (p. 34). The mechanisms involved in creating the negative impact of crime on recreation are many. The literature cites two main constructs linking crime and the recreation experience; constraints and Csikszentmihalyi’s flow experience. Crawford and Godbey (1987), Crawford, Jackson, and Godbey (1991), and Mannell and Kleiber (1997) have all indicated that fear can be a constraint to leisure participation. Likewise, the flow experience, which matches skill level and challenge of experience over time to create satisfaction, may also be affected by perceptions of crime and safety. For example, if recreationists perceive crime to be a problem to be overcome during the recreation experience they may question their ability to negotiate the perceived dangers inherent to crime (Coble, Selin, & Erickson 2003).

Although crime has negative impacts on recreation, the techniques used to deter criminal behavior may also have an indirect impact on recreation. “On the one hand is the need to maintain law and order in the park. On the other is the need to recognize law enforcement practices may negatively and unfairly impact the average visitor” (Philly & McCool, 1981 p. 367). In 1982, Lucas indicated rules and recreation are in conflict when freedom of choice is considered. Perceived freedom is a main tenet of recreation, however regulations limit that freedom. Clearly, both criminal behavior and management techniques designed to limit said behavior create impacts on all visitors.

2.11 Crime in Protected Areas

Crime is the largest facet of depreciative behavior that occurs in protected areas. Some crimes involve the area itself, a specific resource, or a group of people. Many

crimes are not specific to just protected areas. Drugs, gang activities, assaults, theft, disorderly conduct, weapons violations, etc. all occur in both urban and protected areas (Chavez & Tynon, 2000). However, there are certain crimes that occur mostly in protected areas or are modified because they occur in such an area (e.g. illegal camping, poaching, and tree theft). Elements of these crimes are dependent on a specific resource or the protected area as a whole (Philly & McCool 1981; Forsyth, Gramling, & Wooddell 1997; Gramman & Vander Stoep 1987).

Beyond describing crime in protected areas, there is a literature that addresses the rate of crime in these areas and the effect it has on the agency. Chavez and Tynon (2000) report that “it appears [that] acts of criminal activity and domestic terrorism [in protected areas] are on the increase and it is time to study them further” (p. 407). The apparent increase in crime is having a negative impact on agency managers, visitors, and the resources.

2.12 Perceptions of Crime in Protected Areas

Chavez and Tynon (2000) indicate there is a lack of public awareness of crime on U.S. national forests. Dunham and Alpert (1997) indicate the public believes crime is progressively getting worse even though it is not. Among employees, Philly and McCool (1981) found crime rates were not highly associated with perceptions of crime or law enforcement practices. They found that managers with law enforcement experience may perceive crime with a greater intensity and more seriously than those who have not held a law enforcement position.

Where do these perceptions originate? Philly and McCool (1981) indicate sources such as gossip, hearsay, educated guessing, and law enforcement experience. Regardless of the basis for crime perceptions, they exist and have been found to be correlated with a number of factors. Philly and McCool found, among National Park Service managers, perception of the amount of serious crime is positively correlated to the number of vandalistic acts reported in the park.

2.2 Law Enforcement Perceptions and Techniques

Literature describing employee perception of law enforcement varies greatly in topic, but is centered on the

differing perceptions of various groups of employees. The first area of research indicates that many law enforcement officers feel that only fellow officers can judge them. Hence, Dunham and Alpert (1997) report officers do not like citizen review boards or the thought of a non-law enforcement officer critiquing them. Officers feel that 'outsiders' cannot judge the "split second decisions" and "chaotic moments of action" police must make (p. 90).

Even within the law enforcement community there are two groups with differing perceptions: sworn officers and non-sworn personnel. Sworn officers often fail "to recognize that both operations and support are 'real police work'" (Hunter, Barker, & Mayhall 2004, p.105). This perception may cause conflict between sworn officers who are primarily in the operations division of an agency and non-sworn who provide essential support functions. Harris and Brown (1972) found a significant difference between U.S. Forest Service supervisors and rangers they supervised on attitudes towards various law enforcement tasks. They stated this difference may be responsible for conflicts between employees. Lastly, they indicate that variables such as tenure of employment, law enforcement experience, and other demographics did not have a significant effect on rangers' perceptions of their responsibilities.

Besides perceptions of law enforcement, the techniques that law enforcement employs to deter crime is an important area of the literature. The plethora of different crimes, with a variety of victims and negative impacts, that occur in protected areas are committed with a wide range of motivations and behaviors. Hence, a wide range of law enforcement tactics must be employed to combat the multifaceted nature of crime. In general, there are two groups of options officers can use, which can be labeled either as soft enforcement or as hard enforcement.

Soft or "low key" (Charles 1982; Carroll 1988) enforcement are tactics to reduce criminal activity with various forms of communication rather than the use of tickets, citations, and arrests. "Soft enforcement encourages compliance through informal methods of education, prevention, and community relations" (Pendleton 1998a). Specifically, a soft approach prompts visitor behavior through physical design, monitoring

and improvement of safety conditions, and visitor cooperation (Jubenville, 1978). For example, Swearingen and Johnson (1995) found the presence of a ranger curtailed off-trail hiking in Mt. Rainier National Park.

In contrast, hard enforcement includes formal sanctions such as ticketing, arrests, and/or stern warnings (Pendleton 1998a). "This is equated by the public with the typical police action of most city police forces; however, it is absolutely necessary in light of the many deliberate law and regulation violations within most park and recreation areas" (Jubenville 1978, p. 215). Since hard enforcement may hamper an enjoyable park experience, protected area managers have encouraged soft enforcement when appropriate (Lukas 1999).

Recently, with an increase in crime in the nation's parks (Pendleton 1997, 1996) there has been a growing shift away from soft enforcement. As early as 1982, Heinrichs indicated that some managers felt that "low-caliber authority" may not be enough to handle the increasing threat of crime. The increase in crime has motivated managers to look for professional law enforcement personnel who are not afraid to use hard tactics against criminal activity (Shore 1994; Pendleton 1998b).

3.0 Methods

3.1 Study Area, Population, and Response Rate

The data were collected via a web-based survey in early March, 2005, with 3,023 full-time National Park Service rangers and superintendents contacted via email to participate in the study. 527 individuals returned a completed survey and 94 of the email addresses were determined to be invalid (effective N=2,933). Thus, a response rate of 18.0 percent was achieved.

3.2 Survey Instrument

The instrument used to survey the NPS employees was a web-based questionnaire. A web survey was chosen because it was determined to be the most appropriate way of contacting individuals across all States and territories of the United States. Furthermore, Dillman (2000) indicated that response rates and response validity is similar or better than a paper mail survey when dealing with a population that has complete email and world-wide web access as does the population in

Table 1.—Association between the perceptions of the effects of criminal activity and law enforcement experience (n=520)

Item	df	χ^2	p	λ
Is criminal activity a problem in the unit in which you are employed?	2	53.33	<0.001	0.12
Are you impacted by criminal activity in your day to day work routine?	2	72.72	<0.001	0.06
Is the visiting public aware of the extent of the criminal activity?	2	33.39	<0.001	0.04

this study. The instrument was designed by the research team based on the relevant literature and conversation held with personnel in the Law Enforcement and Emergency Services Office of the National Park Service. The instrument was reviewed by an expert panel of law enforcement officers. After the individual items of the instrument were designed the instrument was then formatted to be used with Web OnQ (a web survey software package developed by the Sociology Department of Clemson University).

4.0 Analysis and Results

The sample consisted of 527 usable surveys which were returned electronically through the world-wide web. About two-thirds of the respondents were male (n=342, 68.4%). The mean age was 44.3 (sd=9.2) with a range of 23 to 65 years of age. The length of employment with the National Park Service ranged from less than one year to over 40 years, with a mean of 18.2 years (sd=8.9). Almost three-fourths of respondents (n=372, 71.7%) had full-time law enforcement experience within the National Park Service. Over three-fourths (n=404, 76.66%) of the rangers surveyed currently worked in parks within a hundred miles of a metropolitan area of 75,000 persons or more. In summary, the respondents were predominantly male, in the middle of their National Park Service careers and worked in park units within a couple hours of an urban area. Many have had law enforcement experience.

4.1 Differing Perceptions of Law Enforcement

To test for differing perceptions between law enforcement and non-law enforcement rangers, two tests were used. Pearson Chi-Square was used to test the association between law enforcement experience and dependent variables with nominal and ordinal levels of measurement. Lambda (λ) and gamma values were

also calculated to indicate the measure of association identified by the Chi-square test. Lambda was calculated when the dependent variable was nominal. Gamma was calculated when the dependent variable was ordinal. An Independent-Samples t-test was used to test for the differences between law enforcement experience and dependent variables with interval and ratio levels of measurement.

The association between dependent variables concerning criminal activity and the independent variable of law enforcement experience (whether or not the respondent had any law enforcement experience) is recorded in Table 1. Results indicate there was a moderately ($\lambda = 0.12$) statistically significant association ($\chi^2_{df=2}=53.33$; $p<0.001$) between law enforcement experience and perceptions of criminal activity as a problem in the respondent's park unit. Law enforcement rangers indicated that criminal activity was a problem more than non-law enforcement rangers. Furthermore, there was a significant association ($\chi^2_{df=2}=72.72$; $p<0.001$) between law enforcement experience and perceptions of the daily impact of criminal activity on the respondent's work. Thus, law enforcement rangers perceived impact by criminal activity more often than non-law enforcement officers. This association was weak ($\lambda = 0.06$). Lastly, Table 1 indicates there was a very weak ($\lambda = 0.04$) significant association ($\chi^2_{df=2}=33.39$; $p<0.001$) between law enforcement experience and perceptions of the visiting public's awareness of criminal activity. Law enforcement rangers felt that the public was more aware of crime than did non-law enforcement rangers.

Table 2 reports the mean differences in perceptions of law enforcement issues between those with law enforcement experience and those without. There were significantly different means between the two groups for

Table 2.—Mean differences of perceptions of law enforcement issues between those with and without law enforcement experience (n=506)

Item	Law enforcement experience		df	t	p
	No	Yes			
<i>Training:</i>					
Law enforcement rangers should have in-service training	5.94	6.27	482.00	-2.19	0.030
Law enforcement rangers require a high level of training	6.19	6.71	147.43	-4.00	<0.001
Law enforcement employees are adequately trained	4.91	4.46	268.17	2.70	0.007
Law enforcement rangers are best supervised by other law enforcement officers	4.58	6.08	197.60	-7.73	<0.001
Law enforcement rangers have a dangerous job	5.86	6.36	221.75	-3.44	0.001
<i>Equipment and funding:</i>					
Law enforcement is adequately funded as compared to other divisions in the park	4.80	3.23	273.21	8.09	<0.001
Law enforcement is adequately equipped to perform their duties	4.62	3.61	265.23	5.24	<0.001
Visitors can distinguish between law enforcement and non-law enforcement rangers	3.33	3.54	488.00	-1.00	0.320
<i>Management:</i>					
Law enforcement rangers are held responsible for their actions	5.58	6.07	221.87	-2.82	0.010
Superintendents are held responsible for law enforcement actions	5.31	4.74	307.63	3.04	0.003
Law enforcement rangers don't have a good understanding of management concerns	3.70	3.36	484.00	1.76	0.080
Law enforcement rangers believe management does not understand law enforcement conditions	4.92	5.39	482.00	-2.49	0.010
<i>Interaction with the public:</i>					
Law enforcement rangers should be educators, not enforcers	4.51	4.06	497.00	2.38	0.020
Law enforcement rangers should use the 'authority of the resource' not the 'authority of the government agency'	4.95	4.22	299.96	4.33	<0.001
Law enforcement rangers should always write citations whenever violations are observed	3.67	3.73	479.00	-0.32	0.750
Visitors with legitimate reasons for violating a rule or regulation should be given leeway	4.36	4.19	486.00	0.92	0.360
Discretion, in using education versus formal sanctions, is an important part of law enforcement	6.41	6.48	396.00	-0.65	0.520
<i>Status:</i>					
Law enforcement rangers feel under-valued.	4.65	5.25	485.00	-3.06	0.002
Law enforcement rangers have a heavier workload than non-law enforcement employees	3.05	4.10	490.00	-5.36	<0.001
Law enforcement rangers are treated more preferentially by managers in comparison to other employee groups	4.31	3.42	275.57	4.52	<0.001

¹Means based on a 7-point agreement scale, where 1=strongly disagree, 4=neither disagree/agree, and 7=strongly agree

*Indicates that variances were not homogeneous, thus statistics for non-homogeneous variances used

the following variables: in-service training ($t=-2.19$, $p=0.030$); high level of training ($t=-4.00$, $p\leq 0.001$); law enforcement are adequately trained ($t=-2.70$, $p=0.010$); law enforcement supervised ($t=-7.73$, $p\leq 0.001$); dangerous job ($t=-3.44$, $p=0.001$); adequately funded ($t=8.09$, $p\leq 0.001$); held responsible ($t=-2.82$; $p=0.010$); superintendents held responsible ($t=3.04$, $p=0.003$); management not understand law enforcement ($t=-2.49$, $p=0.010$); educators not enforcers ($t=2.38$, $p=0.020$); authority of resource versus agency ($t=4.33$, $p\leq 0.001$); under-valued ($t=3.06$, $p=0.002$); heavier workload ($t=5.36$, $p\leq 0.001$); and preferential treatment by managers ($t=4.52$, $p\leq 0.001$). There were no significant differences between the groups concerning the variables involving discretion, leeway, always write citations, understanding of management, and distinguished from other rangers. Hence, for a majority of the variables tested and reported in Table 2 there were differences between law enforcement rangers and non-law enforcement rangers.

Overall, the results support a difference in the perceptions of law vs. non-law enforcement NPS personnel. Although, there was not a difference found in all the comparisons, most of the variables tested were significantly different between rangers with and without law enforcement experience. However, those variables that were found not to have a significant difference were not specific to a single topic. This would indicate that although there may be no difference on some points of a certain issue, overall there are different perceptions between rangers with law enforcement experience and rangers without law enforcement experience.

4.2 Relationship Between Urban Proximity of Park and Level of Enforcement

The objective to identify the effect of a park's proximity to an urban area on the level of enforcement advocated by the park's employees would be was tested using one-way analysis of variance (ANOVA) to test for statistically significant differences in the means. A Tukey's post hoc test was performed to identify where specific differences between the groups of the independent variable exist.

Table 3.—Differences among distance categories concerning level of enforcement (n=508)

Distance of park from urban area	n	Enforcement level*	
		Softer	Harder
200 miles and over	54	4.60 ^a	
100 to 199 miles	69	4.79 ^{a,b}	4.79 ^{a,b}
50 to 99 miles	111	4.84 ^{a,b}	4.84 ^{a,b}
25 to 49 miles	86		5.09 ^b
Under 25 miles	188		5.06 ^b

$F=3.52$, $p=0.01$; $\eta^2=0.03$

^{a,b} Means with different superscripts indicate a statistically significant difference $p\geq 0.05$

* Higher means indicate agreement to harder levels of enforcement

The independent variable used was distance from park to an urban area (75,000 people or more). The dependent variable was level of law enforcement. This variable was created by forming a composite score of the twelve items regarding level of enforcement. The scale for this variable was: 1 was equal to "strongly disagree;" 4 equaled "neither disagree/agree;" and 7 was equal to "strongly agree." Each item in the composite was written as to represent perceptions of a hard level of enforcement. Hence, the higher the mean value for each item and for the composite score the harder the level of enforcement that respondent agreed with. To test for the reliability of the composite variable, a Cronbach's Alpha was calculated to measure the scale's internal consistency. The Cronbach's alpha for composing the variable was $\alpha=0.86$, indicating a high internal consistency.

There was a statistically significant difference ($F_{df=13, 487}=3.52$; $p\leq 0.008$) in level of law enforcement among the distance from park to urban area categories (Table 3). As indicated in the table the level of enforcement at park units over 200 miles from an urban area ($\bar{X}=4.60$) was statistically significantly different from park units that were 25 to 49 miles from an urban area ($\bar{X}=5.09$) and park units fewer than 25 miles from an urban area ($\bar{X}=5.06$). The other distance categories were not statistically different from each other. Hence, in general, as rangers work in a park unit closer to an urban area with over 75,000 people they are more likely to agree with a harder level of enforcement.

The results of the ANOVA that was used to test the second objective indicated that proximity of the park unit to a metropolitan area over 75,000 persons was related the level of enforcement that respondents perceived occurred in the park unit. The closer the park unit was to the urban area the harder the enforcement level preferred by rangers.

5.0 Discussion

The purpose of the present study was to understand the differing perceptions of law enforcement administrative management and the duties, practices, and responsibilities of law enforcement rangers. While the limited research on this topic has focused on impacts of crime on the visitor experience or on protected area managers, the present study is unique in that its focus was on law enforcement and its management through the perceptions of both law enforcement rangers and rangers with no law enforcement experience.

The first research question was to determine the differing perceptions of law enforcement duties, responsibilities, and practices between those with law enforcement experience and those without. Data showed there was a difference, furthermore, this finding supports previous findings by Philley and McCool (1981) in their study of National Park Service superintendents, by Harris and Brown (1972) in a study on U.S. Forest Service rangers, and by researchers who have focused on general law enforcement research. Connecting the previous research, the present study, and the literature regarding the characteristics of the law enforcement sub-culture may help explain why these differences were found. Dunham and Alpert (1997) stated that law enforcement officers are hired for their homogeneity and adherence to norms. Furthermore, Hunter, Barker, and Mayhall (2004) indicated that new law enforcement officers are socialized into the values of the police sub-culture. Thus, it is not unfounded to posit that one of the reasons law enforcement rangers hold different perceptions than those of rangers without law enforcement experience may be because law enforcement officer's perceptions are shaped by their homogeneous personality traits which are reinforced by socialization.

Another partial explanation for the results of the first objective may be a familiarity bias. It has been found that law enforcement officers are more aware of the criminal activity around them because they deal with it and the people who commit it everyday (FVTC 1990). This may help explain the differences in perceptions regarding the occurrence of certain crimes, groups of people who cause problems, and even the techniques used to deter crime. This may be another area for future research.

The second research question suggested that the level of law enforcement used in a park unit is related to the distance the park unit is from a metropolitan area which has a population greater than 75,000. Data supported the notion that the closer a park was to an urban area the harder the level of enforcement advocated by the park's rangers. The results of the second objective can also be interpreted in light of previous research. Chavez and Tynon (2000) have done extensive research on the impacts of urban encroachment on federally protected land, finding that with urban encroachment comes an increase in crime. Furthermore, Shore (1994) and Pendleton (1998b) found that harder levels of enforcement are used as occurrence of crime increases. Logically, it follows that urban encroachment causes an increase in crimes in a protected area which in turn increases the level of enforcement technique used by law enforcement officers. Clearly, further research is needed to test these relationships; however, the present study and previous research provide a good foundation for this idea.

Further research is also needed to identify the other variables that influence the level of enforcement used in dealing with rule and law violations. Dunham and Alpert (1997) indicate that certain crimes may encourage different levels of enforcement. Furthermore, Philley and McCool (1981) posit that the level of enforcement each law enforcement ranger uses in their park unit is affected by the attitudes of their park superintendents. Also, Harris and Brown (1972) indicated that increased visitor days contribute to differing perceptions and management preferences of Forest Service rangers. A study is needed testing whether level of law enforcement technique is a function of proximity to an urban area or because of

increased visitor use, or it is a mixture of both. More research is needed to identify the variables associated with level of enforcement.

6.0 Conclusion

Law enforcement and security in protected areas has become an important concern to federal land managers. In an effort to better understand the relationships between law enforcement, crime, and protected areas this study examined National Park Service ranger perceptions of law enforcement in park units. It is necessary to better understand how these topics relate to each other and the visitor experience. A thorough understanding of law enforcement will contribute to the existing research on this topic and provide a basis for further research.

This study provided information to both researchers in the field of recreation resource management and to the managers who make decisions within protected areas. Results indicated that there are differing perceptions of crime and law enforcement duties, responsibilities and practices among law enforcement rangers and non-law enforcement rangers. Also, the study indicated that the closer a park is to an urban area the more likely rangers are to use harder levels of enforcement in handling and deterring crime.

7.0 Citations

- Alpert, G.P. and Piquero, A. 1998. **Community policing: Contemporary readings**. Prospect Heights, Illinois: Waveland Press.
- Carroll, M. 1988. **A tale of two rivers: Comparing NPS—local interactions in two areas**. Society and Natural Resources. 1: 317- 333.
- Charles, M. 1982. **The Yellowstone ranger: The social control and socialization of federal law enforcement**. Human Organization 41: 216-226.
- Chavez, D.J. and Tynon, J.F. 2000. **Triage law enforcement: Societal impacts on National Forests in the west**. Environmental Management. 26: 403-407.
- Coble, T.G., Selin, S.W., and Erickson, B.B. 2003. **Hiking alone: Understanding fear, negotiation strategies and leisure experience**. Journal of Leisure Research. 35: 1-22.
- Crawford, D.W. and Godbey, G. 1987. **Reconceptualizing barriers to family leisure**. Leisure Sciences. 9: 119-127.
- Crawford, D.W., Jackson, E., and Godbey, G. 1991. **A hierarchical model of leisure constraints**. Leisure Sciences. 13: 309-320.
- Dillman, D.A. 2000. **Mail and internet surveys: The tailored design method**. New York: John Wiley & Sons.
- Dunham and Alpert, G.P. 1997. **Critical issues in policing: Contemporary readings 4th ed**. Prospect Heights, IL: Waveland Press, Inc.
- Fiske, S.T. 2004. **Social beings: A core motives approach to social psychology**. New York: John Wiley & Sons, Inc.
- Fletcher, J.E. 1983. **Assessing the impact of actual and perceived safety and security problems on park use and enjoyment**. Journal of Park and Recreation Administration. 1: 21-36.
- Forsyth, C.J., Gramling, R., and Wooddell, G. 1998. **The game of poaching: Folk crimes in southwest Louisiana**. Society & Natural Resources. 11: 25-38.
- FVTC law enforcement recruit school. 1990. Appleton, WI: Fox Valley Technical College.
- Gramman, J.H., Bonifield, R.L., and Kim, Y. 1995. **Effect of personality and situational factors on intentions to obey rules in outdoor recreation areas**. Journal of Leisure Research, 27, 326-343.
- Gramann, J.H. and Vander Stoep, G.A. 1986. **Prosocial behavior theory and natural resource protection: A conceptual synthesis**. Journal of Environmental Management. 24: 247-257.

- Harris, J.H. and Brown, P.J. 1972. **Law enforcement in the forest: How ready are managers?** Journal of Forestry. 12: 750-751.
- Heinrichs, J. 1982. **Cops in the woods: Crime is seizing an increasing share of resource agencies' attention.** Journal of Forestry. 80: 722-724.
- Hunter, R.D., Barker, T., and Mayhall, P.D. 2004. **Police community relations and the administration of Justice 6th ed.** New York: Prentice Hall.
- Jubenville, A. 1978. **Outdoor recreation management.** Philadelphia: W.B. Saunders Company.
- Knopf, R.C. and Andereck, K.L. 2004. **Managing depreciative behavior in natural settings: A review of research and implications for management.** In Society and natural resources: A summary of knowledge. Manfredi, M.J., Vaske, J.J., Bruyere, B.L., Field, D.R., & Brown, P.J. eds. Jefferson, MO: Modern Litho.
- Lucas, R.C. 1982. **Recreation regulations: When are they needed?** Journal of Forestry. 80: 148-151.
- Mannell, R.C. and Kleiber, D.A. 1997. **A social psychology of leisure.** State College, PA: Venture Publishing.
- Manning, R.E. 1999). **Studies in outdoor recreation: Search and research for satisfaction.** Corvallis, OR: Oregon State University Press.
- Pendleton, M.R. 2000. **Leisure, crime, and cops: Exploring a paradox of our civility.** Journal of Leisure Research. 32: 111-115.
- Pendleton, M.R. 1998a. **Policing the park: Understanding soft enforcement.** Journal of Leisure Research. 30: 552-571.
- Pendleton, M.R. 1998b. **Taking the forest: The shared meaning of tree theft.** Society & Natural Resources, 11, 39-50.
- Pendleton, M.R. 1997. **Looking the other way: The institutional accommodation of tree theft.** Qualitative Sociology, 3, 325-340.
- Pendleton, M.R. 1996. **Crime, criminals and guns in 'natural settings:' Exploring the basis for disarming federal rangers.** American Journal of Police. 4: 3-25.
- Phillely, M.P. and McCool, S.F. 1981. **Law enforcement in the National Park system: Perceptions and practices.** Leisure Sciences. 4: 355-371.
- Shore, D. 1994. **Bad lands.** Outside. 19: 56-71
- Swearingen, T. and Johnson, D. 1995. **Visitor's responses to uniformed park employees.** Journal of Park and Recreation Administration. 13: 73-85.

AN ANALYSIS OF HOMEOWNER AND AGENCY WILDLAND FIRE MITIGATION STRATEGIES

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Abstract

Four homeowner and agency wildland fire mitigation strategies were empirically examined in relation to three sets of causal influences. Two agency actions (prescribed fire and mechanical thinning) and two homeowner actions (defensible space and firewise construction) were analyzed against socio-demographic, situational and psychological precursors. Data were from a survey of Colorado residents ($n = 532$) living in the wildland-urban interface. Logistic regression indicated that the agency and homeowner actions had significantly different patterns of social causes and linkages. Results support the contention that socio-demographic, situational and psychological variables differentially influence support for agency or homeowner actions. Overall, the psychological measures were the most useful. Theoretically based models of natural resource policies can facilitate understanding the causal mechanisms that drive support for, or opposition to, wildland fire actions and improve policy development, situated communications and local community involvement strategies.

1.0 Introduction

Recent catastrophic wildfires have reinforced the need for successful mitigation strategies that are coordinated across all levels of government (federal, state, county, local) and address the needs and concerns of affected homeowners living in the wildland-urban interface (WUI) (Blackwell 2004). Despite the growing body of social science literature on wildland fires, however, knowledge gaps remain. For example, to what extent are homeowners' familiar with, and approve of, alternative agency initiated wildfire mitigation strategies (e.g., mechanical thinning, prescribed burns)? Are WUI

residents willing to adopt individual behaviors that can potentially minimize the consequences of a wildland fire (e.g., defensible space, firewise construction)? Do they consider these activities effective? Do homeowners feel that defensible space and firewise construction make their property safer? What influences individual behavior and support for wildland fire mitigation strategies? Managers need a better understanding of the mechanisms involved to improve wildland fire policy and associated communication strategies.

1.1 Background

Natural resource managers have recognized that the social sciences can be used to inform policy with good information (O'Laughlin 2003). For example, Cheng (2002) emphasized that responding to wildfire risks is essentially a "social process that blends scientific information with social values and attitudes." Hoover and Langner (2003) noted "the importance of understanding ...attitudes, perceptions and beliefs about fire in developing feasible fire management strategies." Despite this recognition of the potential contributions that the social sciences can make, scientifically-based analyses of wildland fire policies are only starting to emerge in the literature (Cortner & Field 2004).

Merging science and policy goes back to the founder of policy sciences, Harold Lasswell, who noted that a healthy policy process "brings to light factors that hitherto operated as a determining factor,...but which had been operating unconsciously" [i.e., unknown to the policy maker] (1951: 524). Work in other policy arenas underscores this approach and has suggested the importance of linking normative beliefs and public policy issues, particularly with empirical data (Hyman, Shingler, & Van Loon 2001). Research on social norms has also supported the integration of science and application. Over the past three decades, at least 50 studies have examined norms (evaluative standards) toward natural resource management issues (for reviews see Shelby & Vaske 1991; Shelby, Vaske, & Donnelly 1996; Donnelly, Vaske, Whittaker, & Shelby 2000;

Vaske & Whittaker 2004). As applied to this study, such evaluative standards refer to the support for collective or institutional behaviors (e.g., an agency's policy regarding fire management). Other research suggests that successful implementation of different policies may rely upon combinations of factors particular to that policy (Taylor, Carpenter, Cortner, & Cleaves 1988; Wittmann, Vaske, Manfredo & Zinn 1998; Zinn, Manfredo, Vaske, & Wittmann 1998). It is, therefore, important to study policy-related norms in a known context, with explicit reference to both geographic place and underlying situations that influence the measured state.

1.2 Context Variables

Socio-demographic variables are commonly measured in social science surveys, and are frequently reported in wildland fire management studies. Variables such as age, sex, education and income have been shown to be related to residents' perceptions wildland fires. Otani and others (1992) showed that older residents were more cautious in their interpretation of warning signs. A review of risk perception studies concluded that gender played a significant role and suggested that different meanings are socially constructed rather than genetically predetermined (Gustafson 1998). Education may be linked to knowledge about wildland fire and income may constrain homeowner mitigation strategies (e.g., firewise construction) (Vogt, Winter, & Fried 2005).

Situational factors define a given context and influence what the public perceives as acceptable or feasible (Wittmann et al. 1998, Zinn et al. 1998). Large tracts of forested land often surround homes built in the wildland-urban interface. Protecting these private residences from fire is a primary consideration when managing wildland fires. This protection influences homeowners' acceptance of fire management policy (Davis 1990). Public support for fire management has been linked to whether the fire will affect private property (Jacobson, Monroe, & Marynowski 2001; Manfredo, Fishbein, Haas, & Watson 1990). In areas where property damage from wildfires occurs frequently, residents supported the immediate suppression of fires that threatened personal property (Gardner, Cortner, & Widaman 1987).

Studies of wildland fire beliefs and attitudes suggest that psychological variables are also important to understanding wildland fire policy support (Absher, Vaske, Bright, & Kneeshaw in press; Brenkert, Champ, & Flores 2005; Vogt et al. 2005; Winter 2003). The public often under- or over-estimates wildfire risks (Beebe & Omi 1993) and large attitudinal differences sometimes exist between experts and non-experts in risk situations (Zaksek & Arvai 2004). Other research suggests that public expectations and understandings of wildland fire management in the WUI change over time and needs to be affected by well-crafted public education programs (Cortner, Gardner, & Taylor 1990). More recently, however, McCaffrey (2004) concluded that such educational campaigns do not seem to be working, perhaps because of a lack of understanding or trust.

2.0 Methods

Data for this study were obtained from a mail survey of Colorado residents living in the wildland urban interface (WUI). The study population consisted of individuals over the age of 18 who reside in Boulder, Larimer, Gilpen, Grand, Jackson, and Clear Creek counties. A random sample of resident names and addresses were purchased from a commercial sampling firm in the summer of 2004.

2.1 Mail Survey Administration

Four mailings were used to administer the survey beginning at the end of May 2004. Residents first received the 12-page questionnaire, a pre-paid postage return envelope and a personalized cover letter explaining the study and requesting their participation. Ten days after the initial mailing a reminder postcard was sent to participants. A second complete mailing (questionnaire, pre-paid postage return envelope and cover letter) was sent to non-respondents 10 days after the postcard reminder. To further increase response rate, a third complete mailing was sent one month following the second complete mailing. A total of 532 completed surveys were returned with an overall response rate of 47 percent (532 returned / 1,200 sent – 56 non-deliverables).

As a check on potential non-response bias, a telephone survey was conducted of non-response residence (n = 100). Perceived effectiveness, approval and aesthetic impacts of prescribed burning and mechanical thinning variables were included in the telephone survey. For all the variables the Hedge's effect sizes were < .2, indicating a "minimal" relationship (Vaske, Gliner, & Morgan 2002). Non-response bias was thus not considered to be a problem and the data were not weighted.

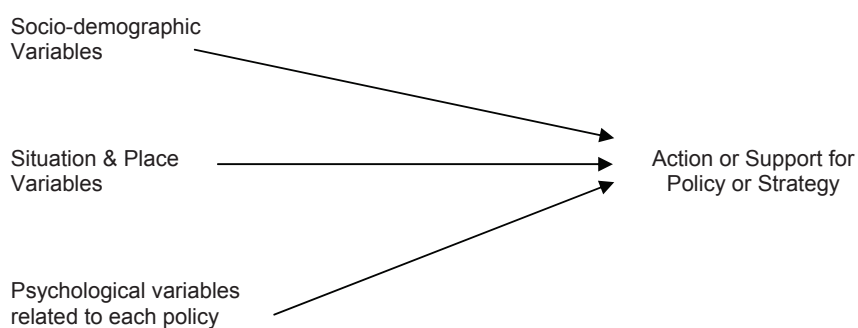


Figure 1.—Basic model of support for policy or action

2.2 Variables in Model

The survey contained four separate independent variables designed to present four common but different wildland fire mitigation strategies. Each was introduced with a short description and reinforced with captioned illustrations. Two strategies dealt with activities homeowners could adopt (i.e., defensible space, firewise construction) and two concerned agency activities (i.e., mechanical thinning, prescribed burns). For analysis purposes, each of these predictors was reduced to a two-level (0, 1) variable. For the homeowner activities, respondents indicated whether or not they currently practice defensible space or have adopted firewise construction. For the agency action strategies an additive composite scale of support was calculated from three (prescribed burns) or four (mechanical thinning) 7-point, Likert-scaled items that gauged the respondent's agreement with the appropriateness and use of the technique (Cronbach's alphas were .83 and .87, respectively). This composite scale was then used to split the respondents into two groups at the "neutral" category, resulting a (0, 1) variable of support for each agency action.

Three sets of independent variables were analyzed. Each group of predictors represented a distinct influence on a policy's implementation or support (Fig. 1). These were comprised of the following original variables in the dataset:

1. Socioeconomic predictors: Age in years, gender, total annual household income in eight categories, and highest level of education in six categories
2. Situational or place-based predictors: Do you live at this address year round? How far from a

forested area is this property? Do you own or rent this property? and How long have you lived in Colorado?

3. Attitudinal measures related to the particular policy/action: How familiar are you with [policy/action]? How effective is [policy/action] at protecting forest /home? Does [policy/action] make your home/property look better or worse? And for defensible space and firewise construction only, How safe would [policy/action] make your property?

Logistic regression was used to estimate the effects of each of the three sets of independent variables on each of the four dependent variables. Twelve separate analyses were run to ascertain the impact of each group of predictors.

3.0 Results:

Over three quarters (79%) of the WUI residents practiced defensible space activities and nearly half (47%) engaged in some form of firewise construction activity (Table 1). Overall, more than four-fifths of the respondents approved of both mechanical thinning and prescribed burn activities (90% and 82%, respectively, above the neutral point in the scale).

Logistic regression with socioeconomic variables accounted for between 2 and 6 percent of the variation in the dependent measures (Table 2). The Nagelkerke R^2 was statistically significant only for the agency actions. The situational variables had a similar impact, explaining approximately 1 to 7 percent of the variation. The situational variables, however, were significant predictors of both personal and agency actions. The psychological

Table 1.—Dependent variables: results of grouping actions.

Dependent Variables	Mean	S.D.	Groups in analysis
Defensible Space	.791	.410	0= No Defensible Space actions 1= Yes, Defensible Space actions
Firewise Construction	.471	.499	0= No Firewise Construction actions 1= Yes, Firewise Construction actions
Mechanical Thinning	.902	.388	0= At or below “neutral” 1= Approve/agree
Prescribed Burning	.822	.297	0= At or below “neutral” 1= Approve/agree

1. Response scale is 0=have done or currently practice, or 1= have not done or never practiced.

2. Response scale is originally from 1= Not at all/Strongly disapprove, to 7= Extremely/Strongly approve, collapsed at 4=Neutral to 0, 1 variable.

Table 2.—Logistic regression results for variable groups as predictors of wildland fire policy: Nagelkerke R² and significance.

Independent Variables	Personal actions		Agency actions	
	Defensible Space	Firewise Construction	Mechanical Thinning	Prescribed Burning
Socio-economic	.021 (ns)	.017 (ns)	.063 (.042)	.054 (.004)
Situational	.073 ($< .001$)	.032 (.021)	.007 (ns)	.020 (ns)
Psychological	.441 ($< .001$)	.270 ($< .001$)	.390 ($< .001$)	.393 ($< .001$)

measures explained 27 to 44 percent of the variance and influenced each of the four policy/mitigation strategies.

The logistic regressions revealed that socioeconomic predictors were statistically significant only for the agency actions ($p = .042$ and $.004$), whereas the situational variables significantly predicted only the personal action variables ($p < .001$ and $p = .002$). The psychological variables were consistently and strongly related to each of the four mitigation strategies ($p < .001$ for each).

4.0. Discussion

WUI residents have adopted some homeowner wildfire mitigation strategies and, on average, support agency-

initiated efforts. Mechanical thinning and prescribed burns were strongly tied to the psychological measures of support, and weakly tied to socio-demographic indicators. Support for these policies can be influenced by tailored communication strategies that focus on the individual level and are crafted for separate market segments.

Firewise construction and defensible space strategies were best predicted by psychological and situational variables, suggesting that agencies should attend to familiarity with a policy or proximity of the residence to the forest. Given the homeowners' costs associated with adopting firewise construction, and the barriers that these might pose for

compliance, residential land developers and the home construction industry should be a primary targets for communication efforts.

The psychological variables displayed strong and consistent links to each policy. The overall pattern suggests that individualized approaches are important to garnering support or behavioral compliance with a wildland fire policy.

The three-factor causal model of policy support provided theoretical and practical results. Although encouraging, more work is needed to further develop a comprehensive model of policy support for wildland fire actions. We suggest further work that analyzes these causes at a more specific level, and that demonstrates the model's use in other geographic and resource settings where wildland fire is an important issue. Our general model should be broadly applicable to other policy arenas, especially those focused on natural resource management or natural disaster issues, we encourage continued testing.

5.0 Citations

- Absher, J.D., Vaske, J.J., Bright, A.D., and Kneeshaw, K. In press. **Assessment and modeling of beliefs, value, and social norms related to wildland-fire management in southern California.** In: M.G. Narog, tech. coord. Proceedings of the 2002 Fire Conference on Managing Fire and Fuels in the Remaining Wildlands and Open Spaces of the Southwestern United States, 2002 December 2–5, San Diego, CA. Gen. Tech. Rep. PSW-189. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.
- Beebe, G.S., and Omi. P.N. 1993. **Wildland burning: The perception of risk.** Journal of Forestry. 91: 19-24.
- Blackwell, J.A., and Tuttle, A. 2004. **California fire siege 2003: The story.** Mare Island, CA: Region 5, Forest Service, U.S. Department of Agriculture. 99p.
- Brenkert, H., Champ, P., and Flores, N. 2005. **Mitigation of wildfire risk by homeowners.** Res. Note RMRS-25WWW. Fort Collins, CO: Rocky Mountain Research Station, Forest Service, U.S. Department of Agriculture.
- Cheng, A.S. 2002. **Fire Social Science Research: Opening Remarks.** In P.N. Omi, and L.A. Joyce comps. Fire, fuel treatments, and ecological restoration: conference proceedings (pp. 209-212). USDA Forest Service Proceedings RMRS-P-29. Fort Collins, CO: Rocky Mountain Research Station, Forest Service, U.S. Department of Agriculture.
- Cortner, H.J., Gardner, P.D., and Taylor, J.G. 1990. **Fire hazards at the urban-wildland interface: What the public expects.** Environmental Management. 13: 15-62.
- Cortner, H.J., and Field, D.R. 2004. **Introduction: Humans, Fire, and Forests – Part III.** Society & Natural Resources. 17: 659-660.
- Davis, J.B. 1990. **The wildland-urban interface: paradise or battleground?** Journal of Forestry. 88: 26-31.
- Donnelly, M.P., Vaske, J.J., Whittaker, D., and Shelby, B. 2000. **Toward an understanding of norm prevalence: A comparative analysis of 20 years of research.** Environmental Management. 25: 403-414.
- Gardner, P.D., Cortner, H.J., and Widaman, K. 1987. **The risk perceptions and policy response toward wildland fire hazards by urban home-owners.** Landscape and Urban Planning. 14: 163-172.
- Gustafson, P. E. 1998. **Gender differences in risk perception: Theoretical and methodological perspectives.** Risk Analysis. 18: 805-811.
- Hoover, A.P., and Langner, L.L. 2003. **People and wildfire: an overview.** In P. J. Jakes, comp. Homeowners, communities, and wildfire: Science findings from the national fire plan (pp. 1-3). Gen. Tech. Rep. NC-231. St. Paul, MN: North Central Research Station, Forest Service, U.S. Department of Agriculture.

- Hyman, D., Bridger, J., Shingler, J., and Van Loon, M. 2001. **Paradigms, policies and people: Exploring the linkages between normative beliefs, public policies and utility consumer payment problems.** Policy Studies Review 18: 89-121.
- Jacobson, S.K., Monroe, M.C., and Marynowski, S. 2001. **Fire at the wildland urban interface: The influence of experience and mass media on public knowledge, attitudes, and behavioral intentions.** Wildlife Society Bulletin. 29: 929-937.
- Lasswell, H.D. 1951. **'Democratic character' in The Political Writings of Harold D. Lasswell** (pp. 465-525). Glencoe, IL: Free Press.
- Manfredo, M.J., Fishbein, M., Haas, G.E., and Watson, A.E. 1990. **Attitudes toward prescribed fire policies.** Journal of Forestry. 87: 19-23.
- McCaffrey, S. 2004. **Thinking of wildland fire as a natural hazard.** Society and Natural Resources. 17: 509-516.
- O'Laughlin, J. 2003. **Policy analysis and natural resources: Bringing science to policymakers.** Moscow, Idaho: University of Idaho.
- Otani, H., Leonard, D., Ashford, V., Bushroe, M., and Reeder, G. 1992. **Age differences in perception of risk.** Perceptual and Motor Skills. 74: 587-594.
- Shelby, B., and Vaske, J.J. 1991. **Using normative data to develop evaluative standards for resource management: A comment on three recent papers.** Journal of Leisure Research. 23: 173-187.
- Shelby, B., Vaske, J.J., and Donnelly, M.P. 1996. **Norms, standards, and natural resources.** Leisure Sciences. 18: 103-123.
- Taylor, J.G., Carpenter, E.H., Cortner, H.J., and Cleaves, D.A. 1988. **Risk perception and behavioral context: U.S. forest service fire management professionals.** Society and Natural Resources. 1: 253-268.
- Vaske, J.J., and Whittaker, D. 2004. **Normative approaches to natural resources.** In M.J. Manfredo, J.J. Vaske, B.L. Bruyere, D.R. Field, and P. Brown (Eds.) Society and natural resources: A summary of knowledge (pp. 283-294). Jefferson, Mo: Modern Litho.
- Vaske, J.J., Gliner, J.A., and Morgan, G.A. 2002. **Communicating judgments about practical significance: Effect size, confidence intervals and odds ratios.** Human Dimensions of Wildlife. 7: 287-300.
- Vogt, C.A., Winter, G., and Fried, J.S. 2005. **Predicting homeowners' approval of fuel management at the wildland-urban interface using the theory of reasoned action.** Society and Natural Resources. 18: 337-354.
- Winter, P.L. 2003. **Californians' opinions on wildland and wilderness fire management.** In P. Jakes, ed. Homeowners, communities and wildfire: Science findings from the national fire plan (pp. 84-92). USDA Forest Service Gen. Tech. Rep. NC-231. St. Paul, MN: North Central Research Station, Forest Service, U.S. Department of Agriculture.
- Wittmann, K., Vaske, J.J., Manfredo, M.J., and Zinn, H.C. 1998. **Standards for lethal response to problem urban wildlife.** Human Dimensions of Wildlife. 3: 29-48.
- Zaksek, M., and Arvai, J.L. 2004. **Toward improved communication about wildland fire: Mental models research to identify information needs for natural resource management.** Risk Analysis. 24: 1503-1515.
- Zinn, H.C., Manfredo, M.J., Vaske, J.J., and Wittmann, K. 1998. **Using normative beliefs to determine the acceptability of wildlife management actions.** Society and Natural Resources. 11: 649-662.

Constraints

AN EXAMINATION OF THE MOTIVATION – ENDURING INVOLVEMENT RELATIONSHIP

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Abstract

We explored the relationship between motivation and enduring involvement using a sample of campers drawn from three distinct campsites in a southeastern National Forest. The campsites varied along the ROS continuum form developed to wilderness. Using multidimensional conceptualizations of both constructs, we hypothesized that the dimensions of motivation would positively influence the dimensions of involvement. Our findings illustrated that, while not all paths were statistically significant, the effect of motivation on involvement was consistent with our hypothesis. No variation in the variation among the path coefficients was observed across the three sites.

1.0 Introduction

Most conceptualizations and operations of enduring involvement that have appeared in the leisure literature over the past 15 or so years have been adapted from work in psychology and consumer behavior (McIntyre & Pigram 1992; Selin & Howard 1988). These conceptualizations stress an ongoing interest in an activity or associated product that has motivational properties (Havitz & Dimanche 1997). These motivational properties are manifested in a number of behavioral outcomes that have been of particular interest to both leisure researchers and practitioners (see Havitz & Dimanche 1997, 1999 for review). In spite of the assumed relationship between motivation and involvement inherent in the definitions of involvement, few leisure researchers have explicitly examined the connection between these two constructs in spite of each receiving considerable attention in the literature. With this in mind, the purpose of this investigation was

to more thoroughly examine the relationship between motivation and involvement within a public leisure service context.

An exploration of the motivation – enduring involvement relationship fills two voids in the literature. First, each of these constructs has an extensive history of inquiry. This is testament to the importance leisure researchers have bestowed upon each for understanding leisure behavior and practice. In spite of conceptual parallels, the product of these research programs appears to be two independent bodies of knowledge. An examination of their relationship has the potential to provide insight on the nature of these constructs' relationship. The second contribution relates to the examination of enduring involvement's antecedent processes. Most research has been directed toward understanding outcomes associated with the construct which have demonstrated implications for leisure service delivery (see Havitz and Dimanche 1999 for review). Given the relative importance of the construct for understanding leisure behavior, it seems logical that attention should also be directed toward understanding the construct's formative processes. While current understanding suggests that motivation is an antecedent of enduring involvement (Funk, Ridinger, & Moorman 2004; Iwasaki & Havitz 1998), empirical evidence supporting this sequence is sparse.

2.0 Past Work

2.1 Connecting Motivation and Involvement

The theoretical connection between motivation and involvement is reflected in work that has examined each of these constructs independently. First, from a motivational perspective, expectancy-value models (Ajzen 1991; Lawler 1963) infer that specific behaviors are the product of an individual's desire to satiate specific needs. For example, in his examination of motivation within the context of organizational behavior, Lawler suggested that motivation can be viewed as a hierarchy of instrumental and terminal expectations. That is, instrumental expectations refer to the relationship between effort (e.g., absentee rate, production rate) and performance outcomes (e.g., more pay, more praise) which lead

to terminal outcomes that are valued long term goals (e.g., social recognition, family solidarity, high social affiliation) (Manfredo, Driver, & Tarrant 1996). In this model, behavior is considered a rational process directed toward logical, functional ends. Viewed in this light, then, motivation to initiate and maintain involvement with specific leisure activities can be understood in terms of an individual's pursuit of specific outcomes. That is, their desire to experience a particular activity is inspired by their expectation that engagement in the activity will yield some kind of positive outcome; e.g., physiological, psycho-social. Over time, individuals learn the benefits afforded by various leisure activities and become most deeply enmeshed in those that best meet their needs.

With regard to the study of involvement in psychology and consumer behavior, the construct's connection to motivation can be traced back to Sherif and colleagues' early work on ego-involved attitudes (Sherif & Cantril 1947; Sherif & Hovland 1961; Sherif, Taub, & Hovland 1958). Sherif and Cantril described ego-involved attitudes as "attitudes that have been learned, largely as social values; that the individual identifies himself [sic] with, and makes part of himself [sic]; and that have affective properties of varying degrees of intensity" (pp. 126-127). In this context, ego-involved attitudes are distinguished from other attitudes by the extent to which they are linked to the self which Sherif et al. suggest is the unique constellation of social and personal values. Ostrom and Brock (1968) extended this understanding and suggested that "The closer the connection between his [sic] attitude and these values and the more central these related values are, the higher the degree of attitudinal involvement" (p. 375). Subsequent experiments designed to activate ego attitudes also established their connection to motivation. These early studies illustrated that under high-involvement conditions, subjects were less inclined to alter their attitudinal position (Freedman 1964; Zimbardo 1960) and more inclined to reject positions contrary to their own (Sherif & Hovland, 1961). Thus, involvement or ego-involved attitudes refer to those attitudes that are intimately connected to the self and help define and distinguish the individual. When these attitudes are activated by stimuli (e.g., leisure activity or associated object), a motivational state is aroused prompting thoughts and behaviors related to the stimuli encountered.

More recent definitions of involvement appearing in both the psychology and consumer behavior literatures reflect Sherif and colleagues' early work. For example, after conducting an extensive review of psychologists' work related to involvement and its effect on attitude change, Johnson and Eagly (1989) defined the concept as the "motivational state induced by an association between an activated attitude and some aspect of the self concept" (p. 293). Alternately, consumer researchers, Celsi and Olson (1988), defined involvement in terms of "perceived personal relevance." For Celsi and Olson, involvement referred to the degree to which an object, situation, or action is considered personally relevant. The personal relevance of a product is represented by the perceived linkage between an individual's self knowledge (i.e., needs, values, goals) and the product's attributes. Through the activation of personally relevant knowledge, "a motivational state is created that "energizes" or "drives" consumers' overt behaviors (p. 211).

The distinction between motivation and involvement also implies a temporal structure that is reflected in the expectancy-value model and the process by which ego attitudes are activated. Specifically, it is the attributes of specific activities that activate ego-attitudes which in turn arouse emotion, cognition and, ultimately behavior. Consequently, an understanding of activity attributes that recreationists consider personally relevant could potentially provide an understanding of both why recreationists are motivated to engage in specific leisure behaviors and the reasons underlying their continued involvement.

3.0 Methods

3.1 Setting

Our data were collected from visitors to three campgrounds situated in Sumter National Forest in upstate South Carolina. These settings were managed in accordance with the tenets proposed in the Recreation Opportunity Spectrum (ROS) (Bultena & Klessig 1969). The ROS framework acknowledges that recreationists vary with regard to the outcomes or benefits they seek in their leisure. Consequently, many settings situated within National Forests are managed in such a way to afford a diverse range of leisure opportunities to visitors. In addition to providing diverse leisure opportunities

that are somewhat reflective of the diversity of leisure needs reflected in the community, the ROS also provides managers with a straightforward framework for managing these settings.

The first setting, Cherry Hill Campground, is a developed, drive-in campground with bathrooms and showers, potable water, camp-pads, and fire rings. The campsites also have a fee of \$10 per night. The second setting, Burrell's Ford Recreation Area, is a less developed camping area that requires a several hundred yard walk-in and does not have formally designated campsites. The only amenities offered to campers consist of a toilet and several scattered picnic tables. The third area, Ellicott Rock Wilderness Area, is a designated wilderness area. Consistent with this designation, there are no Forest Service developed campsites or other built amenities. While these three settings differed considerably in terms of the leisure experiences supported, they were all situated within a 5 mile radius (10 to 15 minute drive) of one another. There is no fee at either of the latter two sites.

While a substantial body of research exists that has examined the relationships among setting attributes and experience preferences (Manfredo, Driver, & Brown 1983; Stewart & Carpenter 1989; Virden & Knopf 1989), it is unclear how setting type moderates the relationship between motivation and enduring involvement. Thus, no formal hypotheses were constructed stipulating the influence of setting type on the relationship between motivation and enduring involvement.

3.2 Sampling

Sampling occurred Friday evenings and weekends between 8 a.m. and 8 p.m. (a total of 60 sampling days).¹ Given the light use of these recreation areas, all recreationists encountered in each of the settings were requested to participate in the study ('convenience sampling,' Babbie 1995). For recreationists sampled at the Cherry Hill and Burrell's Ford sites, surveys were completed onsite. Surveyors² either waited for the respondent to complete the survey, or came by the

campsite later to collect the completed survey instrument. While there were no direct verbal refusals, 12 survey instruments were returned blank. These procedures yielded 312 completed surveys (96% response rate). For the Ellicott Rock Wilderness Area, given the difficulty associated with completing survey instruments onsite (i.e., nowhere to sit with a flat surface) in addition to our desire to be as unobtrusive as possible, recreationists were provided with a survey instrument and a stamped self addressed envelope all enclosed within a plastic resealable bag. They were also requested to provide their name and address to be sent a follow-up survey instrument should they lose or damage the survey we provided onsite. One hundred and eighty seven survey instruments were distributed. There were no refusals. Two weeks following the initial onsite contact, the recreationists were sent a postcard with information thanking them for their participation in the study, a reminder for those who had yet to complete the survey to do so and return it at their earliest convenience, and our contact information to acquire another survey instrument in case the one they received had been lost or damaged. One hundred and twelve completed surveys were returned (60 % response rate). Combined, our total sample size was 424 cases; 188 for Cherry Hill, 124 for Burrell's Ford, and 112 for Ellicott Rock.

3.3 Measures

3.31 Motivation

While Manfredo et al. (1996) recommended using all REP scale items to alleviate concerns relating to content validity, the length of our questionnaire and the desire to examine other issues of theoretical and practical interest limited our ability to include all items. The data presented in this paper were collected as part of a broader investigation of campers' attitudes and behaviors related to the Sumter National Forest. Consequently, respondents' motivations for camping were measured using 15 items selected from the battery of REP scale items (Manfredo et al. 1996). These items were measured along a five-point scale where 1=highly unimportant through 5=highly important. Our decision criteria concerning the inclusion/exclusion of items, a priori, was based on the agency's prior use of these scales in these

¹Forest Service managers indicated that most use occurs on weekends.

²Two graduate students from Clemson University.

Table 1.—Confirmatory factor analysis – motivation (pooled sample)

Dimensions		α	AVE	λ	t-value	δ
Escape		.74	.65			
E1	To be away from the everyday routine of home			.58	-	.67
E2	To get away from crowded areas			.76	11.18	.42
E3	To experience the solitude/privacy of camping			.77	11.27	.40
Nature		.88	.73			
N1	To be in a natural setting			.80	-	.36
N2	To enjoy the natural scenery			.89	21.10	.20
N3	To enjoy the tranquility of the area			.87	20.31	.25
Bonding		.84	.76			
B1	To share quality time with family/friends			.91	-	.18
B2	To do something with my family/friends			.94	24.06	.12
B3	To bring family/friends closer together			.61	14.18	.62
Learning		.82	.70			
L1	To develop my knowledge about the area			.72	-	.49
L2	To learn more about nature			.78	14.67	.39
L3	To learn about the natural history or ecology of the area			.78	14.69	.39
Social		.91	.65			
S1	To be with people who have similar interests			.46	-	.79
S2	To talk to new and varied people			.93	9.92	.13
S3	To meet new campers			.93	9.93	.38

settings and reviews of past investigations conducted in similar contexts (Manning 1999). We grouped these items into five conceptual domains titled; escape, nature, bonding, learning, and social. As shown in Table 1, results from the confirmatory factor analysis (CFA)³ for the pooled sample demonstrated that the hypothesized factor structure fit the data well as evidenced in factor loadings, average variance explained (AVE)⁴, and measures of internal consistency (i.e., Cronbach's alpha).

3.32 Enduring Involvement. Enduring involvement was measured using Kyle and colleagues (Kyle et al. 2004a) Modified Involvement Scale (MIS). In addition to adapting items from McIntyre (1989) and McIntyre and Pigram's (1992) involvement scale, they utilized

five additional items (see Table 2). For centrality, two items were added 'camping occupies a central role in my life' and 'to change my preference from camping would require major rethinking.' The first item was adapted from Kyle, Graefe, Manning, and Bacon (2003) and Kyle et al.'s (2004b) measure of centrality which they used to measure hikers' enduring involvement with hiking along the Appalachian Trail. The second item was adapted from Pritchard, Havitz, and Howard's (1999) resistance dimension of their commitment scale. While this item was originally developed to measure an outcome associated with an individual's psychological commitment to an agency, we reworded the item so that the primary attitude object now reflected personal

³The fit indices for the measurement model in which CFA was conducted were: $\chi^2=958.41$, $df=360$, $RMSEA=.062$, $NFI=.94$, $CFI=.96$, $IFI=.96$.

⁴The AVE for each latent construct provides an estimate of the variance captured by the construct in relation to the amount of variance due to measurement error. Fornell and Larcker (1981) suggested that values less than .5 infer that the validity of the indicators and the construct is questionable.

Table 2.—Confirmatory factor analysis – enduring involvement (pooled sample)

Dimensions		α	AVE	λ	t-value	ε
Attraction		.86	.66			
A1	Camping is one of the most enjoyable things I do			.80	-	.36
A2	Camping is very important to me			.85	17.87	.28
A3	Camping is one of the most satisfying things I do			.79	16.78	.38
Centrality		.83	.65			
C1	I find a lot of my life is organized around camping			.90	-	.19
C2	Camping occupies a central role in my life			.88	22.69	.23
C3	To change my preference for camping to another recreation activity would require major rethinking			.61	13.75	.63
Social Bonding		.71	.50			
SB1	I enjoy discussing camping with my friends			.77	-	.41
SB2	Most of my friends are in some way connected with camping			.71	11.23	.050
SB3	Participating in camping provides me with opportunity to be with friends			.64	9.16	.59
Identity Affirmation		.73	.55			
IA1	When I participate in camping, I can really be myself			.74	-	.45
IA2	I identify with people and image associated with camping			.76	14.00	.42
IA3	When I'm camping, I don't have to be concerned with the way I look			.73	13.02	.47
Identity Expression		.74	.60			
IE1	You can tell a lot about a person by seeing them camping			.69	-	.52
IE2	Participating in camping says a lot about who I am			.88	10.07	.23
IE3	When I participate in camping, other see me the way I want them to see me			.74	9.57	.45

investment in activity. In so doing, the primary attitude object reflected in the item was shifted from the brand level (i.e., service provider) to the product level (i.e., activity). Similar to centrality and Buchanan's (1985) conceptualization of side bets, Pritchard et al.'s resistance dimension examines the degree to which recreationists' attachment to a line of behavior is a function of personal investments (e.g., emotional commitment, social world ties, activity-related expenditures). Lastly, Kyle et al. (2004a) constructed three new items based on the definitions of each of the dimensions of involvement; (a) social bonding, 'participating in camping provides me with an opportunity to be with friends,' and (b) identity affirmation, 'I identify with the image associated

with camping' and 'when I'm camping I don't have to be concerned with the way I look.' All items were measured along a five-point scale where 1=strongly disagree through 5=strongly agree. They used two independent samples to establish the validity (i.e., convergent, discriminant, nomological) and reliability (i.e., internal consistency, composite reliability) of the scale using multiple criteria. As shown in Table 1 and Table 2, results from the confirmatory factor analysis⁵ for the pooled sample demonstrated that the hypothesized factor structure fit the data well as evidenced in factor loadings, AVEs, and measures of internal consistency (i.e., Cronbach's alpha).

⁵Goodness of fit indices: $\chi^2=958.41$, $df=360$, $RMSEA=.062$, $NFI=.94$, $CFI=.96$, $IFI=.96$.

Table 3.—Summary of invariance tests

Model	χ^2	df	$\Delta\chi^2$	df	RMSEA	NFI	CFI	IFI
H1: Invariant structure	2033.24	1131			.066	.90	.95	.95
H2: Invariant loadings	2107.89	1171	74.65***	40	.067	.90	.95	.95
(model with unconstrained loadings)	2077.98	1163	44.74	32	.066	.90	.95	.95
H3: Invariant beta weights	2104.16	1179	26.18	16	.066	.90	.95	.95

*** $p < .001$

4.0 Analyses, Findings and Discussion

4.1 Testing for Variation Across Settings: Structure, Measurement, and Effects

We tested a structural model using LISREL (version 8.54) where each dimension of enduring involvement was hypothesized to be positively influenced by each dimension of motivation. Because past research has demonstrated that the nature of motivation and enduring involvement is subject to variation across activities and settings, we also tested the model independently across the three settings from which respondents were sampled using multigroup CFA (Bollen 1989). The procedure we used involved comparing the factor structure of our conceptualization of motivation and involvement, factor loadings, and beta coefficients across the three groups. Group comparisons are made by constraining elements of the model to be equal. Equivalence across groups is assessed by examining the effect of the imposed constraint on model fit. Equivalent factor structures infer that our multidimensional conceptualization of the constructs is consistent across settings. Equivalence in factor loadings across the three setting contexts would indicate that our measures of motivation and involvement are operating equivalently among each of the groups. Lastly, equivalence among beta weights would indicate that the effect of motivation on involvement is consistent across the three settings.

Bollen (1989) noted that testing for model comparability across groups is a matter of degree in that the researcher decides which parameters should be tested for equality and in what order these tests should be made. Using the chi-square difference test (Byrne 1998) to gauge the effect of the imposed constraint, the hierarchy of invariance⁶ (i.e., tests for equality) that we tested in this

study included: (a) equality of structure (H1), which examines the suitability of the five factor solution for motivation and the five factor solution for enduring involvement across groups; (b) equality of scaling (H2), which examines the similarity in the pattern of factor loadings across groups; and (c) the equality of structural coefficient estimates (H3), which examines the similarity of the beta weights for each of the groups.

In the first test, H1, the models were hypothesized to have the same pattern of fixed and free values in the matrices containing factor loadings, structural coefficients, and the variance/covariance matrices. The fit of this unconstrained model, shown in Table 3, was considered adequate ($\chi^2=2033.24$, $df=1131$, $RMSEA=.066$, $NFI=.90$, $CFI=.95$, $IFI=.95$). This unconstrained model served as a point of comparison for the second test.

Results from the second test (H2) indicated that there was some variation among the three groups with regard to the pattern of factor loadings ($\Delta\chi^2=74.65$, $\Delta df=40$, $p < .001$). Constraints on individual factor loadings illustrated that three elements were contributing to the matrix inequality; E_2 , SB_2 , and IE_2 . This finding suggests that the degree to which the latent construct accounted for variation in the manifest item varied across sites. For E_2 , loadings ranged from .58 at Ellicott Rock to .91 at Burrell's Ford. For SB_2 , loadings ranged from .53 at Ellicott Rock to .82 at Cherry Hill. Lastly, for IE_2 , loadings ranged from .64 at Ellicott Rock to .91 at Cherry Hill. Beyond these items, the remaining indicators performed similarly across the three sites.

⁶For a more detailed discussion of invariance testing, see Bollen (1989) or Byrne (1998).

The final test (H_3), which examined the equality of the beta weights across the three settings, indicated that the imposition of this constraint did not significantly effect model fit ($\Delta\chi^2=26.18$, $\Delta df=16$, $p > .05$). This finding indicates that the beta weights were not influenced by “setting type.”

In summary, the proceeding tests of invariance indicate that the factor structure, the performance of the indicators, and the effect of the dimensions of motivation on the dimensions of involvement were, for the most part, equivalent among the three groups.

4.2 Summary of Effects

Table 4 depicts the statistically significant effects of the dimensions of motivation on the dimensions of enduring involvement. These findings offer partial support for our hypothesized model suggesting that each dimensions of enduring involvement would be positively influenced by each dimension of motivation. Specifically, the following relationships were observed in the final model:

- a. *Attraction* was positively influenced by escape only ($\beta=.36$, $t\text{-value}=6.53$). This finding suggests that the importance and pleasure respondents’ associated with camping was a product of their desire to escape routine and crowds and to enjoy privacy.
- b. *Centrality* was positively influenced by learning only ($\beta=.27$, $t\text{-value}=5.47$). Thus, as respondents’ desire to learn about the natural environment increased, so too did their propensity to indicate that camping occupied an important place in their lives.
- c. *Social bonding* was predicted by escape ($\beta=.16$, $t\text{-value}=2.86$) and social ($\beta=.20$, $t\text{-value}=4.07$). The effect of escape on social bonding implies that escaping the presence of others and the quest for solitude is acceptable with close family and friends. Alternately, respondents desiring the company of others were also inclined to indicate that much of their social world was structured around camping.

Table 4.—Structural model analysis

Dependent Variable	Predictor	β	t-value	R^2		
				A	B	C
Attraction	Escape	.36	6.53	.16	.14	.09
Centrality	Learning	.27	5.47	.08	.07	.07
Social Bonding	Escape	.16	2.86	.10	.10	.05
	Social	.20	4.07			
Identity Affirmation	Nature	.15	2.37	.24	.29	.17
	Bonding	.12	2.62			
	Learning	.32	4.84			
Identity Expression	Learning	.45	6.87	.20	.27	.16

A = Cherry Hill, B = Burrell’s Ford, and C = Ellicott Rock

- d. *Identity affirmation* was positively influenced by nature ($\beta=.15$, $t\text{-value}=2.37$), bonding ($\beta=.12$, $t\text{-value}=2.62$), and learning ($\beta=.32$, $t\text{-value}=4.84$). These findings indicate that respondents’ engagement in camping reaffirms their own sense of self. The activity attributes that drove the affirmation processes touched upon opportunities to interact with and learn about the natural environment along with the relationships they shared with close family and friends.
- e. *Identity expression* was predicted by learning only ($\beta=.45$, $t\text{-value}=6.87$). Thus, the opportunity to learn about the natural environment through the activity enables respondents to express their identities (i.e., the self to others).

While we constrained the regression paths to be equal across the three groups, there remained variation in the variance accounted for by motivation in the dimensions of enduring involvement (see Table 8). Overall, the strength of association (as reflected in the R^2 values) between the dimensions of motivation and enduring involvement was most apparent in the Cherry Hill and Burrell’s Ford samples. For all dimensions of involvement, motivation accounted for a greater percentage of the variance in the Cherry Hill and Burrell’s Ford samples than was accounted for in the Ellicott Rock sample.

Further, the strongest effects were reflected in the identity affirmation and identity expression models with the percent of variance accounted for ranging between 17 to 29 percent for identity affirmation and 16 to 27 percent for identity expression.

Finally, the purpose of this investigation was to explore the nature of the relationship between motivation and enduring involvement among a sample of campers drawn from a southeastern National Forest. Our findings support the contention that motivation is an antecedent of enduring involvement. All significant relationships demonstrated that the dimensions of motivation were positive predictors of the dimensions of enduring involvement. Our multidimensional conceptualization of each construct, however, illustrated that the relationships among each of the dimensions was not uniform; not all effects were statistically significant and not all effects were of equal valence. We also observed that setting type did not influence the strength of these effects. The strength of the effect of motivation on enduring involvement was consistent across all three settings.

These findings also provide further support for Kyle et al.'s (2004a) conceptualization and measure of enduring involvement. Their measure, the MIS, was an extension of McIntyre and Pigram's (1992) measure of enduring involvement. We would recommend continued testing in varied contexts.

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5.0 Citations

- Ajzen, I. 1989. **Attitude structure and behavior**. In A.R. Pratkanis, S.J. Breckler and A.G. Greenwald, eds., *Attitude structure and function* (pp. 241-277). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Babbie, E. 1995. **The practice of social research**. New York: Wadsworth Publishing Company.
- Bollen, K.A. 1989. **Structural equations with latent variables**. New York: Wiley.
- Buchanan, T. 1985. **Commitment and leisure behavior: A theoretical perspective**. *Leisure Sciences*. 7: 401-420.
- Bultena, G., and Klessig, L. 1969. **Satisfaction in camping: A conceptualization and guide to social research**. *Journal of Leisure Research*. 1: 348-364.
- Byrne, B.M. 1998. **Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming**. Mahwah, NJ: Lawrence Erlbaum Associates.
- Celsi, R.K., and Olson, J.C. 1988. **The role of involvement in attention and comprehension processes**. *Journal of Consumer Research*. 15: 210-224.
- Freedman, J.L. 1964. **Involvement, discrepancy, and change**. *Journal of Abnormal and Social Psychology*. 69: 290-295.
- Funk, D.C., Ridinger, L.L., and Moorman, A.M. 2004. **Exploring origins of involvement: Understanding the relationship between consumer motives and involvement with professional sport teams**. *Leisure Sciences*. 26: 35-61.
- Havitz, M.E., and Dimanche, F. 1997. **Leisure involvement revisited: Conceptual conundrums and measurement advances**. *Journal of Leisure Research*, 29, 245-278.
- Havitz, M.E., and Dimanche, F. 1999. **Leisure involvement revisited: Drive properties and paradoxes**. *Journal of Leisure Research*. 31: 122-149.
- Iwasaki, Y., Havitz, M.E. 1998. **A path analytic model of the relationships between involvement, psychological commitment, and loyalty**. *Journal of Leisure Research*. 30: 256-280.

- Johnson, B.T., and Eagly, A.H. 1989. **Effects of involvement on persuasion: A meta-analysis.** *Psychological Bulletin.* 106: 290-314.
- Kyle, G.T., Absher, J.D., Hammitt, W.E., Cavin, J., and Cavin, D. 2004a. **Testing a modified involvement scale.** Paper presented at NRPA's Leisure Research Symposium. Reno, NV.
- Kyle, G.T., Bricker, K.S., Graefe, A.R., and Wickham, T.D. 2004b. **An examination of recreationists' relationships with activities and settings.** *Leisure Sciences.* 26: 123-142.
- Kyle, G.T., Graefe, A.R., Manning, R.E., and Bacon, J. 2003. **An examination of the relationship between leisure activity involvement and place attachment among hikers along the Appalachian Trail.** *Journal of Leisure Research.* 35: 249-273.
- Lawler, E.E. (1973). **Motivations in work organization.** Monterey, CA: Brooks/Cole.
- Manfredo, M.J., Driver, B.L., and Brown, P. 1983. **A test of concepts inherent in experience-based setting management for outdoor recreation areas.** *Journal of Leisure Research.* 15: 263-283.
- Manfredo, M.J., Driver, B.L., and Tarrant, M.A. 1996. **Measuring leisure motivation" A meta-analysis of the Recreation Experience Preference scales.** *Journal of Leisure Research.* 28: 188-213.
- McIntyre, N. 1989. **The personal meaning of participation: Enduring involvement.** *Journal of Leisure Research.* 21: 167-179.
- McIntyre, N., and Pigram, J.J. 1992. **Recreation specialization reexamined: The case of vehicle-based campers.** *Leisure Sciences.* 14: 3-15.
- Ostrom, T.M., and Brock, T.C. 1968. **A cognitive model of attitudinal involvement.** In R.P. Abelson,
- E. Aronson, W.J. McGuire, T.M. Newcomb, M.J. Rosenberg and P.H. Tannenbaum, eds., *Theories of cognitive consistency: As sourcebook* (pp. 373-383). Chicago: Rand-McNally.
- Pritchard, M.P., Havitz, M.E., and Howard, D.R. 1999. **Analyzing the commitment-loyalty link in service contexts.** *Journal of the Academy of Marketing Science.* 27: 333-348.
- Selin, S.W., and Howard, D.R. 1988. **Ego-involvement and leisure behavior: A conceptual specification.** *Journal of Leisure Research.* 20: 237-244.
- Sherif, M., and Cantril, H. 1947. **The psychology of ego-involvements: Social attitudes and identifications.** New York: Wiley.
- Sherif, M., and Hovland, C.I. 1961. **Social judgment, assimilation and contrast effects in communication and attitude change.** New Haven, CT: Yale University Press.
- Sherif, M., Tuab, D., and Hovland, C.I. 1958. **Assimilation and contrast effects of anchoring stimuli on judgments.** *Journal of Experimental Psychology.* 55(2): 150-155.
- Stewart, W.P., and Carpenter, E. 1989. **Solitude at Grand Canyon: An application of expectancy theory.** *Journal of Leisure Research.* 21: 4-17.
- Virden, R.J., and Knopf, R.C. 1989. **Activities, experiences, and environmental settings: A case study of recreation opportunity spectrum relationships.** *Leisure Sciences.* 11: 159-176.
- Zimbardo, P.G. 1960. **Involvement and communication discrepancy as determinants of opinion conformity.** *Journal of Abnormal and Social Psychology.* 60: 86-94.

RACIAL DISCRIMINATION IN PARKS AND OUTDOOR RECREATION: AN EMPIRICAL STUDY

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Abstract

Research dating back to the 1960s has reported under-representation of racial and ethnic minorities in outdoor recreation. There are three hypotheses as to why racial and ethnic minorities are under-represented in parks and outdoor recreation areas. The marginality hypothesis purports that historic discrimination has left minorities without economic or educational resources to visit parks and related areas. The subculture hypothesis suggests that traditional recreation areas maybe outside the cultural value system of racial and ethnic minorities. The discrimination hypothesis suggests that overt and/or institutional discrimination may discourage minorities from visiting recreation areas. The discrimination hypothesis has been advanced relatively recently and has received little empirical testing. This study explores the discrimination hypothesis by measuring 1) how visitor perceptions of crowding are affected by the racial composition of other visitors encountered; and 2) visitor attitudes toward management actions designed to address under-representation of racial and ethnic minorities in parks and recreation areas.

The research objectives outlined above were addressed through design of a survey questionnaire and a pilot administration of the survey to a sample of undergraduate students at the University of Vermont. The survey questionnaire included a series of 10 photographs illustrating a range of use densities along a

trail at Grand Canyon National Park. The photographs showed a varying a mix of white and black hikers. Respondents were asked to rate the acceptability of each photograph, and the resulting data were used to test for existence of racial discrimination. Other components of the questionnaire included respondent attitudes toward management actions designed to address under-representation of racial and ethnic minorities in parks, and broader racially related attitudes and experiences. Study findings provide preliminary insight into the issue of racial discrimination in parks and outdoor recreation and provide a base for refining the study questionnaire in preparation for its administration to visitors at selected parks and outdoor recreation areas.

1.0 Introduction

According to the Census Bureau (2000), the United States is becoming more racially and ethnically diverse. Moreover, it is projected that by 2050, racial and ethnic minorities will account for almost half the U.S. population and nine out of every 10 people added to the population (Murdock 1995). This growing minority population has potentially important implications for national parks. Racial and ethnic minorities have traditionally been under-represented as visitors to national parks. For example, a recent survey of a representative sample of Americans found that 32 percent of whites had visited a national park in the last 2 years compared to only 13 percent of blacks (Solop et al. 2003). If racial/ethnic minority groups continue to be substantially underrepresented in the national parks, it will perpetuate an issue of social/environmental injustice and may threaten long term support for the national park system.

This report examines results from a study concerning racial and ethnic discrimination/bias among national park visitors. The study consisted of a survey that was administered in a class at the University of Vermont. This was a pilot test of the survey and the data collected will be used to refine the survey instrument and provide baseline data in preparation for administration of the survey to park and outdoor recreation area visitors.

2.0 Literature

Beginning in the 1960s and 1970s, the Civil Rights Movement increased visibility of and societal concern for injustices in traditional American institutions such as housing and education (Washburne 1978). Outdoor recreation also became an area of concern. Initial studies done by the Outdoor Recreation Resources Review Commission found differences among black and white outdoor recreation patterns (Mueller and Gurin 1962). More recent research has continued to document such patterns, including under-representation of racial/ethnic minorities in national parks (Floyd 1999; Solop et al. 2003; West 1989).

Various studies have been conducted to explore potential reasons for under-representation of racial/ethnic minorities in national parks as well as determine barriers to racial/ethnic minority under-representation (Dwyer 1990; Dwyer 1992; Dwyer 1993; Hutchison 1987; West 1989). Research in the field has led to the development of three main hypotheses.

The first hypothesis is commonly referred to as the marginality hypothesis. This hypothesis attributes differences in racial/ethnic minority representation to socioeconomic factors such as limited resources and historical discrimination. The U.S. Census taken in 2000 examined income differences between blacks and whites. Whites make \$9,481 more per capita than blacks (U.S. Census 2000). This difference in per capita income can contribute to under-representation of blacks in national parks because they may have less discretionary income than whites. Socioeconomic differences can be attributed to lack of opportunity due to discrimination stemming from the United States' long-standing struggle with racial equality.

The second hypothesis is referred to as either the subcultural or ethnicity hypothesis. This hypothesis attributes differences in national park visitation to cultural norms, value systems, and social practices. For example, it is theorized that since African American culture is rooted in servitude to the land, blacks do not find refuge in parks and wilderness to the same extent as do whites (Meeker 1973). Furthermore, a survey of

Chicago residents found differences in preferences for developed sites and social interaction between blacks and whites that tends to support the subcultural/ethnicity hypothesis (Dwyer 1990).

The third hypothesis is referred to as the discrimination hypothesis. This hypothesis places importance on contemporary discrimination. Feeling discriminated against or fear of discrimination in a national park may cause racial/ethnic minorities to avoid visiting these areas (Dwyer 1992). This hypothesis needs more research on the types and ranges of discrimination and how discrimination affects recreation choices.

Related studies have been done to examine barriers to visitation to national parks among visitors and non-visitors for different racial/ethnic groups. For example, the recent survey of Americans conducted by Solop et al. (2003) found that the most common barriers to visitation among blacks and whites were expense of hotels, other costs of visiting parks, and lack of knowledge about parks. However, blacks reported these barriers in higher percentages than whites. Distance and transportation have also been suggested as important barriers in black visitation to national parks (Floyd 1999). Studies have shown that African Americans are less likely than whites to travel long distances and that the lack of accessible public transportation to national parks plays an important role in limiting visitation rates of racial/ethnic minorities (Dwyer 1990; Solop et al. 2003).

3.0 Objectives

The study examined in this paper consisted of a survey that was administered to undergraduate students in a class from the University of Vermont's Rubenstein School of Environment and Natural Resources. This survey was administered as one step in a larger research project. The purpose of this step was to collect baseline data and to refine the survey instrument. The next step in the study is to administer the questionnaire to sample visitors in a variety of parks and outdoor recreation areas. This paper briefly describes the study methodology, selected study findings, and potential limitations and implications of the study.

4.0 Methodology

The study used two research techniques, visual research methods and survey research to determine respondents' feelings on the racial composition of park visitors and respondent characteristics that may have an affect on racial and ethnic discrimination. The questionnaire contained a set of photographs depicting a range of use levels and different racial compositions of visitors on a portion of trail in Grand Canyon National Park. The photographs were digitally altered to allow control over numbers and racial composition of visitors. The research design for constructing the series of study photographs is shown in Table 1. Visual research methods such as this have been used in crowding research (Manning & Freimund 2004 & Manning et al. 1996). Perceptions of crowding are influenced by many factors, one of which is characteristics of those encountered (Manning 1999). Characteristics of those encountered include a visitor's "perceptions of likeness". Perceptions of likeness can be influenced by group size, group type, mode of travel, and may include the race/ethnicity of those encountered. The survey was administered to students in a course on race and culture conducted in the Rubenstein School of Environment and Natural Resources. Seventy-three completed questionnaires were obtained.

5.0 Results

The survey asked respondents various questions about themselves. Given that the respondents were college students at the University of Vermont, there was relatively little diversity among them regarding characteristics potentially important to this study. There were no Hispanic or Latino respondents and they were predominantly white. Respondents were asked the racial makeup of their neighborhoods, schools, work and place of worship. Ninety-three percent of the respondents grew up in mostly to all-white neighborhoods and 99 percent currently live in mostly to all-white neighborhoods. A majority of respondents, 86 to 91 percent, attended mostly to all white junior high and high schools. None of the respondents live, attend church, or work in mostly to all-black environments.

The first question in the survey asked respondents to examine and evaluate each of the 10 study photographs

Table 1.—Research design for study photographs

Number of Visitors	Racial Mix of Visitors (White/Black)		
0	(0/0)		
4	(0/4)	(2/2)	(4/0)
8	(0/8)	(4/4)	(8/0)
12	(0/12)	(6/6)	(12/0)

and rate their "acceptability" on a scale of -4 (very unacceptable) to +4 (very acceptable). Figure 1 plots aggregate acceptability of each study photograph. Results indicate that respondents find photographs with increasing numbers of visitors to be less acceptable. However, there are virtually no differences in acceptability among the photographs that have the same number of visitors but different racial compositions. Later in the survey, respondents were asked to rate their "comfort level" with each study photograph on a scale of -4 (uncomfortable) to +4 (comfortable). Figure 2 shows the respondents' comfort level for all the study photographs. Results again indicate that respondents feel less comfortable with photographs that show increasing numbers of visitors. However, there are also some apparent differences in comfort level with photographs showing alternative racial compositions of visitors. For example, for the three photographs showing alternative racial composition of four visitors, respondents reported being less comfortable with the photograph showing all black visitors than with the photograph showing all white visitors. This pattern was consistent over all three sets of photographs showing a range of visitors. While some of the differences were not statistically significant, that outcome may be due to the relatively small sample size.

A second part of the questionnaire asked a series of questions about respondent knowledge of racial/ethnic minority under-representation in the national parks, the reasons for this under-representation, and support for or opposition to management actions designed to address this issue. The first question asked respondents if they thought racial/ethnic minority groups visited national parks more or less frequently than whites. Most respondents (58.3%) correctly thought that racial/ethnic minority groups visited national parks less frequently than whites. However, 19.4 percent of respondents thought that there was no difference in visitation rates

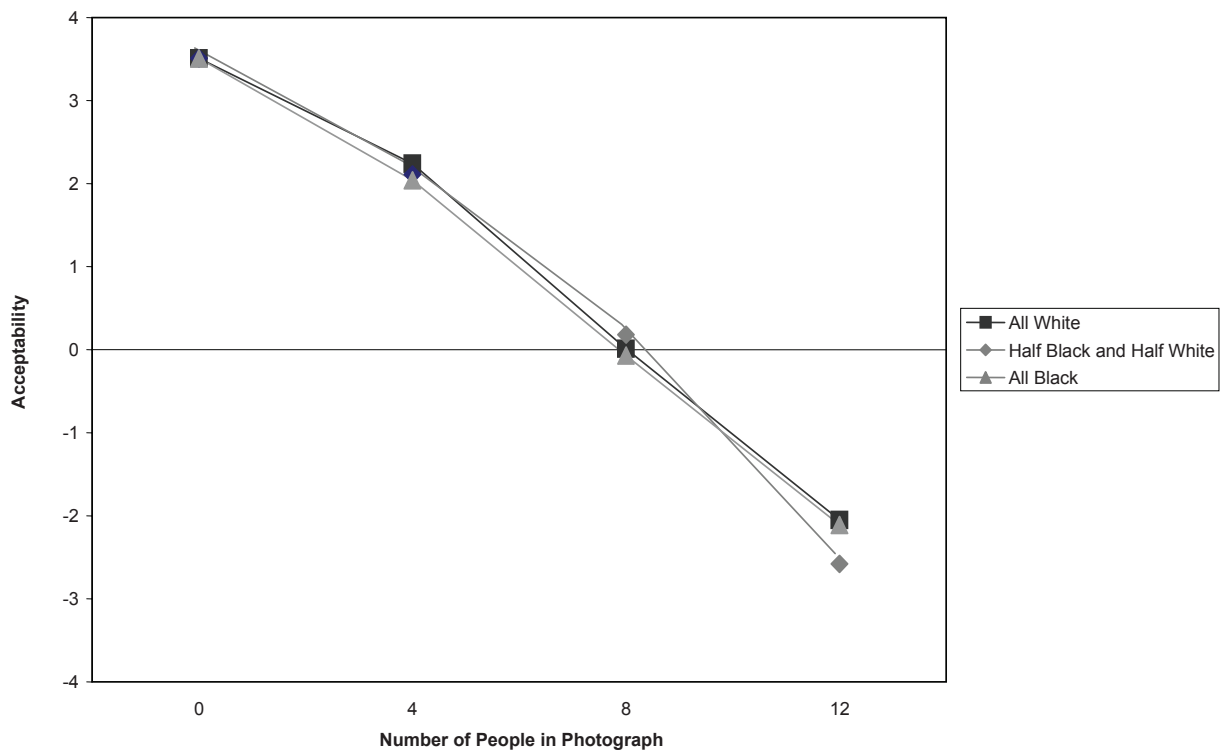


Figure 1.—Social norm curve depicting respondents' acceptability rating for each study photograph.

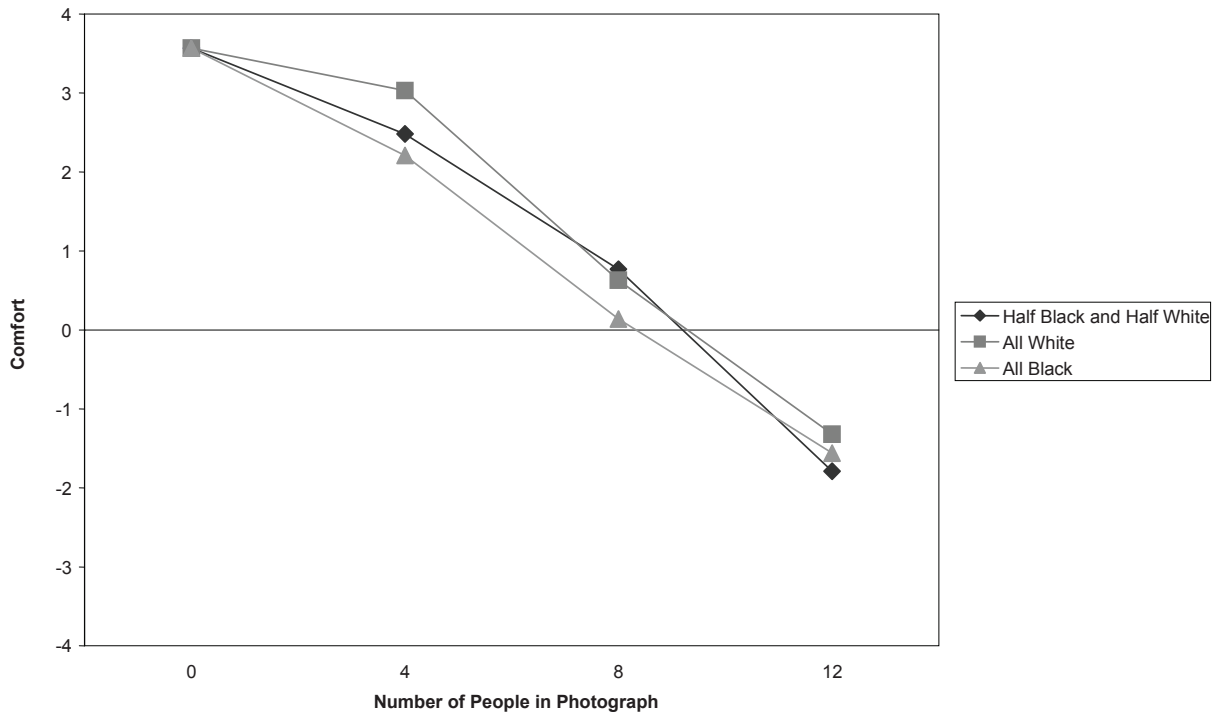


Figure 2.—Social norm curve depicting respondents' comfort level for each study photograph.

Table 2.—The extent to which respondents agree or disagreed with reasons for why racial/ethnic minorities may not visit national parks.

	Disagree (-2)	Somewhat disagree (-1)	Don't know/not sure (0)	Somewhat agree (1)	Agree (2)	Mean
a. National parks are located too far from racial/ethnic minority populations	26.4	15.3	22.2	29.2	6.9	-0.3
b. Entrance fees are too high and tend to discriminate against racial/ethnic minorities	55.6	18.1	16.7	9.7	0.0	-1.2
c. Visiting national parks is too expensive for racial/ethnic minorities	48.6	22.2	15.3	11.1	2.8	-1.0
d. Racial/ethnic minorities do not feel comfortable in national parks because of discrimination	29.2	18.1	38.9	12.5	1.4	-0.6
e. National parks do not address the history and culture of racial/ethnic minorities	26.4	18.1	30.6	16.7	8.3	-0.4

and an additional 22.2 percent reported that they simply did not know.

Respondents were also asked the extent to which they agreed or disagreed with reasons why racial/ethnic minorities may not visit national parks. A five-point response scale was used that ranged from -2 (disagree) to +2 (agree). The questionnaire provided five reasons: 1) national parks are located too far from racial/ethnic minority populations; 2) entrance fees are too high and tend to discriminate against racial/ethnic minorities; 3) visiting national parks is too expensive for racial/ethnic minorities; 4) racial/ethnic minorities do not feel comfortable in national parks because of discrimination; and 5) national parks do not address the history and culture of racial/ethnic minorities. Table 2 shows the study responses. A majority of respondents disagreed that entrance fees discouraged racial/ethnic minorities from visiting national parks and that visiting national parks is too expensive for racial/ethnic minorities. A plurality of respondents disagreed with the other three reasons included in the questionnaire.

Respondents were also asked the extent to which they supported potential management actions to attract more visitors from minority racial/ethnic groups. The survey included the following management actions: 1) establish national parks closer to minority racial/ethnic group populations; 2) lower entrance fees to national parks; 3) lower the costs of visiting national parks (e.g., lower prices for campgrounds, hotels); 4) hire more rangers/employees representing racial/ethnic minority groups; and 5) establish more parks that address the history and culture of racial/ethnic minority groups. Respondents were asked to rate the degree to which they supported or opposed each management action using a response scale of -2 (strongly oppose) to +2 (strongly support). Table 3 shows the responses to each management action. A majority of respondents supported all of the management actions with the exception of establishing national parks closer to racial/ethnic minority populations. However, there was a large degree of uncertainty over these management actions with a relatively substantial percentage of respondents reporting being “neutral” about all five management actions.

Table 3.—The extent to which respondents support potential management actions to attract more visitors from minority racial/ethnic groups.

	Strongly oppose (-2)	Oppose (-1)	Neutral (0)	Support (1)	Strongly support (2)	Mean
a. Establish national parks closer to minority racial/ethnic group populations	4.3	10.0	41.4	27.1	17.1	0.43
b. Lower entrance fees to national parks	5.7	15.7	21.4	34.3	22.9	0.53
c. Lower the costs of visiting national parks (e.g., lower prices for campgrounds, hotels)	5.7	8.6	27.1	44.3	14.3	0.53
d. Hire more rangers/employees representing racial/ethnic minority groups	1.4	2.9	30.0	47.1	18.6	0.79
e. Establish more parks that address the history and culture of racial/ethnic minority groups	1.4	5.7	20.0	41.4	31.4	0.96

6.0 Discussion

Study findings suggest some potential evidence of racial bias or discrimination in national parks. While there were no differences in the “acceptability” of study photographs based on the racial composition of visitors shown, there were some apparent differences in “comfort” ratings based on racial composition of visitors. In the case of the latter, study photographs showing all black visitors were rated lower than study photographs showing all white visitors. It is important to note that all respondents to the survey were white.

Study findings also suggest that most respondents were aware of the fact that national parks are visited less often by racial/ethnic minorities than by whites. However, a large minority of respondents were unaware of this issue. Many respondents were skeptical about the reasons presented in the questionnaire (and derived from the literature) to explain why racial/ethnic minorities are substantially under-represented in the national parks,

but most respondents generally supported proposed management actions designed to remedy this issue.

It should be emphasized that administration of this survey is considered a pilot project. The sample size is quite low which inhibits our ability to conduct appropriate statistical tests. Moreover, the sample is comprised of students, not park visitors. All respondents were white. Furthermore, respondents were students in a course focused on race and culture as it applies to environmental and natural resource issues which may have sensitized respondents to the issues explored in this study.

Clearly, more research is warranted on this topic. Our intention is to work with colleagues at the University of Florida and Arizona State University to arrange for administration of the survey to a more racially diverse group of students. After this initial phase of research, we would like to administer the survey to visitors at selected national parks.

7.0 Citations

- Dwyer, J., and Hutchison, R. 1990. **Outdoor recreation participation and preferences by Black and White Chicago households.** Social Science and Natural Resource Recreation Management. Boulder, CO: Westview Press. 49-67.
- Dwyer, J., and Gobster, P. 1992. **Black/White outdoor recreation preferences and participation: Illinois State Parks.** Proceedings of the 1991 Northeastern Recreation Research Symposium. USDA Forest Service, Gen. Tech. Rep. NE-160: 20-24.
- Dwyer, J. 1993. **Outdoor recreation participation: An update on blacks, whites, Hispanics, and Asians in Illinois.** Managing Urban and High-Use Recreation Settings. USDA Forest Service, Gen. Tech. Rep. NC-163: 119-21.
- Floyd, M. 1999. **Race, ethnicity and use of the National Park System.** Social Science Research Review. 1(2): 1-23.
- Hutchinson, R. 1987. **Ethnicity and urban recreation: Whites, Blacks, and Hispanics in Chicago's public parks.** Journal of Leisure Research. 19: 205-222.
- Manning, R.E. 1999. **Studies in Outdoor Recreation: Search and Research for Satisfaction (second ed.).** Corvallis: Oregon State University Press.
- Manning, R. and Freimund, W. 2004. **Use of visual research methods to measure standards of quality for parks and outdoor recreation.** Journal of Leisure Research. 36(4): 552-579.
- Manning, R., Lime, D. and Freimund, W. 1996. **Crowding norms at frontcountry sites: A visual approach to setting standard of quality.** Leisure Sciences. 18(1): 39-59.
- Meeker, J.W., Woods, W.K. and Lucas, W. 1973. **Red, white, and black in the National Parks.** The North American Review.
- Mueller, E., and Gurin, G. 1962. **Participation in outdoor recreation: Factors affecting demand among American adults:** Outdoor Recreation Resources Review Commission study Report 20. Washington, DC: US Government Printing Office.
- Murdock, S.H. 1995. **An America challenged: Population change and the future of the Untied States.** Boulder, CO: Westview Press.
- Solop, F.I., Hagen, K.K. and Ostergren, D. 2003. **Ethnic and racial diversity of national park system visitors and non-visitors technical report.** NPS Social Science Program, Comprehensive Survey of American Public, Diversity Report.
- U.S. Census Results. 2000. <http://www.census.gov/main/www/cen2000.html>.
- Washburne, R.F. 1978. **Black under-participation in wildland recreation: Alternative explanations.** Leisure Science. 1: 175-189.
- West, P. 1989. **Urban region parks and Black minorities: Subculture, marginality, and interracial relations in park use in the Detroit metropolitan area.** Culture, Conflict, and Communication in the Wildland-Urban Interface. Boulder, Co: Westview Press, 109-115.

PERCEIVED OPPORTUNITIES AND CONSTRAINTS ON PARTICIPATION IN A MASSACHUSETTS YOUTH HUNT

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Abstract

The Massachusetts Division of Fisheries and Wildlife sponsors about 70 basic hunter education courses, serving an average of 2,700 students each year, of which more than 400 are 15- to 17-year-old minors. This study examined parent/guardian and youth participant attitudes toward a special youth hunt in Massachusetts and constraints toward participating in such a hunt. The study objectives were to: 1) determine the opportunities that would be important to both parents and youth for youth to participate in a specialized youth hunt, and concomitant differences in those perceived opportunities; 2) determine the extent of participation in hunting and shooting activities by both parents and youth who participated in the programs; and 3) examine the perceived constraints on youth in participating in hunting activities and the youth hunts. A total of 374 questionnaires were completed after three mailings. Because of the 30 percent response rate, a random sample of 150 subjects was selected for a short telephone survey from the 863 youth and parents who did not return a completed questionnaire, to test for non-response bias. The respondents indicated that parents and youth differed in their perceptions of opportunities and activities important in a youth hunt. An examination of the extent of participation in hunting and shooting activities by parents and the youth revealed similar patterns in hunting various game species. There were few

social constraints on youth participating in hunting, but time constraints as a result of school, work, and sports prevented youth from hunting as much as they would like. Similarly, non-participation in a youth hunt was a result of a lack of time and opportunity rather than a result of social constraints. Parents and their children agreed on several points on what opportunities are important to them to be offered in a specialized youth hunt that could prove helpful to the Massachusetts Division of Fisheries and Wildlife and local sportsmen's clubs in developing and implementing a specialized youth hunt program.

1.0 Introduction

A fundamental concern of wildlife management agencies at all levels in the United States is that their constituency base, the population of hunters, has been declining in recent years (e.g. Miller and Vaske 2003). Hunter decline is related to several areas of concern: operating revenue issues, economic impact issues, overall support for hunting and hunting-related wildlife management practices, and others (Mehmood et al. 2003). Subsequently, developing programs to support initial and sustained participation in hunting activities and understanding the factors that influence hunting participation such as constraints to involvement in hunting are of major interest to wildlife management agencies.

Two areas that have received attention are those related to hunter education and youth hunting activities. Both program areas emphasize socialization into proper hunting and firearm handling practices as well as introduction to the broader hunting community. The Massachusetts Division of Fisheries and Wildlife and the Office of Environmental Law Enforcement have sponsored hunter education courses since 1954 (Chaplin 1954) and youth-oriented hunts since 1969 (Pollack 1969). The objectives of this study were to examine selected elements of these programs, specifically: (1) describe perceived opportunities available to both parents and youth of a youth hunt; (2) determine the extent of participation in hunting and shooting activities of both parents and youth who participated in the programs;

and (3) examine the perceived constraints on youth in participating in hunting and the youth hunts.

2.0 Methods

A 12-page self-administered questionnaire booklet was developed that asked a battery of questions of the parent and youth about: 1) their satisfaction with the hunter education course; 2) participation in hunting and shooting activities; 3) opportunities that they perceived important in a specialized youth hunt; 4) parental concerns about participation in, and specialized training they would like their child to receive prior to engaging in a youth hunt; 5) socio-demographic questions of both parents and youth; 6) constraints on hunting related activities; and 7) questions on youth on employment and other time commitments that could be used to explore constraints on participating in a specialized hunt or harvesting activities

The Massachusetts Division of Fisheries and Wildlife provided a list of 1280 youth, 15 to 17 years old, who had completed hunter education over 2001 through 2003; the list included youth and parent names and addresses. Using Dillman's Total Design Method, we mailed parents and youth three survey waves of the questionnaire and a postcard reminder over a two-and-a-half-month period.

After accounting for undeliverable questionnaires and refusals an effective response rate of 31 percent (or 374 parent and youth respondents) was achieved. To check on non-response bias, a randomized sub-sample of 150 households was drawn from the 863 non-respondent parents and youth. We were only able to obtain current telephone numbers for 64, who were telephoned and questioned with a reduced set of questions.

The results from the telephone survey were compared to five sub-samples randomly selected from the 374 completed questionnaires. No response bias was detected for 20 of 21 questions asked of parents and on 33 of 35 questions asked of youth. The results from the telephone survey were compared to five sub-samples randomly selected from the 374 completed questionnaires. Among parents, non-respondents were more likely to answer "yes" to the question "Do you hunt?" than were those who returned the questionnaire. In three of the five sub-samples, there was a statistically significant difference

between the two groups (Fisher's exact test $< .05$). Non-response bias was not apparent in any other of the 20 variables asked in the telephone follow-up.

Among youth, non-respondents were more likely to have participated in hunting-related activities as much as they liked. All five sub-samples of the respondents were statistically significantly different from the non-respondents (Fisher's exact test $p < .05$). Compared to all five sub-samples, non-respondents were also more likely to have been invited to participate in the Essex County League upland or waterfowl youth hunt ($p < .05$). Non-response bias was not observed in any of the other 33 variables.

3.0 Results

The average age of parents was 46.9 years, they were primarily male (84.9%), and 84.2 percent were currently married. Sixty-two percent of parental respondents had some college, 98.3 percent were non-Hispanic Caucasians, 81 percent were employed full-time, and 40.7 percent had incomes over \$75,000. As a sample they generally had less ethnic diversity, were a little better educated, and a larger percentage of the respondent households had higher incomes than the general Massachusetts' households.

The mean age of respondent youth was 17.3 years, 90.2 percent were male, 73 percent were in high school and 22.6 percent were either in college or working; 57.8 percent of the youth sample reported being employed for a median of 20 hours per week

3.1 Opportunities desired in a specialized youth hunt

Both parents and youths were asked a series of questions seeking to discover what opportunities are important to them to be offered in a specialized youth hunt (see Table 1). Parents and youths agreed on several points. Among the most important opportunities to both groups are the opportunities to learn how to hunt and find game with others, to learn from an experienced hunter, and to apply what was learned in the hunter education course. The single most important issue for the parents is the opportunity "to learn about guns and hunting safety," with 95.7 percent responding that it is "important"

Table 1.—Extent of parents’ (P) and youths’ (Y) agreement with statements concerning the importance that particular opportunities be offered for participation in a youth hunt.

	<i>N</i>	Very Important (%)	Important (%)	Neutral (%)	Unimportant (%)	Not At All Important (%)	Sig <i>d</i> (ES)
To learn about hunting with a shotgun	P368 Y329	51.6 27.7	36.4 33.7	9.8 25.5	1.1 6.1	1.1 7.0	< .001 <i>d</i> = 0.85
To learn proper field shooting techniques	P367 Y329	58.6 31.9	33.5 43.2	6.3 14.9	0.8 4.3	0.8 5.8	< .001 <i>d</i> = 0.79
To learn to hunt with dogs	P367 Y329	16.9 20.1	31.1 32.5	37.6 31.0	9.5 8.2	4.9 8.2	n.s.
To learn how to clean game	P367 Y327	41.1 31.8	40.6 37.9	13.9 20.8	2.7 4.3	1.6 5.2	< .001 <i>d</i> = 0.34
To learn how to cook game	P363 Y329	20.4 23.4	37.5 32.5	30.9 28.0	8.0 9.4	3.3 6.7	n.s.
To learn from an experienced hunter	P368 Y329	61.4 44.4	30.7 34.3	5.4 13.7	1.4 3.0	1. 4.6	< .001. <i>d</i> = 0.52
To learn how to hunt/find game with others	P366 Y330	48.6 33.6	40.7 45.8	7.9 13.6	0.8 2.1	1.9 4.8	< .001 <i>d</i> = 0.39
To learn about guns and hunting safety	P369 Y328	78.9 43.3	16.8 27.7	3.0 18.9	0.5 4.3	0.8 5.8	< .001 <i>d</i> = 1.18
To apply what was learned in the hunter education course in the field	P368 Y328	63.6 36.9	29.6 38.4	4.6 18.0	1.1 1.2	1. 5.5	< .001. <i>d</i> = 0.73
To learn how to identify game in the field	P368 Y329	60.9 36.2	30.7 38.3	6.3 16.7	0.8 3.0	1.4 5.8	< .001 <i>d</i> = 0.69

d (Effect Size) of 0.20 is a minimal relationship, 0.50 is considered as a typical relationship, and 0.80+ is a substantial relationship, (see Vaske, Gliner & Morgan 2002)

or “very important.” Youths reported that “to be able to shoot in a hunting situation” was the second most important opportunity (parents were not asked this questions). Both groups found the opportunities to learn to hunt with dogs and to learn how to clean and cook game much less important than the other opportunities.

Parents and youth differed statistically, however, on eight of ten opportunities on the strength of the importance. In every opportunity in which there is a difference, the parent respondents rated it higher in importance than the youth, and based on the effect size the difference was moderate (typical) to substantial.

To further examine if youth and parents differed on the perceived opportunities, Principle Components analysis

was employed to see if there was an underlying set of components or sub-dimensions of such opportunities. The analysis resulted in two sub-components of the perceived opportunities in a youth hunt, accounting for 71.7 percent of the variance (see Table 2). A Field Experience component was identified by ratings of importance on opportunities for hunting with a shotgun, learn field shooting techniques, learn from experienced hunters, learn how to hunt/fid game, gun and hunting safety, apply what was learned in the hunter education course, and the opportunity to learn how to identify game in the field. Opportunities to learn to hunt with dogs, learn how to clean game, and learn how to cook game in a youth hunt were ratings that loaded on a second component which was labeled as a Periphery Activity component.

Table 2.—Sub-components of the importance that particular opportunities be offered for participation in a youth hunt.

	Field Experience (Comp1)	Periphery Activity (Comp 2)
To learn about hunting with a shotgun	.849	
To learn proper field shooting techniques	.854	
To learn from an experienced hunter	.776	
To learn how to hunt/find game with others	.707	
To learn about guns and hunting safety	.894	
To apply what was learned in the hunter education course in the field	.826	
To learn how to identify game in the field	.731	
To learn to hunt with dogs		.798
To learn how to clean game		.680
To learn how to cook game		.805
Cronbach's Alpha	.934	.756

Summative scales for each component were developed and an independent sample t-test indicated a difference between youth and parents on the Field Experience scale ($t = -8.874$, $p < .001$, $d = 0.91$), parents were more likely to see Field Experiences as more important than youth. There was no difference between youth and parents on the Periphery Activity scale ($t = -1.798$, $p > .05$)

3.2 Extent of Participation in Hunting and Shooting Activities

Both parents and youth were asked about the number of times they engaged in hunting and shooting activities over the past year; parents were specifically asked how frequently they participated with their son or daughter who had completed the hunter education course (see Table 3). Target shooting and deer hunting garnered the most frequent participation reported by parents, with 68.7 percent of parents saying they had participated in target shooting with their child and 62.3 percent participating with their child in deer hunting.

For all other hunting and shooting activities listed, more parents reported not participating than having participated with their child (e.g., 39% of parents indicated they had participated in upland bird hunting

compared to 61% who said they had not participated with their child in this activity).

Youth were asked the extent of their participation in hunting and shooting activities, a similar pattern to that of parental participation emerged. Almost three-fourths (73%) of youth respondents had deer hunted since completing the hunter education course, 86.1 percent had participated in target shooting, 51.8 percent engaged in archery target shooting, and slightly less than half of the youth (47.7 %) reported skeet or trap shooting. Less than half of the youth respondents (42.5 %) had participated in small game hunting, 41.1 percent reported hunting upland birds, about 30 percent of youth said they archery hunted, though they were not asked about specific species, 27.4 percent engaged in turkey hunting, and 23.4 percent hunted waterfowl

We also asked youth the extent of their participation in activities related to their hunter education course and periphery to hunting and shooting activities, and as can be seen in Table 5, over 82.9 percent of youth had eaten a meal of wild game and 68.1 percent had a meal from wild fish. However, only 64.6 percent had actually

Table 3.—Parent participation in hunting/shooting activities with child who attended hunter education.

	<i>N</i>	> 10 Times/ Year (%)	5 to 10 Times/Year (%)	< 5 Times/ Year (%)	I Have Not Participated (%)
Upland bird hunting (pheasant, grouse)	359	3.9	12.0	23.1	61.0
Waterfowl hunting (ducks, geese)	356	3.6	7.5	23.8	67.0
Small game hunting (rabbits, squirrel)	358	0.6	7.0	16.8	75.7
Turkey hunting	358	0.6	7.0	16.8	75.7
Deer hunting	369	14.4	16.3	32.0	37.4
Target shooting with a rifle	364	18.1	20.9	29.7	31.3
Archery shooting	360	12.5	9.2	15.8	62.5
Archery hunting	352	9.7	4.8	8.2	77.3
Skeet or trap shooting	358	8.9	5.9	20.9	64.2

Table 4.—Youths' participation in hunting activities since attending hunter education course.

	<i>N</i>	> 10 Times/ Year (%)	5 to 10 Times/Year (%)	< 5 Times/ Year (%)	I Have Not Participated (%)
Upland bird hunting (pheasant, grouse)	358	5.9	14.5	20.7	58.9
Waterfowl hunting (ducks, geese)	350	7.7	5.7	10.0	76.6
Small game hunting (rabbits, squirrel)	351	7.7	8.5	26.2	57.5
Turkey hunting	347	3.7	8.4	15.3	72.6
Deer hunting	352	19.9	20.5	32.7	27.0
Target shooting	360	32.2	24.7	29.2	13.9
Archery shooting	357	19.9	11.8	20.2	48.2
Archery hunting	355	13.2	5.6	11.8	69.3
Skeet or trap shooting	354	10.7	11.3	25.7	52.3

cleaned or prepared wild game to eat and 61.3 percent had cleaned or prepared wild fish.

3.3 Constraints

To assess time commitments of youth we asked a series of questions about their activities in school and the community:

- 54 percent of youth indicated they were involved in team sports,
- 19.9 percent said they were involved in club activities,
- 44 percent say they were involved in non-school related social activities

Table 5.—Youths' participation in hunting activities since attending hunter education course.

	<i>N</i>	> 10 Times/ Year (%)	5 to 10 Times/Year (%)	< 5 Times/ Year (%)	I Have Not Participated (%)
Had a meal from wild game	356	31.2	21.3	30.3	17.1
Cleaned or prepared wild game to eat	359	11.7	14.8	28.1	45.4
Had a meal from wild fish	360	17.5	16.7	33.9	31.9
Cleaned or prepared wild fish to eat	359	15.6	15.0	30.6	38.7
Wildlife viewing/watching	356	28.9	24.2	28.9	18.0

- 26 percent report they are involved in “other” activities such as snowmobiling, four-wheeling, Boy Scouts, etc.
- youth reported spending a median of 40 hours on these activities over the fall months, during the prime hunting seasons
- time commitments with friends averaged 19.14 hours per week.

In order to ascertain the ability of youth to access hunting activities we asked them about whether they had a driver's license and a car. Over 73 percent (73.6%) said they had a driver's license and 64.7 percent indicated they had a car.

The youth were then asked questions concerning their participation in hunting-related activities since they attended a hunter education course. Those who reported not having participated as much as they would have liked (62.8%) were asked what prevented them from doing so (see Table 6). “School” was the most common reason, with 81 percent saying it cut into their hunting-related activities. Work was an obstacle for 54.5 percent. Sports and hobbies were an obstacle for 30 percent; a lack of people to go with and a lack of opportunities were problems for 28.3 percent and 23.9 percent, respectively. Lack of interest, the disapproval of family or friends, and a lack of an understanding of fish and wildlife laws were problems for less than two percent of the respondents.

Out of the 374 youths who responded to the questionnaire, only 20 had ever been invited to a

specialized youth hunt. Of this 20, 14 decided not to participate in the hunt. These 14 youths were asked why they did not attend the youth hunt. Ten reported that a lack of time was a reason for not attending the youth hunt. Four responded that they had no one to go with and four said they lacked the equipment.

Generally, constraints were associated with the lack of time, which are structural in nature; or a lack of someone to go with or lack of opportunity, reflecting isolation (Crawford et al. 1991). Social constraints such as disapproval of friends or family affected few youth respondents.

4.0 Conclusions and Implications

Youth hunts are perceived by both youth and parents as providing opportunity for youth to be properly socialized into the overall hunting experience: proper gun handling, field shooting techniques, hunter safety were rated important to very important by parents and youth alike. Other elements of the field experience such as identifying game, learning how to hunt with others were also highly rated. Results also show that parents rated the youth hunt opportunity as more important than the ratings by youth for providing proper socialization into the field hunting experience. The commonalities among parents and youth provide an opportunity for Massachusetts Division of Fisheries and Wildlife to develop hunting and shooting opportunities that include both parents and youth, an opportunity that they have begun to implement with their upland game youth hunt initiative.

Table 6.—What has prevented youths from participating as much as they would like in hunting-related activities.

	N=226
School	81.0 %
Work	54.5 %
Sports or hobbies	30.1 %
Not having people to go with	28.3 %
Lack of opportunities	23.9 %
Lack of transportation	11.5 %
Other	9.7 %
Don't have the needed equipment	9.7 %
Can't afford to go	8.4 %
Don't know where to hunt	8.4 %
Difficulty getting a firearms permit	6.2 %
Family disapproves	1.8 %
Friends disapprove	1.3 %
Lack of interest	1.3 %
Don't understand fish and wildlife laws	0.4 %

Deer hunting and target shooting are the most frequently participated in by both parents and youth alike. Although over 62 percent of parents hunt deer, most hunted five times per year or less. What should be noted is the amount of non-participation in hunting activity by both parents and youth. About 76 percent of parents had not hunted small game, turkey, or archery the past year. Youth participation/non-participation generally followed the adult pattern. As early as 1969, Meyersohn (1969) and Burch (1969) noted that influences on outdoor recreation behavior may be more appropriately placed within groups rather than within individuals. Initiation into hunting for male adolescents is related to older, male family members who hunt (O'Leary et al. 1987; Bissell et al. 1998; Stedman & Heberlein 2001). The high rates on nonparticipation suggest that youth are not being socialized into the hunting culture by their families and will likely carry this forward to adulthood. Theory suggests that declining hunting participation may be related to value shift in modern societies (Manfredo et al. 2003). Some suggest that wildlife management agencies

can do very little to abate this shift (Mehmood et al. 2003; Manfredo et al. 2003). However, policy means can be developed to help retain the existing hunting population and ensure that hunting continues to be part of the social fabric of the community (Mehmood et al. 2003).

Constraints on leisure have been categorized as structural, interpersonal, and intrapersonal. (Crawford et al. 1991). Structural constraints include such things as time, money, health that negatively influence participation; interpersonal constraints involve family obligations, lack of leisure partners, and others; intrapersonal constraints suggest such factors as low self esteem that limit participation (Shogan 2002). Most of the important constraints on youth participation in hunting activities can be classified as structural: school, work, other sports and hobbies. Research suggests that such constraints can be negotiated (Jackson and Rucks 1995), and that such negotiations may have to occur within a particular category, as constraints may be sequential (Nadirova & Jackson 2000). Youth nonparticipation in hunting also includes interpersonal constraints, related to lack of family support and involvement in hunting throughout the year, suggesting that encouraging parental involvement with specialized youth hunts and providing programs to enhance skills among hunters of familial units may encourage youth and older family members to continue participating.

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5.0 Citations

- Bissell, S.J., Duda, M.D., and Young, K.C. 1998. **Recent studies on hunting and fishing participation in the United States.** Human Dimensions of Wildlife. 3(1): 75-80.
- Burch, W.R. 1969. **The social circles of leisure: Competing explanations.** Journal of Leisure Research. 1(2): 125-147.
- Chaplin, B.R. 1954. **Massachusetts Wildlife.** Nov. 1954.

- Crawford, D.W., Jackson, E.L., and Godbey, G. 1991. **A hierarchical model of leisure constraints.** Leisure Sciences. 13: 309-320.
- Jackson, E.L., and Rucks, V.C. 1995. **Negotiation of leisure constraints by junior-high and high-school students: An exploratory study.** Journal of Leisure Research. 27 (1): 85-105.
- Manfredo, M.J., Teel, T.L. and Bright, A.D. 2003. **Why are public values toward wildlife changing?** Human Dimensions of Wildlife, 8, 287-306.
- Mehmood, S., Shang, D. and Armstrong, J. 2003. **Factors associated with declining hunting license sales in Alabama.** Human Dimension of Wildlife. 8: 243-262.
- Meyersohn, R. 1969. **The sociology of leisure in the United States: Introduction and bibliography.** Journal of Leisure Research. 1(1): 53-58.
- Miller, C.A. and Vaske, J.J. 2003. **Individual and situational influences on declining hunter effort in Illinois.** Human Dimensions of Wildlife. 8: 263-276.
- Nadirova, A. and Jackson, E.L. 2000. **Alternative criterion variables against which to assess the impacts of constraints to leisure.** Journal of Leisure Research. 32(4): 396-405.
- O' Leary, J.T., Behrens-Teppe, J., McGuire, F.A., and Dottavio, F.D. 1987. **Age of the first hunting experience: Results from a nationwide recreation survey.** Leisure Sciences. 9: 225-233.
- Pollock, B. 1969. **Massachusetts Wildlife.** Jan. 1969.
- Shogan, D. 2002. **Characterizing constraints of leisure: A Foucaultian analysis of leisure constraints.** Leisure Sciences. 21: 27-38.
- Stedman R.C. and Heberlein, T.A. 2001. **Hunting and rural socialization: Contingent effects of the rural setting on hunting participation.** Rural Sociology. 66(4): 599-617.

Urban Park and Community Forestry: Use and Management

EASEMENT-BASED LAND CONSERVATION AND RECREATIONAL ACCESS IN THE NORTHERN FOREST

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Abstract

New England's northern forest is one of the largest continuously forested areas in the United States. Private landowners control approximately 22 million acres and continue the tradition of allowing public access to private lands. Forest residents and visitors fuel an annual recreation and tourism industry worth \$16 billion, and many of these activities take place on private lands. But, with nearly 3 million acres protected by land trusts, conservation efforts may be affecting traditional recreation access of private land – and, conservation efforts may ultimately affect the region's recreation and tourism economy. This research asks the question, "What are the relationships between land conservation, outdoor recreation opportunities, and community support for conservation?" This study will consider how individuals and organizations in three local communities are affected by conservation decisions, particularly as those decisions related to outdoor recreation access, use, and sustainability on conserved lands.

1.0 Introduction

The land conservation movement continues to gain attention around the nation due to its swift growth and impacts on land use. The first land trust in the United States formed in 1891 (Brewer 2003), and today there are more than 1,500 land trusts around the country that have protected nearly 35 million acres (Land Trust Alliance 2004). In regions with limited public lands,

such as New England, recreational needs have often been fulfilled by access to private lands. With the increasing use of conservation easements to protect private lands from development or to preserve specific conservation values, traditional recreational access to these lands – and the region's overall recreation and tourism economy – could be affected.

This project's study area is the 26-million-acre northern forest, which stretches from New York to Maine (Blackmer 1995). Eighty-five percent of the forest is privately owned (Northern Forest Lands Council 1994), and nearly 3 million acres have been conserved (deGooyer & Capen 2004). While 1 million people call the forest home, about 70 million people live within a day's drive of the forest (Klyza & Trombulak 1994). Timber continues to be a main economic activity, but recreation and tourism have become a \$16 billion-a-year industry, and many of these activities take place on private lands (Northern Forest Lands Council 1994).

With considerable lands held in private ownership, an active conservation movement protecting significant acreages, and the dependence on private lands for recreational opportunities, the northern forest presents a unique setting in which to study the relationships among communities, conservation, and recreation. This research seeks to fulfill two goals: 1) examine the extent to which local conservation activities in three parts of the Northern Forest are affecting access to outdoor recreation opportunities on private lands; and 2) broadly assess the influence of land conservation efforts on local communities. While some authors have begun to examine the benefits of land trusts within communities (see LaPointe 2003) and the effects of conservation on land access (see Kies 2004), there remains a need for research into the relationship between conservation and community.

2.0 Literature Review

The majority of information available about land trusts and land conservation is historical, technical,

or organizational in nature. The Land Trust Alliance (2004) reports continuing and substantial increases in the number of active land trusts and the number of acres protected around the country. Land trusts in the U.S. originated more than a century ago as advocates of land conservation but have since evolved into active participants, as evidenced by the 35 million acres directly protected by those organizations (Brewer 2003; Land Trust Alliance 2004). Legal agreements between private landowners and nonprofit land trusts that determine the future uses of land can in turn affect local communities in various ways, including changes in local tax revenue, public access, resource use, and future development patterns.

Missing from this technical literature is a detailed analysis of the social aspects of land conservation. Issues that deserve attention include conservation's relationship with communities and people, stewardship of conserved properties, and the long-term economic, social, environmental impacts of land conservation. Conservation decisions both large and small affect local communities, and as such, it is important to understand the relationship between conservation and communities, particularly community involvement in conservation and changes to historical community land uses. LaPointe's (2003) study of community benefits from local land trusts offers one of the first insights into the relationships between community and conservation, but further research is needed to more clearly understand the complexities between conservation and community.

The notion of community has received extensive attention in the sociology literature. Within the varied definitions, three commonalities present themselves (Hoffer 1931; Hillary 1955): communities consist of (1) social groups (2) with shared experiences (3) in a geographical location. As Reiss (1966) suggests, the definition of community must encompass the social constructs as well as the physical geography of a place. For example, individual actions and decisions, such as conserving land, combine to affect the both the physical and social landscapes (Schein 1997). Small- and large-scale conservation projects result in changes to allowable land uses, possibly including public access and recreation. Allowable land uses may result in a town or

village defining itself as a farming community, recreation destination, resource-based community, and so on.

Knowledge of social networks further helps in understanding the role of community in conservation efforts. People function in this world as actors in complex networks, and social network models are a way of demonstrating the relationships that people have with others. While most small-scale conservation decisions are made between individual landowners and land trusts, large conservation projects often involve multiple actors including landowners, land trusts, project funders, government agencies, and others. Because the study towns in this research project are small and rural, it is expected that some people will serve communities in several capacities and that people will share similar networks. Fischer (1982) labels the sharing or overlapping of social networks as density, and he terms the number of ways people within networks as relational density or multistrandedness. It is hypothesized that the respondents will reveal dense and multistranded networks within the three northern forest communities. Residents may serve on local committees together, recreate together, perhaps be related, or are connected in some other fashion.

3.0 Methods

Based on the work of deGooyer and Capen (2004), three communities in the northern forest were chosen for study: Island Pond, Vermont; Pittsburg, New Hampshire; and Rangeley, Maine. These communities were chosen because of their socio-economic and demographic similarities, including comparable population size, race, median age, and median income. They were also chosen because of the traditional use of private lands for outdoor recreation opportunities and proximity to large conservation projects.

Each of the communities is also located near conservation easements greater than 100,000 acres. Island Pond is located near the 132,000-acre Champion Lands project. Pittsburg is near the 171,000-acre Connecticut Lakes Headwaters project, and about 111,000 acres of Pingree family lands were conserved near Rangeley, Maine. The projects are similar in that they involved multiple actors, cost millions of dollars, and included public access and

Table 1.—Socio-economic and demographic characteristics of three study towns

	Island Pond, VT	Pittsburg, NH	Rangeley, ME
Population	849	867	1,052
Males:Females	412:437	446:421	527:525
Race (% white)	94.2%	98.3%	99.2%
Median Age	42.1	46	44.5
Median Household Income	\$25,547	\$38,516	\$33,382

Source: US Census Bureau, 2000

Table 2.—Highlights of three conservation projects

	Island Pond, VT	Pittsburg, NH	Rangeley, ME
Project Name	Champion Lands	International Paper	Pingree*
Conserved Acres	132,000 acres	171,000 acres	111,732 acres
Cost	\$26,535,000	\$42,000,000	\$4,134,084
Land Ownership: Federal	26,000 acres	25,000 acres	
State	22,000 acres		
Private	84,000 acres	146,000 acres	111,732 acres

*figures given for Rangeley region of project only

Sources: Vermont Land Trust (1999), Trust for Public Land (2003a), New England Forestry Foundation (2004)

recreation provisions. One major difference, however, is that only the development rights were purchased in the Pingree family project rather than the lands themselves, resulting in a lower project cost.

Purposive sampling is being used to identify interview candidates in the three towns, including local leaders, business people, and recreation groups. Snowball sampling will identify other potential respondents. Data collection through the interview process is under way, and it is expected that about 45 interviews will be conducted across the three towns. When the interviews are completed and transcribed, content analysis will describe the extent that conservation activities are affecting recreational access of private conserved lands. Social network analysis will reveal the relationships that exist among the interviewed groups associated with and affected by conservation.

Each of the three project towns has a history of recreation on private lands, including the lands protected under easement. Analysis of the conservation easement language

will reveal similarities and differences in public access and outdoor recreation opportunities among the three conservation projects. The language can also be compared with respondents' interview transcriptions to see how interview respondents believe those projects are affecting access and recreation opportunities. The interviews will also reveal respondent involvement in the conservation projects, importance of outdoor recreation to local economies, and ownership patterns of local lands.

4.0 Initial Results

4.1 Recreation Patterns in the Northern Forest

As the nation's population continues to increase, so does the demand on natural resources for outdoor recreation opportunities. The 1962 report of the Outdoor Recreation Resources Review Commission predicted a tripling in demand for recreation lands by the year 2000, but that prediction was fulfilled by 1983 (Teasley et al. 1998). With a large percentage of the nation's population living in the East, far from vast expanses of public lands, outdoor recreation on private lands has become an accepted tradition in the Northeast, and the substantial

demand for outdoor recreation opportunities has strong economic implications. Bergstrom and Cordell (1991) found that “[t]he aggregate total net economic value of outdoor recreation in the U.S., represented by the sum total net economic value for the 37 activities considered [...] is approximately \$122 billion annually – which is approximately nine times the value of timber harvested nationwide” (p. 84). Northern forest communities are realizing the economic benefits of tourism and recreation as well. Residents and visitors spend \$16 billion annually on recreation- and tourism-related goods and services (Northern Forest Lands Council 1994).

There has been limited research into the effects of conservation activities on recreational access and use of private lands. Kies’ (2004) study found that a majority of people (76% of respondents, n=52) in the northern forest did not notice a change in recreation opportunities due to conservation efforts. There was, however, a general lack of awareness by respondents about the use of conservation easements in forest protection. The current study will continue to investigate community knowledge of large local conservation easements and recreation behavior on those and other local lands.

In another study, deGooyer and Capen (2004) examined how conservation easements are influencing forest management in the Northern Forest. Their mail survey to randomly selected Northern Forest property owners with easements on their land revealed management objectives, timber operations, and conservation values, among other topics. Sixty-percent of the survey respondents (n=85) indicated recreation as a management priority, and 10 percent indicated recreation as the most important priority. Sixty-seven percent of respondents indicated aesthetics as a management priority, and 12 percent indicated aesthetics as the most important priority. These findings are important to the current study because they demonstrate the importance of recreation and aesthetic values of private property, in particular to landowners, but could possibly be extended to other residents and potential visitors.

Initial interviews in my study have demonstrated that the conserved properties are utilized for their outdoor recreation opportunities. Aside from personal opinions

about which specific activities should or should not be allowed (in particular, motorized recreation), respondents note that traditional use of the lands continues, and they indicate that local communities are economically dependent on recreating visitors to the area.

4.2 Easement Language

Language in the conservation easements shows that the authors acknowledged the importance of recreation and tourism to the social and economic well-being of their region. The easements include specific language regarding public access and use of the properties. Traditional activities such as hunting, trapping, fishing, hiking and wildlife viewing are generally allowed, while use of motorized vehicles is limited or restricted. Snowmobiling is a motorized activity that is generally allowed, while use of ATVs is either restricted to roads or prohibited altogether.

The Champion Lands easement specifies that one of its purposes is “[t]o provide perpetual public, recreational access to the Property for traditional recreational purposes...” (Vermont Land Trust 1999). There is one caveat for activities that utilize corridors, however. For activities including snowmobiling, biking, equestrian use, motor vehicles, and access for disabled persons, corridor managers for each use must be designated prior to the use being allowed for. For example, the statewide snowmobile organization Vermont Association of Snow Travelers has become the designated corridor manager for snowmobile use. According to the easement, the corridor manager assumes “responsibility for maintenance and management” of the corridor open to the public.

In New Hampshire, the Connecticut Lakes Headwaters easement is explicit in describing the importance of public access and recreation: “The Property constitutes the single most important land resource for the tourism and recreational economy of Pittsburg, Coos County, New Hampshire, a community that is dependent on tourism and outdoor recreation for more than half of its economic activity, and the Property is a significant resource for the tourism and recreational economy for the State and region” (Trust for Public Land 2003b). A variety of allowable nonmotorized recreational activities, as well as snowmobiling and motor vehicle use on

designated roads, will continue to provide recreation and tourism opportunities that support the region's economy.

Unlike the other projects, the Pingree lands in Maine are held by the original private owners. However, purchase of the development rights ensures the preservation of the conservation values on the properties. While the easement language does not guarantee public access, one of the project's purposes is to continue the tradition of public recreation opportunities, enjoyed by 90,000 recreationists each year (New England Forestry Foundation 2004).

5.0 Discussion and Conclusions

Interviews are still being conducted to further explore whether or not recreation patterns have been affected by large conservation easements in the three communities. Answers to recreation-related questions posed in initial interviews corroborate background research that describes the historical recreational uses of the properties and the importance of recreation to local economies. Other questions explore respondent participation in local government and community organizations, which locals are involved in recreation issues, and recommendations for other potential interview respondents. Answers to these questions are providing insight into the social networks of community members, particularly how networks are shared and which residents are well-known for their involvement in community issues.

Gaining a greater understanding of how locals with different community roles view conservation activities will be useful for those involved in land conservation projects. This will further the ability of rural planning to account for the possible social impacts of land conservation in addition to the impacts to allowable land uses. The ability of large corporate or family land holdings to continue providing outdoor recreation opportunities is important to residents, visitors, and local economies. The results of this study will be important in understanding the relationships between communities and conservation, including the effects of conservation projects on outdoor recreation, and the networks that exist in rural communities.

Future research could examine the role of land conservation organizations in providing recreation opportunities. Foti and Jacobs (1991) explored this topic during their examination of the role and extent of nonprofit conservation organizations in providing outdoor recreation. They found that conservation organizations provide passive access and use to lands, and they suggest that there is significant potential for other educational and recreational opportunities. With the protection of large properties (greater than 100,000 acres) that have traditionally provided recreational use, the relationship between conservation and community recreation will grow stronger.

6.0 Citations

- Bergstrom, J.C., and Cordell, H.K. 1991. **An Analysis of the Demand for and Value of Outdoor Recreation in the United States.** *Journal of Leisure Research.* 23(1): 67-86.
- Blackmer, S.D. 1995. **Of Wilderness and Commerce: A Historical Overview of the Northern Forest.** *Vermont Law Review.* 19(2): 263-281.
- Brewer, R. 2003. **Conservancy: The Land Trust Movement in America.** Lebanon, NH: University Press of New England.
- deGooyer, K. and Capen, D.E. 2004. **An Analysis of Conservation Easements and Forest Management in New York, Vermont, New Hampshire, and Maine, Final Report.** Burlington, VT: University of Vermont.
- Fischer, C.S. 1982. **To Dwell Among Friends: Personal Networks in Town and City.** The University of Chicago Press, Chicago.
- Foti, P.E. and Jacobs, H.M. 1991. **Local and Regional Land Conservation Organizations: An Emerging Actor in Outdoor Recreation Provision.** *Journal of Park and Recreation Administration.* 9(1): 31-42.
- Hillary, G.A., Jr. 1955. **Definitions of Community: Areas of Agreement.** *Rural Sociology.* 20(2): 111-123.

- Hoffer, C.R. 1931. **Understanding the Community.** The American Journal of Sociology. 36(4): 616-624.
- Kies, W.S. 2004. **Conservation Easements and Recreation in the Northern Forest: Influences on Opportunity and Access.** Master's Thesis, University of Vermont.
- Klyza, C.M. and Trombulak, T.C. 1994. **The Future of the Northern Forest.** Hanover, NH: Middlebury College Press.
- Land Trust Alliance. 2004. **Private Land Conservation in U.S. Soars.** November 18, 2004. Accessed April 20, 2005. <http://www.lta.org/newsroom/pr_111804.htm>
- LaPointe, C. 2003. **Relationship Between Land Trusts and Local Communities: Exploring Ties to People and Place.** Master's Thesis, University of Vermont.
- New England Forestry Foundation. 2004. **The Pingree Forest Easement: A Summary.** Accessed September 15, 2004. <<http://www.newenglandforestry.org/projects/pingreeeasement.asp>>
- Northern Forest Lands Council. 1994. **Finding Common Ground: Conserving the Northern Forest.** Concord, NH: Northern Forest Lands Council.
- Reiss, A.J., Jr. 1966. **The Sociological Study of Communities.** In Perspectives on the American Community, edited by R.L Warren. Chicago: Rand McNally. p. 591-603.
- Schein, R.H. 1997. **The Place of Landscape: A Conceptual Framework for Interpreting an American Scene.** Annals of the Association of American Geographers. 87(4): 660-680.
- Teasley, R.J., Bergstrom, J.C., Cordell, H.K., Zarnoch, S.J., and Gentle, P. 1998. **Private Lands and Outdoor Recreation in the United States.** In Cordell et al., Outdoor Recreation and Wilderness in America. Champaign, IL: Sagamore Publishing. p. 183-218.
- Trust for Public Land. 2003a. **171,000-Acre CT Headwaters Now Protected (NH).** October 10, 2003. Accessed May 26, 2005. <http://www.tpl.org/tier3_cd.cfm?content_item_id=12763&folder_id=258>
- Trust for Public Land. 2003b. **Grant of Conservation Easement.**
- Vermont Land Trust. 1999. **Champion Lands Project: Champion International Working Forest Lands Grant of Public Access Easement.** Accessed January 19, 2005. <<http://www.vlt.org/CIAccessEasement.html>>

URBAN AND COMMUNITY FORESTRY STEWARDSHIP IN BALTIMORE: ASSESSING OPPORTUNITIES USING CONJOINT ANALYSIS

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Abstract

This paper reports a preliminary review of a study of preferences toward individual design attributes for urban environments as well as overall urban-design preferences of residents and stakeholders in the greater Baltimore area. Conjoint techniques will be used to solicit and analyze stakeholder preferences. Personal interviews and focus-group settings would be used to survey preferences and other respondent characteristics and attitudes. Once preference mappings are estimated for individual respondents, segmenting techniques such as discriminant analysis and clustering may be used to identify differences in preference among various groups or types of individuals.

1.0 Introduction

The city of Baltimore is in transition, attempting to rejuvenate itself following a long decline. The population has declined from 1.2 million in the 1950s to approximately 650,000 today. Many industrial sites and residential areas that have been virtually abandoned must be rebuilt. In one area alone, 90 city blocks have been demolished and await reconstruction. This renewal provides an opportunity to create an urban environment that is more aesthetically pleasing and ecologically healthy than the typical urban landscape. It is intended that new environments will attract both business and residents.

The Baltimore Ecosystem Study (BES) focuses on understanding the long-term dynamics effects of society on the ecological structure and function of the Baltimore region and Chesapeake Bay, and how the changing ecological structure of these areas affects the health,

welfare, and economy of the region. The study described here, one component of the much larger BES, will focus on soliciting and understanding the preferences of residents and prospective residents of these new neighborhoods toward their living environment. We are reporting only preliminary methodology in this paper.

2.0 Conjoint Analysis

Conjoint analysis is a technique for measuring psychological judgments. It is used frequently in marketing research to measure consumer preferences (Green et al. 1988). Respondents choose between alternative products or scenarios that display varying levels of selected attributes. The utility of each attribute can be inferred from the respondent's overall evaluations. These partial utilities or part worths indicate the relative importance of each attribute's contribution to overall preference or utility. They can be combined to estimate relative preferences for any combination of attribute levels. Conjoint techniques are well suited for soliciting and analyzing preferences in environmental decisions that frequently entail tradeoffs between costs and benefits that are not represented efficiently in market transactions. For example, Opaluch et al. (1993) described an approach that used paired comparisons to rank potentially noxious facility sites with respect to social impacts. Dennis (1998) used a conjoint ranking survey to solicit public preferences for various levels of timber harvesting, wildlife habitats, hiking trails, snowmobile use, and off-road vehicle access on the Green Mountain National Forest. And Lawson and Manning (2002) used a stated (dichotomous) choice model to analyze tradeoffs among social, resource, and management attributes of the Denali wilderness experience.

Choice experiments can be designed and analyzed in many ways. Respondents may be asked to indicate their preferences by choosing one of two or more options, ranking several options, or assigning numerical ratings to each option. Numerical ratings provide the most information but also place the greatest cognitive

demands on respondents. Green (1974), Green and Srinivasan (1978), Louviere and Woodworth (1983), and Louviere (1988) provide information on experimental design in the context of conjoint analysis.

A random utility model generally is used to explain preferences toward different mixes of attributes that may be used to describe an alternative, in this case an urban landscape. When presented with a set of alternatives, individuals are assumed to make choices that maximize their utility or satisfaction. The utility that the i th individual derives from the j th alternative (U_{ij}) can be represented as:

$$U_{ij} = X'_{ij} + e_{ij} \quad (1)$$

where X_{ij} is a vector of variables, which may include transformations of variables that represent values for each of the four attributes of the j th alternative to the i th individual; β is a vector of unknown parameters; and e_{ij} is a random disturbance, which may reflect unobserved attributes of the alternatives, random choice behavior, or measurement error.

A respondent's utility level (U_{ij}) for each alternative is not observed, but their choice of alternative is. Their choice of alternative, rating, or ranking is observed and is assumed to proxy for his or her underlying utility. McKelvey and Zavoina (1975) developed a polychotomous probit model to analyze ordinal level dependent variables. Other forms of multinomial probit and logit models are available to estimate other forms of choice representations.

3.0 Proposed Application for Baltimore

Interviews with key informants and focus-group surveys will be used to solicit expert and stakeholder knowledge about the study areas and preferences for adoptable urban-design scenarios. Attributes of the design scenarios may include percentage of tree or grass cover, housing density, road layout, or similar environmental features. We will work with urban designers from Columbia University's Graduate School of Architecture, Planning, and Preservation to generate design alternatives and visual components of the survey instrument.

Respondents may include key informants within the community, representatives of interested groups, or any community stakeholder with an interest in urban design. Examples of types of key informants are neighborhood association members, business owners, religious leaders, community gardening and forestry leaders, housing builders, developers, real estate professionals, local government agency representatives, grassroots organization leaders, and educators. Conjoint techniques allow estimation of a structure or map of each respondent's preferences toward individual choice attributes. In turn, these can be examined using discriminant analysis or clustering techniques to determine whether there are preferential differences among various groups or types of individuals. These differences also may be characterized and related to other databases such as PRIZM lifestyle marketing categories and supplemental marketing data based upon respondents' demographic and socioeconomic characteristics and residence location.

To implement this research, we will work with the Parks & People Foundation (P & P), which has extensive experience in organizing and facilitating neighborhood-based meetings and key-informant surveys. P & P will assist in convening and conducting the focus-group surveys. Respondents will be recruited through both targeted and open meetings. On the basis of P & P's experience, we expect to collect 100 to 125 conjoint surveys for each of three study areas within Baltimore.

4.0 Summary

To enhance the potential for a successful revitalization, Baltimore officials are interested in learning more about the preferences of residents and business toward alternate urban landscapes, particularly with respect to environmental and ecological aspects. We plan to conduct a conjoint survey designed to solicit such preferences and provide the means to analyze acceptable tradeoffs among various design attributes, as well as determine the optimal overall design preferred by various types of prospective residents. A clearer understanding of the preferences of prospective residents and business will help create a more attractive urban environment and aid in revitalizing the city while providing both social and economic benefits.

5.0 Citations

- Dennis, D.F. 1998. **Analyzing public inputs to multiple objective decisions on National Forests using conjoint analysis.** *Forest Science*. 24(3): 421-429.
- Green, P.E. 1974. **On the design of choice experiments involving multifactor alternatives.** *Journal of Consumer Research*. 1: 61-68.
- Green, P.E.; Srinivasan, V. 1978. **Conjoint analysis in consumer research: issues and outlook.** *Journal of Consumer Research*. 5: 103-123.
- Green, P.E.; Tull, C.S.; Albaum, G. 1988. **Research for marketing decisions.** 5th ed. Englewood Cliffs, NJ: Prentice Hall. 784 p.
- Lawson, S.R.; Manning, R.E. 2002. **Tradeoffs among social, resource, and management attributes of the Denali wilderness experience: a contextual approach to normative research.** *Leisure Sciences*. 24: 297-312.
- Louviere, J.J. 1988. **Conjoint analysis modelling of stated preferences: a review of theory, methods, recent developments and external validity.** *Journal of Transport Economics and Policy*. 10: 93-119.
- Louviere, J.J.; Woodworth G. 1983. **Design and analysis of simulated consumer choice or allocation experiments: an approach based on aggregate data.** *Journal of Marketing Research*. 20: 350-367.
- McKelvey, R.D.; Zavoina, W. 1975. **A statistical model for the analysis of ordinal level dependent variables.** *Journal of Mathematical Sociology*. 4: 103-120.
- Opaluch, J.J.; Swallow, S.K.; Weaver, T.; Wesselles, C.W.; Wichelns, D. 1993. **Evaluating impacts from noxious facilities: including public preferences in current siting mechanisms.** *Journal of Environmental Economics and Management*. 24: 41-59.

PARKS AND THE GEOGRAPHY OF FEAR

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Abstract

Crime and safety have been issues of interest among park manager for many years. These problems not only effect participation in parks, but also could have a negative impact on the overall experience. Recently, researchers have been integrating programs like geographical information systems with empirical data to study and analyze this problem. This study incorporates different set of data to better understand crime patterns in Gainesville, FL parks. Data from the U.S. Census Bureau, Gainesville Police Department, onsite park survey and Gainesville Parks and Recreation Department were used. Results from the survey indicate that most people feel very safe in Gainesville's parks. GIS analysis and police reports demonstrate a lack of criminal activities among most of the city parks. The importance of this study is to demonstrate what is happening and where park managers and administrators can use this information to improve the areas most affected by crime.

1.0 Introduction and Rationale

Crime continues to be a critical global and national issue. There has been a considerable amount of academic discussion on the effect of crime on visitors and tourists (e.g. Bairner & Shirlow 2003; Pendleton & Thompson 2000; Manning et al. 2001). Concerns about crime and safety affect recreation in a number of ways. In some areas of the United States perceptions of safety and crime are considered to be important constraints for people participating in outdoor leisure activities. The most obvious constraint would be displacement; that is, fear is often one of the principal reasons visitors give for avoiding specific areas.

Over the years a variety of efforts have been made to control crime in parks, including increased police patrols, camera installation, and improved and increased lighting in high risk areas. Developments in technology are being integrated into these efforts to better understand and analyze crime, but crime remains difficult to predict. Some studies (e.g. Bowers & Hirschfield 1999) have shown a pattern between the distribution of criminal activities and the locations of victims and aggressors. Geographical information systems (GIS) have become useful tools in the fight against crime. Police and park managers are using these systems to better understand relations between place, social conditions, and criminal activities (Eckblom 1988).

1.1 Crime

Bairner & Shirlow (2003) showed that crime could act as a constraining factor for any outdoor activity. There are three types of constraints: intrapersonal, interpersonal and structural. Fear of crime is intrapersonal as it prevents us from engaging in our daily activities. Researchers have been emphasizing the importance of crime, especially in highly populated areas. Some researchers have studied the "when" and "where" of criminal activity in an attempt to predict and understand this behavior. Cohen & Felson, (1979) explained the regularities in the distribution of criminal activities and their victims. In this theory three components must be present: an available target, a motivated offender and the lack of a guardian to prevent the crime. If these components regularly occur in an area or community, then crime can be expected. Other researchers (e.g. Wiles 1988) have stated that the type and distribution of demographics and residence have a direct relationship with crime.

1.2 GIS and Crime

The relations between place, social conditns, and criminal activities can be facilitated by systems capable of analyzing spatial data (Eckblom 1988). Geographical information systems (GIS) are tools capable of representing geographic phenomena and their relationships with social structures. GIS is useful as an analytical tool in that it can be utilized to demonstrate spatial relations between disjointed data sources (crime

reports, census information and land use). Pendleton et al. (2000) suggested that criminal occupation and activity within parks may follow a recognized. Spatial representation of this sequence can be represented using GIS.

Today, GIS is being used to help park and recreation managers learn more about their park users. This technology aids in the measurement of specific geographic information of a recreational facility, and description of the spatial distribution of different conditions around that area, including crime (Lee et al. 2004).

2.0 Objectives

The purpose of this study is to identify the locations of both criminal activities and city parks in Gainesville, FL, to determine if crime is affecting use of the parks. Also, it will analyze perceptions of and responses to safety issues in order to better understand the attitudes of park users towards crime and safety.

3.0 Methods

In 2004, about 1,500 onsite interview surveys were collected from randomly selected users of the Gainesville Recreation and Parks Department (GRPD) facilities and programs. Visitors' perceptions of park safety, facilities and service were analyzed, along with demographics (U.S. Census Bureau data) and criminal activity (police crime data) of the surrounding geographic area. ArcGIS was used to spatially analyze the criminal occurrences near the park locations and to represent a relationship between them. Cluster analysis of the parks was performed to differentiate those parks near higher criminal activities.

Descriptive statistical analyses were used to examine park users' responses. Frequencies, means and standard deviations were calculated to obtain gender, age, and area of residence. Analysis of variance (ANOVA) was used to measure differences between the relationships of residents, age groups, gender, and users' park perception.

4.0 Results

Survey responses indicated a near even gender distribution. A majority of those interviewed were

Table 1.—Survey Demographic

Gender	n	%
Male	698	49.6
Female	714	50.6
Total	1412	100

Age (years)	n	%
Under 21	166	11.8
21-40	848	60.3
41-50	177	12.6
51-60	114	8.1
61+	92	7.2
Total	1397	100

Live in Gainesville	n	%
Yes	1091	78
No	307	22
Total	1398	100

between 21 and 40 years old, and a small percentage was over 61 years old. Most of the people interviewed resided within the Gainesville city limits (Table 1).

Participants felt that promoting a healthier lifestyle and increasing life satisfaction were the most important benefits gained from visiting the city parks. Most of the respondents felt that keeping children occupied was the second most important benefit gained from visiting a park (Table 2).

Responses showed that most of the parks and facilities were generally considered safe. Participants generally felt that the parks were safe for themselves and their family. The lack of lighting was the most important reason for GRPD parks being considered unsafe, followed closely by lack of adequate law enforcement (Table 3).

An ANOVA between park perceptions and age groups suggest little discrepancy between participants and their perceptions of parks in Gainesville. Only "overall quality," "park safe for my family," "adequate lighting," and "parks help keep children occupied" showed

Table 2.—Benefits of parks

Park Benefits	Not Important	Slightly Important	Moderately Important	Very Important	Extremely Important	Mean	Std. Dev.
Keeps children occupied	4%	4%	17%	37%	37%	3.98	1.046
Helps reduce crime	4%	9%	22%	40%	26%	3.74	1.059
Strong feeling of community	4%	9%	25%	40%	22%	3.68	1.032
Increases community awareness	5%	11%	33%	34%	18%	3.5	1.049

Table 3.—Respondents' opinions on safety of GRP

Park Attributes	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Dev.
Park is safe for my family	25%	61%	11%	3%	1%	1.9	0.72
Adequate law enforcement	7%	21%	49%	18%	5%	2.9	0.92
Adequate lighting at night	7%	26%	42%	19%	7%	2.9	0.99
Sufficient emergency information	8%	35%	37%	15%	5%	2.7	0.98
Children are safe using the park	18%	56%	19%	6%	1%	2.2	0.83
Condition of the park is safe	18%	66%	13%	3%	0%	2.0	0.68
Park is unsafe at night	6%	21%	44%	21%	8%	3.0	0.99

significant difference between the groups (Table 4). Post-hoc analysis showed that age group 51-60 years differed significantly from the 21-30 years and 31 - 40 years groups in "general safety of the parks." Additionally, the 12-30 years group differed significantly from the 31 - 40 years age group for "parks safe for my family" (Table 5). No other groups showed significant differences. A t-test was performed to find differences between gender, but no significant differences were found between these groups.

5.0 Discussion

Crime distribution statistics imply that most of the criminal activities occur in areas away from the parks. In fact, most of Gainesville's parks have a very low rate of criminal activity (one to five cases for the last 4 years) (Figure 3). There are two parks that exhibit a high number of criminal cases (over 25), but all other are under 25 criminal cases in the last 4 years. Most of the city parks are surrounded by below average income or poor families (less than \$15,000 a year) (Figure 2). For the maps we buffered the area around the city parks to 50 meters to have a better understanding of the

relationship with low-income areas. Results show that in Gainesville there is no relationship between low-income areas and crime rate (Figure 2).

In this study, demographic condition does not seem to be a factor in crime rates. Survey results showed that people feel reasonably safe in parks, and that crime is not a factor preventing people from recreating in public areas. The data suggests that this city park does not attract crime; however, more information is necessary to determine whether the creation of these parks has helped curb crime. One thing we are certain is that people feel very safe going to public parks and that crime or safety is not an issue that prevent them from recreating.

6.0 Conclusion

Data obtained from Gainesville, FL indicates a higher incidence of criminal activity away from the city parks than near the parks, regardless of area demographics. Within this study area, crime seems randomly distributed, with little evidence to suggest any concentration near city parks.

Table 4.—Mean and standard deviation for age group and park perception.

	Park Attributes							
	Park safe for my family		General safety		Adequate lighting		Keep children occupied	
Age	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
21-30	2.0	0.72	1.2	1.30	2.9	0.99	3.7	1.22
31-40	1.8	0.69	1.1	1.24	3.1	0.99	3.8	1.09
41-50	1.9	0.77	1.3	1.69	2.9	0.99	4.2	0.90
51-60	1.9	0.71	1.8	2.52	2.8	0.96	4.2	0.97
61-70	2.0	0.74	1.0	0.82	2.8	0.89	4.0	0.93
Above 70	1.9	0.69	1.1	1.10	2.9	1.13	4.0	1.01

Table 5.—Analysis of variance for age group and park attribute.

Park Attributes		SS	df	MS	F
Overall quality	Between Groups	46.813	5	9.363	
	Within Groups	3420.995	1351	2.532	3.697**
Park safe for my family	Between Groups	7.229	5	1.446	
	Within Groups	704.876	1368	0.515	2.806***
Adequate lighting	Between Groups	15.562	5	3.112	
	Within Groups	1296.026	1329	0.975	3.192**
Keep children occupied	Between Groups	33.218	5	6.644	
	Within Groups	1053.661	993	1.061	6.261***

Reported are only groups with significant difference.

*P < .05, ** P < .01, *** P < .001.

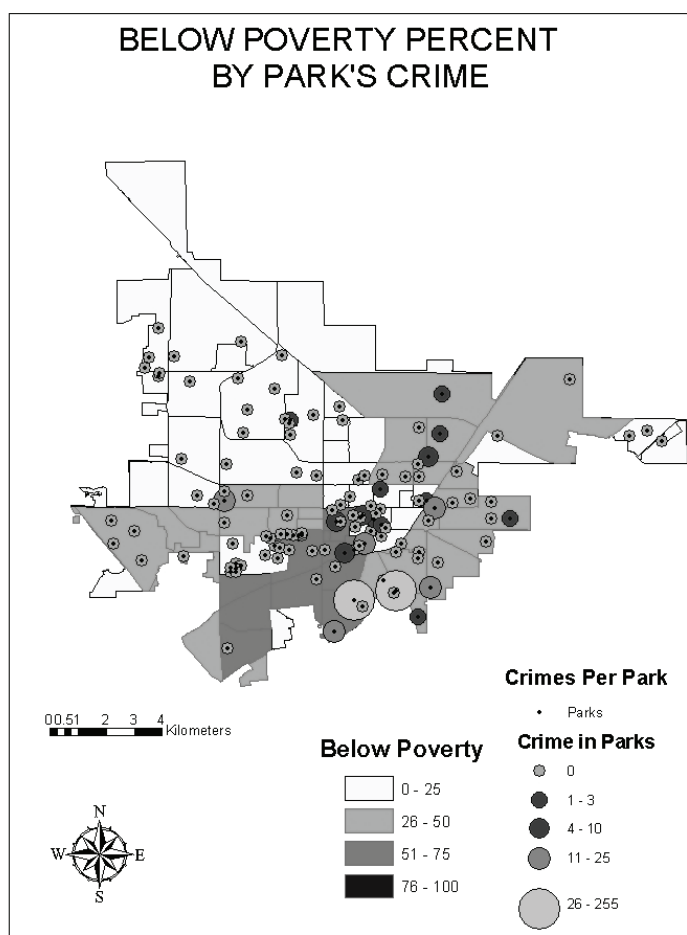


Figure 1.—Map of Number of Crimes versus Percentage of Population below Poverty

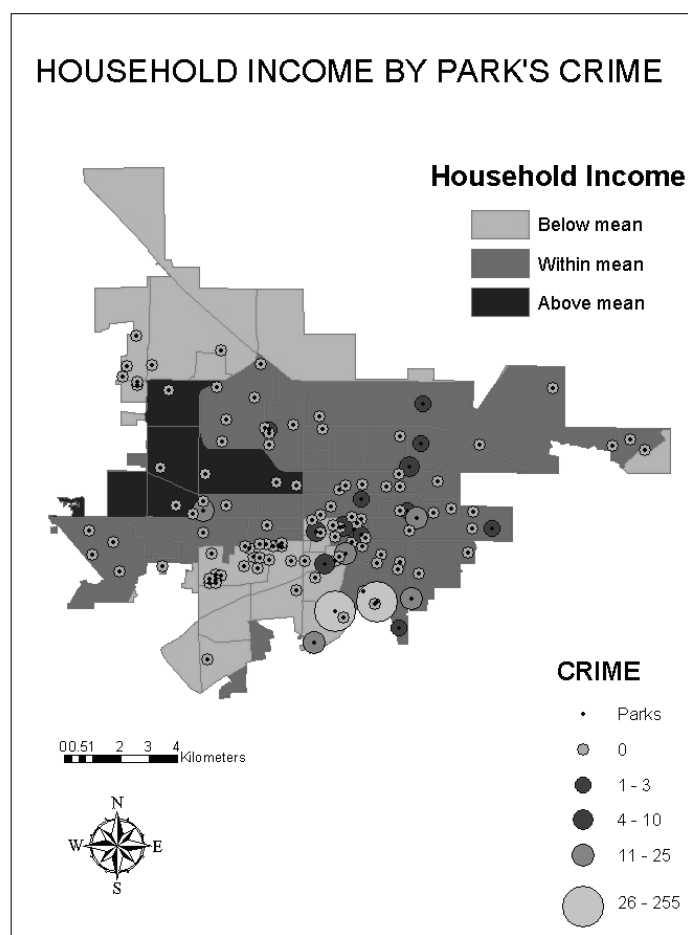


Figure 2.—Map of Number of Crimes versus Average Household Income

According to the results of this study, crime is not a factor constraining people from recreating in city parks, with the majority of respondents indicating feeling very safe within the parks in general.

GIS offers park managers the ability to integrate various data into a holistic planning tool in which valuable information can be disseminated among the recreating public. Park should create a program to work with the police using spatial analysis to monitor criminal activities; this way the public can choose which parks to use or to avoid. Also, this information will give the police a better idea of where most of the criminal activity is, thus allowing a focused collaboration between law enforcement and the city parks department.

7.0 Citations

- Andrews, M. 1997. **Fighting crime in San Diego parks.** Parks & Recreation. 32(7) Last Retrieved May 25, 2005 http://www.findarticles.com/p/articles/mi_m1145/is_n7_v32/ai_19649723?cm_ven=YPI
- Arlinghaus, S.L. 1996. **A path through recent GIS literature.** Geographical Review. 86(1): 101-108.
- Bairner, A. and Shirlow, P. 2003. **When leisure turns to fear: fear, mobility, and ethno-sectarianism in Belfast.** Leisure Studies. 22: 203-221.
- Bowers, K. and Hirschfield, A. 1999. **Exploring links between crime and disadvantage in northwest**

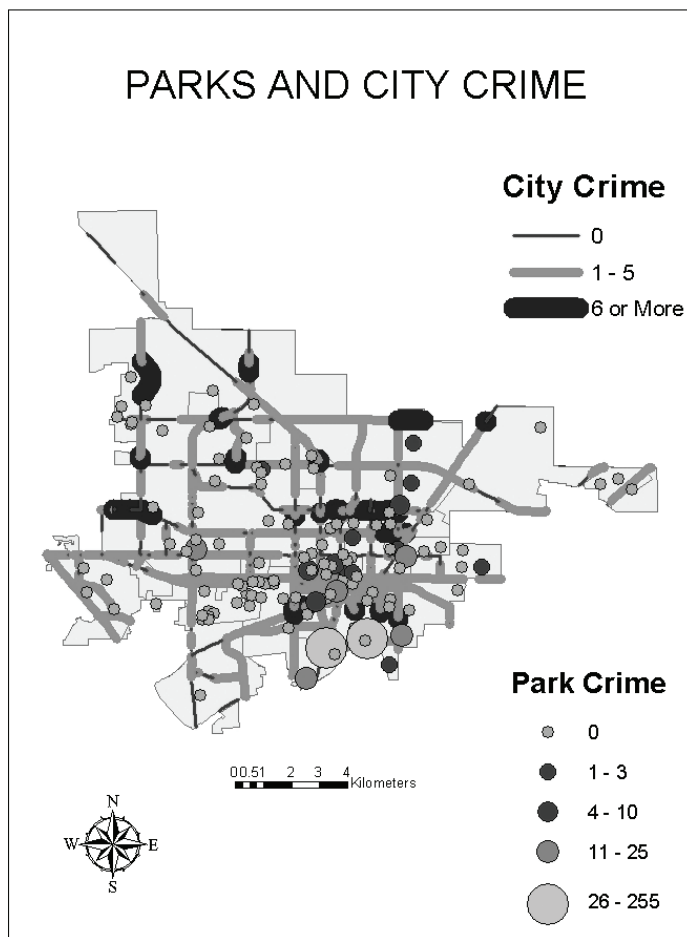


Figure 3.—Map of Number of Crimes versus Percentage of Population below Poverty

England: an analysis using geographical information systems. *Geographical Information Science*. 13(2): 159-184.

Chrisman, N.R. 1999. **What does 'GIS' mean?** *Transactions in GIS*. 3(2): 175-186.

Koskela, H. and Pain, R. 1998. **Revisiting fear and place: women's fear of attack and the built environment.** *Geoforum*. 31: 269-280.

Lee, B. and Graefe, A.R. 2004. **GIS: A tool to locate new park and recreation services.** *Parks & Recreation*. 39(10): 34-41.

Manning, R., Bacon, J, Graefe, A, Kyle, G., Lee, R and Burns, R. 2001. **I never hike alone: security on the Appalachian Trail.** *Parks & Recreation*. 36(7): 50-57.

Messner, S.T. and Blau, R.J. 1987. **Routine leisure activities and rates of crime: A macro-level analysis.** *Social Forces*. 65(4): 1035-1053.

Pendleton, M.R. and Thompson, H.L. 2000. **The criminal career of parks and recreation hotspots.** *Parks & Recreation*. 35(7) http://www.findarticles.com/p/articles/mi_m1145/is_7_35/ai_63973906

Solomon, B. 1948. **Recreation and delinquency.** *Journal of Educational Sociology*. 21(5): 284-290.

Methodology II

METHODOLOGICAL CHALLENGES TO ESTIMATING RECREATION USE OVER A LARGE GEOGRAPHICAL AREA: A CASE STUDY OF 35 TVA RESERVOIRS

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Abstract

The Tennessee Valley Authority (TVA) initiated a study to estimate the changes in aggregate recreation use and associated changes in recreation expenditures within the TVA region for 35 of the reservoirs impacted by proposed changes in system operations. The data needed to develop recreational use estimates, user profiles, and economic impacts for this Programmatic EIS were collected using primary data collection on reservoirs and tailwaters.

This paper focuses on the methodological challenges of collecting data in an efficient and cost-effective manner over a large geographic area from four main user groups: public water access site users, commercial operators providing tours or rental watercraft, patrons of commercial operators, and shoreline property owners. The four main methodological challenges discussed in this paper are: (1) stratification of a system of 35 reservoirs and 29 tailwaters; (2) sample design; (3) survey design; and (4) data collection for public access site users and commercial patrons.

1.0 Introduction

The Tennessee Valley Authority (TVA) operates 49 reservoirs on the Tennessee River System, which extends across seven states. Thirty-five of the reservoirs are impacted by TVA's reservoir operations policy, which guides the daily operations of the Tennessee River System (TVA 2004). In 2001, TVA initiated its Reservoir Operations Study (ROS) to identify whether changes in system operations would produce greater public value. The ROS analyzed a number of different

alternative operating policies to estimate the impacts of those policies on various resources, including recreation. To support the resulting Programmatic Environmental Impact Statement, data were needed to estimate existing recreational use occurring at its projects, and the changes in recreation use and associated changes in recreation expenditures within the TVA region from the proposed changes in system operations. Primary data collection for the study was conducted with four main user groups: public water access site users, commercial operators providing tours or rental watercraft, patrons of commercial operators, and shoreline property owners.

Conducting primary data collection in an efficient, cost-effective manner over a large geographical area is a challenging task. The study area was spread across two time zones, and the study team across three time zones. Methodological challenges fell into four main categories: (1) stratification of a system of 35 reservoirs and 29 tailwaters; (2) sample design; (3) survey design; and (4) data collection for the public access site users and commercial patrons. The challenges associated with the primary data collection, and the resulting implications for future research of this type are discussed in this research paper.

To provide background for the methodological issues, the data collection efforts used for each of the four user groups are briefly described below.

2.0 Primary Data Collection

The data needed to develop recreational use estimates, user profiles and economic impacts were collected using primary data collection on reservoirs and tailwaters. Data collection methods included contact (intercept) surveys, mail surveys, and advance and follow-up telephone surveys.

2.1 Public Water Access Site Users

Contact surveys were administered at a representative sample of public access sites at sampled reservoirs/tailwaters to collect data on recreational users (by

recreational activity) and provide a basis for estimating total recreation use by activity for each reservoir and tailwater area. In addition to counting everyone entering and exiting the site on the sampled data collection day, interviewers intercepted recreationists to collect trip-specific items, such as age, income, group size, primary activity, length of stay, and trip expenditures. Public water access site users were also asked to indicate how their recreational use would change under different reservoir operating conditions.

Sampling and data collection for recreational use at public access sites were conducted using a roving access site survey method (also known as the Bus Route Method) as described in Pollock et al. (1994). For each sampled reservoir and tailwater, all water-based public access sites were mapped and sampled with the assistance of TVA staff based on their level of anticipated use.

The data collection at public access sites was conducted between May 19 and October 19, 2002. Specific data collection days were selected to represent two seasons, summer and fall. Data collection days were also selected to represent three different day types: weekdays, weekends, and holiday weekends. A total of 15 data collection days were selected for Pickwick, Chatuge, Chickmauga, Melton Hill, Kentucky, Gunter'sville, Norris and Tellico reservoirs. A total of 10 data collection days were selected for Blue Ridge, Cherokee, Douglas, Hiwassee, and South Holston because these reservoirs were assumed to have lower recreational use levels.

Contact surveys were completed with 4,644 persons at the sampled reservoirs, or 67 percent of those approached by the interviewers and asked to complete the survey.

2.2 Commercial Operators

This survey was mailed to commercial operators to estimate use levels for recreationists who access the water via marinas, outfitters, and other commercial operations. The type of data collected included recreational use data (number of trips for each activity by month and reservoir/tailwater), as well as perceptions on how the demand for their services would change under different operating conditions.

Prior to the survey mailing, an initial telephone contact was attempted with each of the commercial operators to inform them of the upcoming mail survey. A survey was then mailed to all 198 commercial operators operating on the 13 selected reservoirs, and reminder telephone calls were made to those commercial operators who had not yet responded. A total of 107 (or 56%) commercial outfitters returned a completed survey.

2.3 Patrons of Commercial Operators

Contact surveys were administered at a representative sample of commercial operations to collect data on recreational users (by recreational activity) and provide a basis for estimating total recreation use by activity for each reservoir and tailwater area. The information collected was identical to that collected in the survey of public water access site users. Completed surveys were obtained from 618 commercial patrons.

2.4 Shoreline Property Owners

A survey was mailed to a census of property owners (identified by dock permits) on the sampled reservoirs to collect data on recreation use (by activity and reservoir/tailwater), user characteristics, and potential changes in use under different operating alternatives. This survey was designed to complement the contact survey by providing comparable data on recreationists who generally access reservoir waters from their homes instead of using public access sites. Completed surveys were received from 2,220 shoreline property owners (or 73% of those mailed a survey).

3.0 Methodological Challenges

The methodological challenges associated with the primary data collection discussed above fell into four main categories: (1) stratification of a system of 35 reservoirs and 29 tailwaters; (2) sample design; (3) survey design; and (4) data collection for the public access site users.

3.1 Stratification of a System of 35 Reservoirs and 29 Tailwaters

Because it was not cost-effective or logistically feasible to collect data at all TVA reservoirs/tailwaters during the study period, the research team needed to identify a sample of reservoirs/tailwaters that would be

representative of the reservoirs/tailwaters impacted by system operations. The development of sampling strata proved challenging in that it needed to recognize the unique traits of each reservoir and associated tailwater in the TVA system, while being general enough to allow for stratification.

Prior to selecting a sample of representative reservoirs, the study team met with TVA staff to classify all reservoirs/tailwaters by type of dam (mainstem, tributary, and run-of-river), type of area (urban, rural, remote), and estimated level of recreational use (high, medium, and low). This type of stratification ensured that each type of dam, area, and level of recreational use were represented within the 13 (of 35) reservoirs and 6 (of 29) tailwaters selected.

To expand the recreational use estimates to the remaining 22 reservoirs and 23 tailwaters where recreational use data were not collected, the following procedures were used:

1. Sampled and unsampled reservoirs were matched on the basis of reservoir type (urban, rural, and remote) and estimated usage level (high, medium, low).
2. Sampled and unsampled tailwaters were matched on the basis of total usage level (high, medium, low).
3. An average total recreation user day (combined estimates of user days from public access site, commercial operations and shoreline property owners) per shoreline mile was calculated for each of the 13 sampled reservoirs. An estimate of the recreation user days per shoreline mile factor was obtained for each of the sampling strata for reservoirs noted above. The total recreation user days per shoreline mile factor was then applied to the total shoreline miles for each of the 22 unsampled reservoirs, based on its classification in the sampling strata to estimate total recreation user days for each of the unsampled reservoirs.
4. Average total recreational user days for each sampling strata for tailwaters noted above was estimated using data collected from the 6 sampled tailwaters. These averages were then

used to estimate usage for the unsampled tailwaters in each stratum.

5. Average total recreation user days per shoreline mile were applied to unsampled reservoirs and tailwaters.

This method of extrapolating use allowed the study team a means of matching up reservoirs/tailwaters and accounting for the sometimes significant differences in the size of reservoirs.

3.2 Sample Design

Different sampling methods were required for each population of recreational users and commercial operators. Because of this and the different data collection methods used for each group, use estimates were developed for each population separately, and then summed to estimate total recreational use of TVA reservoirs and tailwaters. Resulting estimates of use were extrapolated to unsampled seasons and reservoirs to provide and estimate of total recreational use for the Tennessee River System.

Because of the many different sources of data, in addition to the different sample designs, survey methodology, and the number of completed questionnaires for each of the survey data sources, there is no statistical procedure available to calculate confidence intervals for the total recreation use estimates for the individual reservoirs or for the TVA system.

3.2.1 Public Water Access Site Users

An inventory of the public access sites available at each sampled reservoir/tailwater was required in order to create the sampling plan for the contact survey. Regional TVA staff that was knowledgeable about the recreation sites at projects within their region was canvassed to compile a comprehensive census of public recreation sites on the sampled reservoirs/tailwaters. TVA staff also assisted in assigning a preliminary estimate of use for each site (high, medium, low, unknown) prior to developing the sample plan for the roving access site survey method, which aided the team in selecting appropriate individual recreation sites for the contact survey as well as in estimating the level of interviewer effort that would be required at each location.

For 11 of the 13 reservoirs, the study team grouped sampled public access sites into one to four data collection routes. A data collection route consisted of three to six relatively contiguous access sites, so that all access sites on the route could be covered on each data collection day. Because of the large number of access sites on two reservoirs, a proportion of access sites were sampled to represent low, medium, and high use sites and the results were extrapolated to the unsampled sites.

An interviewing team (1 or 2 persons) was assigned to a specified data collection route on each data collection day. The interviewing team was responsible for conducting the data collection at each site on that data collection route, with specific starting and stopping times for each of the access sites on the route. The starting point for a data collection route was randomly selected for all access sites on that route for each day. The route direction was also randomly selected for each day.

Specific data collection days were randomly sampled to represent summer and fall. Data collection days were also selected to represent weekdays, weekends, and holiday weekends. A total of 15 data collection days were selected for Pickwick, Chatuge, Chickmauga, Melton Hill, Kentucky, Guntersville, Norris and Tellico reservoirs. A total of 10 data collection days were selected for Blue Ridge, Cherokee, Douglas, Hiwassee, and South Holston because these reservoirs were assumed to have lower recreational use levels. Estimates of use for the spring and winter seasons were obtained from self-reported survey data.

3.2.2 Commercial Operators

The study team worked with knowledgeable TVA staff to identify commercial operations that provided recreation access to reservoirs. The study team and TVA staff identified a list of 198 active commercial operators for the 13 selected reservoirs and tailwaters, and assigned a preliminary estimate of use to each operator (high, medium, low). An initial telephone contact was attempted with each of these operators to inform them of the upcoming mail survey. The study team also used this contact to obtain permission to conduct on-site interviews with commercial patrons at some of the sites.

3.2.4 Shoreline Property Owners

TVA maintains a database of permits issued to property owners for shoreline modifications, including new structures, alterations to structures, and property transfers issued for land- and water-based development on TVA-owned residential access shoreland and flowage easement shoreland. Referred to as 26a permits, the permits are issued by TVA's regional offices, and individual records were retained within each regional. Generally, the database contained records of permits issued within the past 5 years, contained some apparent commercial listings, contained numerous duplications of addresses due to multiple permits being issued to individual residences (for some reservoirs), and excluded residents living in multi-family buildings where the permit is not in their individual name. TVA staff familiar with the study area and the permit database advised that "most" residential shoreline properties have some sort of structure or development for which a 26a permit is necessary, and that new or transfer permits are applied for regularly and that most residences would have likely applied for a permit within the last 5 years (since 1997).

Alternatives to the 26a database were considered but rejected—these included purchasing a sample from a survey research sample vendor, assembling a sample from property assessor's offices, and hand sampling from individual regional offices' hard copy files of 26a permits. Each of these alternatives had issues related to coverage, time intensity, and/or cost.

Despite its limitations, the study team judged the 26a database to be the best available database of shoreline property owners' addresses needed to provide broad coverage for purposes of implementing the survey in support of obtaining information for the system-wide programmatic EIS. Two important assumptions were made about this database: (1) Shoreline residential permit holders are the same as other shoreline residents with no permits; and (2) Shoreline residential permit holders in the usable database are the same as shoreline residential permit holders who are not included in the database.

All unique records with a valid residential mailing address were included in the sample frame. All records for the

sampled reservoirs/tailwaters (3,393) were included in the sample of shoreline property owners.

3.3 Survey Design

Survey design was challenging because surveys needed to vary not only by user group, but also by reservoir since the individual drawdown schedules of the sampled reservoirs varied.

3.3.1 User Group

The contact survey of public access site users and commercial patrons collected information on:

- Recreational activities
- Length of current trip
- Trip expenditures
- Total number of trips per month to the sampled reservoir/tailwater
- How visitation was likely to change if water levels changed

The commercial operator survey collected information on:

- Number of watercraft launched by month and average party size
- Number of campsites available, occupancy rate, average party size
- Number of watercraft rentals by month, average party size
- Number of people using fishing and guide services by month
- Number of people using whitewater rafting guided trips by month

The design of the property owner mail survey was challenging as it needed to recognize year round residents, summer residents and weekend residents. The shoreline property owner survey collected information on:

- Household size
- Number of days each month use each sampled reservoir
- Types of recreational use
- How visitation was likely to change if water levels changed
- Suggestions for improvements

3.3.2 Individual Drawdown Schedule of Sampled Reservoirs

For the different user groups, the surveys needed to also vary by reservoir to account for different proposed drawdown schedules. For each of the four users groups, there were three different scenarios for changes in operating schedule. This resulted in a total of 12 survey versions.

The survey asked how their recreational use at the sampled reservoir would change if the drawdown levels changed. It also asked how their recreation use of other reservoirs would change if the drawdown level at the sampled reservoir changed (speaks to site substitution).

3.4 Data Collection for the Public Access Site Users and Commercial Patrons

The study team needed to identify, hire and deploy over 50 people to conduct the contact surveys with public access site users and commercial patrons over a 7-month period. Interviewers were obtained from a variety of sources, and included college students, TVA volunteers and temporary workers. These interviewers were deployed across five different states and two different time zones on the sampled data collection days.

The challenges in identifying and retaining this group of people were many, including:

- Lack of interest among the interviewers in being assigned to certain locations
- Number of required working hours per day was too long for some
- Seven-month length of the data collection period was too long for some (e.g., college students)
- Lack of flexibility in schedule of sampled days
- Physical demands of data collection were too much for some (e.g., senior citizens)
- Inability of some to understand the high level of quality control required for the data collection

4.0 Implications for Future Research

This challenging project offered some lessons for future studies of this type, including the following:

- It is imperative to have a dedicated staff person from the client who is knowledgeable about the different reservoirs/tailwaters as well as the

other staff who can be called upon to assist with compiling the census of public and commercial sites. Compiling these censuses without these knowledgeable staff would have entailed several person-months.

- Existing databases may or may not be complete or have sufficient information. Once again, it is critical to have staff that is knowledgeable about how the database was compiled in order to be able to evaluate its strengths and weaknesses as a sample source or a source of information.
- The amount of time and resources needed to assemble a team of interviewers who can work across a large geographic area for a long period of time should not be underestimated. A significant amount of resources are needed to recruit, train and oversee the work of interviewers. Universities and temporary agencies proved to be a good source for interviewers. Given the irregularity of the data collection over a long period of time, and the need to work on holidays and weekends, interviewers should be well-compensated for their work and supervisors should be assigned to implement quality control checks throughout the data collection period.

- Given the number of variations to the survey instruments across the various user groups, survey versions need to be clearly marked on the instruments.
- Surveying public water access site users at a large number of sites is a very time-intensive (thus, expensive) task. If additional funds had been available, additional days would have been sampled during the summer and fall. This number of sample days actually used resulted in large confidence intervals. If resources allow, additional days should be sampled for the access site surveys to reduce the size of the confidence levels, especially if data are needed by type of day (weekend, weekday, and holiday) as well as time of year.

5.0 Citations

Pollock, K.H., C.M. Jones, and T.L. Brown. 1994.

Angler Survey Methods and Their Applications In Fisheries Management. American Fisheries Society Special Publication 25.

Tennessee Valley Authority. 2004. **Reservoir Operations Study – Final Programmatic EIS.** Knoxville, Tennessee.

DATA MINING IN RECREATION RESEARCH: DETERMINANTS OF PLACE ATTACHMENT IN RECREATIONAL CAMPS AND COTTAGES

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Abstract

This paper uses data collected by Lyndon State College and the Vermont Fish and Wildlife Department from the Northeast Kingdom Camp Owner Survey to show how Classification and Regression Tree (CART) analysis, a data-mining program, can be used in social research. Unlike traditional regression techniques, CART is not constrained by typical parametric assumptions or missing data. Not only can CART be used as a stand-alone application, it can be used to improve the performance of traditional quantitative methods like OLS regression.

1.0 Introduction

One of the most important and most commonly used statistical tools in the social sciences is regression analysis. Much of the data being used, however, are complex and contain missing values, and the relationships between variables may be non-linear and involve interactions. The commonly used regression techniques have difficulty dealing with such data. Classification and Regression Tree (CART) analysis, a data mining program, is a more modern statistical technique ideally suited for exploring and modeling this complex data.

Traditional regression methods, such as linear or logistic regression, have several assumptions that the data must meet in order to work; and several problems may arise in the data which are detrimental to the success of modeling with traditional methods. The data must be

normally distributed and must be linearly related to the dependent variable, or it has to be transformed to make it so, and missing data will cause a case to be dropped from the analysis. Moreover, traditional methods are difficult to use to model interaction effects, much less discover an unsuspected interaction; and variable selection can be cumbersome when faced with numerous potential independent variables, especially when there is no theory to dictate which variables should be important. In the end, assuming we have normalized all the data and made it linear, included any important interaction terms, and selected the best model, interpretation is still less than intuitive.

CART does not have these problems. CART automatically determines the most important variables and uncovers interactions of any complexity, handles both linear and non-linear relationships, includes methods for dealing with missing data, and makes no assumptions about the distributions of the independent variables. The resulting regression tree is very easy to interpret even for someone with no quantitative expertise.

CART has been used with a great deal of success in other fields. It has been used to develop triage rules for AIDS and cardiac patients (Lewis 2000, Long, Griffith, Selker, & D'Agostino 1993), and for identifying cancerous tissue (Zhang, Yu, Singer, & Xiong 2001); to determine high and low credit risks (Arminger, Enache, & Bonne 1997); to determine optimal nesting areas of smallmouth bass so that they can be protected (Rejwan, Collins, Brunner, Shuter, & Ridgway 1999); it has even been used to determine which milk cows should be culled from a herd (Tronstad & Gum 1994). In this paper we introduce CART by using it to discover the determinants of place attachment among camp owners in northeastern Vermont. Using data collected in the Northeast Kingdom Camp Owner Survey, we will compare CART, particularly the regression tree tool, to multiple linear regression to show the pros and cons of this method, and show that CART is a valuable tool to be used in conjunction with other techniques.

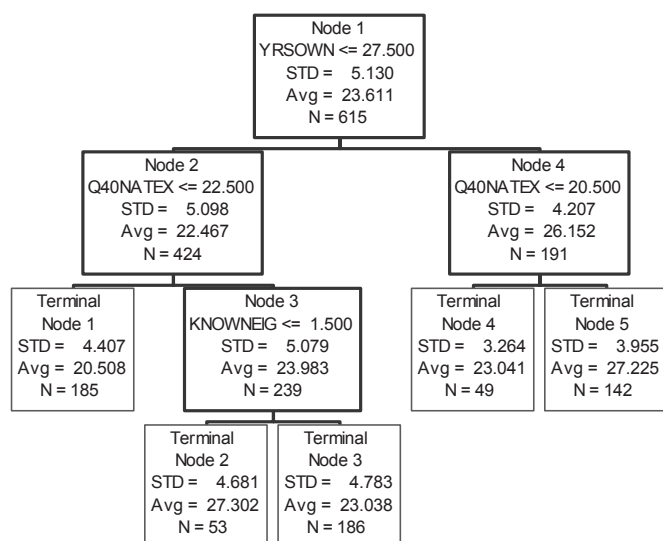


Figure 1.—Regression Tree Predicting Score on Location-Historic Index.

2.0 What is CART

There are three ways that CART can be used that will be discussed in this paper: 1) CART can be used as a stand-alone tool for analysis; 2) CART can be used to select from a long list the most important variables to be included in a regression model; and 3) CART can be used to split the data into multiple groups, each of which can then be used to build separate regression models. First, we will describe what CART is.

Classification and Regression Trees are made up of nodes. Nodes simply represent groups of data. The root node, the original node at the top of the tree, contains every case in the data set (see Fig. 1 for an example of a tree). Every node that is split is a parent node, and the two nodes that come out of it are child nodes. The two resulting child nodes together contain all of the cases that were in their parent node. The final nodes that do not spit are terminal nodes. All of the terminal nodes combined contain all of the cases that were in the root node. Each and every case ends up in only one terminal node.

CART is a form of recursive binary partitioning. Classification and regression trees are grown by repeatedly splitting the data into two mutually exclusive groups. A node, or the data, is split at a point in any independent variable that creates two new nodes that are more homogeneous in the dependent variable than the was the

original node. The new nodes are then spit again using the exact same process. Tree growth ends when no spit can increase the level of homogeneity.

CART chooses the best splitting point from all possible points in the data. Within a categorical variable, the number of possible spits is equal to $2k-1$, where k is the number of categories in the variable. So a variable with only two categories, such as a yes or no answer to a survey question, can be spit only one way, while a variable with, say, five categories could be split 15 different ways, allowing for every possible combination of categories. For quantitative variables, there are $u-1$ possible splits, where u is the number of unique values the variable may take. CART looks at every possible split in every variable to find the one that produces the greatest homogeneity in the two resulting child nodes. In a regression tree, which is what will be described in this paper, homogeneity is measured by the standard deviation of the dependent variable. A lower standard deviation represents greater homogeneity. When CART splits a node, the two child nodes will have a combined weighted standard deviation that is lower than the parent node's standard deviation. The weighted standard deviation takes into account the number of cases in the child node.

CART continues splitting the data until no more splits are possible. This happens when all of the cases in a node have the same value in the dependent variable, or when no possible split will increase the homogeneity. The resulting tree overfits the data, just as continuing to add independent variables to a regression model even though there is no important increase resulting in the r -square will do. The overfit tree fits the data very well, but would not be very useful if applied to a new set of data because it takes into account all of the idiosyncrasies of a particular set of data. To find an optimal tree, CART prunes the tree, eliminating nodes further down the tree that are capturing the idiosyncrasies of the data. To do this, CART can use a set of test data, if available, that was not used to build the tree, or it uses cross-validation, which basically mimics test data using subsets of the data available. This produces the tree with the smallest estimated error. The pruned tree generally works much better than the unpruned tree if you wish to make inferences.

3.0 Northeast Kingdom Camp Owner Study

The data used below were obtained from the Northeast Kingdom Camp Owner Survey. The purpose of the study was to examine the underlying structure of place attachment among camp owners in rural northeastern Vermont, and to relate sub-dimensions of place attachment to a series of demographic, activity, place attribute and social interaction variables. The data were collected through interviews and mail surveys of a representative sample of camp owners.

A place attachment scale was used to measure the strength of attachment to the camp. This scale was based on scale items developed by Williams et al. (1992), Cuba and Hummond's (1993) work on Cape Cod, and Kaltenborn's (1997) examination of place attachment to recreational homes in Norway. The 23-item scale was formatted as a 5-point Likert-type scale ranging from strongly agree (1) to strongly disagree (5). In addition, a place attribute scale was developed that was thought of as encompassing both socio-cultural and bio-physical "magnets" that draw people to a place (Beckley 2003). Items from this scale were derived from both Kaltenborn's study and Beckley's paper, and were scored on a Likert-type scale of not at all important (1) to very important (5). Principal component analysis was used to reveal two sub-dimensions of both the place attachment and the place attribute scale. One of the sub-dimensions derived from the place attachment scale will be used as the dependent variable in the analysis below. The place attribute sub-dimensions are used as independent variables.

CART and multiple linear regression were used to examine the 23 demographic, activity and social interaction variables', and the place attribute sub-dimensions' relationships to one of the place attachment sub-dimensions.

A two-factor solution was chosen for the place attachment scale based on an examination of the scree plot and interpretability of the rotated factor solution. The two factors accounted for 49 percent of the variance. The first factor reflected attachment on an emotive-symbolic level similar to that of Schreyer, Jacob and

White's (1981) emotional/symbolic sub-dimension and Williams et al.'s (1992) place identity. The second factor loaded on historical and geographical area statements and was labeled as a location-historic dimension, a dimension that approaches the functional dimensions of Schreyer, Jacob and White, and overlaps with the area and history dimensions of Kaltenborn's study (see Table 1). This latter location-historic dimension of place attachment was used as the dependent variable in the analysis presented here.

3.1 CART Analysis

Figure 1 shows the pruned regression tree built by CART using the 23 demographic, activity and social interaction variables', and the place attribute sub-dimensions to predict the value of the subject's score on the location-historic index of place attachment. Each node is numbered, with terminal nodes numbered separately from the splitting nodes. Listed below each node number is the variable that the node was split on. If the description in the node is true of a given case (for example, in the root node, if YRSOWN—the number of years the respondent has owned or leased the camp—is less than or equal to 27.5), the case goes to the left child node. Listed next in each node is the standard deviation and the mean of the dependent variable for the cases in the node. The growing homogeneity is apparent from the decreasing standard deviations as the tree descends. The mean in the terminal nodes represents the predicted value on the location-historic index for the cases in each node.

Figure 2 is a scatter plot of YRSOWN and Q40NATEX (the index of the place attribute sub-dimension "Nature," which includes the importance of the natural environment, wildlife viewing opportunities, serenity and peacefulness of one's camp's location). The root node splits on YRSOWN at 27.5 years. This split is represented in Figure 2 by the vertical line drawn at 27.5 on the horizontal axis. The subjects to the left of the line are in the left child node, node 2, in Figure 1, and the subjects to the right of the line are in the right child node, node 4. In node 2 in Figure 1, the cases are again split, this time on Q40NATEX at 22.5 (the possible range is 5 to 25). This split is represented in the scatter plot in Figure 2 by the line drawn at 22.5 on the vertical axis. Note that this line terminates at the line drawn

previously representing the root node split. Only the cases in the left section of the scatter plot are split. The cases below the new split go to node 2's left child node, terminal node 1, and the cases above the split go to node 3. Node 4 in Figure 1, the right child node of the root node, also splits on Q40NATEX, but at 20.5. This split is also represented in Figure 2 by the line drawn at 20.5 on the vertical axis, this time to the right of the root node split. The cases above this split go to terminal node 5 in Figure 1, and the cases below go to terminal node 4. The final split in the regression tree in Figure 1 cannot be shown on the scatter plot because it is in a new variable, but it would split the cases in the upper left section of the scatter plot on the variable concerning how well the respondent knows his or her neighbor.

The r-square for the regression tree can be examined two ways. One way is the resubstitution r-square, and this is most similar to the r-square we look at for a multiple regression model. It is calculated by looking at how well the original data fits the pruned tree. The other is the cross-validated r-square. This is calculated from the cross-validation procedure that is used to select the optimal tree. It gives an indication of how well the regression tree would do if it were used with an entirely separate set of data. The resubstitution and cross-validation r-squares for the tree in Figure 1 are 0.274 and 0.215, respectively.

Using the regression tree as a stand-alone tool for analysis can be done at this point. Table 2 gives the statistics for the terminal nodes for the regression tree in Figure 1. They have been ordered in ascending value based on the mean value of the dependent variable within each terminal node. The result of the tree which led to these terminal

Table 1.—Factor Loadings.

	Factor I Emotive- symbolic	Factor II Location- historic
Experiences		
Going to my camp is one of the most pleasant things I can think of	.71	.08
Camp is a refuge when the rest of my life becomes too stressed	.71	.05
I get more pleasure out of doing the things I do at camp, than doing the same things anywhere else	.76	.11
Much of my life centers on the immediate location of my camp	.51	.38
Doing what I do at camp is more important than doing the same things anywhere else	.66	.33
Camp is my favorite place in my time off	.78	.20
I would prefer spending more time at camp, if I could	.64	.10
When I am at camp I can really be myself	.62	.24
Being at camp provides more satisfaction than visiting other places	.60	.36
Camp makes me feel like no other place can	.64	.35
Camp is very special to me	.74	.22
My family has a long lasting attachment to the general area where my camp is located	.08	.67
I identify more strongly with my camp than my home	.49	.51
My camp is significant to me because of its history and tradition	.16	.71
I identify strongly with the general area of my camp	.36	.62
Memories of camp are more vivid than those of home	.41	.57
No other places can be compared with the general area where my camp is located	.34	.62
The general area where my camp is located means more to me than my actual camp	.01	.54
Cronbach Alpha	.90	.81

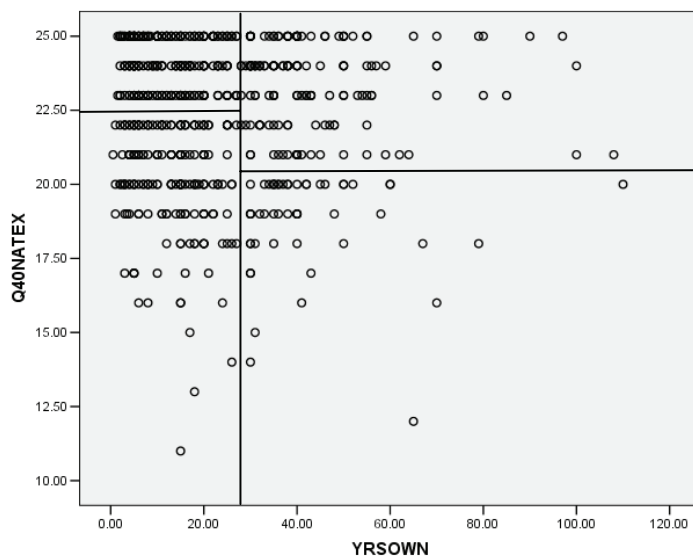


Figure 2.—Scatter plot showing splits from regression tree.

nodes is the creation of splitting rules. The splitting rules leading to each terminal node are shown in the right column of Table 2. The subjects with the lowest estimated scores on the location-historic sub-dimension of place attachment, those in terminal node 1, had owned or leased their camps for less than 28 years and did not have extremely high scores on the nature dimension of place attribute (at least a 23 out of a possible 25). Two of the nodes show groups that had high scores on the location-historical sub-dimension of place attachment. Node 5 is made up of people who had owned or leased their camps for at least 28 years and who scored a 21 or higher on the nature dimension of place attribute. Node 2 is made up of people who owned or leased their camps for less than 28 years, but who had extremely high scores on the nature sub-dimension. They also responded that they knew their neighbor “very well,” which is the highest level in a 5-point Likert-type scale. These results show the importance of the nature sub-dimension index of place attribute and the number of years and individual owned or leased their camp. The importance of how well someone knows his or her neighbors

to the location-historic index of place attachment comes out particularly among those respondents who were relatively short-term owners of their camps and who scored high on the nature dimension of place attribute. This analysis using CART as a stand-alone tool uses only three variables to split the data and developed an easily interpreted model with a resubstitution r-square of 0.274. Subsequently, we approach the same problem with linear regression.

3.2 Multiple Linear Regression

One of the uses of CART is to select from a long list of potential independent variables to be entered into a regression model. In this section, a model derived from CART will be compared to two models developed using common variable selection techniques—backward regression and stepwise regression (see Table 3). Variable selection for the CART model is based on the CART output, which tells what variables were the most important in creating the splitting rules for the regression tree (Table 4 is an abbreviated list showing variable importance in the CART model). Based on the r-squares in Table 3, the stepwise and backward models did better than the CART-derived regression model, but not by much, especially considering the CART model used fewer variables. The more linearly related the data is, the less well CART will do as compared with traditional linear techniques. CART will do better with non-linear data, though.

Table 2.—Terminal node statistics.

Terminal Node	Count	Mean	SD	Splitting rules
1	185	20.508	4.407	YRSOWN < 28, Q40NATEX < 23
3	186	23.038	4.783	YRSOWN < 28, Q40NATEX > 22, KNOWNEIGH = VERY WELL
4	49	23.041	3.264	YRSOWN > 27, Q40NATEX < 21
5	142	27.225	3.955	YRSOWN > 27, Q40NATEX > 20
2	53	27.302	4.681	YRSOWN < 28, Q40NATEX > 22, KNOWNEIGH = VERY WELL

Note: The values in the right column have been adjusted to represent values in the actual data set. For example, YRSOWN splits on 27.5 in the regression tree, but no case has this value, so those who were ≤ 27.5 are actually < 28. KNOWNEIGH = 1 means the respondent knows his neighbor very well.

Table 3.—Multiple regression models estimating score on location-historic index.

	STEPWISE	BACKWARD	CART
Q40NATEX	0.666**	0.654**	0.642**
Q40HARVSX	0.266**	0.262**	0.253**
KNOW NEIGH	-0.485**	-0.427**	-1.116**
YEARS OWN	0.080**	0.076**	0.087**
COMPARE	-1.077**	-1.004**	—
PARNT OWN	-1.272**	-0.793*	—
NATUR STDY	-1.250**	-1.081**	—
XC SKI	—	-1.013**	—
STAY CAMP	—	-0.352*	—
OCCUPY	—	0.006*	—
AGE	—	—	-0.021
TOGETHER	—	—	-0.057
CONSTANT	6.174**	6.562**	6.286**
	ADJ. R2=.389	ADJ. R2=.382	ADJ. R2=.359

*p<.10,

**p<.05

Table 4.—Variable importance.

Q40NATEX	100.000
YRSOWN	96.990
Q40HARVSX	
KNOWNEIG	39.169
TOGETHER	31.210
AGE	23.071

The numbers represent an index of importance, with the most important variable set at 100.

The last use of CART to be illustrated here is to divide the original data set into separate categories based on the splits from the regression tree and use each group to estimate a regression model. Three separate models are shown in Table 5, and selection rules for each model are shown in the column headers. If the regression models based on the entire data set are an accurate description of the data, then we should see similar results for each of these three groups, but we do not. In fact, as can be seen in Table 5, there is quite a bit of difference between the models built for each of the three groups in terms of the variables selected for each model. Furthermore, the amount of variance explained for each group was quite different. Although the middle model did very well, with an r-square of 0.38, the other two groups were relatively weak, with r-squares under 0.19. This shows us that the models built for the entire data set are a bit deceptive, because they tell us that the change in the dependent variables due to the changes in the independent variables is the same for all the data. We see here that this is not the case. In fact, we see that

for certain sets of the data, there are unique relationships between the dependent and independent variables. The one exception is in the case of the variable Q40HARVSX, one of the sub-dimensions of the place attribute scale, which is important for all three subgroups in Table 5 and has a similar coefficient in each case.

4.0 Conclusion

CART is not a replacement for traditional methods, but a tool that can be used to compliment and extend the usefulness of traditional methods. CART excels when the relationships between variables are non-linear, while traditional methods typically perform better with linear relationships. As the last example shows, however, even when the relationships are linear, they may not be the same across all of the data, and traditional regression techniques are unable to detect this. CART helps determine what the important subgroups of the data are. Classification and Regression Trees are a valuable addition to the statistical toolbox of every social scientist.

Table 5.—Multiple regression models for subsets based on CART splits.

	YRSOWN < 28, Q40NATEX < 23	YRSOWN > 27	YRSOWN < 28, Q40NATEX > 22
Q40NATEX	—	0.686**	—
Q40HARVSX	0.234**	0.243**	0.273**
KNOW NEIGH	—	—	-0.532
YEARS OWN	—	0.051**	—
COMPARE	—	-1.108**	-1.200**
PARNT OWN	—	—	-2.335**
NATUR STDY	—	-1.560**	—
XC SKI	—	-0.978	—
STAY CAMP	-0.817**	—	—
OCCUPY	0.010**	0.014**	—
WILDLIFE OBS.	—	—	-2.259**
BERRY/MUSHROOM	1.368**	—	—
TOGETHER	-0.460**	—	—
CONSTANT	19.022**	5.443*	25.701**
	ADJ. R2=.170	ADJ. R2=.380	ADJ. R2=.189

*p<.10,

**p<.05

5.0 Citations

Arminger, G., Enache, D., and Bonne, T. 1997.

Analyzing credit risk data: a comparison of logistic discrimination, classification tree analysis, and feedforward networks. Computational Statistics. 12(2): 293-310.

Beckley, T.M. 2003. **The relative importance of sociocultural and ecological factors in attachment to place.** In Understanding Community-Forest Relations, USDA Forest Service Gen. Tech. Rep. PNW-GTR-566: 105-126.

Cuba, L., and Hummon, D.M. 1993. **Constructing a sense of home: Place affiliation and migration across the life cycle.** Sociological Forum. 8(4): 547-572.

Kaltenborn, B.P. 1997. **Nature of place attachment: A study among recreation homeowners in southern Norway.** Leisure Sciences. 19: 175-189.

Lewis, R.J. 2000. **An introduction to classification and regression tree analysis.** Paper presented at the meeting of the Society for Academic Emergency Medicine in San Francisco. Retrieved February 2005, from <http://www.saem.org/download/lewis1.pdf>

Long, W.J., Griffith, J.L., Selker, H.P., and D'Agostino, R.B. 1993. **A comparison of logistic regression to decision-tree induction in a medical domain.** Computers in Biomedical Research. 26: 74-97.

Rejwan, C., Collins, N.C., Brunner, J., Shuter, B.J., and Ridgway, M.S. 1999. **Tree regression analysis on the nesting habitat of smallmouth bass.** Ecology. 80(1): 341-348.

Schreyer, R., Jacob, G., and R. White 1981. **Environmental meaning as a determinant of spatial behavior in recreation.** Proceedings of the Applied Geography Conferences. 22: 294-300.

- Tronstac, R., and Gum, R. 1994. **Cow culling decisions adapted for management with CART.** American Journal of Agricultural Economics. 76: 237-249.
- Williams, Daniel R., Patterson, Michael E., Roggenbuck, Joseph W. and Alan E. Watson. 1992. **Beyond the commodity metaphor: Examining emotional and symbolic attachment to place.** Leisure Sciences. 14: 29-46.
- Zhang, H., Yu, C., Singer, B., and Xiong, M. 2001. **Recursive partitioning for tumor classification with gene expression microarray data.** Proceedings of the National Academy of Sciences. 98(12): 6730-6735.

Market Segmentation

AN ANALYSIS OF ATTITUDES TOWARDS THE COMPREHENSIVE EVERGLADES RESTORATION PLAN USING MARKET SEGMENTATION

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Abstract

Manipulation of water systems in south Florida have created hundreds of miles of canals, dams, and other diversions. These efforts significantly altered the region's hydrology and introduced unanticipated changes into the ecosystem. In 2000, the Comprehensive Everglades Restoration Plan (CERP) was authorized to restore, protect, and preserve these wetlands. Because CERP is the product of negotiated compromise between divergent interests, public outreach and involvement serves an important role. Using data collected from a telephone survey of south Florida residents ($n = 1,806$), four segments were derived to assist managers understand the public's support of the restoration plan. Results show that most respondents ($n = 984$) had no awareness of the plan. Differing demographic and psychographic profiles of segments suggest that varied communication strategies are necessary to promote CERP to each subgroup. Using marketing principles, a prioritization schema is constructed to assist managers communicate with the public.

1.0 Introduction and Background

The nation's most expansive subtropical wetland, known as the Everglades, covers approximately 2 million acres in south Florida (South Florida Water Management District [SFWMD] 2005). Human induced manipulation of natural drainage systems starting in the late 1800s allowed white settlement to burgeon. Agriculture flourished as hundreds of miles of canals and levees were constructed to reclaim the land (Clarke & Dalrymple

2003). After several decades, these alterations – created to control flooding and divert water for agricultural irrigation – contributed to over-drainage and severe soil loss (Clarke 2003, Sklar et al. 2000). Petitioning state and federal governments, the citizens of south Florida requested assistance in managing the region's water (Clarke & Dalrymple 2003). Congress responded by authorizing the U.S. Army Corps of Engineers to complete several complex projects aimed at providing “flood control, water supply, prevention of saltwater intrusion, and protection of fish and wildlife resources” (SFWMD & Florida Department of Environmental Protection [FDEP] 2004).

Unexpected ecological changes and rapid increases in the human population of south Florida continued to pose threats to the wetlands despite the efforts of the Army Corps of Engineers. By the end of the 1900s, the Everglades constituted only one-half of its original geographic extent and 30 percent of historic water flows (SFWMD & USACE 1999). In 1994, the Comprehensive Everglades Restoration Plan (CERP, or “plan”) was proposed as a way to correct historical misallocations of water through hydrological and ecological restoration of the Everglades system (Clarke 2003). The underlying assumption of CERP supposes that the ecosystem will recover when natural water flows and cycles are restored to the remaining lands of the Everglades (Clarke & Dalrymple 2003).

The stated goal of CERP is to “restore the quantity, quality, timing, and distribution of water to the Everglades ecosystem” (SFWMD & FDEP, 2004). More generally, the plan aims to reconcile ecological values with social and economic priorities to achieve sustainable well-being (Clarke 2003, SFWMD & USACE 1998). And, given the complexity and scale of CERP, officials recognize that its effects may not become evident for several years (SFWMD & FDEP 2004). CERP managers need an understanding of prevailing attitudes of south Florida citizens towards the restoration effort, including communication strategies, to respond to the public's concerns and to succeed in adaptive assessment. This

study seeks to: 1) segment a sample of south Florida residents based on the nature of their awareness and support of CERP; 2) profile each segment using socio-demographic and psychographic measures; and 3) develop strategies for managers to use for communication with the segmented resident subgroups.

2.0 Methods and Procedures

2.1 Question Development

Based on researchers' review of relevant literature, visits to south Florida, and meetings with personnel affiliated with CERP and the National Park Service, a survey instrument was produced. Potential questions were assembled from prior studies and were written by the research team in collaboration with National Park Service staff. Question item content and order underwent cognitive pre-testing techniques to ensure that survey participants did not respond to questions that, as Bishop (2005) suggests, would significantly influence subsequent survey answers or compel participants to submit survey answers not supported by requisite familiarity or acquaintance. The length of time necessary to complete the questionnaire was determined by conducting mock interviews. The survey instrument was approved by the Office of Management and Budget.

2.2 Data Collection

National Opinion Research Services of Miami, Florida, conducted computer-assisted telephone interviews (CATI) using a sample of 34,500 telephone numbers from the five southernmost counties in Florida (Broward, Collier, Lee, Miami-Dade, and Monroe). National Opinion Research Services specializes in sampling multi-lingual populations; interviewers used in this study spoke both non-accented English and Spanish. Also, several tri-lingual interviewers were utilized for the study to allow for an adequate sampling of Creole-speaking Haitian residents of south Florida.

Using the CATI system, interviewers called phone numbers generated for sample. Only those individuals 18 years of age or older were interviewed. Upon contacting a household, the resident having had the most recent birthday was asked to participate in the interview. If the interviewer reached the interviewee at an inconvenient time, a later appointment was scheduled. The CATI

system was used to track these appointments. Ten attempts were made to reach participants at a phone number before that number was abandoned. The interview cooperation rate for the study was determined to be 17.3 percent. Cooperation rate is considered to be the percentage of the total eligible interviews conducted out of the combined total of all eligible interviews conducted, break-offs, refusals, etc. The total useable sample yielded 1,806 respondents.

3.0 Analysis

Recall that the objectives of this study include segmenting a sample of south Florida residents based on the nature of their awareness of and support for CERP, then profiling each segment using socio-demographic and psychographic measures. One segment of the study population ($n = 984$, or 54.5%) indicated they did not know there was a restoration plan. This segment was dubbed UNFAMILIAR. About 46 percent ($n = 822$) indicated they possessed awareness of CERP. These 822 individuals were subsequently segmented based upon their support of the plan. Approximately 89 percent of those aware of CERP (40.4% of the total sample; $n = 730$) said that they supported it and were therefore referred to as SUPPORTIVE. A segment named UNSUPPORTIVE declared that they did not support CERP (1.8% of the total sample; $n = 32$). Some respondents could not say whether they supported the plan or not; they were called UNSURE (3.3% of the total sample; $n = 60$). Figure 1 depicts the steps of analysis.

4.0 Results

4.1 Socio-demographic Profile

Chi-square analysis using cross-tabulation was employed to investigate differences between segments in terms of the following socio-demographic variables: ethnicity, country of birth, language, employment, presence of vehicle in household, county of residence, level of education, household income, and age. Results show that familiarity with CERP distinguishes segments within the context of most of these socio-demographic measures. That is, the UNFAMILIAR segment revealed above expected tendencies to be Hispanic, Latino, or Spanish; speakers of non-English languages mostly; born outside the U.S.; younger; and without access to a

household vehicle. This segment also tended to have a lower education level and lower income. Figure 2 illustrates these differences.

4.2 Psychographic Profile

Principal components factor analysis with a varimax rotation was conducted to reveal underlying dimensions of respondents' attitudes towards a series of statements of generic park policies. Ten statements of attitude from the survey were reduced to three factors explaining 51.1 percent of the variance (see Table 1).

Resource protection attitudes include expressions that suggest human use of and behavior in parks should be secondary to environmental stewardship and guardianship. Counter-mission attitudes are protected area management opinions that are incongruent with the prevailing philosophies of most land management agencies, including the National Park Service (the administrator of much of the Everglades ecosystem). The informed attitudes factor includes opinions that have likely been cognitively justified in the respondent's mind by learned, factual information. Analysis of variance was conducted to investigate differences between segments in terms of the attitude factors. Mean regression factor scores for each segment were used to compare responses. Results are presented in Table 2.

The UNFAMILIAR segment was characterized by negative mean scores on the resource protection attitude factor (-0.18) and on the informed attitude factor (-0.15). This indicates that members of this subgroup tended to hold opinions that do not support natural and historical resource protection, nor did they hold opinions that are commonly supported by complex, counter-intuitive facts. Logically, this segment also exhibited a positive mean score for the counter-mission attitude factor (0.27), indicating that respondents tended to disagree with prevailing park management approaches.

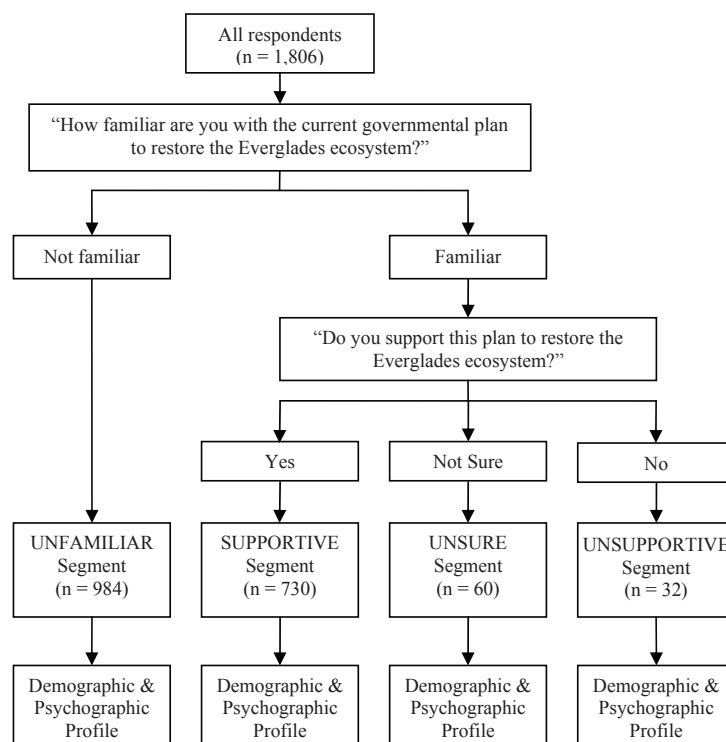


Figure 1.—Steps of Analysis.

Members of the SUPPORTIVE segment exhibited positive mean scores for the resource protection attitude factor (0.25) and the informed attitude factor (0.16). Additionally, this subgroup had a negative mean score on the counter-mission attitude factor (-0.30). Taken together, one can conclude that members of this segment generally held opinions consistent with most land management agencies, and they valued resource management efforts.

Although the UNSURE segment received a negative mean score on the resource protection attitudes factor (-0.11), it received a positive mean score on the informed

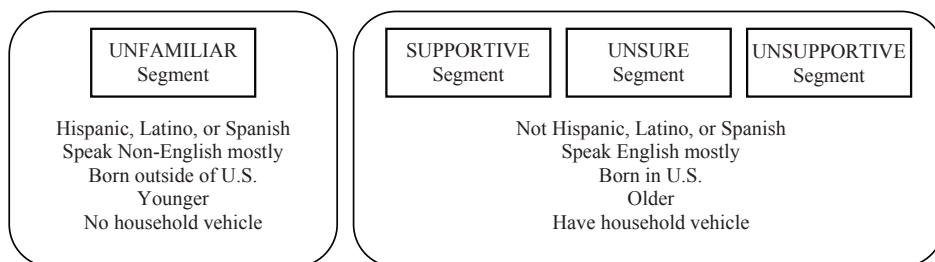


Figure 2.—Above Expected Socio-demographic Tendencies for the UNFAMILIAR Segment Compared to Other Segments.

Table 1.—Factor Analysis of Attitudes Towards Park Management Policies

Items	Item Mean Score ^a
Resource protection attitudes	
“National parks and preserves are important places even if many people do not visit”	4.32
“South Florida parks and preserves are a good use of taxpayers’ money”	3.95
“More rangers are needed to enforce laws and rules in parks and preserves”	3.80
“Natural and cultural resources should be protected in parks and preserves, even if it means reducing the number of visitors”	3.76
Counter-mission attitudes	
“Parks and preserves are a good place to let go of unwanted pet fish or birds”	2.28
“Sports fields, swimming pools or golf courses should be added to attract more visitors to parks and preserves”	2.35
“Panthers, bears, and other large wild animals should be removed from south Florida parks and preserves for the safety of visitors”	2.13
“Only people who deeply respect nature and history should visit parks and preserves”	2.25
Informed attitudes	
“Removal of non-native plant and animal species by park managers should be high priority for south Florida parks and preserves”	3.31
“Parks and preserves should set controlled forest fires to imitate ecological effects of naturally occurring fires”	3.08

^a 1 = “strongly disagree;” 3 = “neutral;” 5 = “strongly agree”

Table 2.—Analysis of variance of park management attitude factors across segments

Attitude Factor	Segment				F	p
	UNFAMILIAR n = 716	SUPPORTIVE n = 587	UNSURE n = 41	UNSUPPORTIVE n = 25		
Resource Protection	-0.18 _{ab}	0.25 _c	-0.11 _b	-0.52 _a	24.4	< .001
Counter-Mission	0.27 _b	-0.30 _a	-0.33 _a	-0.07 _{ab}	38.6	< .001
Informed	-0.15 _a	0.16 _{ab}	0.28 _b	0.12 _{ab}	12.2	< .001

Means in the same row that do not share subscripts differ at $p < .05$ in the Duncan’s post-hoc comparison.

attitudes factor (0.28). Furthermore, the segment received a strong negative score on the counter-mission attitudes factor (-0.33). Members of this subgroup tended to agree with prevailing resource management philosophies and held opinions supported by fact, but weakly disagreed on the tenets of resource management.

Lastly, members of the UNSUPPORTIVE segment were characterized by a strong, negative mean score on the resource protection attitude factor (-0.52), indicating that they tend to disagree with these statements. The mean regression score exhibited by this segment on counter-mission attitudes (-0.07) is near the overall mean regression score (0.00). Individuals in this segment tended to have some knowledge of resource management, as the mean score for the informed attitudes factor is positive (0.12), though weak.

5.0 Conclusion and Implications: Communication Strategies Through a Prioritization Schema

According to Kotler (2000), targeting groups for marketing or information campaigns necessitates an evaluation of the segment's overall attractiveness within the context of the organization's objectives and resources. Although CERP is expected to be a relatively expensive government project (\$7.8 billion according to Clarke, [2003]), it would behoove decision-makers to consider conservative approaches to policy marketing efforts. Therefore, a prioritization schema has been developed to assist CERP decision-makers implement various strategies depending on the availability of resources.

The schema was created based on data collected for this research project. Communication strategies were developed for each segment based upon principles of positioning. First, a determination was made of the attitudes toward the plan that are held by the segment in question (Ries & Trout 1986). Next, particular communication strategies were chosen for that segment from the seven possibilities suggested by Aaker and Shansby (1982) and Aaker and Myers (1987): positioning by attributes/benefits, positioning by price/quality, positioning by use/application, positioning by product class, positioning by user, positioning by competitor, and positioning by cultural symbols. Last, an assessment of

resources necessary for positioning were made (Aaker & Myers 1987).

5.1 First Priority: UNFAMILIAR

If the organizational objective is to garner support for CERP among individual south Florida residents, the first subgroup to target should be UNFAMILIAR persons. Of the four, this was the largest segment, therefore it holds the most potential to achieve support, given that communication efforts are implemented prudently and without distractions from competing interests (Belch & Belch 2004). Because members of this segment held no awareness of the restoration plan, one can logically assume they possessed no attitude towards it. Considering the socio-demographic characteristics of the segment, positioning by cultural symbols and by user are effective approaches.

5.2 Second Priority: UNSURE

Second in the prioritization schema is the UNSURE segment. Members of this subgroup had no cohesive attitude towards the restoration plan, although they were familiar with it. UNSURE individuals tended to exhibit a positive attitude towards often-controversial resource management practices such as prescribed fire and non-native species removal from parks. To appeal to these informed attitudes, marketers should consider positioning by attributes/benefits. Such an approach can attempt to sway UNSURE individuals in the direction of support by emphasizing the advantages of the plan from an ecological perspective. Analogies can be drawn between CERP and invasive species control, for instance. Or, the benefit of biodiversity can be emphasized. The link between environmental well-being and CERP should be demonstrated in a way that portrays the restoration effort as analogous to other resource management practices that have been supported repeatedly by science.

5.3 Third Priority: UNSUPPORTIVE

As Newman and Perloff (2004) put it, "...not all products can be sold to all consumers" (p. 20). In that light, it is not surprising to see that some residents of south Florida did not (and will never) support the Everglades restoration plan. This subgroup, the UNSUPPORTIVE segment, was the smallest of the four identified in this study. They were familiar with the plan

and have explicitly expressed disdain with it. So, although UNSUPPORTIVE residents had the most potential to frustrate or hamper CERP, focusing on them before other subgroups would not be a wise use of resources. Rather, the UNFAMILIAR and UNSURE segments have the potential to yield more support. For these reasons, the UNSUPPORTIVE subgroup receives third priority.

UNSUPPORTIVE individuals may have disliked the plan for many varied reasons, the measurement of which were beyond the scope of this study. They may have borne adversity to any government project, or they may have simply believed in a better notion of how to protect the Everglades. Whatever the reason, their propensity to hold informed attitudes towards park management suggests that any attempt to inform these non-supporters should utilize the positioning by attribute/benefit approach, much in the same way as it was prescribed to the UNSURE segment. That approach should stress positive benefits to the natural environment and the human systems therein. Simply linking CERP to a healthy environmental future may be excessively superficial – insightful connections that associate the plan with the availability and price of the urban water supply, the ability of south Florida's infrastructure to provide a high standard of living, or the far-reaching effects of economic stimulation as the result of increased ecotourism may be effective arguments.

5.4 Fourth Priority: SUPPORTIVE

It is fortunate for managers that the SUPPORTIVE segment is relatively large, as this subgroup already possessed the attitudes that CERP advocates seek. Ranked fourth in priority, they should not be overlooked entirely. Some communication effort will be required to reinforce positive attitudes towards the plan.

6.0 Recommendations for Future Investigation

More accurate, appropriate, and meaningful inferences about the residents of south Florida can be drawn if future researchers improve upon the shortcomings of this study. A sizeable number of stakeholders were not included in data collection because of monetary and temporal constraints. If a similar study is to be conducted in the future, surveys should be administered

during months that would permit the inclusion of seasonal residents (e.g. January or February). While the demographic characteristics of the sample used in this project demonstrated a remarkable likeness to actual population parameters, such validity is not guaranteed for future studies, as geo-demographic changes and shifts occur constantly. Census information should be analyzed with close attention to detail in future studies so that shifts in geographic and demographic trends are captured in the study sample. Instead of telephone interviews, alternative methods of data collection should be considered. Focus groups are frequently used in market research (Babbie 2002) and may reveal ascendant attitudes towards CERP not represented by the segments derived in this paper. Qualitative approaches such as this may be used to generate questions for another quantitative study.

7.0 Citations

- Aaker, D.A., and Myers, J.G. 1987. **Advertising management (3rd ed.)**. Englewood Cliffs, NJ: Prentice Hall.
- Aaker, D.A., and Shansby, J.G. 1982. **Positioning your product**. Business Horizons. 59: 56-62.
- Babbie, E. 2002. **The basics of social research**. Belmont, CA: Wadsworth.
- Belch, G.E., and Belch, M.A. 2004. **Advertising and promotion: An integrated marketing communications perspective**. New York: McGraw-Hill.
- Bishop, G.F. 2005. **The illusion of public opinion: Fact and artifact in American public opinion polls**. Lanham, MD: Rowman & Littlefield.
- Clarke, A.L. 2003. **Introduction to special issue: Restoring the Florida Everglades – Balancing population and the environment**. Population and Environment. 24: 451-453.
- Clarke, A.L., and Dalrymple, G.H. 2003. **\$7.8 billion for Everglades restoration: Why do**

environmentalists look so worried? Population and Environment. 24: 541-569.

Kotler, P. 2000. **Marketing management: Analysis, planning, implementation, and control.** Upper Saddle River, NJ: Prentice-Hall.

Newman, B.I., and Perloff, R.M. 2004. **Political marketing: Theory, research, and applications.** In L. L. Kaid, ed. Handbook of political communication research (pp. 17-44) Mahwah, NJ: Lawrence Erlbaum Associates.

Ries, A., and Trout, J. 1986. **Positioning: The battle for your mind.** New York: McGraw-Hill.

Sklar, F., DeAngelis, D., Fitz, C., Gawlick, D., Krupa, D., Maddeen, C., et al. 2000. **Hydrological needs – Effects of hydrology on the Everglades, Chapter 2.** In South Florida Water Management District, Everglades consolidated report, 2000 (pp. 2-1 - 2-31). West Palm Beach, FL: South Florida Water Management District.

South Florida Water Management District. 2005. **Entire ecosystem – Everglades/Florida Bay watershed management.** Retrieved January 18, 2005, from http://www.sfwmd.gov/org/wrp/wrp_evgl/2_wrp_evgl_watershed/2_wrp_evgl_watershed.html

South Florida Water Management District and Florida Department of Environmental Protection. 2004. **Comprehensive Everglades Restoration Plan Annual Report, January 2004.** West Palm Beach, FL: South Florida Water Management District.

South Florida Water Management District and United States Army Corps of Engineers. 1998. **Central and Southern Florida Project comprehensive review study: October 1998.** West Palm Beach, FL: South Florida Water Management District.

South Florida Water Management District and United States Army Corps of Engineers. 1999. **Rescuing an endangered ecosystem: The plan to restore America's Everglades.** West Palm Beach, FL: South Florida Water Management District.

MULTI-USE TRAILS: TRULY MULTI USE

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Abstract

Trails are a valued form of recreation that appeals to a wide variety of users. The uses that these trails support include walking, biking, running, inline skating, snowmobiling, cross country skiing, and others. A challenge to trail managers is designing and managing a trail that appeals to diverse groups of users. This research examined the similarities and differences between distinct user segments on the Lansing River Trail located in Lansing, MI. Respondents were segmented based upon their reasons for using the trail. Five distinct user groups were identified: those who use the trail solely for *exercise, training, recreation, transportation*, or for *mixed* purposes. These and other distinctions will be discussed in this paper for both researchers and managers.

1.0 Introduction

As communities continue to expand, lifestyles are becoming more fast-paced and people have less time to enjoy outdoor leisure opportunities. In addition, they are becoming more sedentary as they spend more time in vehicles and in front of computer monitors and televisions. Rail-trails and other urban trails are one type of asset that can serve society's need for physical activity, link communities, and can be accessible to many people depending on their route (Gobster 2004, Rosegard 2004). Trail activities such as walking, running, bicycling and in-line skating promote health and provide quality leisure experiences (Henderson and Ainsworth 2000, 2002). A healthy, active lifestyle has been shown to lower the risk of cardiovascular morbidity (Manson et al. 1999). Trail users are diverse and have many different motives for trail use. The objective of this study was to better understand the demographics, motives,

and activity patterns of urban trail users on Lansing Michigan's River Trail. In a recent trail symposium sponsored by American Trails Association, a research session discussed the situation that we continue to lack data on trail use and users (Pugh and Moore 2005). This paper attempts to fill that gap to share a methodology and results from an in-depth, reliable trail use and user study.

2.0 Background

The Lansing River Trail (LRT) is a multiple use, non-motorized trail of 7 miles in length. It meanders along the banks of the Red Cedar and Grand Rivers between Michigan State University (MSU) and North Lansing. In addition there is a spur that runs from River Point Park to Moore's River Park following the Grand River upstream for more than a mile. The trail traverses through a variety of habitats and natural environments. The trail provides direct river access to fisherman and offers walking/running, biking, and inline skating opportunities. The LRT links many of Lansing's city parks together, as well as downtown and neighborhood business districts and many other community attractions including historic museums, farmers market, and the city's convention center. In 2004, the Mid-Michigan Environmental Action Council (Mid MEAC) received a grant from the DALMAC Bike Tour to assess the use and users of the LRT. To accomplish this they contracted with researchers from the Department of Community, Agriculture, Recreation and Resource Studies at MSU to conduct a study of trail use and to profile trail users.

3.0 Methods

The data gathered in this study was collected by an onsite survey conducted July 15th through September 15th, 2004. Six sampling sites were selected along the trail, each approximately one mile apart. Sample periods were proportionally distributed for weekdays and weekend days with 2-hour sampling blocks. Trail users were intercepted at a rate of every 10 minutes, with a possible sample size of 864 and an actual sample size of 354. The difference between the potential and actual sample size is due to no survey being administered

during that 10-minute period as no user passed by or by a trail user refusing to complete the questionnaire. Those completing the survey responded to questions about motives for using the trail, duration of trail use, satisfaction with the trail experience, and suggestions for improvements and extensions.

Two trained interviewers collected all surveys. It was also the job of the interviewers to observe and record on a tally all trail users that passed by during their two-hour time block. Trail users were tallied by their type of use and also by their age (adults vs. children). The one-page survey was then given to only those trail users who gave consent.

4.0 Results

The findings of this research are reported by use and users. Use refers to an individual's presence on a segment of the trail at a given time. We estimate use by trail segment and then adjust our total use estimate by the average number of segments a user reports in a given occasion. Users refer to the type of use and qualities of that user. An individual user could be represented many times in use data, however, only once in user data.

4.1 Use of the Lansing River Trail

The LRT had 72,040 estimated uses from May 1 through September 30, 2004, using the 2 months of data to extrapolate to 5 months of summer use. This estimate comes from an estimate of 187,305 segment uses divided by 2.6 segments per use. Of the total uses, 64 percent were on weekdays and 36 percent were on weekends (Table 1). Adults (18 years old and older) accounted for 86 percent of the uses and children for 14 percent of uses. For the adult uses, 49 percent were bicycling, 46 percent walking/running and 5 percent inline skating. For the children uses, 62 percent were bicycling, 34 percent walking/running and 4 percent inline skating. These data were compiled from only observation data.

Table 1.—Uses of the Lansing River Trail

	% of Uses	Frequency (total of 72,040 uses)
Age		
Adults	86%	61,954
Children	14%	10,086
Gender		
Male	57%	41,063
Female	43%	30,977
Time		
Weekday	64%	46,298
Weekend	36%	25,742
Activities (Adults)		
Walking/Running	46%	28,499
Biking	49%	30,357
Inline Skating	5%	3,098
Activities (Children)		
Walking/Running	34%	3,429
Biking	62%	6,253
Inline Skating	4%	404

Most (56%) LRT uses were by Lansing residents, with 15 percent by E. Lansing residents and 29 percent from elsewhere. For adults, males accounted for 57% of the uses and females for 43%. One-third (33%) of the adult uses were by people who were 50 and over, 39 percent were by those 35 to 49 years old and 28 percent were by those 18 to 34 years old. More than half (55%) of LRT use was accessed without driving a vehicle to the trail. Forty-eight percent of the uses were by individuals who lived 2 miles or less from the trail. Eighty-four percent of uses were for two hours or less and 93 percent were rated as satisfactory experiences. These data were compiled from observation data to estimate total trail use and then applied data from the on-site survey using questions related to that day's use.

4.2 User Segments

Trail users were segmented by those who use the trail solely for *exercise, training, recreation, transportation*, or for the *mixed* purpose of two or more of the motives.

Table 2.—User segments

	Exercise	Training	Recreation	Transportation	Mixed
% of Users	24%	8%	23%	3%	42%
Originated Locally	61%	77%	47%	88%	46%
Favorite Activity	Walking (54%)	Running/Jogging (82%)	Bicycling (55%)	Bicycling (65%)	Bicycling (48%)
Annual median use	11 days	31 days	6 days	7 days	11 days
Improvement	Litter cleanup	Extensions	Extensions	Bathrooms	Extensions

These five segments were then evaluated amongst several other variables exclusively from the on-site survey.

The *exercise* group consisted of 24 percent of the total LRT users (Table 2). Sixty-one percent of users originated in Lansing or East Lansing (from the local area). Walking (54%) was the most common trail activity, followed by biking (29%) and running/jogging (13%). Exercise users reported a median annual use of 11 days on the trail.

The *training* users made up 8 percent of the total LRT users. Seventy-seven percent originated locally. They were most likely to be running or jogging (82%), followed by biking (12%) and walking (8%). Their annual median use was 31 days on the trail, the highest of any group.

The *recreation* group made up 23 percent of the total LRT users. Forty-seven percent of the recreation users originated locally. Bicycling (55%) was the most common trail activity, followed by walking (38%), fishing access (8%), and all others (2%). Their annual median use was the lowest of any group with 6 days.

The *transportation* group consisted of 3 percent of the total LRT users, making it the smallest segment. Eighty-eight percent originated locally. Biking (65%) was the most common trail activity, followed by walking (17%), shopping (8%), running (4%), and all others (4%).

The *mixed* group was the largest group with 42 percent of the total LRT users. Forty-six percent of the mixed group was from the local area, the lowest percentage

of the five segments. Bicycling (48%) was the most common trail activity, followed by walking (36%), running/jogging (10%), inline skating (4%), and all others (2%). Their annual median use was 11 days.

Besides estimating the total trail use and describing user segments, trail users were asked to rate their trail experience and suggest improvements. These findings were intended to help park managers target areas of improvement or investment. For all segments, a better surface (i.e., fixing cracks and holes, resurfacing) was the single most commonly mentioned trail improvement. However, other key considerations differed among segments, with exercise users requesting improved litter cleanup, training users requesting numerous extensions and drinking fountains, recreational users requesting extensions and mixed users supporting trail extension and improved litter cleanup.

5.0 Discussion and Conclusions

The LRT serves residents, workers, and visitors to the Lansing/E. Lansing community. On an average daily basis, the trail receives 471 uses from May - September. Those who use the trail for recreation or exercise purposes are the largest single use groups and show that trails are appropriately positioned as recreation facilities, as well as health and fitness related. Many trails are also supported with federal, state or local transportation funding and this use is apparent, however, small. Additional efforts are needed to encourage and reward individuals who use trails over personal vehicles. This type of use can result in a healthier lifestyle and reduced pollution and road congestion. Besides the individual and health benefits of

trails, economic benefits are also realized. Seven percent of the LRT users were tourists that make a specific trip to Lansing to use the LRT, with most spending money at restaurants, filling stations, convenience stores, and sporting goods outlets.

In total, most trail users are highly satisfied, but some key sources of dissatisfaction have been identified and many suggestions for improvement made by respondents. The greatest source of dissatisfaction is the LRT's uneven surface. This can influence enjoyment and safety. It is related to both paving and the boardwalk system. One reflection of this is the low proportion of trail uses involving inline skating compared to similar paved trail studies elsewhere in Michigan such as the Peer Marquette Rail-Trail in Midland County. Fortunately, resurfacing is under way on both the boardwalk portions and on the eastern paved sections. Such work should focus on providing a high quality, long lasting surface. Trail surface maintenance should be reviewed to maximize the useful life of the new surface.

Trail users also advocate extending the LRT. This is also in progress to the south, extending the LRT to Hawk Island County Park and Scott Woods City Park. There is support for additional extensions to the north, west and east. Linking with other jurisdictions including townships, county and other municipalities will enhance the prospects for trail extension as will working with interested citizens and organizations.

Many users support improved maintenance of trailside vegetation, trash, litter, the river shoreline, etc. With 72,040 uses annually and 15 percent of those by tourists to the area, the LRT and its trailside environs are one of the important assets of the Capitol City area. Their condition reflects on the perceptions of residents, workers and visitors about the condition of the region.

Improved signage, more drinking fountains and improved security, while noted by fewer people than the above mentioned concerns also merit consideration. While signs or maps for regular resident users showing directions, distance and "you are here" may be unneeded, such visible information is important to help a first visit by a tourist, new resident or new worker be an enjoyable

one. Additional drinking fountains provide a valued service, allowing trail users to be less burdened with gear and promoting good health. All trail users need a sense of security about the LRT. While the trail does not appear to be perceived as dangerous as evidenced by 33 percent of adult uses by those over 50, security is best based on prevention and a visible security presence, not solely on response after a criminal incident. This includes appropriate lighting, trail visibility from easily patrolled streets, uniformed officers visible on the trail at unpredictable times and clearly identified volunteer safety patrol personnel trained to be "eyes and ears.."

The LRT is a prominent and valued asset of Lansing. Its already high standing in the community can be enhanced and strengthened by listening to this representative cross-section of trail users and prudently acting on their suggestions. Other trails managers would benefit from a study of this nature to substantiate trail use levels and understanding the nature of uses that range from recreation to health and fitness to transportation.

6.0 Citations

- Gobster, P. 2004. **An active living perspective on recreation research: Examples of urban trail use and suggestions for further involvement.** P. Tierney and D. Chavez, eds. Proceedings of the Fourth Social Aspects and Recreation Research Symposium. San Francisco State University, April, 22-29.
- Henderson, K.A. and B. Ainsworth. 2000. **Enablers and constraints to walking for older African American and American Indian Women: The cultural activity participation study.** Research Quarterly for Exercise and Sport. 71(4): 313-322.
- Henderson, K.A. and B. Ainsworth. 2002. **Enjoyment: A link to physical activity, leisure and health.** Journal of Park and Recreation Administration. 20(4): 130-146.
- Manson, J.E., F.B. Hu, J.W. Rich-Edwards, G.A. Colditz, M.J. Stampfer, W.C. Willett, F.E. Speizer, and C.H. Hennekens. 1999. **A prospective study of walking as compared with vigorous exercise in the prevention**

of coronary heart disease in women. New England Journal of Medicine. 341: 650-658.

Pugh, J. and R. Moore 2005. **What do we have, where is it, what is missing? Trails research.** Trail Tracks. Winter issue, 24-27.

Rosegard, E. 2004. **Effects of trail information on physical activity enjoyment.** P. Tierney and D. Chavez, eds. Proceedings of the Fourth Social Aspects and Recreation Research Symposium. San Francisco State University, April, 30-34.

LEISURE ACTIVITY PATTERNS AND HOUSEHOLD COMPOSITION: THE CHANGING HOUSEHOLD

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Abstract

Our knowledge of the dynamics of the American family system is partial since we have limited research regarding the changing household make-up and its impact on recreation and leisure patterns. The present study attempts to fill that gap by using an analytical approach to recreation and leisure patterns using household composition segments. Participation in different recreation activities, as well as the frequency and style of participation would expect to vary by age, gender, education level, region, ethnicity, and financial resources. New recreation and tourism facilities should reflect the changes in the composition of households that we would expect to impact recreation demand and activity preferences.

1.0 Introduction

In 1984, the Journal of Leisure Research (JLR) published a review of the literature on leisure and families making a variety of recommendations for leisure research. Although progress has been made, challenges remain. Important variables in leisure that have been studied include contexts, motives, perceptions, patterns, and trends of recreation and leisure pursuits by different demographic and social groups (Horna and Lupri 1987, Kelly 1983, Mactavish, Sehleien, and Tabourne 1997, Shaw 1997). One area that continues to be important, however overlooked, is family types or structures. Considering the many lifestyle changes that have taken place since 1984, researchers still have not sufficiently addressed how families are enacted or constructed, thus there is a gap in the literature concerning how the concept of family should be redeveloped in order to address current trends

(Holman and Epperson 1984). Understanding shifts in demographics and lifestyle is especially important to businesses or communities seeking to develop tourism projects. According to Gunn (1994), tourism planning can and should be directed toward goals of visitor satisfaction, protected resource assets, and community and area integration, as well as the more commonly accepted goals of improved economy and business success. In order to meet these goals, it is important to understand the needs of potential visitors. Type, style, and frequency of recreation activities vary by age, gender, education level, region, ethnicity, and financial resources. Therefore, changes in the composition of a population would result in changes in recreation demand (Kelly and Warnick 1999).

Understanding the role of household composition can be beneficial in making educated decisions about which resources to use and programs to offer when developing any tourism project or destination. An example of an attempt to make educated choices is the proposed project. The Great Lakes Discovery Center, offers an opportunity to examine whether household composition plays a role in the design and programming issues involved in the project. A broad-based public/private partnership has formed with a vision of building a Great Lakes Discovery Center as part of the Shiawassee National Wildlife Refuge operated by the U.S. Fish and Wildlife Services in the Bridgeport, Michigan area. The location of this center would be adjacent to Interstate 75 at the Bridgeport-Frankenmuth exit. To investigate the most beneficial use of the land, planning groups were formed consisting of engineer/architects, business planners and market researchers. The overall purpose of the study was to develop a better understanding of potential visitor markets to the Great Lakes Discovery Center and the Bridgeport district of the Shiawassee National Wildlife Refuge. Michigan State University (MSU) was charged with the market research segment of the effort, with the specific goals of generating estimates of market demand, developing profiles of key markets, providing guidance for developing communication and

pricing strategies, and obtaining data to address key programming and facility design issues.

Kelly and Warnick (2001) reported demographic trends which include: a population increase, an aging population, fewer families, many single parent families and many parents in the workforce, fewer children in households and higher levels of education. In developing a new tourism project, such as the Great Lakes Discovery Center, consideration should be given to the changing household composition and how it affects leisure participation. By understanding which programs and activities appeal to certain household types, programs can be developed and marketed in such a way as to increase visitor satisfaction and offer programs to meet the needs of a variety of consumers, especially those that are underserved. In addition, recent articles in travel magazines and publications such as *American Demographics* (Seema 2001) have discussed the broadening composition of the American family and the many overlooked and under-served markets. The focus of this paper is the question, "Do family patterns and household composition influence leisure and recreation participation and interests?"

2.0 Methods/Instrumentation

A mail survey was viewed as the most appropriate method to study a large number of individuals in order to obtain information regarding their recreation and environment interests. These research findings will be considered during the development of the Great Lakes Discovery Center. The survey instrument was developed by the MSU research team with input from experienced researchers who conducted recreation studies in the Chicago area (Vogt, Andereck, and Klenosky 2002). The survey instrument was designed as an eight-page booklet consisting of 17 questions. The questions used were mostly closed-ended (e.g., yes/no, pick one, rate on a scale, etc.), although several open-ended questions were used as well. The questionnaire was structured to obtain information about respondents' general recreation habits and interests, intentions to visit the Great Lakes Discovery Center, likely visitation behavior, preferences for specific attraction features and programming options, marketing issues, and demographics.

Using the three-stage tailored method (Dillman 2000), the mail survey consisted of a personalized cover letter, a prepaid return envelope, the questionnaire, and a \$1 incentive. A postcard, which included both a thank you and a reminder, was sent to all respondents 1 week after the initial survey mailing. Three weeks after the initial survey mailing, those individuals who had not yet responded were sent another personalized letter, an envelope, and another copy of the survey. In addition, the potential of non-response bias (i.e., which occurs when survey respondents and non-respondents differ in how they would complete the survey) was examined by completing a nonresponse study. Households who had not responded were randomly selected, stratified by state, and mailed a one-page letter asking whether they would visit the Great Lakes Discovery Center complex, as a way of estimating visitation patterns of survey nonrespondents. Nonresponse, or lack of response to any of the mailings, suggests a lack of interest or ability to visit. Thus, in calculations of expanding our sample statistics to the general population, nonrespondents were treated as nonvisitors. Further, of the 16 households who responded to our nonresponse letter, 14 indicated they would "definitely not", "probably not", or "may or may not" visit, offering further support for treating nonrespondents as nonvisitors.

2.1 Method/Sample

In January 2004, the survey was sent to 1,500 individuals in the Midwest area, specifically, all counties in the lower peninsula of Michigan, two counties (Mackinac and Chippewa, to include St. Ignace and Sault Saint Marie) in the upper peninsula of Michigan, northern counties in Indiana to include Gary, South Bend, and Fort Wayne, and northern counties in Ohio to include Toledo and Cleveland. These geographic areas include approximately a 250-mile, one-way drive radius to the Bridgeport area, the proposed location of the Great Lakes Discovery Center. The list was randomly drawn from the general population using a list obtained from Survey Sampling International (Fairfield, CT). Worthy of mention is that although areas in Canada are located within the 250-mile drive radius, Canadians were not included in the sample due to a number of factors, the first being that Survey Sampling International did not provide Canadians on

Table 1.—Survey response summary

	Quantity of surveys
Original sample size	1,500
Less: Bad addresses	78
Less: Deceased	5
Net effective sample size	1,431
Less: Refusals (didn't want to answer, too old, no interest)	16
Less: Returned empty	11
Usable surveys	537 ^a
Overall response rate	38.0%

^aOf the 552 respondents, 56 were from Indiana; 373 from Michigan, and 107 from Ohio.

the list. Second, researchers were concerned about how business reply envelopes would be handled through the international post. Last, the high cost of postage would be prohibitive. Of the 1,500 surveys mailed, a total of 537 useable surveys were returned (Table 1). In all, a 38 percent response rate was achieved. This level of response is strong for a general population study and quite acceptable for the needs of this research.

2.2 Method/Variables

Households were the unit of sampling and analysis. In order to examine household composition, households were segmented into groups using the following variables; gender, number of adults in the household, number of children in the household and children's ages. Four major household types were formed from the sample (n=537) based on the demographic data. The four groups formed from demographic data were:

- Group 1 (n=109) Single adult households with no children in household = 20% "Single/with no kids"
- Group 2 (n=253) Two adults and no children in household = 47% "Couple/with no kids"
- Group 3 (n=23) Single adult households with at least one child living in household = 4% "Single/with kids"
- Group 4 (n=152) Two adults and at least one child living in household = 28% "Couple/with kids"

To gain understanding of respondents in comparison to the general population, demographic data were compared to the 2000 Census (US Census Bureau 2000). The results of this analysis indicated an overrepresentation of: Michigan residents, wealthier households, households without children, middle-aged adults, and Caucasians. The underrepresented groups included: Indiana and Ohio residents, lower income households, younger adults/households, and African American households. These over and under representations were slight and no adjustments to the data were made. However, these biases should be considered in marketing and programming efforts. Two additional variables were analyzed: participation experience or history in activities in the Great Lakes Region during the past 12 months and the importance of outdoor recreation experiences/features (5-point Likert scale ranging from "not at all important" to "extremely important").

3.0 Results

To measure participation experience or history in activities, participants were presented with a list of 30 activities available in the Great Lakes region and asked to indicate if they or another member of the household had participated in the prior 12 months.

The top five activities for each group were used to develop an experience history for each household type. The Single/with no kids households rated "driving for pleasure or sightseeing" as the number one activity (88%). "Walking or hiking for pleasure" fell into the number one or two spot for each group; Single/with no kids (88%), Couples/with no kids (96%), Single/with kids (91%), and Couples/with kids (95%). Interestingly, the only household group to indicate experience with "hunting or trapping" was those consisting of Couple/with kids (89%), which may be indicative of the tradition of fathers teaching sons to hunt. In addition, households consisting of Single/with kids were the least likely of the four groups to "drive for pleasure or sightseeing" (76%). Based on this information, we can determine the different recreation and leisure interests for the varying household compositions, specifically single adults versus households with two adults.

To examine whether there were significant associations between outdoor recreation past/experience history and household composition, cross tabulation analysis was employed. The household group “Single/kids” was excluded from the analysis because the sample size was small resulting in too few cases in cells which can cause inaccurate statistically results. According to Norusis (1988), if the sample is too small, differences, even large ones, are unable to be detected. Table 2 presents a summary of these cross tabulation results. The highlighted section shows those instances where a relationship between items was statistically significant

at a level of 5 percent or lower, based on the Pearson chi-square test for independence (Singleton, Straits, and Straits 1993). The most significant differences between household types and participation experience or history were found in hunting or trapping ($p=.001$) and swimming in the Great Lakes ($p=.005$). Also, the Couples/with kids household group indicated the highest participation in hunting and fishing (89%) compared to the Single/with no kids group (56%). The same pattern was found for swimming in the Great Lakes, where Couples/with kids participated to a greater extent (70%) than the Single/with no kids household group (52%).

Table 2.—Outdoor recreation past experiences/history

	Household type ^a			Composite Mean (n=537)	χ^2	Sig.
	Single/no kids (n=109)	Couple/no kids (n=253)	Couple/ kids (n=152)			
<i>Significant Differences Between Household Type Segments</i>						
Hunting or trapping	55.6%	83.1%	88.9%	80.0%	13.1	.001
Swimming in the Great Lakes	51.9	73.7	76.3	70.4	10.8	.005
Boating, motorized/nonmotorized, in other lakes or rivers	62.8	84.3	81.1	79.8	9.5	.009
Boating, motorized/nonmotorized, in the Great Lakes	48.8	67.3	74.7	66.5	8.2	.017
In-line skating	57.1	68.2	84.6	74.6	7.8	.020
Fishing in other lakes or rivers	61.4	78.6	81.1	76.5	7.0	.031
Walking or hiking for pleasure	88.0	95.6	95.2	93.9	6.5	.040
<i>Similarity Between Household Type Segments</i>						
Driving for pleasure or sightseeing	88.5%	95.3%	92.1%	93.0%	4.6	.099
Rock or fossil collecting	52.4	56.0	73.8	61.9	4.1	.131
Horseback riding	33.3	39.5	55.8	44.8	3.8	.148
Visiting nature or environmental education	82.2	71.3	67.1	72.0	3.3	.192
Observing wildlife	86.7	91.2	83.3	88.0	3.2	.201
Going to a zoo	52.7	65.2	61.3	61.4	2.5	.282
Viewing wildflowers and natural vegetation	85.2	88.2	80.6	85.7	2.0	.364
Orienteering	25.0	22.2	45.5	32.1	1.5	.475
Volunteering to do nature-related restoration	57.9	46.2	37.5	47.9	1.5	.480
Swimming in other lakes or rivers	79.5	80.4	85.6	82.4	1.3	.534
Camping in a vehicle or trailer	57.7	64.1	69.5	65.0	1.2	.559

Continued

Table 2.—Continued

	Household type ^a				χ^2	Sig.
	Single/no kids (n=109)	Couple/no kids (n=253)	Couple/ kids (n=152)	Composite Mean (n=537)		
Bird watching	85.3	91.6	89.6	89.9	1.1	.566
Participating in neighborhood, river or park clean-up activities	59.1	54.8	68.2	59.3	1.1	.583
Fishing in the Great Lakes	59.4	68.8	67.1	66.7	1.0	.617
Gather plants/berries/ferns	80.0	82.8	75.9	79.7	0.9	.650
Backpacking overnight	46.7	34.8	46.7	41.5	0.8	.685
Picnicking	79.7	79.0	83.3	80.5	0.7	.698
Bicycling	84.4	81.4	85.6	83.7	0.7	.708
Camping in a tent	50.0	51.3	55.6	52.7	0.4	.818
Attending nature-based interpretive programs	64.3	56.8	57.1	58.3	0.3	.881
Going to a museum or heritage site	76.8	74.1	74.5	74.8	0.2	.926
Going to an arboretum/botanic garden	58.3	55.6	55.7	56.2	0.1	.945
Attending history-based interpretive programs	52.2	55.6	51.9	53.5	0.1	.948

^aNote: On this Chi-Square Analysis, household type “Single/kids” were excluded because of too few cases in cells which can cause inaccurate statistical results.

Next, the importance of various experiences was evaluated by providing a list of 28 outdoor recreation experiences/features. Those found to be most important were an outdoor experience that includes fresh air (mean=4.37), experiencing the outdoors (4.22), and natural/scenic landscapes and open-spaces (4.08). Equally important to outdoor experiences were safe and secure environments (4.34), offering comfort facilities such as restrooms and water fountains (4.29), that are both clean and well maintained (4.25), offered at a reasonable fee or price (4.25), and have a helpful and courteous staff (4.08).

The relationship between importance of outdoor recreation features and household composition was tested using one-way analysis of variance. Results indicated significant relationships among four features and household types (Table 3). Features related to the facilities (e.g., food or vending, good visitor services, clean restrooms and water fountains, trails, etc.) were found to differ amongst the segments, followed by features related to learning and preservation (e.g., river restoration

projects, environmental/conservation education programs, restoring and preserving land and open-spaces, etc.). Facilities attributes were most important to single parents and restoration and sustainability were most important to single adults without children in the household.

4.0 Conclusion

Recreation participation by household type varies for some activities. Researchers and practitioners alike should take note of the changes in the composition of a population and the impact these changes will have on recreation demand. While the majority of leisure research has focused on heterosexual married couples with children, it is apparent that researchers need to take into account the diversity of family types that now exist. In light of current trends (Seema 2001), some of the household compositions in need of further research include multigenerational households, single parent households, and gay and lesbian families. The Travel Industry Association of American (TIA 2004) conducted

Table 3.—Outdoor recreation experiences or features

	Household type				Composite Mean (n=537)	F-Test	Sig.
	Single/no kids (n=109)	Couple/ no kids (n=253)	Couple/ kids (n=152)	Single/ kids (n=23)			
<i>Significant Differences Between Household Type Segments</i>							
Restoring and preserving land and open spaces	3.92 (1.07)	3.61 (1.12)	3.51 (1.18)	3.57 (1.12)	3.64	2.74	.042
Attractions/facilities with food or vending available	3.24 ^a (1.21) b	3.15 (1.25)	3.35 (1.21)	4.04 (.92)	3.27	4.22	.006
Attractions/facilities accessible via trails	3.19 (1.16)	2.85 (1.19)	3.08 (1.19)	3.39 (1.15)	3.01	3.20	.023
Learning about sustainable communities/systems	3.30 (1.19)	2.91 (1.18)	2.89 (1.15)	3.09 (1.04)	2.99	2.95	.032
<i>Similarity Between Household Type Segments</i>							
Enjoying fresh air	4.44 (.74)	4.35 (.82)	4.32 (.72)	4.52 (.66)	4.37	.871	.456
Attractions/facilities in safe, secure environments	4.29 (.87)	4.33 (.84)	4.36 (.72)	4.52 (.59)	4.34	.558	.643
Attractions/facilities with comfort facilities	4.25 (.88)	4.24 (.91)	4.36 (.72)	4.57 (.59)	4.29	1.57	.194
Attractions/facilities available at reasonable fees and prices	4.29 (.88)	4.19 (.90)	4.29 (.76)	4.57 (.66)	4.25	1.64	.178
Attractions/facilities that are clean and well-maintained	4.23 (.89)	4.23 (.81)	4.28 (.77)	4.39 (.72)	4.25	.363	.779
Experiencing the outdoors	4.28 (.80)	4.23 (.85)	4.19 (.80)	4.00 (.90)	4.22	.775	.508
Attractions/facilities with helpful and courteous staff	4.05 (1.03)	4.06 (.92)	4.07 (.844)	4.52 (.59)	4.08	1.88	.131
Experiencing natural/scenic landscapes	4.07 (1.06)	4.14 (.87)	4.03 (.88)	3.91 (.94)	4.08	.740	.528
Attractions/facilities with ample parking available	3.97 (.96)	3.97 (.97)	4.02 (.85)	4.39 (.58)	4.00	1.53	.204
Attractions/facilities with good visitor services	3.94 (.99)	3.91 (.91)	3.89 (.902)	4.39 (.58)	3.93	2.05	.105
Experiencing a sense of solitude	3.98 (1.06)	3.78 (1.14)	3.80 (1.00)	3.91 (.90)	3.83	.912	.435
Being able to see and hear wildlife	3.68 (1.15)	3.84 (1.03)	3.81 (1.05)	3.70 (1.06)	3.79	.617	.604
Providing habitats for endangered or sensitive plants/wildlife	3.97 (1.10)	3.67 (1.20)	3.61 (1.15)	3.65 (1.15)	3.71	2.16	.091
Experiencing wilderness areas	3.45 (1.22)	3.56 (1.10)	3.53 (1.14)	3.09 (1.27)	3.51	1.31	.269

Continued

Table 3.—Continued

	Household type				Composite Mean (n=537)	F-Test	Sig.
	Single/no kids (n=109)	Couple/ no kids (n=253)	Couple/ kids (n=152)	Single/ kids (n=23)			
Attractions/facilities location within an hour's drive from home	3.52 (1.11)	3.50 (1.07)	3.38 (1.16)	3.65 (1.15)	3.48	.633	.594
River restoration projects	3.49 (1.23)	3.47 (1.13)	3.32 (1.18)	3.17 (1.19)	3.41	.912	.435
Environmental/conservation education programs	3.53 (1.14)	3.40 (1.08)	3.27 (1.14)	3.30 (1.25)	3.38	1.04	.372
Attractions/facilities accessible via interstate highways	3.36 (1.14)	3.34 (1.13)	3.32 (1.14)	3.65 (1.15)	3.35	.592	.621
Nature/environmental programs	3.32 (1.20)	3.17 (1.09)	3.02 (1.12)	3.09 (1.24)	3.15	1.46	.223
Sites featuring Native American history	3.31 (1.18)	3.14 (1.16)	3.03 (1.14)	3.26 (1.35)	3.14	1.26	.285
Learning about the Great Lakes ecosystem	3.33 (1.21)	3.12 (1.12)	3.01 (1.04)	3.13 (.96)	3.13	1.63	.182
Viewing native flora (plants)	3.26 (1.29)	3.11 (1.08)	2.97 (1.10)	3.09 (1.04)	3.10	1.25	.288
Sites featuring farmstead and agricultural history	3.07 (1.14)	2.98 (1.06)	3.01 (1.17)	3.17 (1.23)	3.02	.302	.824
Technology presentation of nature	2.72 (1.16)	2.68 (1.16)	2.64 (1.06)	2.57 (1.03)	2.67	.164	.921

^aScale where 1= “not at all important” and 5 =“extremely important.”

^b Number in parentheses is the standard deviation.

a study of family travelers and predicted more “grand travel” in the years to come as the 77 million active, healthy Baby Boomers become grandparents. Special pricing to accommodate single parent families may also need to be addressed. In addition, changes in the country's ethnic and racial composition may increase demand for multi-generational travel, affecting the size of traveling parties. A constantly evolving marketplace will have a whole range of implications and household composition will continue to change, resulting in a new, more diverse “traditional” family.

Overall, this analysis showed outdoor recreation behaviors, as well as the importance or preference for outdoor recreation activities, is fairly similar across the household segments. Some differences were noted. For example, single adults were less likely to hunt,

fish, boat or swim in the out-of-doors. Single parents expressed that facility services were important to their outdoor experiences and found food service and trails to be necessary. Limitations of this study include the limited number of participants representing each group, especially single parents. For this reason, these results should be interpreted with caution. We recognize the shortcomings and suggest replication of this study with over increased representation of the single with children household group. Our knowledge of the dynamics of the American family system is limited due to the small amount of research currently available regarding household make-up and the role it plays in leisure and recreation participation. The present study takes an alternative analysis of recreation and leisure patterns, based on household composition. Changes in the composition of a population will have impacts

on recreation demand, underlining the importance of research in the area of recreation needs and household composition.

5.0 Citations

Dillman, D.A. 2000. **Mail and internet surveys: The tailored design method.** New York, NY: J. Wiley.

Gunn, C. 1994. **Tourism planning: Basics, concepts, and cases.** Washington, DC: Taylor & Francis.

Holman, T.B. and Epperson, A. 1984. **Family and leisure: A review of the literature with research recommendations.** *Journal of Leisure Research.* 16: 277-294.

Horna, J. and Lupri, E. 1987. **Father's participation in work, family, life and leisure: A Canadian experience.** In C.S. Lewis and M. O'Brian, eds., *Reassessing fatherhood.* London: Sage Publications.

Kelly, J.R. 1983. **Leisure identities and interactions.** Winchester, MA: Allen & Unwin.

Kelly, J.R. and Warnick, R.B. 1999. **Recreation trends and markets: The 21st century.** [electronic resource] www.netlibrary.com. Champaign, IL: Sagamore.

Mactavish, J.B., Schleien, S.J., and Tabourne, LA. 1997. **Patterns of family recreation in families that**

include children with developmental disabilities.

Journal of Leisure Research. 29: 21-46.

Norusis, Marija J. 1988. **The SPSS guide to data analysis for SPSS/PC+.** (pp. 250). Chicago, IL: SPSS, Inc.

Seema, N. 2001. **The new family vacation.** *American Demographics.* 23: 5.

Shaw, S.M. 1997. **Controversies and contradictions in family leisure: An analysis of conflicting paradigms.** *Journal of Leisure Research.* 29: 98-112.

Singleton Jr., R.A., Straits, B.C., and Straits, M.M. 1993. **Approaches to Social Research.** New York, NY: Oxford University Press.

TIA. 2004. **Domestic travel market report.** Washington, D.C.: Travel Industry Association of America.

U.S. Census Bureau. 2000. **Census 2000.** Geographic area: Michigan. <http://factfinder.census.gov/> (Accessed 12 October 04).

Vogt, C.A., Andereck, K.L., and Klenosky, D.B. 2001. **Project report market analysis: Midewin National Tallgrass Prairie.**

Tourism and the Tourist Experience

SERVICE QUALITY IN TOURISM: A CASE STUDY OF THE 2001 STUDY TOUR OF TAIWAN

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Abstract

Every year, the government of Taiwan sponsors a six-week program for approximately 800 foreign-born, young Chinese, “The Overseas Chinese Youth Language Training and Study Tour”, which is aimed at familiarizing the participants with their Chinese language and culture. The purpose of this study was to assess perceptions of service quality among participants in this program. Out of the 803 individuals that participated in this program, 596 finished the survey in this study. The quality was measured by the REQUAL model, and factor analysis extracted three dimensions including reliability, responsiveness, and assurance with adequate internal consistency (0.85; 0.77; 0.71). These dimensions differed from REQUAL’s five-dimension model because of a difference in service context, i.e., from a domestic recreation activity to an international tourism program. Regression analysis suggested that assurance and reliability were significant predictors of overall service quality. The findings revealed that another effective service evaluation model is needed for tourism-related study, and a different service scenario will possibly yield a different service focus.

1.0 Introductions: Headings

More and more American college students, motivated primarily by their interests in learning, are likely to participate in educational travel programs, according to some institution’s reports. The Institute of International Education (IIE), for example, reported that in 2002 there were about 2,700 short-term study abroad programs, and it indicated a more than 50 percent

increase in ten years in the number of study tour programs when compared to IIE’s report in 1990. More and more study abroad programs are offered to satisfy students’ different learning needs, and it has become a “megatrend” for education to extend beyond classroom learning to include studying abroad to acquire knowledge. In 2001, 833 ethnically Chinese college students from all over the world joined a 6-week, education-oriented travel program, the Overseas Chinese Language Training and Study Tour (hereafter referred to as the Study Tour), to learn Chinese culture and language. This study would use the Study Tour as the case to explore the service quality and how participants’ needs are satisfied under different contexts. This study also tried to compare with the previous service studies and testify whether the current recreation service evaluation model (REQUAL) could capture the Study Tour service phenomena. Because this study focused only on the 2001 Overseas Chinese Youth Language Training and Study Tour in Taiwan (although the program began in 1966), generalizations from this study are limited to 2001.

2.0 Relevant Literature Review

2.1 The Study Tour

The Study Tour was developed for ethnically Chinese youth living overseas and has been held in Taiwan and sponsored by the Taiwanese government since 1966. This 6-week, study abroad program is divided into two parts: an educational section that includes 28 days of language and folk art classes as well as a nine-day trip around Taiwan. Each participant might pay only one-fifth tuition fees, and the Taiwanese government would pay the rest of their tuition. The government hopes such financial support would encourage more and more ethnical Chinese students to join the program in order to meet the three different expectations among the government, the student’s parents, and the student.

As for the government, it had hoped that the program would lead to interactive opportunities between the participants and their “roots” in real life situations and make the participant understand and support

Taiwanese policies in their own local societies or countries. The hidden political ambitions of the government for sponsoring this program were to avoid diplomatic isolation from the international society and to keep overseas Chinese friendly to Taiwan (personal communication with Dr. Pan, Chief Director of the Study Tour, 2001). On the other hand, for both parents and students, the Study Tour is a “Love Boat” because the potential for marriage would be the first priority for them during the 6-week program. In-keeping with traditional marriage expectations, the parents hoped their daughters or sons could find their life partner with the same ethnic background. Since the traditional Chinese marriage should involve the same ethnic backgrounds, the Study Tour offered an excellent chance for those participants to find Chinese males/females for their life partner. The other consideration for parents would be roots-finding, or reunderstanding Chinese culture and language, through language and heritage classes. For students, friendship-finding might be their main motivation for this program instead of learning and understanding Chinese culture and language. In this situation, the program service quality would play a crucial role for their satisfying program experience, and it also could contribute to their successful learning experience. The program sponsors, the China Youth Corps and Overseas Chinese Administration Committee, were responsible for designing, developing, and implementing this program.

2.2 Service Quality and Tourism

2.2.1 Service Quality and SERVQUAL model.

Backman & Veldkamp (1995) stated that quality of service is an essential factor involved in a service provider's ability to attract more customers. Unlike the quality of goods, which may be measured objectively by such indicators as durability and number of defects, service quality is an elusive construct that is difficult to measure (Crosby 1979). Mackay and Crompton (1990) defined service quality as “the relationship between what customer's desires from a service and what they perceive that they receive” (p. 47). Additionally, service quality is also a way of thinking about how to satisfy customers so that they hold positive attitudes toward the service they have received (Ostrowski, O'Brian, & Gordon 1993).

To help service providers identify their strengths and weaknesses, Parasuraman, Zeithaml, & Berry (1988) developed the SERVQUAL model, a diagnostic tool including 22 items to appraise five key service factors: tangibles, reliability, responsiveness, assurance, and empathy. Parasuraman et al. (1988, 1991) found that the five-dimensional format of SERVQUAL allows researchers to assess the level of service quality along each dimension, as well as overall. The purpose of this model is to serve as a diagnostic method for uncovering broad areas of weaknesses and strengths in the quality of service a company delivers. A lot of service-related research was evaluated by SERVQUAL, and they might have results consistent with Parasuraman et al.'s (1988, 1991) suggestions. SERVQUAL has offered a model for measuring service quality for over 10 years. However, some researchers have suggested that a revised measurement scale is needed specifically for providers of tourism services. The new service instrument might be needed for research in tourism fields.

2.2.2 Service Quality and Tourism. The quality of service involved with tourism plays an important role in the process of delivery (Wyllie 2000) and thus is the standard used to assess the effectiveness of a particular leisure service agency, including the tourism service sector (Godbey 1997). Service quality is an intangible, but crucial, area of interest to travel service providers. As described above, the major service evaluation tool is SERVQUAL model, and Parasuraman et al. stated that this model could apply to various service contexts. Many tourism researchers use this model to evaluate the quality of services provided in tourism and affiliated industries (Baker & Fesenmaier 1997; Childress & Crompton 1997; Fick & Ritchie 1991; Leblanc 1992; Ostrowski, O'Brien, & Gordon 1993; Vogt & Fesenmaier 1995). For example, SERVQUAL was tested by Mackay (1987) in the Canadian municipal parks, and he extracted the same five dimensions as Parasuraman et al.'s (1985) model (as cited in Crompton et al. 1991). In another study, Brown and Swartz (1989) expanded SERVQUAL and found that service providers do not understand the level at which customers evaluate their experiences. Bigne et al. (2003) also employed SERVQUAL to test the quality of service received from travel agencies, and they found that it is still a valid and reliable model with

which to evaluate the service quality provided by travel agencies.

Although SERVQUAL was designed to measure service quality, it provides only a framework or skeleton and thus has had to be adapted and modified to evaluate specific services (Parasuraman et al. 1988, 1991; Beckman & Velfkamp 1995). MacKay and Crompton (1988) proposed a conceptual framework for studying service quality in the recreation and leisure industries—the REQUAL model (REQUAL). In addition, Crompton et al. (1991) stated that SERVQUAL cannot be used to evaluate service quality in the different types of recreation services sectors and suggested the need to develop a new scale to fit tourism or other recreation services sectors. Thus, in 1990, using SERVQUAL as a basis, Mackay and Crompton developed REQUAL, which is used to evaluate the quality of recreational services. In 1995, Backman and Veldkamp (1995) reviewed and offered empirical studies; they concluded that these findings from current empirical studies suggest that the new model in the YMCA project, REQUAL, can serve as a template for other researchers to use in their investigation of recreational service quality.

After considering the settings and the context of this study, the REQUAL model, along with the performance-based evaluation tool, SERVPER (Cronin & Taylor 1992), will be utilized in this study to determine the service dimensions and their relation to the overall service quality for Study Tour.

3.0 Methodology

3.1 Setting

The setting for this study was the Study Tour. The tour, which is situated in Taipei, Taiwan, was held July 5–August 11, 2001. Two locations were utilized: the Chien-Tan campus, which is located in the downtown of Taipei, and the National Ocean University, which is located in the northern part of the Taipei metropolitan area.

3.2 Method

Because of the abstract nature of service quality in the recreational service industry, it was important to use an objective scale of service quality to evaluate participants'

perceptions of the service quality provided by the Study Tour. This study will employ REQUAL and adopt a performance-based model, like SERVPER (Cronin & Taylor 1992) to fit the Study Tour context and time limitation. This study predicted that the five service-quality dimensions (derived from the REQUAL model) would be indicators of perceived overall service quality. To do that, factor analysis was utilized to reduce the 22 items on the service-quality questionnaire into categories. The principal components analysis was conducted utilizing a varimax rotation, as Mertler and Vannata (2002) suggested one of possible statistic analysis for confirmation analysis purpose.

3.3 Instrument

The instrument used for this study was an on-site and self-administered questionnaire comprised of modified REQUAL items. The staff of the Study Tour helped to distribute and collect the survey sheets from the participating students at the end of the Study Tour.

4.0 Findings and Discussion

4.1 Findings

Three criteria as Tabachnick and Fidell (1996) suggested were used to determine the appropriate number of components to retain: eigenvalue not less than 1, variance explained, and scree plot. In addition, the Cronbach alphas to assess the internal consistency of assurance, responsiveness, reliability, and tangibles were 0.85, 0.77, 0.71, and 0.37, respectively.

Based on the criteria, the tangibles component was taken out of further discussion because of its low accountability for the variance and its low Cronbach alpha value. Thus, three factors were retained (assurance, responsiveness, and reliability), which were employed in further regression analyses to isolate their relationships with the perceived overall service quality of the 2001 Study Tour. See Table 1 for a breakdown of which items were categorized under each of the three factors.

The three categories extracted from the items on the questionnaire were analyzed for how predictive they were of the perceived overall service quality. The results of the regression analysis for how predictive these categories were are shown in Table 2. The R square was 0.35; about

Table 1.—Factor analysis of the items on the service quality questionnaire used for the 2001 Study Tour

Factors and Items	Factor1	Factor 2	Factor 3	Factor 4
Assurance				
22. The staff should be credible.	0.800			
21. The staff should be polite.	0.799			
20. The staff should be competent.	0.713			
18. The staff should understand my needs.	0.558			
1. The staff should be neat and well dressed.	0.544			
19. The staff should be trustworthy.	0.543			
24. The staff should be enthusiastic.	0.521			
10. The staff should perform their duties consistently well.	0.508			
17. The staff makes us feel like we belong.	0.504			
Responsiveness				
14. Problems should be solved quickly.		0.625		
13. The sponsors should act on participants' suggestions.		0.596		
12. The staff should respond to requests quickly.		0.563		
11. The staff should be willing to go that extra mile to help				
Participants		0.519		
16. The staff should give me individual attention.		0.508		
15. The staff should take time with the participants.		0.493		
Reliability				
7. Information provided should be accurate.			0.713	
9. What is promised should be delivered.			0.682	
8. The program should start on time.			0.662	
4. The equipment provided by this program should be up-to-date.			0.447	
6. The sponsors should be concerned with quality control.			0.449	
Tangibles				
2. The facility should be comfortable.				0.700
5. The facility should be visually aesthetically attractive.				0.477
3. The other participants should not be bothersome.				0.446
Eigenvalues	7.163	1.748	1.138	1.048
Percentage of Total Variance	32.56%	7.95%	5.17%	4.76%
Cumulative Percentage of Variance	32.56%	40.51%	45.68%	50.44%
Cronbach's Alpha	.85	.77	.71	.37
Number of Items Per Factor	9	6	5	3

35 percent of the variance in predicting the perceived overall service quality could be explained by the items in this questionnaire. The beta values indicate that the assurance dimension (0.47) made the most statistically positive and significant contribution among the items in

the questionnaire. The beta values for assurance (0.47) and reliability (0.21) were both statistically significant at the .001 levels. However, responsiveness was not statistically significant in predicting the perceived overall service quality.

Table 2.—Summary of results of the regression analysis for the three dimensions in predicting the perceived overall service quality of the 2001 Study Tour and satisfaction equation

Factors	B value	Standardized alpha value	p-value
Assurance	.54	.05	.47***
Responsiveness	.02	.05	.01
Reliability	.25	.05	.21***

$R^2 = .35$, *** $p < .001$

Satisfaction = $2.07 + 0.54 \text{ Assurance} + 0.25 \text{ Reliability}$

Table 3.—A Comparison of factor Cronbach alpha values between the SERVQUAL model, Crompton et al.'s (1991) model, and the (2001) Study Tour findings

The SERVQUAL model	Cronbach alphas	The (2001) Study Tour model	Cronbach alphas	Crompton et al.'s (1991) model	Cronbach alphas
Tangibles	0.92			Tangibles	0.79
Reliability	0.93	Reliability	0.71	Reliability	0.88
Responsiveness	0.93	Responsiveness	0.77	Responsiveness	0.82
Assurance	0.95	Assurance	0.85	Assurance	0.91
Empathy	0.93				

4.2 Discussions

Compared to the REQUAL model, these results revealed that the fourth and fifth dimensions, empathy and tangibles, did not affect the perceived service quality of the Study Tour. Furthermore, the Cronbach alphas values were also lower for each of the dimensions in this questionnaire than they are for each of the dimensions of the REQUAL and SERVQUAL models (also see Table 3).

Factor 1 included nine items relating to the assurance dimension, which has to do with courteous and knowledgeable staff members, who convey a sense of competence and confidence (Parasuraman et al. 1988, 1991). This is different from an a priori comparison with Crompton et al.'s design (1991). Four extra items, which in the REQUAL model were located in other factors, were added to this dimension. "The staff should understand my needs" and "The staff should make us feel like we belong" were originally designated as belonging in the empathy dimension, which did not emerge in this study. These two items appear to be consistent instead with the definition of assurance. The ethnically Chinese youth needed some extra care to increase their trust and

confidence because it was the first time for most of them to leave their own country and attend a study abroad program. "The staff should be neat and well dressed" and "The staff should perform duties consistently well" were originally designated as items belonging in the factors "Tangibles" and "Responsiveness," but they also seemed to be consistent with the definition of "Assurance," reflecting the ability of the staff to build trust and confidence. Crompton et al. (1991) also found the same results, except for "The staff should understand my needs," and they believed that aside from this item, these items would be more appropriate in the assurance dimension, reflecting Parasuraman et al.'s (1988, 1991) suggestions.

Factor 2, "responsiveness," involves the "staff's willingness to help customers and provide prompt services" (Parasuraman et al. 1988, p. 6). "The staff should give me individual attention" was originally designated as belonging under "Empathy," according to Crompton et al. (1991). This extra item could also be conceptualized as a provision of "individual attention by the staff promotes good service." Factor 3, "Reliability" means

the “ability to perform the promised service dependably and accurately” (Parasuraman et al. 1988, p. 6). Furthermore, the item, “The equipment provided by this program should be up-to-date,” referring to the facility, transportation, and lodging used by the 2001 Study Tour, was originally designated as belonging in the “Tangibles” dimension, but it could also be seen as contributing to the evaluation of the “Reliability” dimension.

One reason that might account for the fact that the Cronbach Alpha is lower for the dimensions examined by this questionnaire than for the dimensions in REQUAL is that the scale did not fit the context of the 2001 Study Tour very well, because it was originally designed for users of public parks instead of tourists studying abroad. Some researchers (e.g. Crompton et al., 1991) brought up the importance of the context of tourism for the measurement scale being used. In comparison to Crompton et al.’s (1991) study on Canadian park users, as well as Backman and Veldkamp’s (1995) study on YMCA users, the increased complexity of this study, including the different goals of recreational settings, might also have contributed to differences in the dimensions of the service quality model. The 2001 Study Tour was a study abroad program held overseas, while the other studies involved domestic park users and consumers in non-profit institutions. Different dimensions might be expected because of differences between domestic and overseas settings.

In order to obtain higher Cronbach alpha values, the study setting must be taken into account when creating the content of the scale, since the function of the measurements on a scale is to link abstract concepts to empirical indicators (Graefe 2003). Additionally, a statistical indication of the extent to which each item is correlated with each factor is given by the factor loading. Existing research shows the necessity of modifying REQUAL or constructing a new scale to evaluate contexts such as those of the 2001 Study Tour. Crompton et al. (1991), for example, found four dimensions (assurance, reliability, responsiveness, and tangibles) in their study of government-supported recreational services. The current findings suggested that a revised service-quality evaluation model is needed for the context of tourist services.

As for the significant indicators of the overall service quality, assurance and reliability factors were both statistically significant indicators, which means that the staff’s inspiring knowledge and enthusiasms would be the positive force for perceived service quality. For those students from various corner of the world, trust in staff would be the most important index for their service quality definitions.

5.0 Conclusion

Three dimensions were found in the 2001 Study Tour model, which are also different from other studies that employed REQUAL. That result, which is due to various differences in the environmental settings of this study, makes sense in light of Babakus and Boller’s (1992) suggestion that the dimensions of the model might vary depending on the type of service sector under investigation. In this study, different service context would be the main reason that different dimensions were found in the Study Tour, as compared to other tourism-related studies. Crompton et al. (1991) stated that the context of different service industries should be considered in future studies, as SERVQUAL is not “one size fits all.” More specifically, different characteristics of the places where the survey takes place may influence an analysis of service quality. In order to improve the quality of this study, more accurate evaluation scales are needed based on educational tourism specifically.

Overall, 70.7 percent of the participants were satisfied with the service quality of the 2001 Study Tour, and the dimensions of assurance (i.e. the courtesy and knowledge of the employees and their ability to inspire trust and confidence) and reliability (i.e. the ability to provide the promised service dependably and accurately) best predicted their perceptions of the overall service quality. Since a major characteristic of tourism is that it is a “people industry” (Vogt & Fesenmaier 1995), meaning that the personal or individualized care of the participants is “the index for the quality of service” (Peters & Waterman 1982, as cited in Vogt & Fesenmaier 1995, p. 765), it makes sense that the most important factor in predicting the overall perceived service quality for the Study Tour participants is assurance, followed by reliability.

Finally, the results of this study indicate that it might be possible to create service quality evaluations that are more accurate instruments for measuring the quality of service in the various service sectors, as Crompton et al. (1991) suggested. Moreover, for the best indicators of service quality in the tourism sector, the tourist's experience, might be the key indicator for evaluating tourism quality, because the tourism industry is essentially people serving people. Therefore, future studies of tourism quality should evaluate the tourist's experience, instead of the five dimensions used in previous evaluation tools, as Otto and Ritchie (1996) stated. Additionally, Fick and Ritchie (1991) also suggested that qualitative methods are needed to examine service quality in the tourism industry. Service quality will be one of the crucial issues in the tourism field in the future.

7.0 Citations

- Babakus, E. and Ho, S.K. 1998. **Service quality and tourism**. Journal of Travel RESEARCH. 37: 71-75
- Backman, S.J., and Veldkamp, C. 1995. **Examination of the Relationship between service quality and user loyalty**. Journal of Park and Recreation Administration. 13(2): 29-41.
- Baker, D.A., and Fesenmaier, D.R. 1997. **Effects of service climate on managers' and employees' rating of visitors' service quality expectations**. Journal of Tourism Research. 36(1): 15-22.
- Bigne, J.E., Martinez, C., Miquel, M.J., and Andreu, L. 2003. **SERQUAL reliability and Validity in travel agencies**. Annals of Tourism Research. 30(1): 258-262.
- Brown, S.W., and Swartz T. 1989. **A gap analysis of professional service quality**. Journal of Marketing. 53: 92-98.
- Childress, R.D., and Crompton, J.L. 1997. **A comparison of alternative direct and discrepancy approaches to measuring quality of performance at a festival**. Journal of Tourism Research. 36(2): 43-57.
- Corsby, P.B., ed. 1979. **Quality is free: The art of making quality certain**. New York: New American Library.
- Crompton, J.L., Mackay, K.J., and Fesenmaier, D.R. 1991. **Identifying dimensions of service quality in public recreation**. Journal of Park and Recreation Administration. 9(3): 15-27.
- Cronin, J.J. and Taylor, S.A. 1992. **Measuring service quality: A reexamination and extension**. Journal of Marketing. 56: 55-68.
- LeBlanc, G. 1992. **Factors affecting customer evaluation of service quality in travel agencies: An investigation of customer perceptions**. Journal of Travel Research. 30(4): 10-16.
- MacKay, K.J., and Crompton, J.L. 1990. **Measuring the quality of recreation services**. Journal of Park and Recreation Administration. 8(3): 47-56.
- MacKay, K.J., and Crompton, J.L. 1988. **A conceptual model of consumer evaluation of recreation service quality**. Leisure Studies. 7: 41-49.
- Mertler, C.A., and Vannata, R.A. 2002. **Advanced and multivariate statistical methods: Practical application and interpretation**. Los Angeles: Pyrczak.
- Ostrowski, P.L., O'Brien T.V., and Gordon, G.L. 1993. **Service quality and customer loyalty in the commercial airline industry**. Journal of Marketing. 22(2): 16-24.
- Otto, J.E., and Ritchie, R.B. 1996. **The service experience in tourism**. Tourism Management. 17(3): 165-174.
- Pan, C.Y. 2001. Personal communication.
- Pan, Z., Chaffee, S.H., Chu, G.C., and Ju, Y. 1994. **To see ourselves: Comparing traditional Chinese and American Cultural Values**. Boulder: Westview Press.

- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. 1991. **Refinement and reassessment of the SERVQUAL scale.** Journal of Retailing. 67: 420-450.
- Parasuraman, A., Zeithaml, V.A., and Berry, L.L. 1988. **SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality.** Journal of Retailing. 64(1): 12-40.
- Tabachnick, B.G. and Fidell, L.S. 1996. **Using multivariate statistics. 3rd ed.** New York: Harper Collins
- Vogt, C.A., and Fesenmaier, D.R. 1995. **Tourist and retailers' perceptions of services.** Annals of Tourism Research. 22(4): 763-780.
- Wyllie, R.W. 2000. **Tourism and society.** State College, PA: Venture Publishing.

MUSEUM VISITORS' PERSPECTIVES ON AND PREFERRED EXPERIENCES FOR HERITAGE TOURISM

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Abstract

A recent study of Michigan museums that complements the economic impact analyses provides insights into museum visitor travel planning and behavior, experience preferences, and recommendations for improving their experiences. This study supports others that indicate museum visitors are predominantly Caucasian, have higher education and household incomes than the general population. However, results also challenge common tourism planning assumptions about the need to create interesting cost center attractions to entice tourists to choose a community or region as their destination. Based on these data, recommendations for tourism experience planning are provided.

1.0 Introduction

For over a decade now (since the early 1990s) in the United States, attention has been focused on the development and promotion of cultural tourism. A national effort was spotlighted when the National Trust for Historic Preservation implemented its Heritage Tourism Initiative in 1993 (Green 1993) and the 1995 Whitehouse Conference on Tourism presented a report commissioned by the President's Committee on the Arts and the Humanities titled "Exploring America through Its Culture". Museums, performing and visual arts organizations have perceived this intentional partnership between cultural organizations and tourism both as a way to extend their missions by impacting otherwise

unreached audiences (or markets) and as a source of additional revenue generation. Such revenue is critical in an era of declining funding from government and some philanthropic sources. The tourism industry has supported cultural tourism development as a way to meet the needs and desires of a changing tourist market, primarily to capture and increase market share. It is no surprise, then, that major attention has been focused on the economic impacts of cultural tourism. Cultural organizations understand this as a critical element in gaining political, community and financial support for their programs and facilities. The tourism industry deems this an essential criterion for inclusion of an attraction or experience in the tourism system. Consequently, cultural organizations are interested in demonstrating economic benefits to communities, regions and states in addition to acknowledging their more traditional benefits: education, preservation, quality of life enhancement. As a result, museums, historic sites, performing arts organizations, and other cultural institutions have commissioned numerous economic impact studies to demonstrate their value in terms understandable by the tourism industry, state legislators and local politicians, community and economic development authorities, and other entities responsible for allocating increasingly limited resources. (America for the Arts 2002; Clarion Associates 2002; Lane 2001; National Governors Association 2001; Stronge 2000, TIA 2001, 2003).

In Michigan, efforts to build a partnership between the state's cultural institutions and tourism began in earnest in about 1994, shortly after the Whitehouse Conference on Tourism. The first phase, spearheaded by members of the Michigan Museums Association (MMA), was a white paper titled *Tourism in Michigan: Discover the Stories and Faces of Michigan* (Michigan Museums Association 1997). This was followed by an initial study of cultural tourism's status in Michigan (Michigan Museums Association 1998), a partnership between the MMA and the Michigan American Automobile Association (AAA) to publish an annual cultural tourism promotional piece, and a series of conferences/workshops to bring together tourism and

¹The contributions of Soo Jun and Paige Schneider, Michigan State University, for qualitative analysis are gratefully acknowledged. Also acknowledged is financial support for the study by Travel Michigan/Michigan Economic Development Corporation and MotorCities Automobile National Heritage Area, with additional support by Michigan Museums Association, Michigan Agricultural Experiment Station and participating museums.

museum professionals and to provide training in heritage tourism planning and implementation (Vander Stoep and Harmon 1999). More recently, since its creation in 2001, Michigan's Department of History, Arts and Libraries (HAL) has focused on development of tourism opportunities highlighting the State's maritime heritage. Two programs are: 1) a community-based program to develop maritime heritage tourism in selected coastal communities; and, 2) a partnership with MMA members and communities to develop themed itineraries (History, Arts and Libraries, 2005). Examples of resulting maritime driving tours include the "River Country Heritage Water Trail," "Historic Harbortowns: Exploring Michigan's Beachtowns," and "Echoes of the Edmund Fitzgerald" (Travel Michigan 2005). Examples of other heritage routes include books, "Art and Wine," "Once Upon a Farm," and "Inventors' Alley." Each themed tourism itinerary was developed by community members and is supported/promoted via Travel Michigan's statewide tourism web site (Travel Michigan 2005). Simultaneously, Michigan Museums Association worked in partnership with Travel Michigan/Michigan Economic Development Corporation to commission a study to assess the economic impacts of cultural tourism in Michigan. To make the primary-data-based study feasible within the debated and vague definitional context of "culture" and the constraints of budget and time, visitors to museums were selected as the sampling frame for a study to estimate economic impacts of museum-based cultural tourism. Results of this study are reported in the proceedings of the 2004 Northeast Recreation Research Symposium (Vander Stoep 2005).

While results of economic impact studies provide the "bottom line" information desired by business and political leaders, and are important for organizational self-assessment and future planning, the economic impacts are simply an indicator of underlying factors. If there are, in fact, positive economic impacts of museum-based (or other cultural organization) tourism, the underlying reasons for why people choose to spend their money engaged in such activities must be understood. How do people choose tourism destinations? What is the role or importance of museums and other cultural sites/events/experiences (hereafter labeled simply as "museums") in those decisions? How do visitors (or

potential visitors) to a community find out about the museum(s)? What are the factors or characteristics of the site or experience that attract them? How much are they willing to pay for admission? What are their favorite parts of a museum experience? What do they not like, or find lacking, in their experience? What are the factors that would encourage tourists to return in the future (repeat visitors)? What are other activities engaged in during the "trip" in which a museum visit is incorporated? On what specifically do tourists spend their money? Answers to these and other questions underlie tourist spending behavior, both in the museum and in the local community.

This paper begins to answer some of these questions for tourists who have included a visit to at least one museum during their trip to a specific Michigan community. For this study, the American Association of Museums definition of "museum" is used (American Association of Museums 1994) and includes many types of sites (sometimes sites that may not be perceived by visitors as a museum, or as a site associated with cultural tourism): general interest museums, history museums, natural history museums, science museums, children's museums, art museums, historic sites and buildings, nature centers, botanical gardens, zoos, aquariums, planetariums, and special interest museums such as maritime museums, lighthouses, historic ships, automobile and railroad museums.

2.0 Methods

As presented more fully in Vander Stoep (2005), it is difficult to provide a universally accepted definition of cultural tourism, partly because the term "culture" is interpreted in many ways, and partly because the experience of tourism is inherently complex, making it difficult to isolate "heritage or cultural" components of a trip from those that are not. To estimate economic impacts, it thus becomes important to operationalize a definition and component of the travel experience. However, this is less important for understanding the factors associated with how and why potential tourists make decisions about travel destinations, and then about decisions for specific experiences and spending within that destination. It is more important to understand the

role of heritage and cultural sites, factors and experiences in making those decisions, and in visitors' assessments of those experiences. For this study, "general admission" museum visitors were targeted. This study does not address experiences associated with special events and community festivals, performing arts, or a host of historical sites and monuments that are not formally associated with a physical "museum" building or site.

2.1 Survey Instruments

The complete study involved multiple survey instruments: a museum administrator survey (sent to a census of all Michigan museums), a visitor survey (using sampling plans at 35 Michigan museums), and a supplemental survey for MotorCities National Heritage Area. This paper focuses on part of the visitor survey.

The survey of museum visitors gathered demographic and travel party information, trip characteristics, spending data, primary trip purpose, information to determine if visitors were local or tourists (traveled more than 50 miles one way) and whether their trip was a day or overnight trip, lodging type for overnight trips, factors related to their museum visit behavior, travel planning, and personal assessments of their museum experiences. The instrument included some questions with response sets provided (for most questions, an "other" option was included to allow visitors the opportunity to provide other responses or explanatory comments) and some questions that were entirely open-ended. Examples of open-ended questions are those that asked visitors to provide information about their best experiences (the things they liked best about a museum) and to give recommendations for improving the site or visitor experience.

Museum visitors initially were contacted at the 35 museums where they completed a short on-site survey, and were invited to complete a more comprehensive post-trip survey. They could choose either a printed mail or web-based format. This survey gathered detailed spending, travel planning and preferences, museum experience assessments and other information after visitors completed their trips. Visitors not returning the initial "long" survey were sent reminders, via mail or email, based on their chosen response mode.

2.2 Visitor Sampling

The museum visitor sample was taken from 35 "large" and "medium" museums² across Michigan, representing a range of geographic locations and museum types (see the AAM list of facilities considered to be museums, in the "introduction"). Based on a planned sampling strategy tailored to each site's special needs, visitors were contacted on dates selected to represent weekend and weekday visitors and different times of day. To serve as a contact site, the museum had to be willing to participate, have staff or volunteers trained to conduct surveys, offer an incentive to visitors for study participation, and serve enough visitors to obtain an on-site sample efficiently. "Small" museums were not included because 1) they are assumed to have minimal economic impact (the primary objective of the funding organization); and 2) it was unlikely that they would have the staff or resources to conduct the onsite surveys.

2.2 Data Analysis

Descriptive statistics (using SPSS) were used for developing visitor profiles, for identifying relevant travel planning factors, trip behavior and preferred activities, describing visitors' general museum interest and involvement, and their willingness to pay for museum visits. Content analysis, using two independent analysts and having discordant results decided by a third analyst, was used to identify general themes for what visitors liked and would recommend for improvements related to their museum-based heritage experience (Silverman 1993).

3.0 Results

3.1 Response Rates and Demographic Characteristics

A total of 6,417 museum visitors were contacted at cooperating museums. Sixty percent of these visitors (n = 3,868) agreed to participate in the post-trip survey and 34 percent of those agreeing actually completed the post-trip survey (n = 1,280). Potential non-response bias in the visitor survey was assessed by comparing the onsite sample with those completing the post-trip survey. No significant differences were observed between the two groups in terms of trip purposes, but there were some

²Large museums have annual operating budgets over \$1 million while medium-sized museums have budgets between \$250,000 and a million.

differences in trip types. Local visitors were somewhat less likely to respond to the post-trip survey while visitors on overnight trips are over-represented in the post-trip sample. Only general admission adult visitors (age 18 or older) were supposed to be contacted for the survey, so these statistics generally exclude a representative sample of visitors who were part of organized school or adult groups and visitors to most special events. However, a small number of “group members” are included in this analysis, as suggested by some of the “group size” data. Museum visitors were similar to the Michigan population as a whole with respect to age, but included fewer minorities. They also had higher levels of education and income. There were no significant differences in demographic profiles across types of trips taken by the respondents (local visitor, day tourist, or overnight tourist).

Ages of museum visitor respondents (adults 18 years and older) were distributed in a fairly normal bell curve, with the two largest age ranges (36-45 years and 46 – 55 years) each accounting for about 23 percent of all respondents, and with higher numbers of visitors in the two oldest age ranges (56-65 years and those more than 65 years old) than the two youngest age groups (those aged 26-35 years and 18 – 25 years. The smallest group (18-25 years old) accounted for only about 5.5 percent of all visitors. About two thirds (67%) of the respondents were women, even though research associates were instructed to alternate male and female respondents to achieve close to a 50:50 male: female ratio. While ratios varied from site to site, women were the most frequent survey respondents overall, with a higher ratio of male respondents at only one site.⁴ It is not possible to determine the reasons for this discrepancy; however, possible reasons include:

- women were more willing to talk with research associates at the museum;

- women were more willing to agree to complete a post-trip survey when contacted;
- more females than males actually visited the museum (or were the “adult” within a group that talked with the research associate);
- research associates did not or were unable to follow the protocol for some reason; or,
- assuming the initial contacts were evenly split male/female, the person completing the post-trip survey at home was more often a female, despite the instruction that the same person who completed the on-site survey should complete the post-trip survey.

Almost 60 percent had annual household incomes of between \$25,000 and \$75,000, with about 11 percent having incomes of less than \$25,000 and fewer than 10 percent having incomes in each of the two highest income categories (\$100,000 - \$124,999 per year, and \$125,000 or more per year). There were small differences among visitors to different museums, with those visiting sites having the highest ticket prices being more likely to have higher incomes. This is likely due to self-selection based on ability to pay, either for the higher ticket prices and/or for the travel costs associated with visiting distant or island-based museums.

Three-quarters of all respondents had some college education or higher, with 50 percent having at least one college degree. Only 18 percent had no more than a high school education. This educational profile is consistent with results of numerous other studies of cultural or heritage tourist market segments that indicate tourists who participate in cultural tourism are, on average, more highly educated than the general population.

Ninety percent of all respondents were White/Caucasian, with the percent at some museums being as high as 96 percent and the lowest being 84 percent.⁵ Almost one quarter (24%) of museum visitor respondents were retired, and 59 percent were employed either full- or

³Descriptive statistics presented in this paper show slightly different results than those presented in Vander Stoep 2005 (NERR 2004) because only general admission visitors were used for the economic analyses, and thus all the other results presented in that paper.

⁴This museum was an automobile heritage museum, which apparently is a topic highly attractive to males.

⁵The individual site results are based on site-specific analysis of only ten of the 35 museums involved in the study. These were the only museums having at least 50 completed surveys returned.

part-time. The largest category (just over 45%) was those working full time in paid jobs. Only 4 percent were students.

3.2 Trip Characteristics and Purpose

For all respondents in the study, about 40 percent of the museum visitors came from within 50 miles of the museum (considered local visitors). Fourteen percent were day visitors who traveled more than 50 miles from home to the site. Forty-six percent of the trips involved an overnight stay in the local area.⁶ However, some sites received predominantly local visitors and others received primarily overnight tourists. The average length of stay in the community was 2.4 nights for hotel visitors and 3.4 nights for visitors staying in other types of lodging.

The average party size for museum visitors was about three persons across all regions and segments, but the most common group size was two people (34%). Another third (35%) traveled in groups of three or four. Only about 4 percent visited alone. About 8 percent traveled in groups of 10 or more. Just over half of the respondents (52%) were traveling in a family group including at least one child. About 25 percent were traveling with a spouse or significant other. The third largest group type category was those traveling with a group of friends (12%). Six percent or fewer (for each group type) were traveling either in an organized group, alone, or with a commercial bus tour.

3.3 Museum Visits as Related to Pleasure Travel Planning and Behavior

Over half (52%) of the trips were made primarily to visit the museum where the visitor was sampled and 20 percent of respondents were visiting the community more generally. Ten percent were visiting friends and relatives, and 9 percent were participating in an art show or other type of special event. The rest of the trips were for other reasons, including for business, as part of a tour, for nostalgia, to attend a family event, or to go shopping. Day trips were more likely than overnight trips to be

primarily to visit the museum, with 73 percent of local day trips and 67 percent of non-local day trips made primarily to visit the museum. Comparatively, only 30 percent of overnight trips were made principally to visit the museum. Overnight tourists were most likely to be visiting the community in general (36%), and included a museum visit within their overall experience.

Because only one-third of overnight tourists who included a museum visit in their trip made their trip specifically to visit the museum, it can be assumed that the museum visit is incorporated into either the travel planning or the in-community tourist experience in some other way. Two questions were used to better understand general decision-making related to museum visits during pleasure travel (not specifically the trip during which respondents were contacted for this study). The first question asked about the respondents' general pattern of museum visits when traveling for pleasure. Just over half of those who answered this question indicated they usually or always include a museum visit in their trip (19% said they always include a museum visit). The most frequent response, however, was by the 38 percent who said they sometimes include a visit to a museum during their trip. Fewer than 10 percent indicated they rarely include a museum visit. Two percent indicated a range of other explanations, including: "museums are visited if they are available," "if a museum visit is included in tours planned by others," "don't travel," or "never consider museums." Several also indicated that a museum visit depends on several factors, such as cost, topic of museum exhibits, and the group with whom they are traveling. One person indicated they would take a special trip for a "premium" museum.

The second question asked if and how a museum visit was considered when choosing a destination and during trip planning. The most common response (47% of those responding) was "I do not specifically plan museum visits, but if I see an interesting museum advertised at the destination, I will visit." The next most common response (44%) was "I plan trips to a community for a variety of experiences, and usually include a museum visit." Only 5 percent of respondents said they "plan trips specifically to visit museums." This proportion

⁶The mix of trip types varies considerably across different museums. While the museums sampled cover a range of locations and museum types, we cannot guarantee that the resulting sample of visitors is completely representative of all museum visitors.

is considerably fewer than the 30 percent of overnight tourists who said they planned “this trip” specifically to visit the museum where contacted. However, it should be noted that the results presented for the two questions relate to general pleasure travel planning and behavior (not just for “this trip”) and includes results for all respondents, not just the overnight tourists. It is also possible that some percent of visitors who planned “this trip” specifically to visit the museum where contacted may not make decisions about all pleasure travel based on a museum visit.

Respondents also were asked what other factors or travel experience opportunities related specifically to heritage or cultural components of their trip were considered when planning a pleasure trip. The following factors were provided:

- Visiting communities that preserve their historic character (architecture, historic downtowns, etc.)
- Staying at historic hotels or bed & breakfasts (B&Bs)
- Eating at local ethnic restaurants
- Eating at restaurants housed in historic buildings
- Shopping at stores and gift shops located in historic buildings
- Purchasing souvenirs that reflect the local history, arts & crafts, and/or culture
- Attending cultural, historic and ethnic festivals and special events
- Attending local music, dance, and/or theater performances
- Walking along waterfront trails, boardwalks, other community self-guided walks
- Going on historic or cultural tours with a guide
- Traveling via historic transportation (e.g., trolleys, horse-drawn carriages, trains, boats)
- Viewing, reading wall displays, menu mini-histories, historic markers and monuments, and outside exhibits along walking paths that explain local history and culture
- Other: (specify).

Respondents were asked to indicate one of three levels of importance for each (very important = 1; somewhat

important = 2; not at all important = 3) or to provide other factors important to them in choosing a destination or planning a trip. Across all visitors to all museums included in the study, the three factors receiving the highest importance (based on calculating a mean of the three possible ratings) were:

- Visiting communities that preserve their historic character (architecture, historic downtowns, etc.) (mean of 1.52)
- Walking along waterfront trails, boardwalks, other community self-guided walks (mean of 1.52)
- Viewing, reading wall displays, menu mini-histories, historic markers and monuments, (mean of 1.63) and outside exhibits along walking paths that explain local history and culture.

The next most important factors, with mean scores of between 1.75 and 2.0 – thus, being at least “somewhat important” – were:

- Purchasing souvenirs that reflect the local history, arts & crafts, and/or culture, and (mean of 1.89)
- Eating at local ethnic restaurants. (mean of 1.97)

All other factors received average ratings indicating less than “somewhat important.” “ Staying at historic hotels or Bed-and-Breakfast facilities” was the least important factor (mean of 2.51) in planning a trip to a specific destination.

The statewide results above were mirrored fairly consistently at the individual museums. Seventy-nine additional responses were provided by respondents in the “other” category. The two most often cited factors related to 1) choosing attractions and activities that provided opportunities specifically for children (20% of “other” responses), with many of them mentioning education for children as important; and 2) visiting historic sites or museums. The remaining factors, each of which was identified by fewer than 7 percent of the 79 “other” responses, were: nearby camping, friendly atmosphere/ staff, proximity to family/friends, price, art, events and festivals, antiques, architecture, cleanliness, variety, safety, wheelchair access, availability of nature-based recreation

opportunities, parking, proximity to home, and the weather.

3.4 Visitor Assessments of the Museum Experience

Respondents were asked also to assess their experience during the specific museum visit during which they were first contacted for this survey. The first question asked them to identify up to three elements of the experience they considered their most favorite. These could include things such as, but not limited to, a specific exhibit, a tour, a program, a video or other media component, the gift shop, or the quality of historic preservation. However, respondents were not restricted to specific categories. Some mentioned specific elements of the museum facility, exhibits or activities; others identified more general characteristics of the experience or qualities of the place (e.g., ambience, associated walking or recreational opportunities).

Content analysis was used to categorize the comments provided originally as specific to individual museums, but grouped across all museum responses to provide a broad picture of experience characteristics preferred by museum visitors. No attempt was made to weight or prioritize the responses. Rather, the preferred experiences could be described generally as having the following characteristics:

- Interactive, hands-on activities (including simulations) – EXPERIENCES,
- Things for children to do (child-friendly),
- Things that relate to the individual (specifics differ depending on age and experience of visitor); nostalgia; elements related to “local area,”
- Opportunities for personal research (e.g., associated library, genealogy),
- Opportunities for extensions/taking things home (e.g., souvenirs, plants, books, art)
- Aesthetics of a site (e.g., landscape, design, cleanliness), ambience, the view
- Amenities, support functions (e.g., gift shop, trails, picnic areas)
- Interpretation from guides & docents/friendly and knowledgeable staff; costumed and performance interpreters

- Demonstrations and re-enactments
- Seeing “real work in progress” (e.g., site restoration, artifact conservation, archaeological digs)
- Authenticity: real objects/artifacts/buildings/natural areas –if its “real,” be sure the visitor knows!
- Experiences (e.g., rides, alternate transportation tours - trolleys, carriages, boats, trains, old cars, ponies, carousel)
- Immersion experiences (where offered)
- Films and videos (including IMAX)
- Variety (“something for everyone” in the group)
- Well-maintained facilities
- Opportunities for socializing with family, friends
- Unique dining/eating experiences (with quality food),
- Factors related to leisurely experience, comfort, ease of movement (including accommodations for visitors having disabilities), free parking
- Some prefer the self-guided, self-paced experiences
- Educational experiences while having fun

Museum visitors also were asked what their least favorite parts of their museum visit were. They could identify up to three things they thought the museum could do to improve the visitors’ experience in the future. Responses could be related to things such as, but not limited to, type and quality of facilities, access (e.g., transportation, signage, accommodations for impairments or foreign languages), quality of exhibits and interpretive programs, the stories presented, accessibility of and relations with staff, hours of operation, variety of experiences offered, and information. Sometimes visitors identified specific negative experiences encountered during their specific trip; other times they identified more general qualities or characteristics of the museum or the opportunities provided.

Recommendations, often stated in terms of things the visitor did not like, could be described generally as having the following characteristics:

- Things not working or being closed, or “stock” was missing (brochures, maps, hand sanitizer, etc.)

- Physical discomfort (no air conditioning, lack of rest benches, not enough water, too far to restrooms, lack of shaded areas to rest), poor weather/wrong season to visit the site
- Lack of convenience (parking, restrooms, water, food, adequate wayfinding aids [signs, arrows, footprints on ground to complement maps; not enough posted maps], etc.)
- Not enough interactive, hands-on opportunities
- No/not enough “local” stories
- Several comments about facilities being “too small” or “expected a larger place”
- Experience doesn’t match expectations (across a range of factors)
- Restricted hours of operation (entire facility or some parts, especially scheduled shows, demonstrations, animal feedings, etc.),
- For some sites, some visitors – wanted more interpreters/docents (or more knowledgeable interpreters)
- Request for new exhibits/experiences, rotating and temporary exhibits to complement “permanent” exhibits (some complained of loss of “old” exhibits, especially those they remembered from childhood)
- Request for more opportunities for socializing (interacting/bonding with group members)
- Sometimes (at specific sites) complaints about costs (admission, add-on tickets, souvenir prices)
- For some sites, comments about poor quality or selection of food (or too-high costs)
- Lack of interpretive staff/docents to provide information, respond to questions
- Lack of accommodations for visitors having various disabilities (physical, vision impairments, hearing impairments); not enough strollers and other accommodations for people with young children

Table 1.—Plans to visit the museum again within 12 months

		LOCAL	TOURIST	TOTAL
Will you visit again within 12 months?	YES	293	135	428
	NO	148	219	367
	MAYBE	39	358	397
	TOTAL	480	712	1,192

Many tourist destination communities and attractions, including museums, often state that they would like to increase repeat visitation. This is in part because it costs less to attract repeat visitors than new visitors. Therefore, visitors were asked if they intended to visit the museum again within the next 12 months and, if not, why. Overall, for all respondents, responses were fairly evenly distributed across those who said they would visit again within 12 months, those who said they would not, and those who were not sure. However, when responses were analyzed by whether the respondent was a local visitor or a tourist, the proportions were considerably different. Local residents were much more likely than tourists to indicate they would visit again, and a much smaller percent were “unsure.” Tourists were much less likely to have made a clear decision about a potential future visit within 12 months (see Table 1).

Across visitors to all museums, the following categories of responses were given as reasons for not visiting the site again within the next 12 months. Of the 397 respondents who provided a reason, the most common was that they simply had made no plans at all for pleasure travel in the next year (n = 134). The next most common reason was that the site was too far from home (n = 113). The next two categories, both probably having the same underlying rationale, could be categorized as “been there, done that” (n = 61) or that, when traveling, visitors simply prefer to visit new and different places on each trip rather than returning to the same places (n = 58). Only a few (n = 18) cited reasons related to a specific “bad experience,” being overcharged, or the museum not meeting their expectations.

Table 2.—Reasons for not planning to visit the museum again within 12 months

Reason	Number Giving Response	
No plan in 12 months	134	
Too far (distance)	113	
Been there, done that	61	} 119
Prefer to visit new/other places on future trip	58	
Didn't have good experience/ meet expectations	15	
Combination of factors	7	
Visit irregularly	5	
Too expensive	3	
Personal health issues	1	

4.0 Discussion and Recommendations

Results of demographic profiles of museum visitors are consistent with those of numerous other studies focused on cultural or heritage tourism. Museum visitors were predominantly white/Caucasian, more highly educated, and having higher annual household incomes than the general population or the “average” tourist (despite the improbability of there actually being an “average tourist”). However, different visitor profiles exist for specific museums that target and attract different market segments (e.g., visitors to the automotive heritage museum).

Nevertheless, there were some results that seem to contradict the common assumptions about why visitors choose a museum attraction (or associated community), and about their propensity to become repeat visitors if they have a good experience. First, the factors that are the most important in the decisions to visit a specific community (where museums may be part of the tourism experience) are those that are not direct revenue generators (preservation of a community's historic architecture, downtowns, landscaping and viewsheds; opportunities to walk along waterfront trails, boardwalks, or other community self-guided walks; and viewing/reading interpretive information about the local history/culture provided in historic markers, wayside exhibits,

on menus, and on wall displays in restaurants and other buildings). These are not the things that visitors actually pay for via admission or other participation fees, lodging and food costs, or purchase of souvenirs. Rather, they are the elements that create the ambience, the character, and the unique quality of a place. Once a tourist decides to visit a place, based on the factors identified above, they will then pay for the varied experiences, activities, services and amenities available within the community. Therefore, it is recommended that communities invest in preserving the unique character and resources of their community, enhancing them through a variety of interpretive and passive recreational opportunities, and promoting a quality experience within the community. Cost centers (attractions, lodging establishments, restaurants, shopping outlets, and other businesses catering

to the tourist) should recognize, support and contribute to these investments. Tourists can't spend their money in their businesses unless they are first attracted to the community. An additional incentive would be to create a program whereby part of a tourist's fees are contributed to the community's non-cost-center development efforts such as historic preservation, trail creation, and interpretive signs/programs. Tourists should be informed of this program, as they are more likely to accept fees and provide additional donations if they know that their dollars are contributing to what they perceive as a “good cause.”⁷

Second, while some tourists do choose a destination based on a single attraction or experience (sometimes even a museum), many more choose a community having a variety of things to do rather than a single activity or attraction (such as a museum). Therefore, community businesses and organizations should work in partnership, rather than competition, to develop a cluster of sites, activities and experiences for tourists. Likewise, these should be jointly promoted so that potential visitors understand the diversity of experiences available.

⁷An example of this is the fee demonstration program in use by federal agencies, which post signs on visitor structures, program signs, and other amenities that are funded by entrance fees.

Additional “linkages” between tourist attractions, sites and experiences can include pedestrian and other transportation links between sites, cross-promotion from site to site, discounted joint admission tickets, and a unified story that links the heritage components of the community so that visitors understand the unique character and stories of the community.

Third, although striving to provide quality experiences and develop client/guest loyalty in visitors is a laudable goal, results of this study indicate that many visitors are unlikely to return to the same attraction or community again, at least in the near future. Thus, efforts should be focused less on attracting repeat visitation and more on encouraging “word of mouth” promotion of the attraction or community by visitors to their friends and colleagues. Results in this study, as in numerous others, clearly shows that the most common information source about a potential tourist site is word of mouth. Therefore, providing a quality experience is still important. Museums and other attractions, as well as their host communities, might focus more attention on referral programs, perhaps by offering discounted fees at attractions, lodging, restaurants or shopping facilities to new visitors referred by previous visitors.

Finally, both individual museums and tourism host communities should review the list of “favorite” and “least favorite” elements of the visitors’ experiences to guide planning and development of visitor experiences. The lists will not be recreated here, but some summary recommendations are made. Generally, a focus on creating hands-on, authentic, immersion experiences using a variety of media and experiential delivery channels, in a clean, attractive and safe environment should be considered. Amenities and support functions, interpretive/educational opportunities, and opportunities for experience extensions (souvenirs, books, home activity sheets, photo opportunities) should be incorporated into the overall experience. Also, communities and museums should provide a range of experiences – something for everyone – to meet the needs of family and other group members, who often have diverse experience preferences.

5.0 Citations

- American Association of Museums. 1994. **Museums count.** Washington, D.C.: American Association of Museums.
- Americans for the Arts. 2002. **Arts and economic prosperity; The economic impact of non-profit arts organizations and their audiences.**
- Clarion Associates. 2002. **Investing in Michigan’s future: The economic benefits of historic preservation.** Lansing, MI: Michigan Historic Preservation Network.
- Green, J. 1993. **Getting started: How to succeed in heritage tourism.** Washington, D.C.: National Trust for Historic Preservation.
- History, Arts and Libraries. 2005. (<http://www.michigan.gov/hal>), accessed 10 July 05.
- Lane, A. 2001. **The Michigan arts and culture industry: A demographic and economic profile.** Detroit, MI: Center for Arts and Public Policy, College of Fine, Performing & Communication Arts, Wayne State University.
- Michigan Museums Association. 1998. **Museums and cultural sites in Michigan: A basis for heritage tourism.** Lansing, MI: Michigan Museum Association.
- National Governors Association. 2001. **The role of the arts in economic development.** (http://www.nga.org/center/divisions/1,1188,C_ISSUE_BRIEF%5ED_2225,00.htm) accessed 14 September 2003; (<http://www.nga.org/portal/site/nga/menuitem.9123e83a1f6786440ddcbeeb501010a0?vgnextoid=0f8b5aa265b32010VgnVCM1000001a01010aRCRD&vgnnextchannel=4b18f074f0d9ff00VgnVCM1000001a01010aRCRD>) re-accessed 10 July 2005. Silverman, D. (1993). *Interpreting qualitative data: Methods for analyzing talk, text and interaction.* London, England: SAGE Publications.

Stronge, W. 2000. **The economic impact of the Florida arts and cultural industry, West Palm Beach, FL:** Florida Cultural Alliance.

Travel Michigan. 2005. **Maritime tours.** (http://travel.michigan.org/drivingtours/?m=9;4&campaign=TM_Web), accessed 10 July 05.

Travel Michigan. 2005. **Driving tours.** (<http://travel.michigan.org/drivingtours/?m=9>), accessed 10 July 05.

Vander Stoep, G. 2005. **Challenges of estimating and using economic impacts for cultural tourism.**

Proceedings of the 2004 Northeast Recreation Research Symposium. USDA Forest Service, Gen. Tech. Rep. NE-326: 109-117.

Vander Stoep, G. And Harmon, L. 2000. **Museums and cultural institutions in Michigan: Can they be viable tourism attractions and tourism industry partners?** Proceedings of the 1999 Northeast Recreation Research Symposium. USDA Forest Service, Gen. Tech. Rep. NE-269: 205-211.

PREDICTORS OF SUSTAINABLE TOURISM: RESIDENT PERCEPTIONS OF TOURISM IN HOLLAND AND CHINA

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Abstract

Construct validity of four dimensions of sustainability on local residents' satisfaction with tourism is examined. Data came from communities bordering Hoge Veluwe National Park (HVNP) in Holland (n=142) and Chongdugou Village in China (n=400). As suggested by prior research, we hypothesized that economic, socio-cultural, ecological, and institutional dimensions of sustainable tourism would influence resident satisfaction with tourism. Dimensions were based on three to six survey items with reliability coefficients ranging from 0.55 to 0.75. Perceived satisfaction, a dichotomous variable, measured resident satisfaction with tourism in their area. From a logistic regression, two dimensions were statistically significant for HVNP and all four for Chongdugou. The HVNP model correctly classified 81 percent of respondents and 70 percent for Chongdugou. The socio-cultural component was the strongest predictor for HVNP and the institutional for Chongdugou. The results supported the hypotheses that the four dimensions can contribute to resident satisfaction with sustainable tourism, however, the relative contribution of each varies depending on the site context. We argue for improving the measurement of sustainable tourism indicators and the developing standards associated with each indicator.

1.0 Introduction

"Sustainable development meets the needs of the present without compromising the ability of future generations

to meet their own needs" (WCED 1987). Sustainable tourism can play an important role in community development, especially in areas abundant in natural capital, yet lacking financial resources or ability to pursue other avenues of growth. Any tourism promotional effort, however, can have positive and negative *ecological*, *economic*, and *socio-cultural* consequences. Achieving a balance among these three classic dimensions of sustainable tourism is difficult to realize, however, without an *institutional* perspective to manage, mediate and facilitate growth (Eden, Falkheden & Malbert 2000; Spangenberg 2002; Spangenberg & Valentin 1999). This fourth institutional dimension emphasizes participatory decision-making processes such as public participation and involvement. The German Wuppertal Institute combined these four dimensions into a single framework called the "prism of sustainability (Figure 1) with clearly defined links among the dimensions (Spangenberg & Valentin 1999). This study examined the construct validity of these four indicators of sustainability on local residents' satisfaction with tourism in communities bordering Hoge Veluwe National Park in Holland and Chongdugou Village in China.

The *ecological dimension* emphasizes the need to reduce pressure on the physical environment. The environment is considered the sum of all bio-geological processes and their elements. The *economic dimension* considers human needs for material welfare (e.g., employment) in

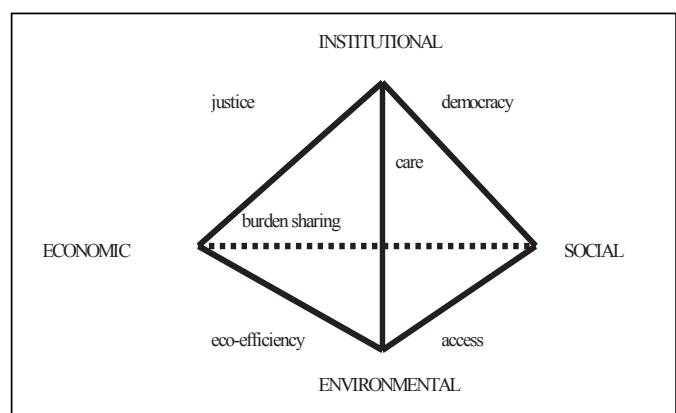


Figure 1.—Prism of sustainability (adapted from Spangenberg & Valentin 1999)

a framework that is competitive and stable at the macro-economic scale. An economic system is environmentally sustainable only as long as the amount of resources utilized to generate welfare is restricted to a size and quality that does not deplete its sources for future use. The *social dimension* refers to individuals' skills, dedication, experiences and resulting behavior. Societal interaction and associated social norms are necessary preconditions for economic activities (Spangenberg 2002). Institutions represent organizations within a system of rules governing interaction among members. The *institutional dimension* calls for strengthening people's participation in political governance. As acceptance of and identification with political decisions become broader, public participation is strengthened. Valentine and Spangenberg (2000) imply that the four dimensions can be linked to indicators for local communities to monitor and evaluate sustainable development.

1.1 Indicators of sustainable tourism

Agenda 21, the document outlining principles for sustainable development adopted during the 1992 'Earth Summit' in Rio de Janeiro (Twining-Ward & Butler 2002), called for coordinated efforts to develop sustainable development indicators at local, regional, national, and global levels. In response, the United Nations Commission on Sustainable Development (CSD) launched a program to develop indicators of sustainable development in 1995. Five years later, highly aggregated indicators were completed and applied in many countries. These indicators, however, primarily concentrated on regional, national, and global levels and focused on the physical environment. The World Tourism Organization (WTO in Dymond 1997), for example, identified 11 core indicators for sustainable tourism categorized as ecological, social, economic and planning. Nine of the 11 were physical indicators (e.g., site protection, development control, waste management planning process). Only two core indicators were psychological (e.g., local satisfaction with tourism) (Dymond 1997).

Although the WTO effort provided a useful starting point, it failed to justify the choice of indicators, lacked clear stakeholder participation, did not consider

local level indicators, and did not offer a monitoring framework for translating indicator information into management action (Twining-Ward & Butler 2002). In response, research has focused on developing practical sustainable tourism indicators, emphasizing the importance of local community involvement during sustainable indicator creation (Sirakaya, Jamal & Choi 2001; Spangenberg 2002; Valentin & Spangenberg 2000). Yuan, James, Hodgson, Hutchinson, and Shi (2003), for example, examined local indicator development in a case study of Chongming County, Shanghai, China. Similar work has been conducted by others (Dymond 1997; Hughes 2002; Innes & Booher 2000; Miller 2001). Not all indicators, however, are relevant to every community (Valentin & Spangenberg 2000). Each community should develop an individual set of indicators within a common structure (Spangenberg 2002).

This approach (common structure, different indicators) allows for community comparisons without ignoring their specific needs and situations. If the four dimensions of sustainable tourism (ecological, economic, socio-cultural, and institutional) are generalizable as suggested by prior research (Berg, Bree, & Cottrell 2004; Cutumisu 2003; Coccossis et al. 2001; Cottrell, Berg, & Bree, 2004; Spangenberg 2002; Spangenberg, & Valentin 1999), all four predictors should influence local residents' satisfaction with tourism. This paper examined the relative contribution of the four indicators to explaining satisfaction with tourism development in two study locations (i.e., a Dutch National Park and a Chinese tourism village).

1.2 Study Settings

The Hoge Veluwe National Park (HVNP), established in 1935, is one of the largest national parks (5500 hectares) in the Netherlands. The area was fenced in the early 1900s to serve as a hunting area with animals brought from abroad. The Hoge Veluwe remained a family estate of Kröller-Müller's until 1935 when they donated their land to the Dutch government as a national foundation due to financial problems. The founding philosophy and principles of Kröller-Müller, however, remained to preserve the park as a nature reserve combining art and culture with nature. The Kröller-Müller Art Museum and

Sculpture Garden located in the center of the park houses fine works of art attracting international tourists while the park itself attracts mostly Dutch visitors. Visitors must enter the park to access the art museum. There are three entrances to the park, each adjacent to a small village representing three sample sites for the HVNP study.

Chongdugou is a small mountain village in the Henan province, China, located in the confluence of two rivers and the Shuilian palace historical site. Chongdugou village includes four sub-villages (Chongdujie, Xigou, Nangou and Xiagou) with 340 families (1300 residents). Local people have traditionally relied on mining, bamboo and timber harvest, each of which contributed to environmental degradation. In 1996, the local government began developing Chongdugou tourism as an economic alternative. Local residents turned spare rooms into guest rooms for home stays. A local government sponsored tourism company manages the Chongdugou happy-in-farmhouse tourism project characterized by experiencing life on the farm. After four years of development, residents participating in the project have had substantial increases in yearly income (Yuan et al. 2003).

2.0 Purpose

This study examined the construct validity of the four sustainability indicators on local residents' satisfaction with tourism in their location. The following empirical questions were examined:

1. What is the relationship between the four dimensions of sustainable tourism (economical, socio-cultural, ecological, and institutional) and resident satisfaction with tourism development?
2. Which sustainability dimension is the strongest predictor of resident satisfaction with tourism development?

The prism of sustainability provided the framework for comparing the settings (Berg & Bree 2003; Berg et al. 2004). Given the inherent cultural differences between the two study locations, the indicators of sustainable tourism were adapted to each study context.

If the constructs are valid, each of the four dimensions of sustainability should influence resident satisfaction with tourism. The following conceptual question was examined.

3. To what extent is the prism of sustainability a useful framework for monitoring sustainable tourism development?

3.0 Methods

Data were obtained from on-site surveys at three communities bordering Hoge Veluwe National Park in Holland ($n = 142$) and four communities of Chongdugou Village, an agri-tourism destination in China ($n = 400$). For HVNP, the study population included local people 16 years or older in the villages of Hoenderloo ($N = 1400$), Otterloo ($N = 2360$), and Schaarsbergen ($N = 864$). Interviewer completed surveys were conducted in shops and bakeries during June 2003. There were 142 respondents (response rate = 46%). For Chongdugou Village, multi-stage random sampling was used to proportionately represent households in the four sub-villages (Fujun, 2004): Chongdujie ($N = 492$, $n = 156$), Xigou ($N = 450$, $n = 143$), Nangou ($N = 200$, $n = 63$) and Xiagou ($N = 121$, $n = 38$).

3.1 Variables measured

Drawn from previous research (Ankersmid & Kelder 2000; Cottrell & Duim 2003; Dymond 1997), four to eight items were used per study to measure each dimension of sustainable tourism. Perceived satisfaction was operationalized as a single dichotomous variable that asked respondents to indicate whether or not they were satisfied with tourism in their area.

4.0 Results

For HVNP, Cronbach reliability alphas were 0.56 for a three-item institutional dimension, .65 for a three-item economic, 0.71 for a four-item ecological, and 0.75 for a six-item socio-cultural dimension (Table 1). For Chongdugou Village, alpha scores were 0.53 for the three-item ecological dimension, 0.59 for a four-item institutional, 0.64 for a three-item socio-cultural, and 0.70 for a five-item economic dimension. An additive index of was computed as the mean of items per dimension.

Table 1.—Scale items for dimensions of sustainable tourism (Hoge Veluwe NP and Chongdugou China)

	Hoge Veluwe ^a NP (n=142)		Chongdugou ^a China (n=400)	
Dimensions of Sustainable Tourism	α	Mean	α	Mean
Institutional Dimension	.555	2.53	.588	2.76
Local inhabitants have influence on decision making process		2.2		---
Tourism contributes to better waste management of the region		2.5		---
There is good communication among parties involved in policy and decision making process		2.8		2.8
Participation is encouraged by local authorities.		---		2.7
Feel I can access decision-making process to influence tourism development in the district.		---		2.3
Long-term planning by regional authorities can control negative impacts of tourism				3.2
Ecological Dimension	.712	3.37	.553	2.84
Tourists cause pollution of environment (water, soil and air)*		2.9		2.8
The number of visitors results in disturbance of plants and animals*		3.3		2.9
Increasing exhaustion of water and energy resources was caused by tourist activities*		3.8		2.9
Tourism does not lead to the extinction of species in the region		3.5		---
Economic Dimension	.652	3.86	.704	3.71
Tourism brings more income to the local communities		4.0		---
Tourism increases the consumption of local products		3.6		---
Tourism creates job opportunities for local people		3.9		3.6
Tourism has resulted in local economic diversification		---		3.8
Products and services are better available generally since the development of tourism.		---		3.9
Region has better infrastructure (roads, electricity, water, public transport) due to tourism.		---		4.1
I have more education opportunities (vocational training) due to tourism development		---		3.2
Socio-cultural Dimension	.755	3.32	.644	3.34
There are too many tourists coming to the region*		3.2		---
Tourism development causes a change of local lifestyle and traditional habits*		3.0		---
Tourists annoy me*		3.9		---
Visitors to NP cause too much noise*		3.8		---
Changes in local lifestyles from tourism is positive		2.9		---
Tourism has increased the level of criminality, alcoholism, vandalism etc*		3.2		3.6
Tourism negatively influences norms and values in our area.*		---		3.2
Local traditions became less important because of tourism.*		---		3.3

Items measured on 5 point Likert agreement scale

*Items recoded to positive direction

^aDimensional scale means in bold/italic α Cronbach's Alpha Reliability

We conducted an independent sample t-test to examine differences between each dimensional index and study location (Table 2). Scores for the institutional dimension were statistically higher ($t = 3.27, p < .001$) for Chongdugou ($M = 2.8$) than the Hoge Veluwe NP ($M = 2.5$). Scores for both locations, however, indicated a general dissatisfaction with respondents' ability to participate in decision-making concerning tourism. Resident scores for the ecological dimension were higher ($t = 6.75, p < .001$) and positive for HVNP ($M = 3.5$) versus Chongdugou ($M = 2.8$). The Dutch residents did not view tourism to the HVNP as a threat to the environment while the Chongdugou village residents viewed tourism development negatively. Mean scores for the economical dimension were relatively positive for each location, however, higher for HVNP ($M = 3.9$) than Chongdugou ($M = 3.7$) ($t = 2.57, p < .01$). Residents from both locations believed tourism offered economic benefit. There were no differences ($t = .16, p < .87$) for the socio-cultural dimension; mean scores were the same ($M = 3.3$) and slightly positive with regard to the socio-cultural aspects of sustainable development.

A greater percentage of the Dutch residents (79%) than the Chongdugou Village residents (37%) were satisfied with tourism (Table 3). For HVNP, a majority of local residents (79%) were not directly involved with tourism for their livelihood; 21% of respondents were restaurant/hotel owners. Residents of the four sub-villages of Chongdugou all live within the boundaries of the agri-tourism project destination. Their daily lives are more directly influenced by tourism than residents near HVNP.

A logistic regression was conducted to determine the construct validity of each dimension to resident satisfaction. The logistic regression for Chongdugou Village correctly classified 70 percent of the responses (68% - No, 73% - Yes, Table 4). The model for Hoge Veluwe correctly classified 81% of the respondents (79% - No, 82% - Yes).

Table 2.—Mean comparisons between Hoge Veluwe NP and Chongdugou Village on each dimension of tourism sustainability

Dimensions	Hoge Veluwe Chongdugou		<i>t</i> -value	<i>p</i> -value
	NP ^a	Village ^a		
Institutional	2.5	2.8	3.27	.001
Ecological	3.5	2.8	-6.75	.001
Economical	3.9	3.7	-2.57	.01
Socio-cultural	3.3	3.3	.16	.87

^aCell entries are means. Original variables coded on 5-point scales ranging from "strongly disagree" (1) to "strongly agree" (5).

Table 3.—Satisfaction with tourism

Satisfaction	Hoge Veluwe NP		Chongdugou Village	
	Frequency	Percent	Frequency	Percent
No	27	21	192	63
Yes	102	79	112	37
Total	129	100	301	100

Table 4.—Classification table—prediction of resident satisfaction with tourism

Satisfaction with Tourism	Study Location	
	Hoge Veluwe NP	Chongdugou Village
	% Correct	% Correct
No	78	68
Yes	82	73
Overall	81	70
Nagelkerke R^2	.55	.30

Two dimensions were statistically significant for the Hoge Veluwe NP (Nagelkerke $R^2 = .55$) and all four dimensions for Chongdugou Village (Nagelkerke $R^2 = .30$) (Table 5). For HVNP, the socio-cultural ($\text{Exp}B = 5.76$) component was the strongest predictor followed by the institutional ($\text{Exp}B = 3.34$). For the Chongdugou Village, the institutional ($\text{Exp}B = 3.17$) index was the strongest predictor followed by the economic ($\text{Exp}B = 2.38$), ecological ($\text{Exp}B = 1.73$), and socio-cultural ($\text{Exp}B = .519$) dimensions.

Table 5.—Predictors of resident satisfaction with sustainable tourism

Dimensions	B	S.E.	Wald	df	Exp(B)	p-value
<i>Chongdugou China</i>						
Institutional	1.15	0.21	30.18	1	3.17	<.001
Ecological	0.55	0.18	9.04	1	1.73	<.003
Economical	0.87	0.25	12.24	1	2.38	<.001
Socio-cultural	-0.66	0.18	13.40	1	0.52	<.001
<i>Constant</i>	-6.45	1.21	28.16	1		<.001
<i>Hoge Veluwe NP</i>						
Institutional	1.20	0.57	4.50	1	3.34	<.034
Ecological	0.87	0.58	2.27	1	2.39	<.132
Economical	0.46	0.49	0.90	1	1.59	<.342
Socio-cultural	1.75	0.56	9.89	1	5.76	<.002
<i>Constant</i>	-11.54	2.75	17.57	1		<.001

5.0 Conclusions

Taken together, our findings support the hypothesis that all four dimensions *can* contribute to resident satisfaction with sustainable tourism as found for Chongdugou Village. As suspected, the relative contribution of each component varied depending on the situational specifics. The two study sites (Holland vs. China) represent distinctly different cultural environments. The institutional dimension was the strongest predictor of tourism satisfaction in the Chongdugou study, while the socio-cultural concept was the strongest at Hoge Veluwe. Examining the predictive contribution of each dimension at a tourism destination highlights which dimension has the greatest influence on resident attitudes about tourism development.

From a theoretical perspective this study shows the importance of the institutional dimension versus the usual focus on the economic, ecological and social dimensions; thereby supporting Eden et al.'s, (2000) claim. Results clearly show that local resident ratings of their satisfaction with tourism depend on the institutional dimension, especially for the Chongdugou study. In this context (the importance of the institutional dimension), this study builds on Cutumisu's (2003) research arguing that sustainable tourism indicators

depend on the specific social and institutional context of each study location. While encouraging, our findings point to the need for (1) refining the items used to measure institutional support; and (2) developing a more sophisticated set of indicators for resident satisfaction with sustainable tourism. Items for the institutional dimension were primarily participation in decision making measures. The institutional dimension encompasses several sub-dimensions: access to decision making, communication processes, politics, and democracy (Cutumisu 2003; Spangenberg 2002; Valentin & Spangenberg 2000). Further research is necessary to clarify an appropriate array of institutional indicators beyond our investigation. In addition, resident satisfaction with tourism was limited to a yes-no response. More precise levels of measurement are necessary to identify underlying aspects of satisfaction with tourism. Following the development of a valid and reliable set of sustainable tourism indicators, it is equally necessary to develop standards for each indicator. For example, what percent of local residents need to be satisfied with each dimension to claim that sustainable tourism has made a positive contribution to society? Development of indicator specific standards is only possible with continued monitoring of tourism development.

6.0 Citations

- Ankersmid, P. and Kelder, L. 2000. **Long live Manuel Antonio and Texel**. Unpublished Masters Thesis. Socio-spatial Analysis. Wageningen University, The Netherlands.
- Berg, C. van den and Bree, F. van. 2003. **PAN Parks Principles: Crosscultural or site specific?** Unpublished Masters Thesis. Department of Socio-spatial Analysis. Wageningen University, The Netherlands.
- Berg, C. van den, Bree, F. van, and Cottrell, S.P. June 2004. **PAN Parks principles: cross-cultural comparison - Poland/Slovakia**. pages 227–234 in: Sievänen, Tuija, Erkkonen, Joel, Jokimäki, Jukka, Saarinen, Jarkko, Tuulentie, Seija & Virtanen, Eija, eds. Policies, methods and tools for visitor management – proceedings of the second International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas, June 16–20, 2004, Rovaniemi, Finland. Available at <http://www.metla.fi/julkaisut/workingpapers/2004/mwp002-32.pdf>
- Coccossis, H., Collovini, A., Konstandoglou, M., Mexa, A. and Parpairis, A. 2001. **Defining, measuring, and evaluating carrying capacity in European Tourism destinations**. Athens, Environmental Planning Laboratory.
- Cottrell, S., Berg, C. van den and Bree, F. van. 2004. **Abstract - PAN Parks implementation process: cross cultural comparison - Bieszczady & Slovenski Raij National Parks**. 2nd International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected areas, June 16-20, 2004, Rovaniemi, Finland.
- Cottrell, S.P. and Duim, R. v.d. 2003. **Sustainability of tourism indicators: a tourist perspective assessment in Costa Rica and The Netherlands**. The Environment Paper Series. 6(1): 2-9.
- Cottrell, S.P., Duim, R. v.d., Ankersmid, P. and Kelder, L. 2004. **Measuring the sustainability of tourism in Manuel Antonio and Texel: a tourist perspective**. Journal of Sustainable Tourism. 12(5): 409-431.
- Cutumisu, N. 2003. **The synergy between nature conservation and development: A framework for analyzing the impact of the Sustainable Tourism Development Strategy in Natura**. Unpublished Masters Thesis. Department of Socio-spatial Analysis. Wageningen University, The Netherlands.
- Dymond, S. 1997. **Indicators of sustainable tourism in New Zealand: a local government perspective**. Journal of Sustainable Tourism. 5(4): 279-293.
- Eden, M., L. Falkheden, L., and Malbert, B. 2000. **The built environment and sustainable development: research meets practice in a Scandinavian context**. Planning Theory and Practice. 1(2): 260-272.
- Fujun, S. 2004. **Agritourism Sustainability in mountain rural areas in China: Chongdugou Happy-In-Farmhouse Case Study**. Unpublished Masters Thesis. Department of Socio-spatial Analysis. Wageningen University, The Netherlands.
- Hughes, G. 2002. **Environmental indicators**. Annals of Tourism Research. 29 (2): 457–477.
- Innes, J.E. and Booher, D.E. 2000. **Indicators for sustainable communities: a strategy building on complexity theory and distributed intelligence**. Planning Theory and Practice. 1(2): 173-186.
- Miller, G. 2001. **The development of indicators for sustainable tourism: results of a Delphi survey of tourism researchers**. Tourism Management. 22 (4): 351-362.
- Sirakaya, E., Jamal, T.B., and Choi, H.S. 2001. **Chapter 26. Developing Indicators for Destination Sustainability**. The Encyclopedia of Ecotourism. D.B. Weaver, CAB International: 411-432.

- Spangenberg, J.H. 2002. **Environmental space and the prism of sustainability: frameworks for indicators measuring sustainable development.** Ecological Indicators. 57: 1-15.
- Spangenberg, J.H. and Valentin, A. 1999. **Indicators for Sustainable Communities.** Wuppertal Institute for Climate, Environment and Energy. A. f. <http://www.foeeurope.org/sustainability/sustain/t-content-prism.htm>. 2003: The Prism of sustainability.
- Twining-Ward, L. and Butler R. 2002. **Implementing STD on a Small Island: Development and Use of Sustainable Tourism Development Indicators in Samoa.** Journal of Sustainable Tourism. 10(5): 363-387.
- Valentin, A. and Spangenberg, J.H. 2000. **A guide to community sustainability indicators.** Environmental Impact Assessment review. 20: 381-392.
- WCED. 1987. **Our Common Future.** Oxford, Oxford University Press.
- Yuan, W., James, P., Hodgson, K., Hutchinson, S.M., and Shi, C. 2003. **Development of sustainability indicators by communities in China: a case study of Chongming county, Shanghai.** Journal of Environmental Management. 68(3): 253-261.

EXPLORING DIFFERENCES BETWEEN POSITIVISTIC AND POST-POSITIVISTIC PHILOSOPHY: AN INTERPRETIVISTIC CASE STUDY OF TOURIST EXPECTATIONS & SATISFACTION

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Abstract

Moutinho's 1987 Vacation Tourist Behavior model is a comprehensive example of a positivistic theoretical framework for tourist decision-making, based on rational behavioral principles. Debate exists over the role of this form of research, based on positivistic philosophy. Citing an increasing interest in post-positivistic philosophy as a means for addressing the current inability to fully represent people's lived experiences; scientists suggest that post-positivistic approaches are also important for understanding the complex nature of social science phenomena. This study employs post-positivistic philosophy, which is focused on understanding and interpreting the process of satisfaction evaluation rather than on prediction or control. Although results cannot be generalized to a larger population or used in a predictive fashion, they suggest a value for post-positivistic philosophy within leisure and recreation research, which lies in an ability to help managers and researchers better understand and interpret the lived experiences of tourists (Crossan 2003; Clark 1998, Decrop 1999; Floyd 2004; Letourneau & Allen 1999; Stewart & Floyd 2004).

1.0 Introduction

Tourists and vacationers go through a complex decision-making process in determining their level of post-purchase satisfaction. Most tourist satisfaction models follow a positivistic approach, in which tourists are viewed as rational beings who evaluate their level of satisfaction or dissatisfaction through a disconfirmation paradigm. That is, tourists purchase a trip with certain expectations (i.e., destination, amenities, and activities), and subsequently evaluate satisfaction based on whether

these expectations were met (confirmed), exceeded, or not met. Moutinho's 1987 Vacation Tourist Behavior model is a comprehensive example of a positivistic theoretical framework for tourist decision-making. This model takes into account three stages of consumer decision processes: pre-purchase influences and decision-making, post-purchase evaluation, and future decision-making. Part two of the model focuses on the post-purchase assessment made by tourists, which is termed as "Satisfaction/Dissatisfaction". Moutinho (1987) proposes that tourists evaluate the adequacy of the tourism product, using a mental cost/benefit comparison. This "Adequacy Evaluation" contributes to the overall disconfirmation paradigm, in which expectations are compared with reality, and determinations are correspondingly made in terms of overall satisfaction / dissatisfaction. Where gaps exist between expectations and reality, Moutinho (1987) suggests that cognitive dissonance mechanisms and reinforcements are employed. The level of acceptance tourists assign to these mechanisms leads to the probability of repeat-buying behavior (Moutinho 1987; Decrop 1999).

Review of the literature suggests that this approach, although widely used by tourism, park, and recreation agencies to measure program success, may not accurately capture the complexity of factors involved in the satisfaction evaluative process of tourists. Social scientists in a range of disciplines continue to debate the role and value of this form of research which is based on a positivistic philosophy (Crossan 2003; Clark 1998, Decrop 1999; Floyd 2004; Letourneau & Allen 1999; Stewart & Floyd 2004). These scholars are among many whom suggest post-positivistic approaches play an important role in understanding the complex nature of social science phenomena such as tourism satisfaction decision-making. This post-positivistic approach assumes "reality is multiple, subjective, and mentally constructed by individuals" (Crossan 2003, p. 54). Crossan (2003) goes on to suggest that the outcomes sought by post-positivistic research are the establishment of warranted assertibility (justification) for the phenomenon rather

than absolute truth, and that such research produces findings “with a focus on meaning and understanding the situation or phenomenon under examination” (p. 54). He recommends building multiple methods approaches that involve the researcher with those being researched and focus on in-depth study of a small sample (Crossan 2003). Stewart and Floyd (2004) capture the rationale for including post-positivistic philosophies within recreation and leisure studies with their observations: “The anxiety amongst leisure researchers is a reflection of a broader crisis within the social sciences about any account that claims to have directly or completely captured someone’s lived experiences and social reality” (p.4). They cite an increasing interest in post-positivistic philosophy as a means for addressing this inability to fully represent people’s lived experiences (Stewart & Floyd 2004).

Employing a post-positivistic philosophy, this study focuses on understanding and interpreting the process and factors of satisfaction evaluation, rather than on prediction and control. Utilizing mixed qualitative methods, this study examines the complexity involved in tourists’ satisfaction with their travel experiences, moving beyond the rational decision-making principles found in positivistic approaches such as Moutinho’s, towards an interpretivistic approach.

2.0 Literature Review

The literature review for this study contained three areas of focus: an analysis of tourist behavior process frameworks in relation to Moutinho’s model, appropriate methodology for an interpretivistic scientific approach, and specific components of tourist satisfaction.

The framework review focused on tourist behavior from pre-trip choice determinants to post-purchase evaluation, satisfaction-dissatisfaction, and the impact of these dynamics on future-decision making (Decrop 1999; Foster 2004; Mazursky 1989). Decrop (1999) evaluates traditional positivistic and post-positivistic models, including those proposed by Crompton, Moutinho, and Woodside that consider a tourist a rational and cognitive information processor. He contrasts these approaches to more recent interpretivistic frameworks, such as those proposed by Woodside and MacDonald and Teare. Decrop (1999) states that “it is important to remember

that there are an array of possible decision-making processes, depending on the individual, the group, and the moment in time” (p. 129). Foster (2004) states that the “measurement of satisfaction involves an assessment of whether the experiences have resulted in the desired benefits sought by the individual and satisfaction is therefore a function of the needs and interests of the individual that the attributes and characteristics of the service provided” (p. 5). Mazursky (1989) studied past experiences and how these experiences contribute to future tourism decisions. He states “that this analysis implies that the traditional expectations-disconfirmation-satisfaction process couldn’t be studied as a closed independent system. The interaction and effects of prior experiences and norms on these factors have to be taken into account to improve the understanding and predictions of choice decisions” (Mazursky 1989, p. 336). This lack of agreement amongst researchers within even this brief analysis seems to confirm the complex nature of predicting tourist behavior. Employing an interpretivistic scientific approach to evaluate the positivistic model presented by Moutinho offers an interesting way to begin to amalgamate current understanding.

To gain a better understanding of the appropriate research methods to apply to this study and scientific approach, literature by Decrop (1999), Patton, (1990), and Bowen (2002) was reviewed. Decrop (1999) suggests that an interpretive approach to science requires a very different approach: “Instead of a rigid separation between the investigator and the object of investigation, interpretivism proposes an interactive and cooperative relationship. The focus is no longer on the quantity of the gathered information but rather on its quality (richness). All points of observation are worthwhile: the interpretive inquirer watches, listens, feels, asks, records, and examines. In-depth interviews, participant observations, or archival research are privileged tools for this” (p. 11). Patton’s (1990) guidance on qualitative research methods provided further input for the framework for this study, resting on methods involving naturalistic inquiry, which means that the researchers intend to study behavior as it exists naturally, without manipulation of the setting; and phenomenological inquiry, which focuses on understanding human experience in a specific context. He challenges researchers to “understand and

document the day-to-day reality of the setting or settings under study..." (Patton 1990, p. 42), and "focus on capturing process, documenting variations, and exploring important individual differences in experiences and outcomes" (p. 43). According to Patton (1990), open-ended responses "permit one to understand the world as seen by the respondents...[and] enable the researcher to understand and capture the points of view of other people without predetermining those points of view through prior selection of questionnaire categories" (p. 24). Bowen's (2002) research through participant observation in tourism was a third influence on research design. Bowen (2002) states that "the level of detail from the participant observation, which created the narrative and informed the conceptualization, would not be created by either quantitative or qualitative CSQs [customer satisfaction questionnaires]" (p.14). The collective guidance offered by these researchers formed the basis of the methodology used within this interpretivistic study.

The final phase of the literature review sought and identified factors which: a) may contribute to tourist satisfaction; and b) may not have been reflected in Moutinho's model. The objective was to study the role these factors play in the direct tourism experience. Four factors were identified: active involvement (Foster 2004; Geva & Goldman 1991; Arsenault & Gale 2004), group dynamics (Arsenault & Gale 2004; Bettenhausen 1991), the role of the guide (Geva & Goldman 1991; Arsenault & Gale 2004; Leiken 2003), and unexpected events (Mazursky 1989; Arsenault & Gale 2004).

Active involvement involves the role tourists play in deciding and shaping their own tourism experiences. Are all the decisions made by the trip organizer? Do participants get a say in the itinerary, meals, activities, etc.? Does the individual experience his/her vacation as simply a member of the audience, watching a performance or do they get involved in the script of the trip, i.e. become part of the play? Geva & Goldman (1999) capture the essence of this dimension in this description: "Consumers play an active role in the tour and take part in shaping its performance. Thus, the quality of the tour performance depends to a large extent on their motivation, initiative, ability, and

effort" (p. 179). Foster (2004) expresses his theory of the role of active involvement in satisfaction by saying, "Therefore tourist experiences can be regarded as the result of an active endeavor by the individual to create a situation in which to achieve satisfaction. It is this active involvement of the individual in the creation of his or her personal experiences that needs to be acknowledged" (p. 5-6). Arsenault and Gale (2004) identified a demand by travelers to engage in participatory, interactive, and hands-on activities: "Travelers want more than merely observing things and listening to lecture, they want to get actively involved" (p. 6). Tourists may have expectations about the level of active involvement they will experience during a trip that would lead to a disconfirmation paradigm, however active involvement seems to be a more complex variable in the evaluation of satisfaction than what can be captured and measured using Moutinho's model. For this reason, it has been chosen as a variable to be further explored.

Geva & Goldman (1999) define group dynamics as "...the relations and interactions among group members, the cohesion and morale of the tour group, manner in which free time was spent..." (p. 179-180). Bettenhausen (1991) suggests that belonging to a group had a great impact on an individual's sense of self, in shaping behavior and attitudes, in creating a shared culture, and in creating the "rites, rituals, and social roles that provide continuity and order" (p. 348). Arsenault and Gale (2004) report findings from their study of Travel Suppliers and Tour Operators, which indicate a relationship between small group interaction, bonding, friendship formation, and satisfaction via the dimension of positive memory creation (p. 10).

Leiken (2003) suggests that guides act intentionally to create special moments for their groups and that by so doing make ordinary moments of an itinerary extraordinary (p. 2). Geva & Goldman (1991) feel that "the responsibility for achieving customer satisfaction is mostly delegated to the tour guide, who, throughout the tour's entire duration, is in a continuous and intense contact with the tour participants" (p. 178). Arsenault and Gale (2004) state: "The importance of the tour director and tour guides cannot be overstated. These people are a critical element of any tour and their

knowledge, skill, and ability to balance group situations along with individual needs is essential to group travel” (p.11).

Arsenault and Gale (2004) referred to “unexpected events” as “surprises”. In their study, “the element of surprise was consistently mentioned in discussions on creating memorable experiences” (p. 12). Based on the findings of their study, they surmise that “surprises can be pre-planned or opportunistic, for despite all the planning in the world, something is bound to go wrong. The beauty of surprise situations is that they create unique opportunities for human interaction, generate a special connection with the place, and build a common bond between travelers. They also can be the foundation of some of the best stories people tell when they return home” (p. 12).

3.0 Research Objectives

The purpose of this research was to explore post-positivistic philosophy in relation to the study of tourist expectations & satisfaction. Research outcomes include an interpretation of the components of tourists’ satisfaction grounded in the experience being studied. The experience chosen for this in-depth, interpretive case study was the 2004 West Virginia University (WVU) Student Recreation Center spring break trip to the Florida Everglades.

4.0 Methodology

This study utilized a purposeful sample of 18 college students enrolled in West Virginia University in a variety of academic programs. This sample was chosen because all members had purchased a space in a nature-based, group travel package, sponsored by the WVU Student Recreation Center. This one-week trip took place in March, 2004, during the university spring break. The destination was the Florida Everglades. Activities included canoeing, camping, snorkeling, boating, sight-seeing, and sunbathing on the beach. A mixed method, qualitative approach was employed, including participant observation, focus groups and open-ended surveys. The study began with an examination of choice determinants and pre-trip expectations, and culminated with an exploration of the components that add into the concept of individual satisfaction.

4.1 Design, Instrumentation, and Procedures

This study employed an interpretive scientific approach, based on post-positivistic philosophy, and qualitative methods in examining the spring break travel experience within and beyond the context of Moutinho’s Vacation Tourist Behavior model. This was a naturalistic inquiry into the students’ decision-making, satisfaction, and future decision-making processes, meaning that the researchers studied behavior as it exists naturally, without manipulation of the setting (Patton 1990) . The research took place in three stages. The first stage consisted of a focus group interview with all participants on the 2004 Student Recreation Center Spring Break Trip prior to the trip commencement. The second stage of the research consisted of participant observation during the trip in order to provide additional context for analysis of satisfaction. The third stage employed a post-trip questionnaire consisting of open-ended questions based on themes identified in the focus groups and in the literature review.

The focus group interview took place during the first meeting for the Spring Break trip. The researchers took notes and tape recorded the interview for maximum data collection. Overall topics to be explored were broken into three categories: icebreakers and travel behavior background, pre-decision and decision structure, and trip expectations (Fluker & Turner 2000; Hobson & Josiam 1992; Hyde & Lawson 2003; Mansfield 1992; Sirgy & Su 2000; Weiermair 2000). A short icebreaker activity was conducted to enable participants to meet each other and enhance comfort levels. After that, the interview followed an open-answer format, allowing individuals to speak in a free-form manner.

To gather data on participant satisfaction and dissatisfaction measures during the trip, and more fully explore the direct experience, participant observation was utilized. One of the researchers assumed the role of leader/participant throughout the trip and gathered data at various times during the travel experience. A variety of techniques were employed in the collection of participant observation data during the trip:

1. Interactive introspection, in which there is two-way sharing of experiences between the

researcher and the participants. This was achieved through random (covert) personal interviews of participants at various times throughout the trip.

2. Daily observations of group behavior and interactions.
3. Guided introspection, in which the participants are asked to think aloud about their thoughts, feelings, and actions. This was achieved through a group debriefing session at the half-way point of the trip and a final debriefing session on the last night.

The main method of recording data was through compiling field notes at the end of each day, or at significant other breaks during the day when the opportunity presented itself. Notes were primarily recorded into a field notebook or other unobtrusive materials such as letter paper or postcards. Still photography also formed part of the documentary evidence, as it did not interfere with the observation and prompted later memories.

A post-evaluation open-ended questionnaire was developed based on themes identified in the literature and in the focus groups. In order to explore a wide variety of factors, a list of 15 questions was developed. It was felt that the length of the questionnaire would prohibit in-depth responses. Therefore, in an effort to increase the detail of each of the responses, not all questions were included on each questionnaire. Instead, a core group of questions was chosen to include in all of the questionnaires (six total), and the remaining eight questions were divided, resulting in two different questionnaires. These were distributed at random, with half of the participants receiving Version A, and half receiving Version B. To increase the response rate, this questionnaire was distributed during the bus ride on the return back to Morgantown and collected prior to arrival.

4.2 Treatment of Data

Data from the focus groups, participant observation field notes, and post-trip questionnaire were analyzed for themes, trends, insights, theories, and additional research opportunities. An inductive analysis was used by looking

for natural variations in the data. Content analysis was used to identify, code, and categorize primary patterns in the data (Patton 1990). Analysis of the focus group transcripts and subsequent field notes collected during the trip was conducted by breaking down responses using spreadsheets. Phrases and expressions within the responses were captured and evaluated to find patterns of response similarities and differences. Key themes were identified and captured. The post-trip questionnaire data was initially analyzed using open-coding, in which content is examined to capture the essence of the data in its pure form. Themes were then identified on the basis of the open-coding, and subsequently, the data was re-examined and recoded using focused coding based on the themes. QSR N6 (2002) qualitative analysis software was utilized to organize the data according to themes identified through content analysis. This process was validated using peer review of all stages of analysis. To obtain additional context, data and themes from the post-trip questionnaire were compared and contrasted with the field notes, as well as the preceding focus group analysis. Results were then explored in relation to Moutinho's model, with the goal of comparing positivistic and post-positivistic philosophies and approaches.

5.0 Results

Participants in the 2004 WVU Spring Break trip to the Florida Everglades expressed high levels of satisfaction. Findings identified 13 satisfaction-related themes: active involvement, amenities, environment, escape, flow and pace, fun, group dynamics, guides, new attitudes and values, novelty, physical activities, unexpected events, and value proposition. Each of these factors seemed to play a significant part in participants' satisfaction. Most of them were expressed in all phases of the research. During the pre-trip focus groups, these themes arose either as elements of past travel experiences or as expectations for the spring break trip experience. During the trip, these themes were present in the participant observations and they re-emerged in the post-trip surveys in discussions of satisfaction. Table 1, which follows, provides a brief explanation of each theme as well as some examples of the direct quotes from participants.

Table 1.—Summary of themes & related dimensions

Theme	Dimensions	Examples from pre-trip focus groups & post-trip surveys
Active Involvement	Degree to which the group helped construct the trip as it evolved, both in terms of decision-making and day-to-day operations.	–“I liked the canoeing and being able to pick from activities at times with some downtime.” –“Keeping everyone involved in cooking and cleaning seemed to help everyone get along.
Amenities	Presence or absence of facilities such as bathrooms, showers, equipment, etc.	–“...there were too many mosquitoes and too few bathrooms.” –“I learned I can go well over a week without a real shower.” –“I have camped before, but not without showering for that long.”
Environment	Environmental factors such as weather, bugs, landscape, ecosystem, etc.	–“The reef, beach, springs and all activities were awesome. The bugs were annoying, but they came with the territory and added bonding and fun jokes.” –“I didn’t have any dislikes that didn’t involve bugs. But they were OK because nature rules.”
Escape	Degree to which experience provided a break from the routine and rejuvenation.	–“I feel like I’m going back to Morgantown rejuvenated and fresh...” –“I needed to get out of Morgantown, away from the rains and clouds every freaking day, go where it is sunny, sunshine, I need sunshine, I need to get a tan. I need light therapy here.”
Flow & Pace	Scheduling of Activities – including flexibility, down-time, and flow of activities.	–“I really enjoyed this trip. I liked the diversity of people on the trip, and the variety of activities we went on and the relaxed nature of it.” –“The activities were great, although the crazy amounts of driving hours bogged things down occasionally.”
Fun	Expectations and experiences that contain elements of fun.	–“Long van rides sucked but it was still fun.” –“All week long I kept saying, “I’m having so much fun! This is really great!”
Group Dynamics	The degree to which the group “got along” – included concepts such as “teamwork” “friendship”, “conflict”, etc.	–“I wanted to meet new people. You’re around your roommate forever, if you get in a fight, you don’t have anyone else to be your friend or get new friends.” –“I experienced no negative comments or actions from anyone. A wonderful group of people, half of the fun is watching the change from the beginning of the trip to the end.”
Guides	Competence and style of the guides.	–“The trip leaders were great. I think they made the trip much more enjoyable.” –“I liked the openness and approachability of the trip leaders, and their knowledge of what was going on.”
New Attitudes & Values	Aspects of personal growth resulting new attitudes and increased motivation, confidence, and/or tolerance for oneself and for others.	–“It changed me for the better as I feel that camping, travel, and not only meeting new people but also living and working together with them always does!” –“I’m (at the moment) eager to keep this level of activity and I am motivated to not just pack away my camping junk.” –“...My tolerance of people’s environment grew sky high. And my sleeping pattern became better. Sobriety is fun too ... it breeds good times among people on vacations.”

Continued

Table 1.—Continued

Theme	Dimensions	Examples from pre-trip focus groups & post-trip surveys
Novelty	New Activities, Destinations, Culture, Experiences	–“I want to learn new things, I’ve done canoeing a little bit, but I’ve never done anything else like this, it will be a learning experience.” – “I think I was able to learn and experience new things with new people and it had a sense of adventure with the different activities.”
Physical Activities	Expectations and experiences relating to programmed itinerary events and activities during the trip.	–What about this trip appeals to you the most? “...definitely stuff I wouldn’t be doing on my own – like kayaking, canoeing, and snorkeling.” – “I liked snorkeling in the ocean. I’d never snorkeled before and it was an experience that I never thought I’d enjoy.”
Unexpected Events	Elements of the trip experience that might be considered uncontrolled: “surprises”, “adventures”	–“Canoeing was a lot of fun especially at Juniper because the chance of being flipped or hitting a tree made it more intense. The more hurdles the better!” – “The springs were cool. I didn’t plan on swimming in Florida and I’m glad I got to. It was an experience I will never forget.”
Value Proposition	Expected and Perceived Value for Cost Comparisons	–“Yes, I couldn’t have found a better deal with the amount of cool things we did with this group of people.” –“... I’ve had more meals in the last week than in the preceding month. We also had activities for every waking hour of the trip. Certainly a better deal than a tattoo and alcohol poisoning in Motown.”

6.0 Implications

According to Moutinho (1987), “Tourist satisfaction is a function of tourist product performance, specific expectations, and expectancy confirmation or disconfirmation” (p. 34). This study indicated a greater complexity to tourist satisfaction that seemed unlikely to be captured in measures of expectancy confirmation or disconfirmation. Of the 13 themes identified within this research, seven seemed likely to fit within a disconfirmation paradigm. These themes include: amenities, environment, fun, novelty, escape, physical activities, and value proposition. Each of these themes were identified both prior to the trip in the participants’ needs and expectations as well as post-trip in their evaluations of satisfaction. Other themes such as flow & pace, active involvement, guides, group dynamics, new attitudes & values, and unexpected events seemed less clear. Expressed needs and expectations with relation to these variables were vague or non-existent. While expectancy confirmation or disconfirmation with relation to these aspects of tourist product performance may have occurred, there also seemed to be situations when these themes interacted with or influenced other themes

in unexpected ways and a traditional disconfirmation paradigm seemed unlikely to capture the complexities taking place.

For example, photographs taken during the participant observation phase of research showed less than desirable environmental conditions with regard to the amount of bugs present and the relative discomfort they posed on the experience. While many of the group members had expressed expectations that the bugs would be a problem, their comments on the post-trip survey indicated a gap between these expectations and reality in which the bug problem was much greater than anticipated. Comments included: “*Bugs sucked*,” “*I like seeing the different animals – the bugs less so*,” “*Least favorite – bug bites*,” and “*Least favorite: tiny bugs*.” A positivistic approach to measuring the disconfirmation paradigm for this variable would likely indicate a gap between expectations of the environment and reality, due to the greater than anticipated impact of bugs, resulting in a negative impact on satisfaction. Yet, the post-positivistic approach taken in this study revealed a greater complexity to the environment theme. The photos

taken during the participant observation phase depicted participants in mosquito netting and hoods, at dusk when bugs were at their worst. From the disconfirmation evaluation of this variable, you would expect to see a lot of unhappiness on the faces of participants; outward expressions of their dissatisfaction with the environment. Yet, these photos overwhelmingly showed smiles on the faces of the participants, laughter, and a general mood of fun. Review of the researcher's notes reveal observations that the positive group dynamics and trip management techniques of the guides helped to mitigate the unpleasant environmental conditions caused by the plethora of mosquitoes. Consider some of the participant quotes from the post-trip survey:

"I was very satisfied with the whole experience. The people were friendly; the leaders were fun, helpful, and laid-back. The teamwork affected my satisfaction as well. The reef, beach, springs and all activities were awesome. The bugs were annoying, but they came with the territory and added bonding and fun jokes."

"I didn't have any dislikes that didn't involve bugs. But they were OK because nature rules."

These comments support the researcher's observations and indicate a greater complexity to the evaluation of satisfaction than that suggested in Moutinho's model.

A second example of the complexities revealed using an interpretivistic approach to the study of tourist satisfaction relates to the relationships and interactions between the themes of active involvement, guides, group dynamics and new attitudes & values. The pre-trip focus groups revealed minimal expectations for these themes. Participants expressed expectations for "easy planning" and "nothing to think about", to "meet new people" and find "new stories" and for "interaction". Notes from the participant observation phase indicated that group dynamics were a pivotal part of the trip from early on. The guides actively managed the trip to create and encourage good group dynamics, utilizing a variety of tactics including pre-trip interaction, getting participants actively involved in trip decisions and daily activities such as cooking and cleaning, and encouraging an overall

atmosphere of tolerance and low stress. Participant survey responses to the post-trip questionnaire suggest the outcomes of these management actions:

"I lost intolerance for things I cannot change. I got a vacation I really needed. My breath was taken away many times. It changed me for the better as I feel that camping, travel, and not only meeting new people but also living and working together with them always does!"

"Keeping everyone involved in cooking and cleaning seemed to help everyone get along."

"I love to camp and meet people. My tolerance of people's environment grew sky high. Any my sleeping pattern became better. Sobriety is fun too ... it breeds good times among people on vacations."

While the complexity and exact nature of the interactions between these themes remains unclear, the use of the interpretivistic approach seems to add value by enabling researchers to more "directly or completely captured someone's lived experiences and social reality" (Stewart & Floyd 2004, p. 4). Evaluations of the gaps between expectations and reality with regard to themes such as the guides, group dynamics, or active involvement would miss the complexity revealed through interpretivistic approaches such as participant observation.

According to Crossan (2003), "the basic reasoning of positivism assumes that an objective reality exists which is independent of human behavior and is therefore not a creation of the human mind... The senses are used to accumulate data that are objective, discernable and measurable; anything other should be rejected as transcendental" (p. 50). A positivistic approach to post-purchase evaluation and the determination of tourist satisfaction, such as the model proposed by Moutinho, attempts to map and measure the "ideal" point of each attribute based on an aggregate cost-benefit analysis where an equilibrium level is identified based on the point where expectations and reality meet. Methodology focuses on the significance and predictive ability of each of theme or variable in terms of the overall

disconfirmation paradigm, in which expectations are compared with reality and determinations are made in terms of overall satisfaction / dissatisfaction. Where gaps exist between expectations and reality, Moutinho suggests that cognitive dissonance mechanisms and reinforcements are employed. The level of acceptance tourists assign to these mechanisms leads to the probability of repeat-buying behavior (Moutinho 1987; Decrop 1999).

A post-positivistic approach focuses on the concept that reality is subjective; it is influenced by context and can be influenced by many factors and is the creation of those involved in the experience. Post-positivism acknowledges the complex relationship between viewpoints, individual actions, environments and socio-cultural issues (Crossan 2003). Rather than seeking an absolute predictive truth, this approach looks for evidence of the existence of occurrences or trends and seeks to interpret them and construct a representation of the lived experience and social context (Stewart & Floyd 2004). The complexities revealed within this study seem unlikely to have been revealed using a positivistic approach, such as the disconfirmation paradigm. Although results of this case study cannot be generalized to a larger population or used in a predictive fashion; they suggest a value for post-positivistic philosophy within leisure and recreation research, which lies in their ability to help managers and researchers better understand and interpret the lived experiences of tourists.

7.0 Limitations

The limitations of post-positivist approaches generally relate to the interactive and participatory nature of qualitative methods. In these types of studies, the researchers are, by design, close to the investigation. While attempts have been made to remove researcher bias from this investigation through peer review, a standing criticism of qualitative methods is that they are the interpretation of the research team and lack the ability to be reproduced or generalized (Crossan 2004). These same limitations apply to this case study of the 2004 spring break trip to the Florida Everglades. Due to the effect of the guides, unexpected events, and small sample size, the results cannot be reproduced or projected to a larger population. They are specific to this type of trip and program and for the purposes of this study were

treated as such. Time and resource constraints were also identified as a limitation to this study; funding was scarce and the study design, implementation, and analysis were on a strict time schedule. Finally, the timing and administration of the follow-up survey may have had an impact on the quality of the responses. In order to ensure a high response rate the questionnaires were distributed and filled out on the van ride home. While all but two of the questionnaires were returned, the trip was still somewhat in progress and the participants may not have had ample time to reflect on the experience.

8.0 Future Research

Crossan (2003) states that “positivism adopts a clear quantitative approach to investigating phenomena, as opposed to post-positivist approaches, which aim to describe and explore in-depth phenomena from a qualitative perspective” (p. 46). Stewart & Floyd (2004) define a context for post-positivism within leisure and recreation studies by acknowledging the use of the philosophy and associated methods such as interpretivism and constructivism and critical theory. They attribute this trend accordingly: “Over the past decade, the leisure literature has enhanced its array of philosophical approaches to research and expanded its capacity for knowledge ... This growing appreciation for alternative paradigms is indicative of our anxiety for approaches that adequately describe (or explain or capture) the experiences and realities of people’s leisure” (p. 5). Positivistic philosophy and associated methodologies will continue to play a pivotal role in developing summarized appraisals of leisure experience, and models such as the Tourism Behavior model posed by Moutinho serve to provide a valuable filter for experience, but direct experience may be better understood through post-positivistic philosophies and methods (Stewart & Floyd 2004). The research presented in this report supports the idea that as researchers in leisure and recreation continue to try to understand and interpret the complexities of lived experiences, post-positivistic approaches can play a valuable role. Specifically, continued exploration of the complex relationships between satisfaction themes and direct experience is encouraged. There seems to be a distinctive role played by the guides of tourism experiences in weaving together elements of satisfaction to influence the direct experience. Future research

should continue to explore the role of the guides, group dynamics, concepts of cognitive dissonance and loyalty, as well as other themes identified in this study.

9.0 Citations

Arsenault, N. and Gale, T. 2004. **Defining Tomorrow's Tourism Product: Packaging Experiences.**

Unpublished report prepared for: Travel Learning Connections, The Canadian Tourism Commission, Learning Thru Leisure Consulting, and Radisson Seven Seas Cruises, 1-41.

Bowen, D. 2002. **Research through Participant Observation in Tourism: A Creative Solution to the Measurement of Consumer Satisfaction/Dissatisfaction (CS/D) Among Tourists [Electronic version].** Journal of Travel Research. 41: 4-14.

Clark, A. 1998. **The qualitative-quantitative debate: moving from positivism and confrontation to post-positivism and reconciliation.** Journal of Advanced Nursing. 27(6): 1242.

Crossan, F. 2003. **Research philosophy: Towards an understanding.** Nurse Researcher. 11(1): 46-55.

Decrop, A. 1999. **Qualitative Research Methods for the Study of Tourist Behavior.** In A. Pizam and Y. Mansfield, eds., Consumer Behavior in Travel and Tourism. Binghamton, NY: The Hawthorn Hospitality Press.

Decrop, A. 1999. **Tourists' Decision-Making and Behavior Processes.** In A. Pizam and Y. Mansfield, eds., Consumer Behavior in Travel and Tourism. Binghamton, NY: The Hawthorn Hospitality Press.

Fluker, M. and Turner, L. 2000. **Needs, Motivations, and Expectations of Commercial Whitewater Rafting Experience.** Journal of Travel Research. 38: 380-389.

Foster, D. 1999. **Measuring Customer Satisfaction in the Tourism Industry.** Paper presented at the Third International & Sixth National Research Conference on Quality Management, Melbourne, Victoria.

Geva, A., and Goldman, A. 1991. **Satisfaction Measurement in Guided Tours.** Annals of Tourism Research. 18: 177-185.

Hobson, J. S., and Josiam, B. 1992. **Spring Break Student Travel--An Exploratory Study.** Journal of Travel & Tourism Marketing. 1(3): 87-97.

Hyde, K., and Lawson, R. 2003. **The Nature of Independent Travel.** Journal of Travel Research. 42: 13-23.

Letourneau, N., and Allen, M. 1999. **Post-positivistic critical multiplism: a beginning dialogue.** Journal of Advanced Nursing. 30(3): 623.

Mansfield, Y. 1992. **From Motivation to Actual Travel.** Annals of Tourism Research. 19: 399-419.

Mazursky, D. 1989. **Past Experience and Future Tourism Decisions.** Annals of Tourism Research. 16: 333-344.

Moutinho, L. 1987. **Consumer Behavior in Tourism.** European Journal of Marketing. 21(10): 3-44.

Patton, M. 1990. **Qualitative Evaluation and Research Methods (2nd ed.).** Newbury Park, CA: SAGE Publications, Inc.

QSR N6. 2002. Victoria, Australia: International Party Limited.

Sirgy, M.J., and Su, C. 2000. **Destination Image, Self-Congruity, and Travel Behavior: Toward an Integrative Model.** Journal of Travel Research. 38: 340-352.

Stewart, W.P., and Floyd, M. 2004. **Visualizing Leisure.** Journal of Leisure Research. 36(4): 445-460.

Weiermair, K. 2000. **Tourists' perceptions towards satisfaction with service quality.** Managing Service Quality. 10(6): 397-409.

Wight, P. 1996. **North American Ecotourism Markets: Motivations, Preferences, and Destinations.** Journal of Travel Research. 36: 3-10.

MOVIE EFFECTS ON THE IMAGE OF THAILAND AMONG COLLEGE STUDENT TRAVELERS

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Abstract

The purpose of this study was to understand how selected college students perceive Thailand as a destination and to determine how viewing a movie, "The Beach," would affect their perceptions. An experiment was utilized to determine if perceptions were different between those who had seen the movie and those who had not seen the movie and if those perceptions changed over time. The results of this study indicated that the knowledge of Thailand was very limited among selected college students. Overall, college students agreed most that Thailand is a place with different food, architecture styles, culture, and lifestyles and where beautiful natural sceneries and good beaches could be found. Despite the positive perceptions college students had of Thailand, their likelihood to actually visit Thailand was low. The movie was found to be ineffective in inducing a visit to Thailand among the respondents. Nevertheless, it did help to enhance positive images but the effects faded away over time.

Keywords: Movie-induced tourism, student travel, destination image and experimental design.

1.0 Introduction

Since the economic crisis in Thailand in 1997, the importance of tourism has increased dramatically due to its role in helping to maintain the flow of badly needed foreign exchange, creating jobs, and generating more income for people in countries with an evolving tourism economy. The Thai government (Tourism Authority of Thailand 2001) is now facilitating the production of movies, hoping to improve the image of the country,

induce tourism, and bring more revenue to the country. Part of their strategy is to attract more young adults, such as college-aged student travelers and convert them into loyal tourists.

Young adult, college-aged travelers have received less attention in the majority of existing market studies due to their lack of large amounts of discretionary spending for overseas travel. According to the Federation of International Youth Travel Organization (FIYTO), young people represent 20 percent of international tourism. In addition, the tourism statistics from the Tourism Authority of Thailand (2001) indicates that the percentage of student travelers has increased every year from 1998 through 2002.

In order to effectively promote Thailand tourism products among the student travel market, it is necessary to know how they perceive Thailand and how the media can affect their perceptions. Although several studies found that movies help to increase tourism in countries such as Australia, Scotland, the U.S.A., and the U.K., previous research has not paid attention to the effect a movie can have on an image of a specific film destination over time. Since it is widely accepted that a destination's image plays a major role in the destination selection process (Fakeye and Crompton 1991; Mayo and Jarvis 1981; Goodrich 1978), a more in-depth study regarding the effects of movies on destination image over time will only support and strengthen the existing knowledge of movie-induced tourism and destination image. Furthermore, it will also provide meaningful destination marketing guidelines that will benefit Thailand's tourism in the future.

1.1 Purpose of the Study

The primary purpose of this study was to examine the effect of a movie on the image of Thailand among student travelers. The movie, "The Beach," was used in this study because, unlike others movies filmed in Thailand, this particular movie made a particularly unique and special visual statement to the audience (i.e., teens, young adults, youth and pop culture, college student travel markets).

The movie promoted the unusual and undiscovered beauty of the particular part of Thailand and a specific location—Phi Phi Island. The main characters in the movie were college-aged student travelers and the primary character, Leonardo DiCaprio, was also popular among the college-aged segment (18 to 24 year olds).

2.0 Review of Literature

Tourism researchers, industry practitioners, and destination marketers have paid increased attention to the concept of image since it differentiates tourist destinations from one another. The term “image” has a number of meanings. In the tourism literature, image is defined as “a set of expectations about a place or activity that exists, either voluntarily or through suggestions, before the actual experience” (Metelka 1981). A number of researchers offer other similar definitions of image: “the impression that people hold about a state in which they do not reside” (Hunt 1975); “the sum of beliefs, ideas, and impressions that a person has of a destination” (Crompton 1979); “the expression of all objective knowledge, impressions, imaginations, and emotional thoughts that individuals have of a particular place” (Lawson and Baud-Bovy 1977); and “a mental construct developed by the consumer on the basis of a few selected impressions among the flood of total impressions that comes into being through a creative process in which selected impressions are elaborated, embellished, and ordered” (Reynolds 1985).

2.1 Movie Effects on Destination Image and Tourism

The results of one study (Brown and Singhal 1993) showed that entertainment is not the sole purpose of motion pictures. Movies can send political messages, correct historical facts, bring viewers to the realization of the moment and even allow the viewers to vicariously experience other cultures, locations or settings or even lifestyles. Consequently, movies do influence our attitudes on a variety of levels. Viewing a single movie or exposure to a specific media message may be sufficient to produce effects on people’s beliefs, thus forming a perception (Jeffers 1997). Jeffers (1997) stated that people are more influenced by media when they are in the early stages of decision-making and that media, including motion pictures, do influence the audience directly, but interpersonal influence is also important. Butler (1990)

argued that what is shown in video formats (television, movies and recorded media) will become even more important than print media in shaping images and visitation to places in the future.

Kim and Richardson (2002) found that the content of movie could be related to destination image formation. Some attributes of the destination image can be positively changed while other attributes might be negatively affected by the movie. From a marketing standpoint, it was implied that destination marketers are not likely to have control about the way a place is portrayed in the movie. Thus, destination marketers may need to develop or adjust their image management strategy depending on the way a place is depicted in a film.

2.2 Evidence of Movie-Induced Tourism

The influence of popular motion pictures (i.e., television film, movie) upon the formation of destination image has received some attention in the tourism literature. A number of empirical studies that have been reported in the tourism literature studied the effects of movies on increased visitation to places they depict (Kim and Richardson 2002; Beeton 2001; Riley, Baker, and Van Doren 1998; Tooke and Baker 1996; Cousin and Anereck 1993; Riley and Van Doren, 1992; Workman, Zeiger, and Caneday 1990.)

2.3 Research on Thailand’s Image

There have been a limited number of academic studies on the image of Thailand. Rittichainuwat, Qu, and Brown (2001) indicated that Thailand has a positive image as a rich cultural, natural, and historical travel destination. At the same time, however, they found that Thailand’s image is tarnished by pollution, prostitution, and the deterioration of some tourist attractions. Tapachai and Waryszak (2000) used unstructured techniques via open-ended questions to measure the image of Thailand. The results demonstrated that all beneficial characteristics of functional (shopping, food, friendliness of people, historical sites, beaches, and scenery), epistemic (experience of difference culture and climate), and conditional (proximity, price, and accessibility to other neighboring country) values are strong beneficial images as agreed on, or perceived, by a majority of respondents (visitors) of Thailand.

2.4 Filming in Thailand

Many foreign production companies have been using Thailand as a film location. Common locations that have been used for foreign films include rain forests, beaches, Chinatown, cities, mountains, seas, rivers, cultural and historical sites. According to the Government Public Relations Department, more than 200 filming occurrences were shot in Thailand between 1995 and 1998. (Thai Students Website 2002). Despite a large number of movies filmed in Thailand, only a few can be used to induce tourism since most of the movies did not make a specific reference to Thailand. "The Beach", the movie based on the top-selling novel published in 1996 by Alex Garland, was selected as the movie of interest in this study because the movie captured Thailand's beautiful beach locations and the contents in the movie were contemporary. The movie is about a backpacker named Richard who is traveling around Asia and gets to know the legend about a special place called "The Beach", a legendary tropical paradise free of conventional society's problems where people live in innocence and happiness (The Beach Website 2002). The Thai government approved the project in the hope the movie will help boost the country's image abroad, attract more tourists, and generate revenue for the country. Twentieth Century Fox agreed to promote Thai tourism in their marketing strategies by offering a free trip for two to Thailand at the official movie website (The Beach Website 2002).

3.0 Methods

Based on the destination image study conducted by Echtner and Ritchie (1993), a combination of structured and unstructured methods should be used to capture the components of destination image. Accordingly, the survey instrument of this study used both open-ended questions (unstructured) and Likert type statements (structured) to capture the image of Thailand.

3.1 Questionnaire Design

The questionnaire used in this study comprised four parts: Part 1:—travel and movie profile, establishing past travel experience and intentions for future travel as well as movie viewing habits; Part 2:—destination image, capturing destination image by using both open-ended questions and pre-developed Likert statements regarding

tourism; Part 3:—movie-induced tourism, capturing the awareness of the phenomenon of movie-induced tourism; and Part 4:—socio-demographic information, age, gender, education, and ethnic group variables. The questionnaire was pre-tested among a small group of undergraduate and graduate students in a university setting and revisions made accordingly.

3.2 Data Collection Process

The data collection process for this study was divided into two phases: 1) an initial survey; and 2) a controlled study. In the first phase, a convenience sample was used. Questionnaires were administered during classes to undergraduate and graduate students at a land-grant research university in the Northeast United States during the spring semester of 2003. Since the purpose of this study was to measure the image of Thailand as perceived by student travelers who were considered to be a potential growth market for Thailand's tourism, the sample from a university set of students could reasonably serve as a convenient representation of college aged, student travelers. The class selection was based on the diversity of students. General education classes (that are required of the entire student population) were considered as the ideal sample due to the large number and the diversity of students in these types of classes. A sample from undergraduate general education classes were recruited who had seen the movie, "The Beach," within the previous three-year period (since the movie's release and were administered the survey. Students were also recruited to the controlled study from the general education classes who had never seen the movie. Incentives, free refreshments and participation in a voluntary manner were techniques employed. A simulated movie theatre setting was also used to increase participation. The initial survey sample and the controlled survey sample were balanced by size, gender and number.

Socio-demographic, traveler profile, movie-induced tourism awareness, and destination image of those who had seen "The Beach" (group 1) and those who had not seen the movie (group 2) were analyzed in the first phase. In order to get a deeper understanding of the movie effects on destination image among student travelers, a second phase of the study was then conducted. The second phase of the study focused on the change in perceptions after

viewing the movie. Accordingly, the study was conducted in a controlled environment. Those who participated in the second phase study were those who had not seen the movie before. A questionnaire similar to the one used in the first phase was used in the second phase. Subjects were asked to complete the questionnaire (pre-test) and after that were shown the movie. A post-test then was conducted (using the same questionnaire), to find out how the movie affected their perceptions about Thailand immediately after viewing the movie.

4.0 Data Analysis

The analysis of the data was comprised of two parts:

1) analysis of opened-ended questions and analysis of attribute-based items; and 2) comparisons of pre-test versus post-test results of the effect of movie viewing of a country destination—Thailand. T-test analysis was applied to determine whether any significant differences existed between those who had seen the movie and those who had not seen the movie. In the examination of the relationships between the viewing period and its effect on destination image, the results gained from the people who had seen movie in the second phase (post-test result) were compared to those from the people who had seen the movie in the first phase. Since the movie was officially released in February 2000, the viewing period could have varied up to as much as 3 years. The results were then compared to identify whether the viewing period affected the students' perceptions of Thailand.

4.1 Hypotheses Testing

Based on the conceptual framework described in this study, the following hypotheses were considered:

Hypothesis 1: There is no difference in the mean attribute ratings of Thailand's features between Group 1 and Group 2.

Hypothesis 2: There is no difference in the mean attribute ratings of Thailand's features within the controlled group.

Hypothesis 3: Viewing a movie has no effect on the likelihood to visit Thailand.

Hypothesis 4: There is no difference in the mean attribute ratings among people who saw the movie in different periods.

Hypothesis 5: There is no difference in the likelihood to visit Thailand by gender.

Hypothesis 6: There is no difference in the mean attribute rating of Thailand's features by gender.

The Statistical Package for the Social Sciences (SPSS 2001) program was used to test the aforementioned hypotheses. The kind of tests used varied from independent-sample T-test, paired-sample T-test, or one-way ANOVA analysis, depending on each hypothesis.. All the tests were conducted using the 95 percent confidence level.

5.0 Results

The purpose of this study was to understand how college students perceive or understand images of the country of Thailand and to determine how of the viewing the movie, "The Beach" might affect their perceptions of this specific destination. For the purpose of this study, a movie called "The Beach" was selected because it was filmed in Thailand and captured the beautiful natural scenery of the country.

5.1 Background Information

During the data collection process, the survey respondents were recruited into two main groups to measure the perception of Thailand before and after viewing the movie – "The Beach." Accordingly, any differences in perceptions about Thailand found may be considered to be the result of the movie's impacts given the design of the study. The respondents who had already seen the movie were categorized as follows: Group 1- saw "The Beach"; and Group 2 - did not see "The Beach." Then, "Group 2" viewed the movie to measure the immediate impacts the movie on their perceptions of Thailand.

Data were collected from February 1 through 28, 2003, yielding a total number of 160 completed surveys. General education classes were selected for the survey due to the large number and the diversity of student class population in these classes. Subjects in Group 2, the controlled group, were from class surveys as well as those who volunteered to participate in the pre-arranged controlled environment from a recruitment process.

The results gained from Group 2 consisted of the pre-test and the post-test surveys. The data from the pre-test (before viewing the movie) were referred to as “Group 2B” data while those from the post-test (after viewing the movie) were referred to as “Group 2A” data (“B” for “before viewing” and “A” for “after viewing”).

5.2 Socio-Demographic Information

The survey respondents consisted of the equal number of males and females, totaling 160 respondents. Ages of the subjects ranged from 18-27. Subjects who were between 18-20 years old accounted for 51.3 percent and those who were between 21-25 years old accounted for 46.9 percent. Only 1.9 percent of the sample was over 25 years old. As for class standings, freshmen (first year of college study) accounted for 13.1 percent, sophomores (second year of college study) for 30.6 percent, juniors (third year of college study) for 22.5 percent, seniors (fourth year of college study) for 31.3 percent, and graduate students (advanced graduate study) for 2.5 percent.

5.3 Travel Behavior

Only 1.3 percent of the survey respondents did not travel for vacation purposes while 38.8 percent traveled once a year, 30.6 percent traveled twice a year, 16.3 percent traveled three times per year, and 13.1 percent traveled four or more times per year. More than half of the survey respondents traveled with family (58.8%). Traveling with friends or significant others accounted for 31.9 percent, while traveling alone or as part of a group accounted for 6.9 percent and 2.5 percent, respectively. As for trips to foreign countries, the median was one trip per year. Only 11.3 percent of the respondents traveled to an Asian country and 2.5 percent of them had visited Thailand in the past 5 years. The sources of information for travel destination used most often by the survey respondents were the internet (85%), followed by friends (56.3%), guidebooks (26.9%), travel agencies (18.2%), and other (2.5%). The survey respondents were found to be frequent movies viewers. The majority of the survey respondents watched movies four times or more in a month (71.3%). An analysis of the survey respondents by groups revealed no significant differences in demographics or travel behavior.

5.4 Attribute Ratings Analysis

The survey respondents were asked to indicate their level of agreement with a series of statements on a seven-point Likert scale. The statements represented different tourist features of Thailand. In general, it could be concluded that the respondents' agreement levels were higher after they watched the movie. In addition, the mean ratings of those who just saw the movie were higher than those who saw the movie in the past. Thus, the differences in the mean ratings may be associated with time effects and will be examined more fully later in this study.

5.5 Hypotheses Testing

Statistical testing methods were undertaken to analyze whether significant differences existed in the mean ratings among different groups and gender. T-test and one-way ANOVA were performed according to the type of variables under consideration. Six hypotheses were developed and tested. Statements and statistical results are as follows.

Hypothesis 1 stated “*There is no difference in the mean attribute rating of Thailand's features between Group 1 and Group 2*”. To test this hypothesis, the results of mean ratings of Group 1 and Group 2 pre-test were compared. After running a T-test analysis, significant differences in 11 out of 18 attributes were found and Hypothesis 1 was rejected.

Before seeing the movie, Group 2 indicated higher levels of agreement on the following six attributes: interesting places, adventure, natural scenic beauty, shopping, and differences in food and architecture styles. As compared to people who had seen the movie from Group 1, Group 2 indicated lower levels of agreement on the following five attributes: pleasant weather, safety, good night life, friendliness of the locals, and the locals' ability to speak English.

This hypothesis test provided some knowledge of the pure perceptions (without being influenced by any medium) that college students had about Thailand and how viewing the movie affected their perceptions. Overall, the perceptions that Group 2 had about Thailand were positive (rated above 4) except for the

safety attribute that was the only attribute with a rating (3.74) lower than four (4) on the seven-point scale. The agreement levels were highest (rated higher than 5) on the following features: differences in lifestyles and custom, food, architecture styles, and natural scenic beauty (5.38, 5.25, 5.2, 5.01 respectively).

The movie seemed to help create positive differences. Significant increases in the mean ratings were found on the pleasant weather, friendly locals, good night life, English speaking, and safety attributes (significantly increased by 1.23, 1.13, 1.11, 1.1, and 0.64 points respectively). On the other hand, the movie also created negative differences on the adventure, interesting places, difference in food and architecture styles, shopping, and natural scenic beauty attributes (significantly decreased by 2.45, 2.43, 1.0, 0.95, 0.54, and 0.45 points respectively). For people who had seen the movie, their agreement levels were less strong, yet positive, on the natural scenic beauty, differences in food and architecture style attributes. Students who viewed the movie held negative images on the interesting places, adventure, and shopping attributes. It could be assumed that those who saw the movie found no major difference features in Thailand that would qualify it as neither a good shopping place nor an interesting and adventurous place. However, since Group 1 respondents were impacted more by having not seen the movie recently, their recall of any specific details may have been affected or clouded. Accordingly, hypothesis 2 was introduced to find out how these perceptions could change right after viewing the movie among a similar market.

The purpose of hypothesis 2 was to test that *“There is no difference in the mean attribute rating of Thailand’s features within the controlled group.”* In order to get the before-movie viewing perceptions, the subjects in the controlled study environment were asked to complete the pre-test survey. After that, they were asked to watch the movie and complete the post-test survey, which provided the after-movie viewing perceptions.

After performing a paired sample T-test, significant differences in the mean ratings of 13 out of 18 attributes were found. Consequently, Hypothesis 2 was rejected. The movie seemed to have an impact on almost all the

attributes except for the following five attributes: safety, tourist information, architecture styles, and the local’s friendliness and ability to speak English. Since the mean scores were taken from the same group of people, the differences in the mean scores were attributed to the movie contents.

Among all the attributes where significant differences were found, the movie created major positive differences on the following attributes: good beaches, pleasant weather, natural scenic beauty, low cost travel, and interesting places (with increases of 1.20, 1.17, 1.12, 1.06, and 1.02 points respectively). Minor increases were found on the nightlife, adventure, food, different and fascinating things, relaxing place, and different lifestyles attributes (with increases of 0.89, 0.75, 0.64, 0.50, 0.48, and 0.38 points respectively). Less significant differences were found on the shopping attribute with an increase of 0.41 points. The hotels and restaurants attribute was the only feature that received negative impact by the movie, with a decrease of -0.48 points. The movie held little references to hotels and only a few references to settings at bars and restaurants in Thailand.

One possible explanation for those attributes in which significant differences were not found could be that the movie did not provide a better or clearer picture of these attributes or perceptions, or these features had little or no impact. Nonetheless, although some scenes in the movie did portray unsafe and unfriendly features of the place, this did not cause the audience to give lower ratings on the same features. This may have meant that the respondents did not take what they saw on the movie literally and/or formed a stereotypical image of Thailand. As for those attributes with significant differences, in general, the respondents gave higher scores on most of the attributes except for the “quality restaurants and hotel” attribute. The movie did show the image of low quality and low-cost guesthouses that were popular among budget- concerned travelers. Unlike the negative features like hostile and unsafe conditions, this feature of low-quality accommodations did have an impact on the respondents’ perceptions. Since in real life situations, it was more realistic to come across some low quality accommodations and restaurants rather than some armed local drug dealers as portrayed in the movie, it made

sense that this feature, not the others, was more strongly taken into account.

Hypothesis 3 aimed to test that “*Viewing a movie has no effect on the likelihood to visit Thailand*”. The respondents were asked to state their likelihood to visit Thailand in the next 5 years on a five- point scale (1 = not at all likely to 5 = very likely). The majority of the respondents were not likely to visit Thailand as the mean of the three groups were all lower than three (2.1, 1.88, and 1.89 for Group 1, Group 2B, and Group 2A respectively). T-tests were used to determine whether significance differences in the means existed.

The first test was performed within Group 2, comparing the likelihood to visit Thailand before (1.88) and right after (1.89) the respondents in Group 2 viewed the movie. The t-test result indicated no significant difference ($t = -.45$ $P = .658$). The second test was the comparison of likelihood between Group 2B (1.88) and Group 1 (2.10) who also had seen the movie but not as recently as Group 2A. Also, no significant difference was found in the second comparison ($t = 1.15$ $P = .256$). These findings further confirmed that viewing the movie did not increase their likelihood to visit Thailand. Accordingly, hypothesis 3 was accepted.

Hypothesis 4, “*There is no difference in the mean attribute rating among people who saw the movie in different periods*”, aimed to test whether different periods of viewing the movie affected the respondents’ perceptions. It should be noted that, for testing hypothesis 4, the number of people who recently saw the movie and those who saw the movie last year were combined due to the small number of people in the former group (1.3%).

The survey respondents were put into 4 different groups in accordance with four different viewing periods (3 years ago, 2 years ago, 1 year ago, and currently viewed). All the respondents in Group 2 were put in the last currently viewed category. From the total number of 160 respondents, 15.61 percent saw the movie 3 years ago, 24.41 percent saw the movie 2 years ago, 10 percent saw the movie last year, and 50 percent saw the movie recently.

One-way ANOVA test was used to test the hypothesis. Significant differences were found in 10 out of 18 attributes. Generally, it was found that the more recent the respondents saw the movie, the higher they rated the features. Nevertheless, the “quality restaurants and hotels” attribute received the opposite rating, the more recent the respondents saw the movie, the lower they rated this feature because the movie portrayed the negative image of the low quality hotels. Most of the highest ratings of Thailand’s features could be found in the “currently viewed” group. The highest rated features within this group were natural scenic beauty, beaches, interesting places, pleasant weather, adventure, and low cost travel (with the mean scores of 6.13, 5.86, 5.55, 5.35, 5.30, and 5.28 respectively. Among all the attributes with significant differences, the most significant differences were found in the interesting places, natural scenic beauty, pleasant weather, and low cost travel features of Thailand. Since the majority of significant differences were found, hypothesis 4 was rejected.

Hypothesis 5, “*There is no difference in the likelihood to visit Thailand by gender*” aimed to test whether gender was an important factor that affected the mean ratings. To test the effect of the gender variable, t-test analyses were used to determine likelihood to visit Thailand.

The results showed that significant differences existed by gender. Females ($n=80$) were found to have significantly higher likelihood scores (mean = 2.20) to visit Thailand in the next 5 years than males (mean = 1.79; $t = -2.17$, sign. level = 0.031); however, the scores also indicated that overall likelihood to visit is not high on the five-point scale with five being the highest likelihood rating. Males simply appear to be much more less likely to visit Thailand in the next 5 years than females.

Hypothesis 6, “*There is no difference in the mean attribute rating of Thailand’s features by gender*”, tested the effects of the gender on the mean ratings of Thailand’s attributes. A t-test found significant differences in only 3 out of 18 attributes when the gender variable was taken into account.

There were equal number of males and females in this study (80 each). Basically, the means of each attribute rated by male and female respondents were pretty similar except for the following three attributes—interesting places, adventure, and natural scenic beauty that received higher rating by females. Nevertheless, a few significant differences did exist; therefore, hypothesis 6 was only partially rejected.

5.6 Results Summary

The test results rejected all of the hypotheses aiming to prove that gender and different periods of viewing the movie would not affect the college students' perceptions of Thailand. However, the accepted hypothesis confirmed that the movie did not change the likelihood of students to visit Thailand. In other words, the movie, time periods, and gender were variables that had impacts of the college students' perceptions of Thailand; however, the movie itself was found to be ineffective in inducing a visit to Thailand.

6.0 Conclusions

The findings of this study suggest watching or seeing a movie about Thailand does not induce travel to the country. For this case of Thailand, this movie, "The Beach" was not effective in the tourism inducing purpose. While the sample surveyed in this study does travel, they were not highly likely to consider Thailand as a travel destination. College students do not appear to consider viewing a movie as an important factor that actually encourages them to visit the filmed location. This was well supported by the findings from the controlled study. The likelihood to visit Thailand of the controlled group did not change even after immediately watching the movie.

This study does support some of the findings of Kim and Richardson (2002). In their study of Vienna, they concluded that a movie did affect some destination image components but that a movie did not enhance the degree of familiarity with the destination. In this study of Thailand, the total effects of a single movie did affect the ratings of selected features or attributes of Thailand; however, it did not lead to an increased likelihood to visit the destination. This study's findings do appear to support the aspects of cognitive and affective image

change noted in Kim and Richardson's (2002) study. Consequently, the specific movie content does appear to affect the viewers' image and perceptions of a destination portrayed in a movie, but in both positive and negative ways. However, differences in terms of recall of places and features about a destination, such as Thailand did enhance the degree of familiarity (an important variable noted in the Kim and Richardson study); but, this level of familiarity appears to fade over time.

While tourist statistics (Tourism Authority of Thailand 2001) did show an increased number of visitors and an increased number of students of college age to the filmed location during the run of the movie, "The Beach", other causes rather than the movie should be considered. What might be some of those other causes? It was possible that the number of visitors increased because of Thailand's aggressive overall promotional campaigns at that time. People might visit the filmed location when they were already in Thailand for example. No evidence exists that conclusively suggests that travelers made a decision to come to Thailand just because of the movie. However, this study did not survey those who actually visited to determine if this movie or other movies or even a combination of movies or other reasons may have prompted or affected their visit intentions. The study was structured to determine if the movie would have an effect. Nevertheless, the movie was found to change perceptions about some of the features of Thailand. Consequently, selective visual aspects of the use of this medium do have an impact in changing perceptions of destination attributes.

The results from the pre-test survey indicated that most students did not know much about Thailand; thus, their perceptions were mainly neutral. This could be considered favorable to tourism promotion purposes. Although it implies harder work, putting an image in a neutral mind is much easier than correcting negative images and changing various stereotypes. Furthermore, it may be more worthwhile to target students in the research process who are more highly motivated to travel to Asian countries and focus their perceptions upon creating a positive image that encourages their travel to Thailand.

The movie medium itself, because in its true sense is not a controlled promotional tool, but rather one that simply might instill a positive or even a negative perception about a place does create challenges for tourism marketers. What is known is that college students are frequent movie viewers and this does hint at possible innovative promotion channel strategies. Add-in clips to DVDs and videos about the destination especially if the movie is destination specific may indeed have additional impact. These techniques combined with the movie as a promotional tool may work better and lead to higher levels of likelihood to visit the country, especially among budget-conscious college students. However, strategies such as these must be a part of a fully integrated marketing communication plan. It is unlikely that a sole movie promotional strategy targeting one specific market and destination would have a long-term impact. In the end, engaging the movie industry in tourism promotion appears to offer some possible benefits to select destinations, but the goal of the movie producers is to create high quality, profitable entertainment.

Accordingly, in the future, Thailand's promotional efforts should be aware of adverse effects a movie can create if it is not specifically made for tourism promotion purpose. The movie can positively change perceptions of Thailand but it does not necessarily make people go there. Travel decision-making is a complex process, thus, countries need to use multiple ways to influence people and to develop more highly refined and integrated marketing communication (IMC) plans. Targeting the right market and understanding consumer behavior are very important in the development of appropriate promotional and IMC strategies. To capture the student traveler market, Thailand's promotion agencies need to understand their travel behaviors and factors that motivate or affect their decision-making over the course of trip planning and decision-making. Nevertheless, movies may be utilized as a supplemental form of promotion strategy to instill or supplement desired perceptions into consumers' minds, as they do appear to influence perceptual changes of selected variables of a selected destination area.

Note: The statistical tables for this study are available from the authors at the University of Massachusetts.

7.0 Citations

- Beeton, S. 2001. **Smiling for the Camera: The Influence of Film Audiences on a Budget Tourism Destination.** *Tourism Culture and Communication.* 3(1): 15-25.
- Brown, W. and Singhal, A. 1993. **Media and Prosocial Messages.** *Journal of Popular Film and Television.* 21(3): 92-99.
- Butler, R. 1990. **The Influence of the Media in Shaping International Tourist Patterns.** *Tourism Recreation Research.* 15: 46-53.
- Cousin, A. and Andereck, K. 1993. **Movie Generated Tourism in North Carolina: Two Case Studies.** In *Proceedings of the 24th Travel and Tourism Research Association.* Wheat Ridge CO: TTRA.
- Crompton, J.L. 1979. **An Assessment of the Image of Mexico as a Vacation Destination and the Influence of Geographical Location upon That Image.** *Journal of Travel Research.* 17(Spring): 18-23.
- Echtner, C.M and Ritchie, J.R. 1991. **The Meaning and Measurement of Destination Image.** *The Journal of Tourism Studies.* 2(2): 2-12.
- Echtner, C. M and Ritchie, J.R. 1993. **The Measurement of Destination Image: An Empirical Assessment.** *The Journal of Tourism Studies.* 31(4): 3-13.
- Fakeye, P.C., and Crompton, J.L. 1991. **Image Differences between Prospective, First-Time and Repeat Visitors to the Lowe Rio Grande Valley.** *Journal of Travel Research.* 30(Fall): 10-16.
- Federation of International Youth Travel Organization Website. Retrieved October 23, 2002, from <http://www.fiyto.org>
- Goodrich, J.N. 1978. **A New Approach to Image Analysis through Multidimensional Scaling."** *Journal of Travel Research.* 16(Winter): 3-7.

- Jeffers, L.W. 1997. **Mass Media Effects**. (2nd Ed.). Prospect Heights, Illinois: Waveland Press, Inc.,
- Kim H. and Richardson, S. 2002. **Motion Picture Impacts on Destination Images**. *Annals of Tourism Research*. 30(1): 216-237.
- Lawson, Fred, and Manuel Baud-Bovy. 1977. **Tourism and Recreational Development**, London: Architectural Press.
- Mayo, E. and Jarvis, L. 1981. **The Psychology of Leisure Travel**. Boston: CBI.
- Metelka, Charles J. 1981. **The Dictionary of Tourism**, Wheaton, IL: Merton House
- Oui, C.S. 2002. **Brand Singapore: The Hub of the 'New Asia'**. *Destination Branding*. 217-260.
- Reynolds, W. 1985. **The Role of the Consumer in Image Building**. *California Management Review*. 7: 69.
- Riley, R., Baker, D., and Van Doren, C.S. 1998. **Movie Induced Tourism**. *Annals of Tourism Research*. 25: 919-935.
- Riley, R.W., and Van Doren, C.S. 1992. **Movies as Tourism Promotion: A "Pull" Factor in a "Push" Location**. *Tourism Management*. 13(3): 267-274.
- Rittichainuwat, B., Qu, H., and Brown, T. 2001. **Thailand's International Travel Image: Mostly Favorable**. *Cornell Hotel and Restaurant Administration Quarterly*. 42(2): 82-95.
- SPSS for Windows. 2001. George, D and Mallery, P., eds. Boston: Allyn and Bacon.
- Tapachai, N. and Waryszak, R. 2000. **An Examination of the Role of Beneficial Image in Tourist Destination Selection**. *Journal of Travel Research*. 39(August): 37-44.
- Thai Students Website. **Hollywood Movies Made in Thailand**. Retrieved October 15, 2002, from <http://www.thaistudents.com/movies/list.html>.
- The Beach Movie Website**. Retrieved October 3, 2002, from <http://www.thebeachmovie.com>.
- Tooke, N. and Baker, M. 1996. **Seeing is Believing: The Effects of Film on Visitor Numbers in Screened Locations**. *Tourism Management*. 17: 87-94.
- Tourism Authority of Thailand Website**. Retrieved November 29, 2002, from <http://www.tat.or.th/stat/index.html/>
- Workman, C., Zeiger, J., and Caneday I. 1990. **Analysis of Visitation: Report to the Devils Tower Tourism Association**. Stillwater OK: Oklahoma State University.

Leisure, Work, and Physical Activity

FLOW EXPERIENCE AMONG APPALACHIAN TRAIL THRU-HIKERS

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Abstract

This study was concerned with determining to what extent flow experiences occur while thru-hiking the Appalachian Trail (AT). Sixty-five percent of the 327 thru-hikers of the AT in 1997 responded to a mail survey questionnaire measuring the extent to which they experienced flow. Results showed that 62.3 percent of the sample had a flow experience while hiking the AT, and for the majority of them it was a daily occurrence. Flow was most often experienced while 'walking/hiking alone' and while 'looking at a view.' Experiencing flow while looking at a view, when this was defined as one of many activities during which flow might occur, was reported significantly more often by women than by men. When this activity was defined as one of the most important activities during which flow might occur, the significant difference between men and women disappeared.

Thru-hikers ranked the following two intrinsic reasons for enjoying their thru-hike as the first and second most important, respectively, among eight possible reasons: 1) enjoyment of experience and use of skills; and 2) the activity itself. The flow experience together with the most important reasons for enjoying thru-hiking appears to help define 'who thru-hikers are.'

Only a small minority of respondents reported having previously completed an AT thru-hike, but a majority of all thru-hikers surveyed expressed a desire to thru-hike the AT again. This was equally the case for those who had experienced flow during the 1997 thru-hike and those who had not.

1.0 Introduction

This paper presents the results of the master's thesis research completed by the second author at Virginia

Commonwealth University (Butler 1999), under the direction of the first author. This was an exploratory study concerned with determining the extent to which "flow" experiences occur among thru-hikers on the Appalachian Trail (AT). Specifically, it was a study of those thru-hikers who reported completing the entire AT in 1997. The (AT) is the name given to the 2,180-mile "foot travel only" trail that extends from the southern terminus of Springer Mountain, GA to the northern Terminus, Mount Kathadin, ME. A thru-hiker is a person who hikes the full length of this trail in a single, continuous journey by putting on a backpack, leaving from one terminus of the trail, and hiking unassisted to the other terminus (Bruce 1997).

The first person to thru-hike the Appalachian Trail was Earl Shaffer of Pennsylvania in 1948. Today Shaffer's thru-hike is considered by many in hiking circles as comparable to "Lindbergh's solo flight across the Atlantic" (Bruce 1997 p. 1). The number of thru-hikers has grown each decade since Shaffer's became the first, and to date more than 20,000 individuals have attempted to thru-hike the AT (Bruce 1997). Thru-hiking the AT takes several months and is a very special experience for those who complete the entire distance in 1 year.

The question of what makes this endeavor so special to thru-hikers was what prompted the research reported here. It was hypothesized that the concept of *flow* would be useful for describing some of the special aspects of the thru-hike.

Flow is an optimal state of mind which for adventure activity participants is characterized by clear goals and quick feedback, focused attention, loss of self-consciousness, altered sense of time, a sense of control, a merging of action and awareness, a match between participant skills and activity challenges, and an experience which is autotelic in nature (Csikszentmihalyi and Csikszentmihalyi 1999). The purpose of this study was thus to determine to what extent flow is experienced by thru-hikers, how often it is experienced, and during which of the different activities comprising this long distance hike that flow might be found to occur.

2.0 Literature Review

Most of the literature on the experiences of thru-hikers has been descriptive narratives of individual thru-hikes, such as Hare's 1975 compendium of Appalachian Trail hikers in which individual quotes of thru-hikers were used to help capture their experiences. Both Luxenberg (1994) and Setzer (1997) explored the many reasons why people thru-hike the Appalachian Trail. Roland Muesser (1998) further expanded upon the reasons for hiking and experiences thru-hikers have while on the AT. Muesser captured what long-distance hikers did in general on the Appalachian Trail, but did not examine the essence of what makes their activity a unique outdoor recreation experience.

Csikszentmihalyi (1975) was one of the first researchers to attempt to explain optimal experiences that individuals share similarly while engaged in certain activities. His original work examined the experiences of rock climbers, chess players, and artists. This led to identification of the flow concept, which he first defined as a state of experience that is engrossing, in itself rewarding, and "outside the parameters of worry and boredom." Flow experiences suggest that the individual finds meaning from activities whenever engaged in a "sense of effortless action in moments that stand out as the best in their lives" (Csikszentmihalyi 1990, p. 52). This literature suggests that meaningful experiences such as these are of the type that thru-hikers might share on the Appalachian Trail.

3.0 Methods

The target population for this study became all thru-hikers of the AT registered with the Appalachian Trail Conference in 1997. They provided a list of 327 thru hikers from their database of application forms submitted by all hikers who completing an AT thru-hike in 1997. A one-page mail survey questionnaire was sent to all of these thru-hikers in 1999. The questionnaire included the following instruments developed by Csikszentmihalyi for his original research: his flow instrument, items specifying the flow experience to activities and frequency of occurrence during the hike, and an eight item reasons-for-enjoyment ranking scale. Note that his original flow instrument consisted of four items, but the following item was eliminated at the outset because it was judged

to be out of context for this study: *I think that the phone could ring, and the doorbell could ring, or the house could burn down or something like that.* A pre-test of the remaining items was conducted by mailing the questionnaire to 13 of the 327 thru-hikers from the 1997 list, of which 10 responded. In addition to examining the mailed-back questionnaires for non-response, follow-up phone calls were made to these 10 respondents to assess difficulties in understanding and completing the questionnaire.

The questionnaire was revised based on pre-test results. The revised questionnaire was then evaluated using an in-depth personal interview with one 1997 thru-hiker. The final questionnaire was then mailed out to all 327 thru-hikers on the 1997 list. A total of 215 completed questionnaires were returned for a response rate of 65 percent. The revised Csikszentmihalyi items included in the final questionnaire are shown below. A check in one or more of the boxes in front of the first three statements in Q1 was considered to be an operational indicator of flow. The flow experience was specified to activities and frequency during the hike by Q2, Q3, and Q4. The eight item ranking scale of enjoyment (reasons) is shown in Q5.

Q1. Please read the following statements and check only those statement(s) that you found similar to your experience on the Trail.

- ☐ My mind isn't wandering. I am not thinking of something else. I am totally involved in what I am doing. My body feels good. I don't seem to hear anything. The world seems to be cut off from me. I am less aware of myself and my problems.
- ☐ My concentration is like breathing. I never think of it. I am really quite oblivious to my surroundings after I really get going. When I start, I really do shut out the whole world. Once I stop, I can let it back in.
- ☐ I am so involved in what I am doing. I don't see myself as separate from what I am doing.
- ☐ None of these statements describe my experiences Thru-Hiking the Appalachian Trail. (Please go to question number "Q5")

Q2. Please circle **All** the activities below during which you had these experiences.

a) Breaking camp	g) Assistance by Trail Angel
b) Eating	h) Walking/hiking with others
c) Walking/hiking alone	i) Preparing food
d) Talking with friends	j) Setting up camp
e) Looking at a view	k) Other (Explain)
f) Resting	

Q3. From the list above, which **One** activity during your Thru-Hike most often provided these experiences? _____
(Please give the ALPHABET LETTER)

Q4. Based upon your answer to “Q3,” how often generally would you say that these experiences occurred?
(Please circle one)

- a) At least once a day. b) At least once a week. c) At least once a month. d) At least once during your Thru-Hike.

Q5. As someone who has hiked the entire distance between termini of the AT in a single continuous journey with a backpack, please rank in succession your reasons for enjoying the journey from 1 to 8 (Number “1” being your most important reason and number 8 being your least important reason).

Enjoyment of the experience and use of skills . . . _____
The activity itself _____
Friendship, companionship _____
Development of skills _____
Measuring self against own ideals _____
Emotional release _____
Competition, measuring self against others . . . _____
Prestige, regard, glamour _____

4.0 Results

Analysis of the data obtained from Q1 revealed that 62.3 percent of the respondents had “flow” experiences during their hike on the AT, with 81.7 percent of those indicating that they experienced flow daily during their hike (Q4). In response to Q2, the two highest frequencies were 88.1 percent reporting “flow” experiences while “walking/hiking alone,” and 71.3 percent reporting flow experiences while “looking at a view.” These same two activities also received the highest activity response

frequencies for Q3 which asked for the one activity most often providing these experiences, but Q3 responses were much more strongly skewed to “walking/hiking alone” (80.6%) as compared to “looking at a view” (6.0%).

Significantly more ($p < .02$) female thru-hikers, as compared to male thru-hikers, reported these experiences while “looking at a view” (Q2), but this significant difference disappeared when genders were compared on responses to Q3 which asked the one activity that *most often* provided these experiences. With the exception of the one gender difference found for “looking at a view” in Q2, no significant gender differences were found for any of the variables included in the study questionnaire. Statistics provided by the Appalachian Trail Conference for 1997 indicated that males constituted a much larger proportion (80.6%) of the thru-hikers as compared to females (19.4%), but an additional question on age included in the study questionnaire indicated that their mean ages were exactly the same (32 years old). Age was the only demographic variable included in the questionnaire, and no significant differences on age were found for any of the other study variables.

Results to Q5 were used to confirm the *autotelic* aspect of flow for these thru-hikers, a characteristic which is generally considered to be a key component of the flow experience. A participant who is having an *autotelic* experience is intrinsically motivated. Some of the items in Q5 are indicators of intrinsic motivation and others are indicators of extrinsic motivation. Respondents ranked the following two intrinsic reasons for enjoying their thru-hike as the first and second most important, respectively, among the eight possible reasons for enjoying their thru-hike: Rank #1) enjoyment of experience and use of skills, and Rank #2) the activity itself. Ranked last in importance, respectively, were two indicators of extrinsic motivation: Rank # 7) competition, measuring self against others, and Rank # 8) prestige, regard, glamour. These results were exactly the same as found for rock climbers in an early study by Csikszentmihalyi (1975). An autotelic score was then calculated for the thru-hikers by summing the means of the two highest ranked intrinsic items and subtracting from this the sum of the means of the two lowest ranked extrinsic items. Autotelic scores are interpreted as *the*

higher the score the more autotelic the experience. The *autotelic* score for these thru-hikers was 9.1, even higher than the *autotelic* score of 7.6 which Csikszentmihalyi (1975) found for rock climbers. Autotelic scores for men and women did not differ, but curiously neither did the *autotelic* scores for non-flow hikers (9.4) differ significantly from that of hikers who experienced flow (8.9).

Two additional questions included in the study questionnaire, number of times respondents had completed a thru-hike of the AT and whether or not they would like to attempt another thru-hike in the future. This was the first thru-hike for 97.6 percent of the respondents, and a majority (80.5%) reported a desire to thru-hike the AT again. This was equally the case for those who had experienced flow during their 1997 thru-hike and those who had not.

5.0 Discussion

Thru-hikers of the Appalachian Trail are a unique group of back packers who achieved their goal of completing the entire 2,180 continuous miles of the AT, between Georgia and Maine, in one calendar year. Results of this study show that the majority of thru-hikers completing the AT in 1997 had similar types of experiences. Flow experiences occurred for approximately three out of every five thru-hikers (62.3%). Another important finding of this study was that most thru-hikers' flow experiences on the Appalachian Trail were regular occurrences, with 81.7 percent indicating that they experienced flow daily.

For those thru-hikers who experienced flow, the flow model provides a viewing lens through which to describe the activity of AT thru-hiking. Responses from these *flow* hikers indicated that experiences they had on the AT were similar to a state of focused attention, a loss of self-consciousness, and a merging of action and awareness as they pursued their ultimate goal. On average they also rated intrinsic reasons much higher than extrinsic reasons for enjoying their thru-hike, an indicator of the autotelic characteristic of flow. Interestingly, those thru hikers who did not experience total flow rated intrinsic reasons for enjoying their thru-hike just as highly as did flow hikers. The average autotelic score of 9.1 for all 1997 thru hikers indicates that thru-hiking on the AT can be considered

a flow-producing activity, similar to other challenging outdoor activities such as rock climbing.

To explore thru-hikers' flow experiences in depth, activities that may provide these experiences during the thru-hike were also examined. The two activities reported most frequently by thru-hikers for when they had flow experiences were *walking/hiking alone* (88.1%) and *looking at a view* (71.3%). For flow to occur there must be concentration by the participant in order to focus on the task at hand. Results for the activity of *walking/hiking alone* support Csikszentmihalyi's assertion that walking on a mountain, although sometimes unselfconscious for the participant, can be a highly intense activity requiring concentrated attention (Csikszentmihalyi 1990). The one activity specified as **most often** providing a flow experience for these thru-hikers was walking/hiking alone, chosen by 80.6 percent of respondents as compared to only 6.0 percent who chose looking at a view, with all other activities being chosen by proportionately fewer respondents.

Thru-hikers appear to comprise a fairly homogeneous group. With the exception of one gender difference found for "looking at a view," no significant gender differences were found for any of the flow-related variables included in the study questionnaire. Significantly more female thru-hikers, as compared to male thru-hikers, reported flow experiences while "looking at a view," but this difference disappeared when genders were compared in terms of the one activity that *most often* provided for flow experiences. Statistics provided by the Appalachian Trail Conference for 1997 indicated that males constituted a larger proportion of the thru-hikers as compared to females, but a study question on age indicated that mean ages for men and women thru-hikers were exactly the same (32 years old). Age was the only demographic variable included in the questionnaire, and no significant differences on age were found for any of the other study variables.

One potential limitation of this study arises from the method of data collection. Surveys rely heavily on the memories of individuals and assume that individuals are able to thoroughly reflect upon their past experiences. Thru-hiker respondents for this study were asked to rely on their long term memories to reported experiences they

had more than one year back in time. This could account for some of the non-response to the survey, as well as memory-related error in response to the flow items included in the questionnaire.

The general conclusion for this exploratory study was that flow experiences appear to be universal experiences for most thru-hikers. As such, they help us understand 'who Thru-Hikers are' by recognizing the commonality of many of their experiences, actions, and desires on the Appalachian Trail.

6.0 Citations

- Bruce, D. 1997. **The Thru-Hiker's Handbook**. Hot Springs, NC: Center for Appalachian Studies.
- Butler, T.S. 1999. **Flow Experience Among Appalachian Trail Thru-Hikers: An Exploratory Study**. Unpublished master's thesis. Virginia Commonwealth University, Richmond, Virginia.
- Csikszentmihalyi, M. 1975. **Beyond Boredom and Anxiety**. San Francisco: Jossey-Bass, Inc., Publishers.
- Csikszentmihalyi, M. 1990. **Flow-the Psychology of Optimal Experience**. New York: Harper & Row.
- Csikszentmihalyi, M. and Csikszentmihalyi, I. 1999. **Adventure and the Flow Experience**. In Adventure Programming Ed. By J.C. Miles and S. Priest. State College PA; Venture Publishing.
- Hare, J. 1975. **Hiking the Appalachian Trail**. Emmaus, PA: Rodale Press.
- Luxenberg, L. 1994. **Walking the Appalachian Trail**. Mechanicsburg, PA: Stackpole Books
- Muesser, R. 1998. **Long-Distance Hiking: Lessons from the Appalachian Trail**. Camden, MN: Ragged Mountain Press.
- Setzer, L. 1997. **A Season on the Appalachian Trail**. Birmingham: Menasha Ridge Press.

EXPLORING THE USEFULNESS OF THE DISPOSITIONAL FLOW SCALE FOR OUTDOOR RECREATION ACTIVITIES

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Abstract

The Dispositional Flow Scale (DFS), developed by Jackson et al. (1998), measures an individual's dispositional tendency to experience flow, a psychological state of optimal experience originally conceptualized by Csikszentmihalyi in 1975. The DFS, developed in the realm of sports psychology, has primarily been used with participants of urban sports settings, such as: football, running, or tennis. This study explores the validity and reliability of applying the DFS to outdoor recreation activities. A stratified sample of 406 visitors to the Bob Marshall Wilderness Complex in Montana was contacted during the summer of 2004. A survey response rate of 74 percent was achieved with on-site contact, mail back questionnaires, follow-up reminder postcards, and replacement mailing. The primary activities reported were hiking, horseback riding, and fishing. Results from confirmatory factor analysis, a special application of structural equation modeling, confirm that the DFS displays a satisfactory level of validity and reliability when applied to these activities.

1.0 Introduction

Since most public land management agencies are mandated to provide outdoor recreation opportunities, it is necessary for their employees to understand the variety of experiences that occur in these natural settings. Natural resource managers and planners also need to understand the quality of those experiences, especially the meaningful, special, or out of the ordinary experiences that are sought in outdoor recreation activities. This focus on the quality of recreation experiences has been investigated in a number of ways. For example, Borrie and Birzell's 2001 review discusses the nature of quality wilderness experiences. Walker et al.'s 1998 work examined the prevalence of optimal experiences among

visitors to an Appalachian outdoor recreation area. One such optimal experience construct is flow.

Flow was originally conceptualized by Csikszentmihalyi (1975) as "...holistic sensation(s) that people feel when they act with total involvement" (p. 36) and later described it as "the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it." (1990, p. 4). Flow is a psychological state that is characterized by nine dimensions; a balance of challenge and skill, a merging of action and awareness, clear perceived goals, unambiguous feedback, total concentration on the task at hand, a sense of control, a loss of consciousness of self, a speeding up or slowing down of time, and autotelic experience, which refers to intrinsically rewarding experiences (Csikszentmihalyi 1990). A state of flow, or flow state, is theorized to occur when these nine dimensions co-occur at high levels.

Most research on flow has examined the presence or occurrence of the flow state in specific situations. This has typically been done by using the Experience Sampling Method (subjects wear beepers that randomly alert the subject to fill out a very brief questionnaire about what they were experiencing when the beeper went off.) These efforts have been helpful to establish that the flow state does occur in a variety of settings, including outdoor recreation settings (e.g., Jones et al. 2000).

For most people, achieving flow is a rare occurrence and is an elusive phenomenon. Csikszentmihalyi (1988) suggested that there are individual differences in the ability to experience flow and that certain people may have psychological traits that allow them to more easily experience flow, regardless of the situation. With this in mind, Susan Jackson and colleagues developed the dispositional flow scale (DFS). The DFS measures an individual's propensity to experience flow. The DFS accomplishes this by measuring the frequency at which an individual experiences flow. The premise is that flow is an optimal, but elusive and difficult to achieve, state

of experience. Therefore, "... people who report more frequent occurrence of flow characteristics (must) possess a greater predisposition towards experiencing flow" (Jackson and Eklund 2004).

Development of the DFS began with a qualitative approach to explore the perceptions that elite performers held of flow and how they attained this state during their athletic performances (Jackson 1992, 1995, 1996). The DFS was initially published in 1998 (Jackson et al. 1998). Confirmatory factor analysis, an application of structural equation modeling, provided a satisfactory fit of the DFS to both the nine factor model and a single higher order model (flow), suggesting good reliability and validity of the scale (Jackson et al. 1998). Slight changes to the scale were made over the course of several studies to improve internal consistency of the scale, eventually settling on a 36-item self-report instrument that is not tied to a particular event, but measures more generally the frequency that a person experiences flow in a chosen activity. The DFS has primarily been used to measure participants of urban sports settings such as football, running, and tennis. In the latest version of DFS, question items were modified in an attempt to make the scale applicable to all activities, not just traditional sport activities. The purpose of this study was to test the reliability and validity of DFS when it is limited to outdoor recreation activities.

2.0 Methods

The DFS was included in the 2004 Bob Marshall Wilderness Complex visitor study (Whitmore & Borrie 2005). The Bob Marshall Wilderness Complex (BMWC) is a large tract of wilderness in northwest Montana comprised of three wilderness areas: Bob Marshall, Scapegoat, and Great Bear. In total, these areas cover over a million acres of land just south of Glacier National Park. Visitors were contacted on-site at the 15 busiest trailheads during summer and fall. There were 115 sample days spread out over a 5-month period. After the initial onsite contact, participants were mailed a questionnaire. With a reminder post card and replacement mailing, a 76 percent response rate was achieved, yielding 291 usable questionnaires. The primary activities reported by BMWC visitors were hiking, horseback riding, and fishing.

Respondents were asked to choose the outdoor recreation activity in which they most participate, referring to their recreation experiences as a whole not just based on their visit to the Bob Marshall Wilderness Complex. They were then asked to think about how often they experienced each characteristic of flow, ranging from never, rarely, sometimes, frequently, to always.

To assess the reliability and validity of the DFS for this sample population, confirmatory factor analysis, a special application of structural equation modeling (SEM) was used. Within confirmatory factor analysis, researchers can specify which observed variables are affected by specific common factors (based on a-priori theory). The advantage of this procedure is that it can deal with latent variables. A latent variable is a variable that is not directly measurable. For example, flow is a complicated construct that cannot be measured directly by any single variable. It is in fact a single construct, but is made up of many observable variables. In structural equation modeling, not only can observed variables be explained by latent variables but latent variables can also be used to explain other latent variables. Confirmatory factor analysis is very helpful in assessing the reliability and validity of multidimensional constructs such as flow.

The software package EQS version 6.1 was used for SEM analysis. This software package was used because at the time of the study, it was the best available for dealing with categorical variables and non-normal data. In all cases, the maximum likelihood method of estimation with robust correction was employed, and a correlation matrix of indicators was used for model identification. Maximum likelihood methods assume normally distributed and continuous data, and violations to these assumptions lead to an increase in type one error (Kline 1998). This study employs many Likert type scale items which are not continuous and rarely approximate a normal distribution. In previous studies (e.g. Jackson & Eklund 2002, 2004), these categorical variables were treated as continuous variables and fit indices were reported using the standard maximum likelihood method of estimation. Due to the violation of assumptions of maximum likelihood, it is likely that many of the results reported suffered from a Type 1 error. Version 6.1 of EQS offers a new way to deal with

these violations through a “robust” option within the maximum likelihood method, employing the Sattora-Bentler scaled chi-square statistic (Bentler 2004). All SEM results in this study are reported as the maximum likelihood results with the robust correction.

3.0 Analysis and Results

Recall that flow is theorized to consist of nine dimensions. The first step in establishing the reliability of the DFS was to assess the composite reliability (coefficient alpha) for each dimension indicating the consistency of the indicators in measuring their respective latent variable (dimension). Shown in Table 1, the coefficient alphas for each dimension ranged between .74 and .89 with a mean alpha of .84. Alphas above .60 indicate sufficient internal consistency reliability (Churchill 1979), thus these nine dimensions are found to have very good reliability.

The validity of the DFS in this study was then assessed by two models in confirmatory factor analysis. The first model, the first order factor model (Fig. 1), tests that the question items load satisfactorily into their intended dimensions and that the dimensions are independent and homogeneous. The second model, the higher order factor model (Fig. 2), tests that the dimensions contribute to a higher order factor, flow. In both models, rectangular boxes represent observed variables. Labels inside the boxes, such as “DFS 1”, indicate the item number. Ovals represent latent variables or factors. Labels inside the ovals, such as “F1”, identify the factors.

In the case of the first-order factor model, straight arrows point from the latent variables to the observed variables. The direction of the arrows indicate that the observed variables can be explained by the latent variables. The values for each strait arrow can be interpreted as a factor loading, or the variance within the factor explained by the observed variable. These values are listed in Table 2. The variance that is not explained by that relationship (error) is represented by the letter “E”, and appears on the right most column of the model. Curved, double ended arrows represent correlations. In this case, all

Table 1.—Coefficient alphas for the Dispositional Flow Scale dimensions

Dimension	Coefficient alpha
Challenge – skill balance	.74
Merging of action and awareness	.83
Clear goals	.88
Unambiguous feedback	.87
Concentration on the task at hand	.87
Sense of control	.84
Loss of self consciousness	.89
Transformation of time	.85
Autotelic experience	.78

n = 291, each factor was comprised of four question items. Data was analyzed with SPSS version 10.0.

possible combinations of correlations between the factors are represented.

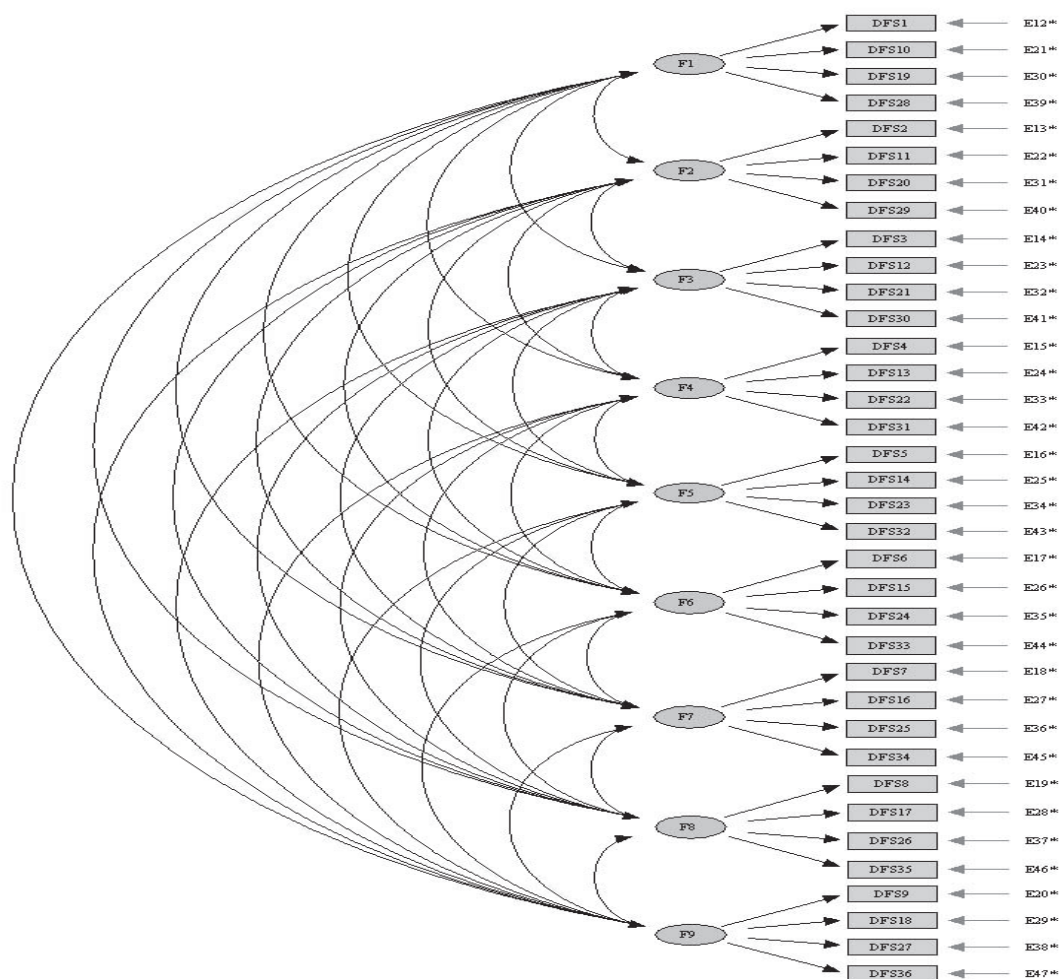
In the higher order factor model, the symbols are the same. Notice the addition of the second, higher order factor, flow [F10]. Straight arrows from flow to each of the nine first-order factors represent the relevance of the overall concept of flow to the nine first-order factors. The values of these arrows can be interpreted as a structure loading, or the variance in the overall factor explained by the first order factors. The structure loadings are listed in Table 3.

With regard to the first order factor model, evidence suggests that all items load well on the factors they are intended to define. Factor loadings are represented on the model as the straight arrows from the latent variables to the observed variables. Loadings were between .65 and .91 with an average factor loading of .77 (see Table 2). The independence of the nine dimensions was evaluated via examination of the correlations among the dimensions (curved double ended arrows). These intercorrelations ranged from .138 to .847 with an average of .495 (see Table 4). The magnitude of these relationships indicates that most factors share a common variance. This should be expected given that all factors were developed to measure aspects of a more global flow disposition. Overall, the common variance between

Label Key:

F1= Balance
 F2= Merging
 F3= Goals
 F4= Feedback
 F5= Concentration
 F6= Control
 F7= Consciousness
 F8= Time
 F9= Autotelic

DFS 1-36 = Question item numbers
 E = Error terms for each item

**Symbol Key:**

Rectangles = observed variables

Ovals = latent variables (factors)

Curved arrows = correlations between factors

Straight arrows from ovals to rectangles = factor loadings

Straight arrows from error terms to observed variables = amount of variance in the question item not explained by the factor.

Figure 1.—First-order factor model, Dispositional Flow Scale.

subscales tends to be less than 50 percent so it seems reasonable to believe that the flow subscales tap into reasonably unique aspects of the flow experience. Overall, the goodness of fit indices (Table 5) point to good fit of the first order model to the data (ratio of chi-square to df of 1.04, CFI of .996, NNFI of .995, and RMSEA of .01). This reinforces that each item does load well into

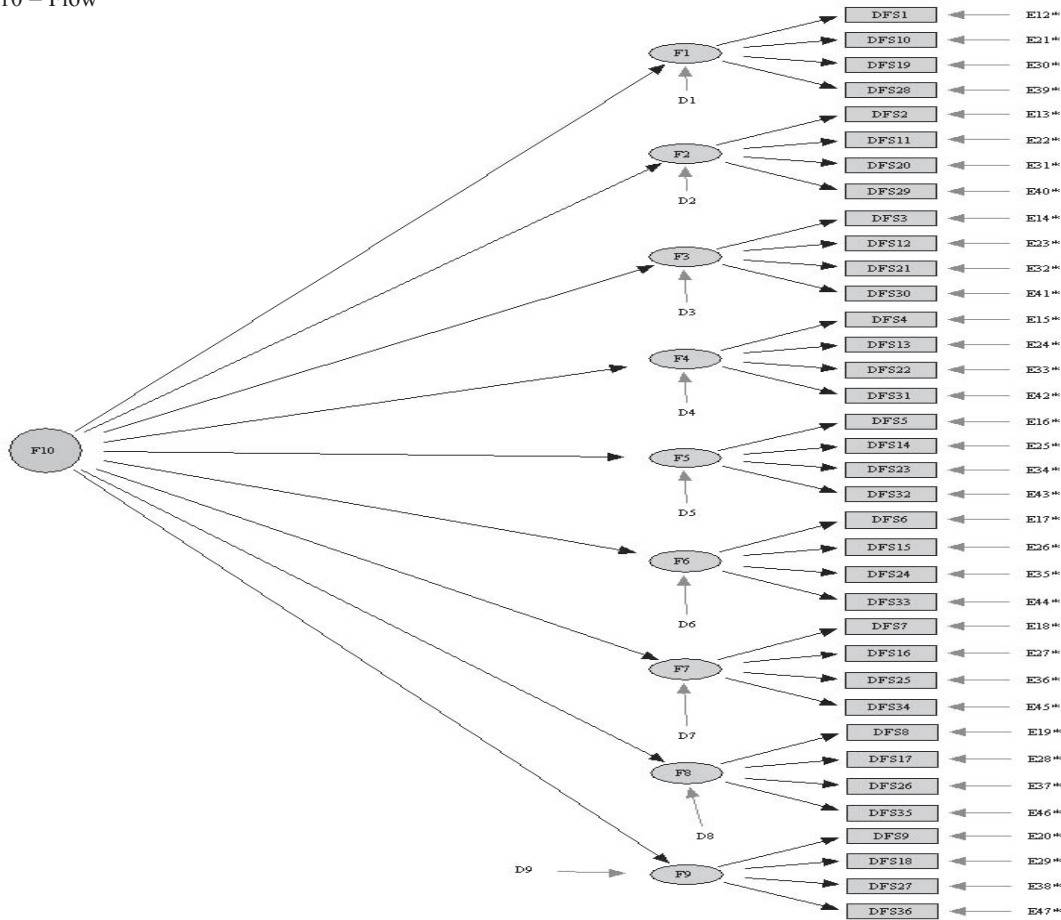
its intended factor and that the factors measure relatively independent aspects of flow.

The higher order factor model tests that the dimensions of flow contribute to a more global construct, flow disposition. The goodness of fit indices (Table 5) point to a good fit between the higher order factor model and

Label Key:

F1= Balance
 F2= Merging
 F3= Goals
 F4= Feedback
 F5= Concentration
 F6= Control
 F7= Consciousness
 F8= Time
 F9= Autotelic
 F10 = Flow

DFS 1-36 = Question item numbers
 E = Error terms for each item
 D = Disturbance or Error terms for each factor

**Symbol Key:**

Rectangles = observed variables

Ovals = latent variables (factors)

Curved arrows = correlations between factors

Straight arrows from ovals to rectangles = factor loadings

Straight arrows from error terms to observed variables = amount of variance in the question item not explained by the factor.

Straight arrows from disturbance terms to factors = amount of variance in the factor not explained by the overall factor (flow)

Figure 2.—Higher Order Factor Model, Dispositional Flow Scale

the data (ratio of chi-square to df of 1.61, CFI of .930, NNFI of .923, and RMSEA of .05). This suggests that an overall flow construct does exist and that each flow dimension contributes to it. The structural loadings of each dimension to the higher flow factor ranged between .26 and .92 with an average of .71 (Table 3). These

loadings represent the strength of the contribution of each dimension to the overall flow construct.

4.0 Conclusion

Taken together, these results indicate that the DFS is valid and reliable for this sample population of outdoor

Table 2.—Factor loadings for the Dispositional Flow Scale

Item	Factor	Factor loading
01	F1 – Balance	.73
10	F1 – Balance	.74
19	F1 – Balance	.72
28	F1 – Balance	.74
02	F2 – Merging	.65
11	F2 – Merging	.66
20	F2 – Merging	.85
29	F2 – Merging	.78
03	F3 – Goals	.75
12	F3 – Goals	.85
21	F3 – Goals	.79
30	F3 – Goals	.83
04	F4 – Feedback	.77
13	F4 – Feedback	.81
22	F4 – Feedback	.83
31	F4 – Feedback	.77
05	F5 – Concentration	.79
14	F5 – Concentration	.68
23	F5 – Concentration	.88
32	F5 – Concentration	.88
06	F6 – Control	.77
15	F6 – Control	.79
24	F6 – Control	.81
33	F6 – Control	.76
07	F7 – Consciousness	.75
16	F7 – Consciousness	.83
25	F7 – Consciousness	.83
34	F7 – Consciousness	.91
08	F8 – Time	.78
17	F8 – Time	.89
26	F8 – Time	.54
35	F8 – Time	.77
09	F9 – Autotelic	.66
18	F9 – Autotelic	.65
27	F9 – Autotelic	.80
36	F9 – Autotelic	.80

Factor loadings were calculated using EQS version 6.1. These values are represented in the first order factor model (Fig. 1) by straight arrows from the factors to each observed variable.

recreation activities. The fit indices for both models demonstrate good fit, indicating that the scale is a valid way of measuring the flow construct. The scale elicited internally consistent responses and hence has desirable reliability properties. Suggestions for future research are to: (1) apply the DFS to other populations that participate in a more diverse range of outdoor recreation activities to ensure that the DFS is valid and reliable for multiple activities; and (2) begin to explore the usefulness of the DFS as an independent variable to help predict such things as visitor behavior, preferences, and/or attitudes.

5.0 Acknowledgments

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6.0 Citations

- Bentler, P.M. 2004. **EQS 6 Structural Equations Program Manual**. Encino, CA: Multivariate Software, Inc.
- Borrie, W.T. and Birzell, R.M. 2001. **Approaches to measuring quality of the wilderness experience**. In Freimund, W.A. and Cole, D.N., comps., Visitor use density and wilderness experience: proceedings; 2000 June 1-3; Missoula, MT. Proc. RMRS-P-20. Ogden, UT: US Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Churchill, G.S. 1979. **A paradigm for developing better measures of marketing constructs**. Journal of Marketing Research. 16: 64-73
- Csikszentmihalyi, M. 1975. **Beyond Boredom and Anxiety**. San Francisco: Jossey Bass.
- Csikszentmihalyi, M. 1990. **Flow: The psychology of optimal experience**. New York: Harper & Row.
- Csikszentmihalyi, M., and Csikszentmihalyi, I., eds. 1988. **Optimal experience: Psychological studies of flow in consciousness**. Cambridge: Cambridge University Press.

Table 3.—Structural loadings for the Dispositional Flow Scale

1st Order Factor	Higher Order Factor	Loading
F1- Balance	F10 – Flow	.85
F2- Merging	F10 – Flow	.70
F3- Goals	F10 – Flow	.90
F4- Feedback	F10 – Flow	.89
F5- Concentration	F10 – Flow	.78
F6- Control	F10 – Flow	.92
F7- Consciousness	F10 – Flow	.54
F8- Time	F10 – Flow	.26
F9- Autotelic	F10 – Flow	.57

Structure loadings were calculated using EQS version 6.1. These values are represented in the higher order factor model (Fig. 2) by the straight arrows from the overall flow factor to each of the first order factors.

Table 4.—Correlations among factors, Dispositional Flow Scale.

Factor	F1	F2	F3	F4	F5	F6	F7	F8	F9
F1	1.000								
F2	.728	1.000							
F3	.740	.533	1.000						
F4	.740	.626	.847	1.000					
F5	.592	.481	.760	.671	1.000				
F6	.767	.647	.834	.797	.776	1.000			
F7	.276	.545	.257	.350	.159	.353	1.000		
F8	.289	.373	.138	.197	.214	.153	.381	1.000	
F9	.644	.403	.490	.447	.442	.494	.221	.493	1.000

Correlations were calculated using EQS version 6.1. These values are represented in the first-order factor model (Fig. 4) by the curved arrows between factors.

Table 5.—Goodness of fit indices for the Dispositional Flow Scale

Model	n	X ²	df	X ² /df	CFI	NNFI	RMSEA
First order factor model	291	568.6	549	1.04	.996	.995	.01
Higher order factor model	291	926.0	575	1.61	.930	.923	.05

Results were calculated using EQS version 6.1, maximum likelihood method with robust corrections. The chi-square reported is the Sattora-Bentler scaled chi-square statistic.

- Jones, C.D., Hollenhorst, S.J., and Selin, S. 2000. **Validation of the flow theory in an onsite whitewater kayaking setting.** *Journal of Leisure Research.* 32(2): 247-261.
- Jackson, S.A. 1992. **Athletes in flow: A qualitative investigation of flow states in elite figure skaters.** *Journal of Applied Sport Psychology.* 4: 161-180.
- Jackson, S.A. 1995. **Factors influencing the occurrence of flow in elite athletes.** *Journal of Applied Sport Psychology.* 7: 138-166.
- Jackson, S.A. 1996. **Toward a conceptual understanding of the flow experience in elite athletes.** *Quarterly for Exercise and Sport.* 67: 76-90.
- Jackson, S.A., and Eklund, R.C. 2002. **Assessing Flow in Physical Activity: The flow state scale and dispositional flow scale.** *Journal of Sport and Exercise Psychology.* 24: 133-150.
- Jackson, S.A., and Eklund, R.C. 2004. **The Flow Scales Manual.** Morgantown, WV: Fitness Information Technology.
- Jackson, S.A., Kimiecik, J.C., Ford, S., and Marsh, H.W. 1998. **Psychological correlates of flow in sport.** *Journal of Sport and Exercise Psychology.* 20: 358-378.
- Kline, R. 1998. **Principals and practice of structural equation modeling.** New York: The Guilford Press.
- Walker, G.J., Hull, R.B. IV, and Roggenbuck, J.W. 1998. **On-site optimal experiences and their relationship to off-site benefits.** *Journal of Leisure Research.* 30(4): 453-471.
- Whitmore, J.G. and Borrie, W.T. 2005 **Bob Marshall Wilderness Area 2004 Visitor Study Technical Completion Report.** College of Forestry and Conservation, The University of Montana, Missoula, MT 160pp.

Place Attachment

THE IMPORTANCE OF PLACE AND THE SUBSTITUTABILITY OF RIVER RECREATION RESOURCES: EMPIRICAL EVIDENCE FROM THE CHATTOOGA WILD & SCENIC RIVER

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Abstract

For managers seeking to allocate recreation opportunities across the landscape, the importance of specific places in relation to their substitutability for recreation purposes is an important consideration. The purpose of this research was to examine the empirical relationship between place attachment and resource substitutability. It is hypothesized that increased place attachment decreases resource substitutability. Data were collected from trout anglers and whitewater boaters who used the Chattooga National Wild & Scenic River in 2000. Results supported the hypothesized relationship. Negative and significant correlations were found between the place attachment variables and measures of substitutability. Associations were found to be strongest between place dependence and the resource substitutability, especially the number of substitutes for both user groups. The more attached these recreationists were to the Chattooga, the fewer substitutes they had and those alternatives were considered of lower quality. Implications for regional carrying capacity assessment are discussed.

1.0 Introduction

Participants in wildland recreation activities like trout angling or whitewater boating develop preferences for specific settings which might be limited in a regional context. As a result of the limited nature of these resources, recreationists form emotional and functional attachments to these places. This attachment then may make alternative resources seem less suitable for the activity or the experience will be perceived as being of lower quality. In regional carrying capacity assessments, the relationship between the importance of place and the substitutability of resources is an important indicator of the social value of a place (Cole 2001; McCool & Cole 2001).

The relationship between the importance of place and the substitutability of recreation resources should be of interest to resource managers for two main reasons. First, this relationship is important because it can be a metric of the uniqueness of a particular resource in its larger regional context. Second, in a social impact assessment, the strength of this relationship would suggest when and for whom mitigation actions would be needed if management actions that lead to displacement of some users were taken.

Past research has alluded to the relationship between place attachment and resource substitutability but none have investigated it directly. The purpose of this research was to examine the empirical relationship between resource substitutability and place attachment. It is hypothesized that the substitutability of recreation resources will decrease as place attachment increases. Empirically, negative correlations are expected between measures of place attachment and measures of substitutability. Based on the findings implications of this relationship for management and regional carrying capacity assessments will be developed.

2.0 Background

Resource substitutability refers to the interchangeability of recreation resources so that equivalent outcomes can be achieved with minimal loss of satisfactions (Brunson & Shelby 1993; Hendee & Burdge 1974). The promise of substitutability research was that if activities or settings that substitute for other activities or settings could be identified, then displacement effects due to the scarcity of opportunities could be mitigated by directing recreationists to alternative activities or settings (Manning 1999). Substitutability's logic from rational choice theory suggests that sites with similar setting attributes could provide similar experiences. Research on the substitutability of recreation resources did not bear this out.

Two analyses indicated that resources with similar attributes were either not perceived as substitutes or were

perceived to offer lesser experiences. In a study of anglers in Green Bay, WI anglers were shown to be less likely to recreate on Lake Michigan despite the similarity of the opportunities (Ditton, Goodale, & Johnsen 1975). Later, Shelby and Vaske (1992) found that salmon anglers in their study of tradeoffs made when a substitute was chosen found that rivers or stream that had similar site attributes were not perceived to be of equal quality as compared to the angler's preferred river. They described angler's quality perceptions of their substitutes as "asymmetric." The question then remained to be asked, what accounts for this asymmetry?

One explanation for the asymmetrical perceptions substitutes could be that because the substitute lacks the meanings as the preferred river or stream, the same quality experience cannot be found at the substitute. Research on resource substitutes have generally started with two assumptions: 1) that settings are a collection of attributes that recreationists choose to fit their experiential needs, what Williams et al. (1992) coined the "commodity metaphor"; and 2) that leisure behaviors like fishing are goal-directed behaviors. In their critique, Williams et al. (1992) suggest that the multi-attribute approach is limiting because it treats settings as "means rather than ends" (p.30). In an alternative view leisure is process of meaning production and settings are meaning centers (Tuan 1974) the psychological outcome is the experience of affect toward a place. Place attachment theories suggest that over time and with increased exposure recreationists form emotional and functional bonds with a specific resource (Hammitt, Backlund, & Bixler 2003; Moore & Graefe 1994).

Research on place attachment has sought to relate the strength of emotional and functional attachments to recreation behavior measured by place identity and place dependence (Williams & Vaske 2003). Place identity is an emotional attachment often defined as a "substructure of the self-identity of a person consisting of broadly conceived cognitions about the physical world in which the individual lives" (Proshansky, Fabian, & Kaminoff 1983, p.59). Place dependence measures a person's functional attachment to place and is based on an individual's or group's assessment of the quality of a place and the relative quality of alternative places for the

same activity. The degree of dependence is a function of the individual or group's awareness and familiarity with alternatives, mobility, and specificity of the place required (Stokols & Schumaker 1983).

Research on place attachment has tangentially addressed the relationship between place attachment and substitutability. Results of this research have suggested that the greater an individual is attached to a resource, the less willing they are to make a substitution. Williams et al. (1992) found that willingness to substitute was associated with lower place attachment scores among wilderness recreationists. Residents of the Svalbard Archipelago with strong senses of place were found to be less likely displaced from their recreation patterns by social and environmental change than residents with weaker senses of place (Kaltenborn 1998).

3.0 Participants and Procedures

3.1 Sample and Data Collection

Participants for this study were drawn from two user groups of the Chattooga National Wild & Scenic River, trout anglers and whitewater boaters. Trout anglers were drawn from members of the Rabun and Chattooga chapters of Trout Unlimited (TU). These two chapters geographically encompass the Chattooga and many of their activities are directed toward the protection and restoration of the Chattooga watershed. Combined, the two chapters have about 300 individual members. Whitewater boaters were drawn from a stratified random sample of whitewater boaters who completed self-administered permits in 2000. Sample stratification represented river use by month.

Data were collected following a modified Dillman method (1999). Two hundred ninety-two TU members and 447 whitewater boaters were sampled. Two hundred three total questionnaires were returned from the TU members for an adjusted response rate of 71 percent. From the whitewater boaters, 242 questionnaires were returned for an adjusted response rate of 64 percent.

3.2 Measures and Analysis

Substitutability- The substitutability of alternative rivers or streams for the Chattooga, were assessed using two measures. Study participants were asked to report the

number of alternative rivers they felt would provide a similar experience as participating at the Chattooga. Then, participants were asked to name a river in the Southeastern United States they thought was the best substitute for the Chattooga. They were then asked to rate the equivalence of their best substitute as compared to the Chattooga on a scale of 1 to 7 where 1="Not as good", 4="equivalent", and 7="better."

Place Attachment- Place attachment was assessed using the place identity and place dependence scales validated by Williams and Vaske (2003). The scales assess each construct with six items measured on a 5-point summative scale with Likert-type anchorings. Scale scores were derived from scale means and exhibited acceptable reliability for both groups with Cronbach's alphas ranging from .85 to .90.

Analysis- To analyze the data, two sets of associations between the place attachment scales and substitutability were tested. Correlations were calculated for both the TU member and whitewater boaters between the place attachment variable and the number of substitutes as well as between the place attachment variables and the best substitute equivalence ratings. To ensure parsimony, analysis did not go beyond correlations. All calculations were performed using SPSS 10.1.

4.0 Results

The substitutability variables exhibited substantial variation, TU members named 40 different rivers and the Whitewater boaters named 37 different rivers they perceived as substitutes for the Chattooga. Overall whitewater boaters had fewer substitutes and were more likely to perceive their substitute to be of lower quality as compared to the Chattooga than the TU members. About 14 percent of the TU members and 44 percent of the whitewater boaters reported having no substitutes. The mean number of substitute reported by the TU members was 5.89 and 1.84 for the whitewater boaters. For the TU members, the modal number of substitutes reported by 20 percent of the respondents was two. Zero substitutes was the mode for the whitewater boaters (43%) (Table 1). TU members tended to rate their named substitutes similarity as "equivalent" or above in the direction of "Better." The whitewater water boaters

tended rate their substitute as "equivalent" or below (Table 2).

Table 3 summarizes the levels of place attachment for the TU members and whitewater boaters. The degree of place attachment was generally lower for the TU members as compared to the whitewater boaters, although the TU members exhibited greater variation in attachment as indicated by the larger standard deviations. Overall, the place identity was stronger than place dependence.

The hypothesis driving this research was that place attachment is negatively associated with the substitutability to recreation resources. Correlations were calculated between place identity and the number of substitutes, place identity and the equivalence ratings, place dependence and the number of substitutes, and place dependence and the equivalence ratings for both the TU members and the whitewater boaters (Table 4). As hypothesized, correlations were statistically significant and negative, except for the relationship between place identity and the number of substitutes for the whitewater boaters ($r = -.06$, $p = .455$). The strength of the associations was generally stronger between place dependence and the substitutability variables than between the place identity and the substitutability variables. Overall the strongest relationships were between place dependence and the similarity ratings, $r = -.46$ for the TU members and $r = -.47$ for the whitewater boaters.

5.0 Discussion

The objective of this research was to examine the relationship between place attachment and resource substitutability. Results lent mixed support for the hypothesis that as place attachment increases the substitutability of alternative resources decreases. Place attachment was show to be negatively associated with resource substitutability but the correlation between place identity and the number of substitutes was not significant for the whitewater boaters. For both the Anglers and the whitewater boaters, the place attachment variables were most strongly related to ratings similarity rating of the respondents' best substitutes. That is, as place attachment as measured by place identity and place dependence

Table 1.—The number of substitutes for the Chattooga reported by the trout anglers and whitewater boaters

Number of substitutes	Trout Unlimited	Whitewater boaters
	% ¹	% ²
0	13.5	41.3
1	14.8	13.6
2	20.0	15.2
3	16.8	9.2
4	7.7	10.3
5	5.2	5.4
6	7.2	1.1
7+	14.8	3.7
Mean (Std. Dev.)	5.89 (14.45)	1.84 (2.32)
Range	100	12

¹ n =155, ² n=184

Table 2.—Similarity ratings of substitutes for the Chattooga.

Similarity rating	Trout Unlimited	Whitewater boaters
	% ¹	% ²
1 = Not as good	1.9	8.3
2	5.0	15.6
3	20.0	34.4
4 = Equivalent	27.5	25.6
5	15.0	8.3
6	19.4	5.6
7 = Better	11.3	2.2
Mean (Std. Dev.)	4.52 (1.50)	3.36 (1.35)

¹ n =160, ² n=180; 1=“Not as good,” 4=“Equivalent,” 7=“Better”

Table 3.—Place attachment ratings.

Variables	Trout Unlimited		Whitewater Boaters	
	Mean	Standard Deviation	Mean	Standard Deviation
Place Identity	3.51	.85	4.16	.67
Place Dependence	2.55	.78	3.52	.79

Table 4.—Correlations between place attachment variables and substitutability variables.

Place attachment	Number of substitutes			Similarity rating of substitutes		
	n	r	p	n	r	p
Trout anglers						
Place identity	154	-.18	.028	159	-.30	.000
Place dependence	159	-.25	.002	160	-.46	.000
Whitewater boaters						
Place identity	183	-.06	.455	179	-.22	.004
Place dependence	181	-.23	.002	177	-.47	.000

increased the anglers' and boaters' perceptions of the quality of their substitute in relation to the Chattooga decreased. Place dependence was more strongly associated with both substitutability variables than place identity. Give the theoretical underpinnings of place dependence, this finding is logical considering that place dependence is based on the individuals' assessment of their preferred place as compared to other places, in a sense it is itself a measure of the lack of substitutes a recreationist has for a particular place.

Several possibilities may account for insignificant correlation between place identity and the number of substitutes for the whitewater boaters but a significant one for the TU members. Two are technical issues of sampling and measurement and another is theoretical in nature.

Previously, it has been noted that in many place attachment studies there is an on-site sampling bias that inflates place identity and dependence ratings, reduces the variance, and attenuates correlations with other variables (Williams & Vaske 2003). This may be the case for the whitewater boaters who were drawn from onsite users where as the anglers were drawn from groups of potential users. Comparing the place identity ratings between the two groups, we find that they are higher with a smaller standard deviation for the boaters as compared to the anglers (Table 3) a pattern consistent with the different samples of the users. Therefore, because of the truncated variance among the boaters there is the possibility of a Type II error. Alternatively, one must ask if a Type I error was made with the anglers. Since

some of the anglers had never been to the Chattooga, they possibly should have been excluded from the analysis because they threaten the validity and reliability of the findings. TU members who had not visited the Chattooga, caused their rating may be biased lower with greater variance than the whitewater boaters, making the correlation significant when it should not have been.

From a theoretical point of view, the statistically insignificant correlation between place identity and the boaters number of substitutes but a significant correlation for the TU members may reveal differences in each group's object of attachment. That is, the meanings from which the two groups interpret their attachment to the Chattooga may differ. For example, the boaters' attachment may be grounded in the Chattooga as a symbolic representation, while the TU members' attachment evaluated in the context of fishing experiences. Confirming this would require interpretive data that seeks to understand the meanings members of these two users groups express for the Chattooga.

6.0 Implications

For management purposes the findings presented here have a few implications for regional carrying capacity assessment. The purpose of regional planning efforts is to ensure a diversity of opportunities a region offers in such a way to maximize to total values and benefits that can be gained from the system. Managers of specific areas need to be aware of the resource they manage fits into the larger array of opportunities before making decisions that in aggregate lead to the homogenization and suboptimalization of the entire system (McCool & Cole

2001). The low number of substitutes and the high levels of attachment among the whitewater boaters suggest that the Chattooga represents a fairly unique resource within the greater regional system. Alternatively, among the TU member the Chattooga is an option among an array of alternatives, some of which provide a better angling experience than the Chattooga experience. These findings may indicate that the Chattooga fills a niche for the whitewater boaters not found elsewhere in the region (i.e. a Wild & Scenic River relatively close to large population centers). Whereas for the TU members, the Chattooga may be a good place to fish near home, but not an optimal experience. In this example, identifying the Chattooga as unique resource serving a niche was fairly simple because it has a special designation. In systems that have many resources with special designations or with resources with no special designations, the relationship between place attachment and the substitutability of alternative resources among multiple user groups might indicate that a specific resource fills a niche for a certain user group(s). Applying data this way could help decisions makers better allocate experiences throughout the entire system because planner, managers and other stakeholders would have a reasonable basis for preferencing a particular user group or experience at a particular site that does not rely solely on current users' preferences for conditions (Stewart & Cole 2003). Rather, the value of a particular site can be understood in relation to alternative sites.

Making major management changes and decisions subject to NEPA analysis often requires estimating the impact of a management action on users. Accepting the tolerability of impacts implicitly requires deciding if the benefits of an action outweigh the costs. Understanding users place dependence to a resource in relation to the comparative quality of alternatives can be an indicator of whether an action will decrease the overall values and benefits of a regional recreation system. In this study, the relationship between place dependence and the similarity variable was moderately strong and negative. This indicates that the displacement of users with increasing dependence will be accompanied by a loss in perceived quality of opportunities for these particular user groups throughout the system. Place dependence then offers a way to segment the proportion of users most likely to be

negatively impacted by management actions that displace current users. Highly dependent users are the most likely to be negatively impacted if displaced or their use is limited. In this case, users with place dependence ratings one standard deviation above the mean for the whitewater boaters ($PD=4.31+$) or approximately 15.87 percent of the whitewater boaters and two standard deviations for the TU members ($PD=4.11+$), or approximately 2.28 percent of the TU members could be the most impacted in terms of a loss in perceived quality if displaced.

7.0 Conclusion

In conclusion, results presented here provide evidence to suggest that increasing attachment to a particular recreational resource reduces the substitutability of alternative resources. TU members were shown to have fewer substitutes and their substitutes were shown to be perceived as being of lower quality as compared to the Chattooga and levels of place attachment increased. Whitewater boaters generally followed this pattern except in their relationship between place identity and their number of substitutes. This research has informed research into place attachment by suggesting that, the threat to the validity and reliability findings by an on-site sampling bias is context dependent. Finally, it has been demonstrated that the relationship between place attachment and the substitutability of recreation resources can be important metrics in regional carrying capacity assessments.

8.0 Citations

- Brunson, M.W., and Shelby, B. 1993. **Recreation substitutability: A research agenda**. Leisure Sciences. 15: 67-74.
- Cole, D.N. 2001. **Visitor use density and wilderness experiences: A historical review of research**. In, W.A. Freimund and D.N. Cole, comps. Visitor use density and wilderness experience: Proceedings. (USDA, Forest Service, RMRS-P-20, pp. 11-20.) Fort Collins, CO: Rocky Mountain Research Station.
- Ditton, R.B., Goodale, T.L., and Johnsen, P.K. 1975. **A cluster analysis of activity, frequency, and environment variables to identify water-based recreation types**. Journal of Leisure Research. 7(4): 282-295.

- Hammitt, W.E., Backlund, E.A., and Bixler, R.D. 200X. **Experience use history, place bonding, and resource substitution of trout anglers during recreation engagements.** *Journal of Leisure Research.* 36(3): 356-378.
- Hendee, J.C., and Burdge, R.W. 1974. **The substitutability concept: Implications for recreation research and management.** *Journal of Leisure Research.* 6: 157-162.
- Kaltenborn, B. 1998. **Effects of place on responses to environmental impacts.** *Applied Geography.* 18(2): 169-189.
- Manning, R.E. 1999. **Studies in outdoor recreation: Search and research for satisfaction.** Corvallis, OR: Oregon State Press.
- McCool, S.F., and Cole, D.N. 2001. **Thinking and acting regionally: Toward better decisions about appropriate conditions, standards, and restriction on recreation use.** *The George Wright Forum.* 18(3): 85-98.
- Moore, R.L., and Graefe, A.E. 1994. **Attachment to recreation settings: The case of rail-trail users.** *Leisure Sciences.* 16: 17-31.
- Proshansky, H.M., Fabian, A.K., and Kaminoff, R. 1983. **Place identity: The physical world and socialization of the self.** *Journal of Environmental Psychology.* 3: 57-83.
- Shelby, B., and Vaske, J.J. 1991. **Resource and activity substitutes for recreation salmon fishing in New Zealand.** *Leisure Sciences.* 13: 21-32.
- Stewart, W.P. and Cole, D.N. 2003. **On the prescriptive utility of visitor survey research: A rejoinder to Manning.** *Journal of Leisure Research.* 35(1): 119-127.
- Stokols, D., and Shumaker, S.A. 1981. **People and places: A transactional view of settings.** In J. Harvey, ed. *Cognition, social behavior, and the environment* (pp. 441-488). Hillsdale, NJ: Lawrence Earlbaum Associates, Publishers.
- Williams, D.R., Patterson, M.E., Roggenbuck, J.W., and Watson, A.E. 1992 **Beyond the commodity metaphor: Examining emotional and symbolic attachment to place.** *Leisure Sciences.* 14: 29-46.
- Williams, D.R., and Vaske, J.J. 2003. **The measurement of place attachment: Validity and generalizability of a psychometric approach.** *Forest Science.* 49(6): 830 - 840.

RECREATION PATTERNS AT LAVA LANDS RECREATION AREA, NEWBERRY NATIONAL VOLCANIC MONUMENT

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Abstract

The purpose of the study was to examine recreationists' behavior and perceptions about their trip experience at the Newberry National Volcanic Monument (NNVM). The NNVM is a large volcanic area in central Oregon, less than 20 miles from the city of Bend. Three main research questions were answered. First, what were the visitors' trip characteristics? Second, what was the reason that the visitors came to NNVM. A battery of questions was asked of respondents to the NNVM recreation regarding their reasons for visiting the forest. These items fell under four domains: nature, challenge, efficacy, and social. The final area of inquiry focused on what the visitors actually did while they were at NNVM, and their level of visitor satisfaction with selected management issues.

1.0 Introduction

The USDA Forest Service (FS) is the primary land management agency for millions of acres of land in Oregon and Washington. Together, these two states make up what is known as Region 6. The FS maintains 20 national forest (NF) units in Region 6, most of them located along the Cascades mountain range that runs north-south from California into Canada. Region 6 NFs also include coastal areas along the Oregon coast, vast expanses of high desert areas in eastern Oregon and smaller, biologically diverse areas that share a border with Canada in northeastern Washington. These NFs include volcanic viewing areas, sublime mountain and valley viewsheds, a range of lake recreation opportunities ranging from primitive to highly developed beaches, hot springs, and beautiful rivers. This diverse range of recreation settings, spread across two vast U.S.

states, provides not only many different recreation opportunities, but many challenges for managers attempting to meet the expectations of a relatively homogenous, but changing user base. USDA Forest Service officials from the Deschutes National Forest identified a need to better understand the customers who use the Lava Lands Recreation Area within the Newberry National Volcanic Monument (NNVM). Accordingly, a survey of visitors was conducted in the summer 2002 recreation season to identify visitor characteristics, use patterns, perceptions and preferences.

2.0 Methods

Data were collected through face-to-face interviews with visitors at the Newberry National Volcanic Monument. Onsite interviews were conducted with 372 visitors during approximately 30 sampling days during May through September 2002. The survey was designed to build on previous surveys in this and similar settings. The respondents were asked a series of questions about their trip characteristics, their satisfaction levels and their reasons for visiting the area.

3.0 Results

3.1 Trip Characteristics and Group Makeup

An examination of the trip characteristics showed that the visitors to Newberry National Volcanic Monument are, for the most part, typical of visitors seen at other "front-country" Central Oregon Forest Service recreation areas (Burns & Graefe 2004a; 2004b; Burns, Graefe, Ayres, & Robinson 2004a 2004b; Lee, Graefe, & Burns 2004; Burns, Graefe & Absher 2003; English, Kocis, & Zarnoch 2004), although some differences were noted (Table 1). One major difference noted is that the proportion of first time visitors was much higher than is typically seen at other front-country Forest Service recreation areas (Table 1). The vast majority of NNVM respondents (69.9%) were first-time visitors, which is nearly opposite of what is seen at several nearby Forest Service recreation areas. These include Diamond Lake (14% first time visitors), Santiam Pass (31.2% first-time visitors), Waldo Lake (25.4% first-time visitors), and only a small minority (8%) at the South Umpqua River

Table 1.—Summary and comparison of differences in demographics and trip characteristics

Demographics and Trip Characteristics	NNVM	Santiam Pass	Diamond Lake	South Umpqua	Waldo Lake
Non-Caucasian respondents	5%	4%	3%	11%	---
First-time visitors	70%	32%	14%	8%	25%
Recreate only at NNVM	32%	64%	63%	---	---
NNVM is primary destination	17%	61%	66%	---	---
Group composition					
Family	83%	31%	59%	39%	---
Other	17%	69%	1%	61%	---

recreation areas (Burns & Graefe, 2004; 2004; Burns, Graefe, Ayres, & Robinson, 2004; 2004; Lee, Graefe, & Burns, 2004). The NNVM respondents who were repeat visitors had been coming to the NNVM area for about 12 years, and visited the NNVM recreation areas on average about 3.4 times per year.

The Newberry National Volcanic Monument was not the sole destination for the typical visitor surveyed in this study. About one-third of the respondents (32.4%) indicated that they planned to recreate only at NNVM on this trip, while the remaining two-thirds of the visitors reported that they were visiting other places as well. Of those respondents who were visiting other areas, 17 percent indicated that NNVM was their primary destination on this trip. Again, compared to many of the other federally managed recreation areas in the area, the proportion of visitors reporting that the NNVM area was their primary destination was quite low. Sixty-six percent of the Diamond Lake visitors, 77.2 percent of the Santiam Pass visitors, and 98.6 percent of the Waldo Lake respondents reported that the recreation area they were visiting was their primary destination on the trip during which they were interviewed (Burns & Graefe 2004a, 2004b; Burns, Graefe, Ayres, & Robinson 2004a, 2004b; Lee, Graefe, & Burns 2004).

Newberry National Volcanic Monument visitors were similar in makeup to those seen at other federally-managed recreation areas in the region. The vast majority of the respondents (82.8%) were in family groups, a proportion typically seen at nearby recreation areas. Nearly all of the visitors interviewed were white (94.9%), similar to the proportion of visitors seen at other FS

recreation areas in that region. More than half (55.8%) of the respondents were male, and the mean age of the respondents was about 46 years old.

3.2 Reasons for Visiting

A series of questions on the survey focused on respondents' motivations for recreating at the NNVM recreation areas, as well as a question probing them as to the most important reason for visiting the recreation area. The selection of "most important" reason for visiting the NNVM recreation areas included to enjoy the place itself, because it is a good place to do my outdoor recreation activities, to spend time with my companions, and because it was close to home. The respondents at the NNVM recreation areas were more likely than those at other central Oregon recreation areas to indicate that they visited to enjoy the place itself (Table 2). At NNVM, 52 percent of the respondents said they visited because of the place itself, compared to just 38 percent of the Diamond Lake visitors, and 47 percent of the South Umpqua River respondents. The Santiam Pass visitors were more activity driven than the respondents at the other three areas, with 45 percent indicating that the most important reason for visiting was to participate in their chosen outdoor recreation activity.

When asked a more general question listing various possible motivations, or reasons for recreating at the NNVM recreation areas, the most highly rated motivations were to experience natural surroundings (mean=4.7), be outdoors (mean=4.5), and to get away from the regular routine (mean=4.5). The lowest rated motivations were for the challenge (mean=3.0) and to develop skills (mean=3.1). These findings are very typical

Table 2.—Most important reason for this visit

	NNVM	Santiam Pass	Diamond Lake	South Umpqua
	%	%	%	%
I went there because it's a good place to do the outdoor activities I enjoy	27	45	36	27
I went there because I enjoy the place itself	52	30	38	47
I went there because I wanted to spend more time with my companions	16	14	24	22
I went there because it was close to home	5	12	3	3

Table 3.—Reasons for visiting

Opinions of Recreationists ^a	NNVM	Santiam Pass	Diamond Lake	South Umpqua
To be outdoors	4.4	4.6	4.6	4.7
For relaxation	4.2	4.6	4.6	4.7
To get away from the regular routine	4.5	4.5	4.6	4.8
For the challenge or sport	3.0	4.5	3.1	3.2
For family recreation	4.3	4.0	4.3	4.5
For physical exercise	3.7	3.9	3.5	3.5
To be with my friends	3.9	3.9	3.8	4.2
To experience natural surroundings	4.7	3.7	4.5	4.5
To develop my skills	3.1	3.3	2.7	3.0

Response Code: 1 = "Not at all important" to 5="Extremely important"

of the reasons people recreate at other front-country recreation areas in the Central Oregon region (Table 3). For the most part, people want to get away from their regular routine by participating in outdoor recreation activities in a natural setting. Typically, the least important motivations for visiting Diamond Lake, Waldo Lake, South Umpqua River, and Santiam Pass were to develop skills, for challenge/sport, and for physical exercise.

3.3 Customer Satisfaction

Several customer satisfaction items were utilized in this study in an effort to understand visitors' satisfaction with various aspects of service quality and to develop a model of customer satisfaction for use by managers at the Newberry National Volcanic Monument. Visitors were asked how they would rate their satisfaction levels with a battery of 16 service quality attributes. All 16 of the quality items were rated above 4.0 on a 5-point

Likert scale (Table 4). The four quality items showing the highest ratings included: views are free from obstructions (mean= 4.96) information boards provide current information (mean=4.95), drinking water is available (mean=4.95), and uniformed Forest Service and concessionaire employees are friendly (mean=4.89). Two items showing slightly lower satisfaction scores were recreation sites are free of danger (mean=4.39, and roadside signs and directions make recreation sites easy to find (mean=4.43).

A second set of measures focused on the core dimensions of the Forest Service Meaningful Measures program. This shorter list of quality items included the visitors' perceptions of health and cleanliness, safety and security, condition of facilities, responsiveness of staff, and condition of the recreation setting (Table 5). Again, the respondents rated highly all of the quality items, with the responsiveness of staff receiving the highest

Table 4.—Comparison of individual quality attributes

Opinions of Recreationists ^a	NNVM	Santiam Pass	Diamond Lake	South Umpqua
Drinking water is available	4.9	3.6	4.1	1.4
Recreation use is compatible with the environment	4.7	3.5	4.2	4.3
Facilities are in good condition	4.7	3.7	3.8	4.1
Recreation sites are free of dangerous conditions	4.4	3.9	4.0	4.1
Developed facilities are accessible for persons with disabilities	4.7	3.3	3.9	3.4
Uniformed Forest Service and concessionaire employees are friendly	4.9	4.1	4.3	4.4
Views from recreation areas are free of obstruction by buildings or development	4.9	4.4	4.4	4.6
Roadside signs and directions make recreation sites easy to find	4.4	3.8	4.2	4.2
Restrooms/Toilets are clean and free of odor	4.8	3.6	3.7	3.1
Parking spaces are plentiful	4.6	3.7	3.8	3.7
I feel safe at the recreation areas	4.8	4.2	4.4	4.4
It is easy to find uniformed Forest Service employees	4.8	3.2	3.5	2.9
Information boards provide current information	4.9	3.6	3.9	4.0
Trails are in good repair	4.8	3.8	4.0	4.0
Rules and regulations are clearly posted and easy to understand	4.8	3.8	4.0	4.3
The area is free from litter	4.8	3.7	3.9	3.8

^aResponse Code: 1="Awful" to 5 = "Excellent"

rating (mean=4.90), followed by condition of recreation setting (mean=4.79). The lowest rated item, albeit still very highly rated, was safety and security (mean=4.55). Lastly, using a scale ranging from 1=not at all satisfied to 10=most satisfied, the visitors were asked to rate their overall experience at NNVM during this trip. The mean score was 9.11, showing a very high rating of their trip experience.

The NNVM quality levels were compared with those at other front-country Forest Service recreation areas (Tables 4 and 5). The individual quality items were compared across three similar front-country Forest Service settings: Diamond Lake, South Umpqua River, and Santiam Pass. The results of this cross-area analysis show that the NNMV satisfaction levels were higher in each instance, across all 16 items. This trend is noteworthy, as this level of congruity is not typically seen across an entire battery of items when compared to similar recreation sites.

When the five Meaningful Measures items were compared across the same three recreation areas, the NNVM satisfaction ratings were once again rated highest for each of the five categories. The examination of the overall quality of experience variable showed similar results across four separate recreation areas: Diamond Lake, South Umpqua River, Waldo Lake, and Santiam Pass. In this case, the NNVM overall satisfaction level of 9.1 was matched by the South Umpqua River recreation area, while the other two recreation sites were rated lower.

4.0 Conclusions and Implications

The findings of this study show that the Newberry National Volcanic Monument visitors are typical of Central Oregon front-country visitors in one sense, yet quite different in others. With regards to the socio-demographic makeup of the visitors, NNVM visitors are very similar to other visitors. There is little difference

Table 5.—Comparison of overall satisfaction ratings and overall trip experience

Satisfaction Ratings	NNVM	Santiam Pass	Diamond Lake	South Umpqua	Waldo Lake
^a Health and cleanliness	4.7	3.9	3.8	3.9	---
^a Safety and security	4.6	3.9	4.1	3.9	---
^a Condition of facilities	4.6	3.9	3.9	3.8	---
^a Responsiveness of staff	4.9	3.9	4.2	4.1	---
^a Recreation setting	4.8	4.5	4.6	4.4	---
^b Overall satisfaction (10-point scale)	9.1	8.2	8.5	9.1	8.5

^a Response Code: 1 = “Awful” to 5 = “Excellent”

^b Response Code: 1 = “not at all satisfied” to 10 = “most satisfied”

in the group dynamics, the racial makeup of the group, and even the age ranges of the respondents. However, it is apparent that people tend to visit NNVM in association with another recreation trip, and that the NNVM is not, for the most part, a tourist destination. Few of the NNVM respondents indicated that this was their primary destination, while most were visiting other recreation areas in the region. This finding highlights the importance of understanding the makeup of the visitors to specific recreation areas, as well as understanding the role of NNVM in relation to other recreation opportunities in the central Oregon region. Having this understanding will allow managers to communicate more effectively with the visitors who do stop at NNVM, and opens the door for increasing the diversity of visitors by targeting potential users who may live in the Bend area.

A majority of the NNVM recreationists visit the recreation area for the purpose of experiencing the place itself. NNVM is a unique recreation area where people learn fascinating things about a (relatively) recent volcano. Visitors can walk on old lava beds and hike to the caldron. This is not an experience that one can replicate in many different places around the United States. This finding underscores the importance of understanding the users' needs and how to meet their expectations. The NNVM recreation area is not a place where people come to participate in sporting activities, or to improve their skills—they visit to see the old volcano, which is situated in an outdoor setting. The NNVM generally meets that expectation, as seen in the ratings of customer satisfaction.

An extensive measure of visitors' satisfaction ratings was undertaken to understand what people are satisfied with at NNVM. First, the service quality ratings were very high, typically higher than any seen at other Central Oregon Forest Service recreation areas. These favorable satisfaction ratings suggest that NNVM visitors get what they come for; they achieve their goal of getting away from the routine by recreating outdoors—but not physically exerting themselves too much. In its own unique setting, the NNVM meets the needs of the visitors. Three different sets of customer satisfaction ratings were included: a general set of five items based on the FS Meaningful Measures program, a second, more in-depth, set of 16 service quality ratings, and an overall trip experience measure. For both the 16-item scale and the 5-item scale, the NNVM quality ratings were higher than for other recreation areas in central Oregon. The overall trip experience rating was the same at NNVM and at the South Umpqua River recreation areas, once again showing some of the most satisfying trip experiences seen in the central Oregon recreation areas.

Overall, these findings indicate that area recreation resource managers are doing a superb job in providing a quality recreation experience at NNVM. Management should continue to focus on maintaining and improving the environmental and social qualities of the recreation area. Simultaneously, management should begin to focus on making NNVM a place that is user-friendly to non-traditional users, such as ethnic and racial minorities. With the high proportion of non-Whites living in the Central Oregon area, it is imperative that the needs of this potential user group be met as well.

Lastly, managers may want to consider benchmarking their successes with other Forest Service recreation areas in the central Oregon region. This will provide managers with a sense of how well they are performing with regards to customer satisfaction issues and attainable goals. Understanding the makeup of NNVM visitors in comparison to other recreation areas in the region will also assist managers in understanding the particular niche of NNVM in a larger context.

5.0 Citations

- Burns, R. and Graefe, A. 2004a. **Diamond Lake recreation use: Perceptions of users' recreation experience across user segments.** Book of Abstracts from the Fourth Social Aspects and Recreation Research Symposium, (pp. 32). San Francisco, CA.
- Burns, R. and Graefe, A. 2004b. **Understanding differences between motorized and non-motorized watercraft users at Waldo lake, Oregon.** Abstract Proceedings of the 10th International Symposium on Society and Resource Management. Keystone, CO.
- Burns, R.C., Graefe, A.R., and Absher, J. 2003. **Alternate measurement approaches to recreational customer satisfaction: Performance-only and importance-performance gap scores.** Leisure Studies. 25(4): 363–380.
- Burns, R., Graefe, A., Ayres, E., and Robinson, K. 2004a. **Recreation at Diamond Lake: An examination of user characteristics, behaviors, and attitudes between 2001-2003.** Submitted to USDA Forest Service, Region 6, Portland, Oregon, 80 pages.
- Burns, R., Graefe, A., Ayres, E., and Robinson, K. 2004b. **Recreation at Waldo Lake: An examination of user characteristics, behaviors, and attitudes.** Submitted to USDA Forest Service, Region 6, Portland, Oregon, 46 pages.
- Burns, R., Graefe, A., Ayres, E., and Robinson, K. 2004c. **The role national forests in central Oregon: Results of four focus group interviews.** Submitted to USDA Forest Service, Region 6, Portland, Oregon, 39 pages.
- English, D.B.K., Kocis, S.M., and Zarnoch, S.J. 2004. **Characteristics and use patterns of visitors to dispersed areas of urban national forests.** In: Proceedings of the second international conference on monitoring and management of visitor flows in recreational and protected areas (pp. 183-188). Saarijarvi, Finland: Finnish Forest Research Institute.
- Lee, J., Graefe, A., and Burns, R. 2004. **Structural analysis of service quality, satisfaction, and behavioral intention among forest visitors.** Journal of Travel and Tourism Marketing. 17(1): 73-82.

TRAIL CONDITION PREFERENCES OF HORSEBACK RIDERS ON THE CLEMSON UNIVERSITY EXPERIMENTAL FOREST

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Abstract

Horseback riding in natural areas is a legitimate and valued outdoor recreation activity that has the potential to cause changes in trail conditions. Riders are often quite experienced, are attached to both the activity and the resource places where they participate, and have preferences toward trail conditions where they ride. The purpose of this study was to examine the relationship of a verbal measure of trail condition preference to a visual preference measure of riders for various trail impact conditions. During June-October 2003, 197 riders completed a photo-questionnaire of trail conditions at a "staging area" (i.e., where horses are loaded and unloaded) on the 17,500-acre Clemson University Experimental Forest (CUEF). Riders rated 24 trail scenes and 15 written trail condition descriptions. The scenes and descriptions were factor analyzed to form four trail condition dimensions; narrow, dry, flat trails; wide, muddy trails; deep, well-rutted trails; and creek crossings. In addition, four factored dimensions of place bonding items revealed that riders were not dependent on the trails of the CUEF for riding, but were rooted to them, identified with them and were familiar with them. It is concluded that photographs can be used to measure trail condition perceptions, inventory baseline conditions, and allow for future photo/field monitoring of changing trail conditions over time.

1.0 Introduction

Recreationists choose the areas in which they recreate based on a number of criteria, including: environmental and trail preferences, amount of experience they have participating in the activity, and the degree to which they feel attached to an area. There is little research that looks at horseback trail riders with the intent to understand whether these factors are employed when choosing the areas in which they ride.

In addition, there is a significant lack of literature available concerning recreational use of horses, including horseback trail riding preferences and trail impact issues that result from heavy horseback trail riding. This suggests that a more concentrated look into this activity is necessary. As land available for public recreation reaches a premium, it is necessary for land-use managers to inventory, monitor, and manage the conditions of multiple-use trails. Wood, Cox and Perry (2000, pg 3) emphasize the importance of managing trail conditions by stating, "the most fundamental issue is the need to create and manage trail systems that fit use to the capacity of the land to accommodate that use, thus harmonizing users with the land."

This study focused on horseback trail riding preference and place bonding in an attempt to understand trail condition preferences and factors that affect them. The purpose of this study was to compare the visual preferences of horseback riders for various levels of trail impacted conditions to verbal descriptions of measured trail conditions and to examine the relationship of place bonding to horseback rider perception of visual trail conditions.

2.0 Literature Review

Due to the expense and difficulty of surveying participants at multiple, specific field sites, photographs have become an important tool in visual preference research. Many researchers have discussed the validity of photographs actually representing landscapes. Shafer and Tooby (1973) and Shafer and Richards (1974) found that

a photograph could accurately measure onsite preference for a landscape, if the photographic presentations contain most of the visual variation found in the actual landscape. Daniel and Boster (1976) found high correlations between people's reactions to photographs and actual on-site visits, averaging a range of $r = 0.85$ to 0.95 . Some researchers have also questioned whether black and white photographs are as effective at conveying the dimensions of the scene, as are colored photographs. Kaplan, Kaplan and Dearthoff (1974) state that the use of black and white photographs as representative simulations of natural environments for preference rating research is supported by both theory and experience. They also confirm that results are quite reliable, valid and intuitively meaningful across a broad selection of environments and groups.

Photographs are a useful way in which participants are presented a scene that they either may be familiar with or may be familiar with scenes of a similar nature. By providing the critical dimensions (e.g., trail slope, tread width and depth, etc.) of the scene along with the photographs, survey respondents can more accurately interpret the trail scene and conditions they are viewing.

Because photographs have been shown to be a reliable and valid form of stimuli presentation in environmental perception research, they have been used extensively in studying environmental preferences (Kaplan & Kaplan 1989), visual preferences (Noe & Hammitt 1988; Ulrich 1988), and scenic beauty (Buhyoff, Gauthier, & Wellman 1984). In contrast to the aesthetic and scenic beauty focus of previous studies, our study focused on the functional preferences of horseback riders for trail conditions depicted through visual images.

When research does not use visual stimuli (i.e., photographs) to investigate environmental conditions and preferences it relies on verbal statements that characterize the environments conditions) to measure preferences. This is commonly done through a series of statements describing different realistic conditions often encountered by participants in an activity. Participants are asked to read the stated condition and answer the degree to which they like or agree with the statement. A number of different factors influence the decision and it is important to give enough information within the

statement so the individual can create a mental picture of what the statement is describing. From this mental image the participant can determine their feelings concerning the statement, in our study, existing trail riding conditions.

There are many factors that can relate to the trail condition preferences of horseback riders. Place attachment, a positive affective bond developed between individuals or groups and their environment over time (Altman & Low 1992) is an influencing factor to analyze when considering recreation choice and preference behavior. Place attachment to recreation resource places and sites incorporate both the affective and behavioral notions of individuals' past experience and attached feelings toward a recreational setting.

Traditionally, place attachment literature has used two dimensions of attachment, place identity and place dependence (Williams & Vaske 2003). More recently this concept has been reconceptualized into place bonding, containing the five dimensions of place familiarity, belongingness, identity, dependence, and rootedness, in an attempt to gain a richer perspective of people's connections to their recreation destination (Hammitt, Backlund, & Bixler 2005). The bond-attachment construct has been alternatively titled by various researchers as sense of place, place identity, place dependence, place attachment, and place bonding. Hammitt, Backlund, and Bixler (2004) suggest that despite different names, the connecting theme among these concepts is that humans form affective bonds to significant places in their lives, whether the focus of the investigation is their home, their community, or the places they recreate.

3.0 Methods

The study area was the 17,500-acre Clemson University Experimental Forest (CUEF), established during the 1930s and located adjacent to the university campus in Clemson, SC. Today, the area offers many opportunities for multiple recreation uses on its approximately 109 miles of trails. One particular area (Fants Grove) within the CUEF has been developed for recreational horseback riding, containing horse-trailer unload facilities and 43 miles of developed trail. It was at the Fants Grove site that horseback riders were sampled.

There were two populations of interest for this study; horseback riders who used the Fants Grove Trails on the CUEF and members of the Pendleton, SC Area Saddle Club. A non-probability convenience sample was drawn from these populations. The resulting number of completed surveys was 197, of which 137 were from onsite sampling at the Fants Grove staging area and 60 from attendance at a monthly Saddle Club meeting and mail back procedure.

Data collection was conducted over a six months period on weekends and weekdays; in late spring through early fall of 2003. Riders were approached as they arrived at the staging area, some returning from their ride and others before they set out. Members of the Saddle Club were addressed at a monthly meeting in early May 2003, and asked to complete the survey. Members were given the opportunity to complete the questionnaire at the meeting or were given a postage paid envelope in which to mail the completed questionnaire back. This procedure resulted in a 79 percent mail back response rate (60 of the 79 members returned surveys). The onsite survey response rate was 66 percent.

The questionnaire consisted of 10 pages, containing both photographic and verbal items. The first section of the photo-questionnaire was a series of 24 black and white digital photographs of different horse-use trail conditions of the Fants Grove area. Each photograph was accompanied by the trail site's exact slope, tread width and depth. Photographs were selected based on a previous study in which the photo sites had been inventoried, measured for trail impact conditions and entered into a GPS location system. Thus, all photos used in the questionnaire corresponded to inventoried trail sites. These locations were determined to have slight to significant amounts of trail tread impact. A regular school backpack was used as a frame of reference or scale in each photograph to make it easy for the respondent to accurately judge the dimensions of the scene. Participants rated each photograph on a scale of one to five based on how much they liked riding their horse through conditions like those depicted in each picture.

The verbal preference measure consisted of 15 verbal descriptions of the trail conditions. The descriptions

represented the conditions depicted in 15 of the photographs; all 24 of the photographs were not described due to similarities in content. An example of one of the trail conditions is, "a medium eroded trail width of 7 feet, depth of 12 inches, no water or mud present and a slope of 20 percent." Participants were asked to rate each description on a scale of one to five of how much they like riding their horses through conditions described in each written statement, where one indicated "like not at all", two was "a little", three indicated "somewhat", four was "quite a bit" and five was "like very much".

A series of 26 place bonding statements were rated by respondents, on a 5-point agreement scale to determine the type and degree of affective bonds that riders of the CUEF might have formed with the area's horse trails. The 5-point agreement scale for the place bonding items consisted of: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

Descriptive statistics were run on all variables and exploratory factor analysis was completed on three sets of items, the photographs, trail condition descriptions and place bonding. Principal component analysis with varimax rotation was used to factor the item scales. Factoring criteria used were: factor loading 0.40, Cronbach alpha 0.70, and Eigenvalue 1.0. Themes describing trail condition-environments were used to label the photographs and trail condition description factors. Once factors were determined, factor grand-means were computed and used as a basis for interpreting the strength of trail condition preferences and dimensions of place bonding.

4.0 Results

Over half of the riders (53%) in the study group were male, 93 percent had graduated from high school, and 59 percent had some college experience. Forty-nine percent of the respondents described themselves as advanced riders, while only 3 percent considered themselves beginners. The rest were closely divided between intermediate and expert riders. On average, riders spent 3.5 hours riding per trip, rode an average of 10 miles, and had at least three horses per riding party. Over 50 percent of riders drove more than 20 miles to

ride at CUEF. Respondents had used the CUEF for riding an average of 12 years, and averaged about 20 trips to the Forest during the last 12 months. The overall mean rating for the 24 photographed conditions was 4.02. The scores were skewed toward the upper end of the 5-point rating scale, indicating a positive response to the trail environment conditions.

When the trail condition preference ratings were factor analyzed to determine underlying themes or commonalities among the photographed trail conditions, three types (factors) of trail scenes were differentiated and identified as: narrow, dry and flat trails; wide muddy trails; and deep, well-rutted trails (Table 1). The narrow, dry flat trails scenes (12 photos) all depicted a trail wide enough for horses to easily travel single file, with the average width of the trails in the scenes being 39.6 inches (3 feet, 3 inches). Some of the scenes showed a narrow trail through an open area, while others represented a narrow trail through a heavily wooded area. The slopes of the trails in each of these scenes ranged from 6 to 25 percent. The average depth of the trail tread in this category, compared against the un-compacted sides of the trail, was 14.5 inches. There was no standing water in any of these scenes nor was there any indication that the areas would retain water after a rain storm. The second dimension, wide muddy trails (5 photos), all contained characteristics common to trail areas that collect water and stay muddy for a period of time. A primary feature of these muddy trail scenes was a wide, expanded area around the original trail site where users have extended the existing path on the sides to avoid traveling through the worst of the mud. These trails were also flat with slopes ranging from 1-9 percent. At the widest point of the trail the width was an average of 87.2 inches (7 feet, 3 inches). The average depth was only 6.9 inches. However, when the trails were wet and muddy, they would be soft and would cause a horse to sink in much further than the average seven inches. Scenes in the final dimension, deep well-rutted trails (4 photos), were each located on an incline with slopes from 15 to 25 percent. Trail width averaged 55.5 inches (4 feet, 7 inches). The most unique feature of these scenes was the trail depth, ranging from 19 inches to 67 inches deep and the terrain of the trail was very rutted. Although the ground is not muddy all

of the time, it is assumed that during heavy rain the areas would be muddy and be difficult to navigate, since the depths of the trails are so deep that riders could not avoid the rutted area by expanding the trails as they did in the previous dimension.

When respondents were asked to rate the verbal trail descriptions, consisting of the same trail tread measurements and slopes as used with 15 of the photos, the mean ratings were lower than for the photographed conditions. The overall mean rating for the descriptions was 3.25 (compared to 4.02 for the photos) and the scores were evenly distributed throughout the 5-point scale. The median score was 3.30. Factor analysis resulted in three dimensions of trail conditions. Six trail descriptions were designated as narrow, dry or flat trails. Five trails conditions were identified as wide muddy trails and two were classified as creek crossings (Table 2).

Because there was an apparent difference between the visual and verbal preference ratings for the trail conditions, the paired preference ratings for the 15 scenes/descriptions were correlated to see if riders were responding in a similar pattern to the trail conditions. As indicated in Table 3, 11 of the 15 comparisons had significant, positive correlation coefficients ($p \leq 0.05$). This indicates that while respondents rated the photographed conditions higher, they responded in a similar fashion to the two preference stimuli (e.g., positive, however, not a strong direct relationship). Implications for these findings will be discussed later in the paper.

While place bonding was theorized as consisting of five dimensions, the 26 items factored into only four dimensions, with 24 of the items meeting the factoring criteria mentioned in the methods. Items did not factor into the fifth proposed dimension, Place Belongingness. The four resulting factors were labeled place dependence, rootedness, familiarity, and identity.

Place dependence measures the degree to which the respondent relies on the CUEF, compared to other places to meet their horseback riding needs. The factor grand mean for place dependence was 2.77; with a Cronbach alpha of 0.94, and the amount of variance explained was

Table 1.—Dimensions of trail scenes, based on factor analysis of trail preference ratings.

Factored Dimension (Item) ¹	Factor loading	Factor grand mean	Cronbach alpha
Narrow, dry flat trails (Eigenvalue = 9.28, Variance Explained = 44.20)			
Trail scene 7	0.76	4.11	0.92
Trail scene 9	0.73		
Trail scene 4	0.72		
Trail scene 10	0.72		
Trail scene 3	0.71		
Trail scene 16	0.67		
Trail scene 13	0.65		
Trail scene 2	0.63		
Trail scene 6	0.64		
Trail scene 11	0.64		
Trail scene 17	0.61		
Trail scene 8	0.61		
Wide muddy trails (Eigenvalue = 2.26, Variance Explained = 10.76)			
Trail scene 20	0.86	4.18	0.89
Trail scene 23	0.83		
Trail scene 12	0.79		
Trail scene 21	0.75		
Trail scene 15	0.66		
Deep, well rutted trails (Eigenvalue = 2.13, Variance Explained = 10.13)			
Trail scene	0.85	3.50	0.88
Trail scene	0.83		
Trail scene	0.79		
Trail scene	0.71		

¹Scenes 1, 14, and 19 did not have a factor loading of 0.40 and were therefore not included in further analyses.

47.03 percent. The mean score related to this dimension suggests weak support for place dependence among the respondents. Conversely, place rootedness, measuring the degree to which a person relies only on the CUEF for riding had a factor grand mean of 3.81; with a Cronbach alpha score was 0.92, and a variance explained of 10.63 percent, suggesting that respondents were moderately to strongly rooted to the CUEF. Place Identity attempts to measure the degree to which an individual has assimilated a place into his/her personal identity. The Cronbach alpha for identity was 0.84 and the amount of variance

explained was 5.69 percent. A factor grand mean score of 3.75 suggests a moderate to strong amount of identity for the respondents. Place familiarity deals with the memories and cognitive relationship a person has for a place. The Cronbach alpha was 0.82 and 5.27 percent of variance was explained. The factor grand mean score of 3.20 suggests a moderate amount of familiarity.

It was theorized that place bonding, or one's degree of affective attachment to an area where they ride horses, would be correlated with their preference for

Table 2.—Dimensions of trail condition descriptions based on factor analysis of trail preference ratings.

Factored Dimension (Item) ¹	Factor loading	Factor grand mean	Cronbach alpha
Narrow, Dry Flat Trails (Eigenvalue = 7.20, Variance Explained = 48.05)			
A muddy trail with a tread width of 5' 8", depth of 8", 5% water and 85% mud present on the trail, and a slope of 3%	0.90	2.63	0.89
A muddy trail with a tread width of 10' 10", depth of 6", 10% water and 50% mud present on the trail, and a slope of 2%.	0.88		
A muddy trail with a tread width of 5' 4", depth of 3", 0% water and 90% mud present on the trail, and a slope of 1%.	0.79		
A highly eroded trail with a tread width of 5' 6", depth of 5' 7", no mud or water present, and a slope of 19%.	0.65		
A highly eroded trail with a tread width of 2' 3", depth of 1' 4", no water or mud present, and a slope of 15%.	0.61		
Narrow, dry flat trails (Eigenvalue = 2.17, Variance Explained = 14.49)			
A lightly eroded trail with a tread width of 2' 8", depth of 7", no water or mud present, and a slope of 6%	0.80	3.83	0.86
A lightly eroded trail with tread width of 5' 3" inches, depth of 11", no water or mud present, and a slope of 9%	0.75		
A medium eroded trail with a tread width of 3' 11", depth of 9", no water or mud present, and a slope of 18%.	0.72		
A lightly eroded trail with tread width of 3' 2", depth of 11", no water or mud present, and a slope of 15%.	0.69		
A medium eroded trail with a tread width of 7", depth of 12", no water or mud present, and a slope of 20%.	0.64		
A medium eroded trail with a tread width of 3' 9", depth of 8", no water or mud present, and a slope of 11%.	0.63		
Creek Crossings (Eigenvalue = 1.11, Variance Explained = 7.41)			
A creek crossing, with a tread width of 4' 11", depth of 1' 3", 20% water, and 50% mud present on the trail, and a slope of 18%.	0.82	3.32	0.62
A creek crossing, with a tread width of 3' 9", depth of 1' 10", 5% water, and 20% mud present on a trail, and a slope of 25%.	0.69		

¹Statements that did not have a factor loading of ≥ 0.40 .

A highly eroded trail with a tread width of 2' 7", depth of 1' 8", no mud or water present, and a slope of 19%.

A creek crossing with a tread width of 5' 3", depth of 2', 20% water and 60% mud present on trail and a slope of 25%.

Table 3.—Trail scene and trail condition description comparison including significant mean differences and relational patterns between preference ratings.

	Visual rating	Verbal rating	$r = 0.20$	p-value
	Mean ¹	Mean ¹		
Photo 13	4.11	3.96	0.14	0.07
Photo 19	4.20	3.69	0.28	0.00
Photo 4	4.21	3.75	0.23	0.00
Photo 10	3.92	2.94	0.36	0.00
Photo 1	4.10	3.33	0.12	0.18
Photo 2	4.31	3.86	0.30	0.00
Photo 11	4.12	3.15	0.20	0.02
Photo 12	4.18	2.45	0.04	0.67
Photo 6	3.85	3.30	0.19	0.02
Photo 18	3.53	2.83	0.25	0.00
Photo 3	4.15	3.72	0.34	0.00
Photo 5	3.71	2.95	0.27	0.00
Photo 14	3.87	2.42	0.08	0.35
Photo 20	4.23	2.39	0.09	0.24
Photo 15	4.29	4.01	0.23	0.00

¹Means based on a 5 point scale, where 1 = “like not at all”, 2 = “like a little”, 3 = “like somewhat”, 4 = “like quite a bit”, 5 = “like very much”

various trail riding conditions. However, only 3 of 12 correlations tested were significant and none were above $r = 0.20$. Thus, place bonding failed to show much of a relationship to trail condition preferences.

5.0 Discussion and Implications

Horseback trail riders in the CUEF generally preferred existing trail conditions as depicted in trail photographs, however, the deep, well rutted trail conditions were preferred least. All 24 trail scenes received a fairly strong response as demonstrated by their mean scores of 3.27 to 4.31 on a scale of one to five. An average mean score of 4.02 indicated that riders “liked quite a bit” the trail tread conditions found at the Fants Grove Area of the CUEF.

Preferences changed when respondents were given written descriptions of existing trail conditions. On average all descriptions received lower scores, ranging from 2.42 to 4.01. The average mean score was 3.25. The biggest difference was found in the preference for the wide

muddy trail conditions, with the scenes receiving a score of 4.18 versus the description score of 2.63. Also, while trail conditions that were deep and well-rutted factored as a focused dimension among the photographs, they did not in the written descriptions; instead the descriptions of creek crossings factored as a coherent condition.

How might one explain the differences found in the preference ratings of the visual conditions with accompanying tread measurements versus the ratings for the verbal descriptions that contained the same tread measurement data? Which of the two represent the more valid data? If “a photograph is worth a thousand words,” then one could suggest that the scenes provide more content for riders to base their preference decision. One could speculate that beyond the amount of information given by a scene, the photographed information is likely to be more realistic and correlated to actual on-site conditions (Daniel & Boster 1976), and perceived more consistently by respondents than the verbal descriptions. For example, how much variation or how accurately can

a rider perceive a verbal trail description of 20 percent slope or 90 percent mud present at a trail location? In defense of the verbal descriptions, how do we know for sure that riders are providing a “functional preference” for riding through the visual trail conditions and not a broader “scenic preference” for the visual medium stimuli? These validity questions, while important, go beyond the basic research implications of this study.

Beyond the research implications just discussed, there are management implications which this research addressed, as follows:

- Photographs, accompanied with actual trail condition data, may be a better tool for soliciting user perception input to trail management than verbal descriptions of trail conditions.
- GPS photographs and trail tread measurements of existing trail conditions can serve as a baseline inventory for trail management.
- The GPS trail scenes, trail tread data, and rider visual preferences can be monitored at 3 to 5 year intervals to document any change in trail conditions and rider perceptions over time.

6.0 Citations

- Altman, I., and Low, S.M. 1992. **Place attachment: Human behavior and environment**: 165-185. New York, Plenum Press.
- Buhyoff, G.J., Gauthier, L., and Wellman, J.D. 1984. **Predicting scenic quality for urban forests using vegetation measurements**. *Forest Science*. 30: 71-82.
- Daniel, T.C., and Boster, R.S. 1976. **Measuring landscape esthetics: The scenic beauty estimation method**. USDA Forest Service Res. Pap. RM-167. Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station.
- Hammitt, W.E., Backlund, E.A., and Bixler, R.D. 2004. **Experience use history, place bonding, and resource substitution of trout anglers during recreation engagements**. *Journal of Leisure Research*. 36: 356-378.
- Hammitt, W.E., Backlund, E.A., and Bixler, R.D. 2005. **Place bonding for recreation places: Conceptual and empirical development**. *Leisure Studies*. 24: 1-25.
- Kaplan, R., and Kaplan, S. 1989. **The experience of nature: A psychological perspective**. New York, NY: Cambridge University Press.
- Kaplan, R, Kaplan, S., and Deardorff, H.L. 1974. **The perception and evaluation of a simulated environment**. *Man-Environment Systems*. 4: 191-192.
- Noe, F.P., and Hammitt, W.E. 1988. **Visual preferences of travelers along the Blue Ridge Parkway**. Washington, DC: U.S. Government Printing Office.
- Shafer, E.L., and Richards, T.A. 1974. **A comparison of viewers' reactions to outdoor scenes and photographs of those scenes**. USDA Forest Service Res. Pap. NE-302, pp. 1-26. Upper Darby, PA: Northeastern Experiment Station.
- Shafer, E.L., and Tooby, M. 1973. **Landscape preferences: An international replication**. *Journal of Leisure Research*. 5: 60-65.
- Ulrich, R.S. 1988. **Toward integrated valuations of amenity resources using nonverbal measures**. In Peterson, G.L., Driver, B.L., & Gregory, R., eds., *Ameity resource valuation*, pp.87-106. State College, PA: Venture Publishing.
- Williams, D.R., and Vaske, J.J. 2003. **The measurement of place attachment: Validity and generalizability of a psychometric approach**. *Forest Science*. 49: 830-840.
- Woods, G.W., Cox, S.K., and Perry, S.E. 2000. **A collaborative adaptive management plan for the Clemson Experimental Forest Trail System**. Clemson University, School of Natural Resources, Clemson, SC.

PLACE ATTACHMENT AND PERCEPTIONS OF BENEFITS GENERATED BY THE FUTURE TIOUGHNIOGA RIVER TRAIL PROJECT

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Abstract

This study examined the relationship between place attachment and residency, past trail usage behavior, and perception of the benefits of a proposed river trail in upstate New York. A telephone or door-to-door survey was administered to 527 residents. Results showed that overall, residents felt a sense of place attachment with the Tioughnioga River (mean=8.7 out of 12), and perceived positive recreational and environmental benefits to the proposed river trail (mean=3.27 and 3.20 respectively, on a 4-point scale), but less economic benefits (mean=2.72). Miles residing from the river and past trail usage were significantly related to a sense of place attachment. However, years of residency was not related to place attachment. Lastly, there was a relationship between place attachment and perceived benefits of the proposed river trail, with those who perceived the highest benefits scoring highest in place attachment. Managers can use these results as they plan new recreation resource developments.

1.0 Introduction

1.1 Background

According to Kyle, Graefe, Manning, and Bacon (2003), place attachment is defined as “the extent to which an individual values or identifies with a particular environmental setting” (p. 250). Williams and Vaske (2003) further define place attachment as consisting of place dependence, or functional attachment, and place identity, or emotional attachment, to specific natural resources. According to Williams and Vaske (2003), place dependence reflects the importance of an environment to help one meet goals or pursue a particular activity. Place identity reflects the symbolic importance of a place in one’s self-identity and affective valuing. Stokowski (2002) further asserts that place

attachment refers not only to a geographic feature or location, but to the social and cultural values that are sustained in the language, history, and culture of a community of people.

Studies focusing on place attachment have shown relationships between place attachment and several other variables, including management preferences and user behavior (Bricker & Kersetter 2000; Kyle, Bricker, Graefe, & Wickham 2004; Williams, McDonald, Riden, & Uysal 1995), leisure satisfaction and demand (Wickham & Graefe 2002), and activity involvement (Kyle et al. 2003; Moore & Graefe 1994). Place attachment can have significant implications for recreation resource planners and managers (Moore & Graefe 1994; Williams 2002), ranging from support for new developments to managing user conflicts in existing areas.

This study investigated place attachment in relation to a newly proposed recreation development, the Tioughnioga River Trail Project. This land- and water-based trail will revitalize the Tioughnioga River along its 30-mile corridor in upstate New York and will accommodate hiking, biking, fishing, skiing, canoeing, kayaking, and other activities. The overall purpose of this project was to assess the preferences and intended use of the river trail by Cortland County residents (Todd, Anderson, & 601 graduate students 2003). Specifically, this part of the study investigated the relationship of place attachment with several variables. If Cortland County residents experienced high levels of place attachment, more positive support for the river trail project could evolve.

1.2 Objectives

This study had three objectives: 1) to examine the relationship between place attachment and residency; 2) to investigate the association of place attachment and actual behavior of past trail usage; and 3) to uncover differences in perceived benefits of the future Tioughnioga River Trail among residents with diverse levels of place attachment. It was hypothesized that number of years lived in Cortland County would be

positively correlated with place attachment, while distance from the river would be negatively correlated. It was also predicted that those with higher place attachment scores would be more likely to have used recreational trails in the past. Finally, it was hypothesized that residents with stronger place attachment scores would perceive greater potential levels of recreational, environmental, and economic benefits from the future Tioughnioga River Trail.

2.0 Methods

2.1 Samples

All subjects for this study were drawn from Cortland County area residents over the age of 18 years. Because it was assumed that residents living very near the river may have different opinions about the trail project than those living further from the river, that population was sampled for a door-to-door survey. All other county residents were eligible to be included in a telephone survey sample.

For those living near the river, a random sample of 280 Cortland households was selected from a GIS database in the mile-wide corridor along the river and asked to complete a door-to-door survey. A systematic random sample of 1170 Cortland County residents, drawn from the telephone directory, were asked to complete a telephone survey.

2.2 Measurement

The door-to-door and telephone surveys had the same questions, but were formatted according to method of administration. Residency was measured in two ways: number of years lived in Cortland County, and number of miles from the Tioughnioga River. Past trail usage was also operationalized by two variables: whether or not respondents had ever used a trail for recreational purposes, and more specifically, whether or not they had spent free time on or near the Tioughnioga River.

A place attachment scale (Cronbach's $\alpha = .82$) was created by summing three items measured on 4-point scales (1=strongly disagree to 4=strongly agree): "The Tioughnioga River means a lot to me" (mean = 2.94), "I would spend more time on or at the Tioughnioga River if I could" (mean=3.01), and "The Tioughnioga River is

a feature I frequently take note of" (mean=2.80). Since it was important for the scale to be quick to administer, only these three items were used, but each represented slightly different aspects of place attachment. While the first item ("The Tioughnioga River means a lot to me") clearly focused on *place identity*, the second item ("I would spend more time on or at the Tioughnioga River if I could") has loaded either on *place dependence* (e.g., Bricker & Kerstetter 2000) or *emotional/symbolic attachment* (e.g., Warzecha & Lime 2001) in other studies. The third item was newly created for this project ("The Tioughnioga River is a feature I frequently take note of"), but aligns most closely with the concept of *place familiarity* (e.g., Hammitt, Backlund, & Bixler 2003). When summed, place attachment scores ranged from 3 to 12. Respondents were subsequently divided into approximate thirds so that 39 percent (203 respondents) were reclassified as having low place attachment (i.e., those with scores ranging from 3 to 8), 29 percent (150) had *medium* (a score of 9), and 32 percent (164) had *high* (scores of 10 to 12).

To measure potential benefits, three scales of three statements each were constructed. These items were derived from the benefits research literature (Godbey, Graefe, & James 1992; Leisure Information Network 1997). Respondents were asked to indicate the extent to which they believed each item would benefit themselves, their households, or their community as a result of the trail development on a 4-point scale (1=no benefit, 2=little benefit, 3=some benefit, 4=great benefit). To represent *recreational* benefits (Cronbach's $\alpha = .84$), three statements were included: an incentive to exercise, recreational opportunities, and a place to meet and do activities with others. *Environmental* benefits (Cronbach's $\alpha = .81$) statements included: protection of scenic views, environmental education and nature study, and cultural and historic preservation. *Economic* benefits statements included: tourist destination; increased economic impact to the area; and a way to link neighborhoods to shopping, work, and school. Cronbach's α was just .51 for this last scale, but significantly increased to .75 when the last item was removed; therefore, the final economic benefits scale was reduced to the first two items.

Table 1.—Place attachment (raw scores) and residency

		Place attachment (raw scores)
Number of years lived in Cortland County	<i>r</i>	-.169*
	<i>n</i>	(461)
Number of miles resided from the Ti River	<i>r</i>	-.024
	<i>n</i>	(494)

*Correlation is significant at the .05 level (2-tailed).

3.0 Results

3.1 Descriptive Results

The overall response rate for the study was 36 percent (527/1450). The door-to-door response rate was 60 percent (169/280), and the telephone survey was 30 percent (358/1170). Nearly 60 percent of the 527 respondents had lived in Cortland County for 16 years or more; distance from the river ranged from 0 to 40 miles with an average of 3.5; nearly two-thirds had used a trail for recreation in the past; and 58 percent had already used the Tioughnioga River for some sort of recreational activity. Place attachment scores ranged from 3 to 12, with a mean of 8.7. Respondents perceived the highest level of benefits of the future river trail to be recreational (the items averaged 3.27 on a 4-point scale), followed by environmental (3.20), and economic (2.72).

3.2 Hypothesis Testing

As expected, number of miles residing from the river was significantly related to place attachment, whether tested by raw place attachment scores ($r = -.17, p < .05$) (see Table 1) or recoded categories (i.e., those with low place attachment scores lived significantly farther away

from the river than those with medium or high place attachment [$F = 11.19, p < .01$]) (see Table 2 for results of one-way ANOVA followed by Scheffe's post hoc test). As also seen in Tables 1 and 2, however, number of years living in Cortland County was *not* significantly related to place attachment, resulting in only partial support for the first hypothesis.

Confirming the second hypothesis, past behavior was associated with place attachment: respondents who had used trails in the past had significantly higher raw place attachment scores than those without previous trail experience ($t = 5.32, p < .01$), a result echoed by Tioughnioga River users vs. nonusers ($t = 9.16, p < .01$) (see Table 3). Chi-square analysis (using recoded categories of place attachment) confirmed these findings, with a higher percentage of low place attachment respondents being nonusers of trails and the river, and a higher percentage of high place attachment respondents being trail/river users (Chi-square = 20.60 for trail use and 59.52 for river use, $p < .01$) (see Tables 4 and 5).

Full support was found for the third hypothesis. Raw place attachment scores were significantly correlated to recreational, environmental, and economic benefits ($r = .43, .42, \text{ and } .37, p < .01$, respectively) (see Table 6). Using one-way ANOVA followed by Scheffe's post hoc test, respondents with re-coded low, medium, and high place attachment scores all differed significantly from each other, such that the lowest levels of benefit were perceived by respondents with low place attachment and the highest levels were perceived by those with high place attachment ($F = 37.00$ for recreational, 31.77 for

Table 2.—Place attachment (recoded categories) and residency

Residency item	Total (n=494)	Place attachment (recoded categories)			F-value	p-value
		Low (n=189)	Medium (n=145)	High (n=160)		
Number of years lived in Cortland County	28.86	28.32	29.64	28.79	.14	.871
Number of miles resided from the Ti River	3.52	4.94 ^a	2.52 ^b	2.69 ^b	11.19	.000

Mean values with different superscripts are significantly different at the .01 level.

Table 3.—Past experience by place attachment (raw scores)

	Used any trail for recreation				Used Ti River for recreation			
	Yes (n=343)	No (n=171)	t-value	p-value	Yes (n=301)	No (n=213)	t-value	p-value
Place Attachment (raw scores)	9.06	8.09	5.324	.000	9.37	7.85	9.159	.000

Values are mean scores on a summed scale of three items, ranging from 3 (least attachment) to 12 (greatest attachment).

Table 4.—Used any trail by place attachment (recoded categories)

		Place Attachment (recoded categories)				
			Low	Medium	High	Total
Used any trail for recreation	Yes	n	115	99	129	343
		%	(56.7)	(66.9)	(79.1)	(66.7)
	No	n	88	49	34	171
		%	(43.3)	(33.1)	(20.9)	(33.3)
	Total		203	148	163	514
						(100.0)

Chi-square = 20.602 (p<.01)

Table 5.—Used Ti River by place attachment (recoded categories)

		Place attachment (recoded categories)				
			Low	Medium	High	Total
Used Ti River for recreation	Yes	n	80	93	128	301
		%	(39.4)	(62.4)	(79.0)	(58.6)
	No	n	123	56	34	213
		%	(60.6)	(37.6)	(21.0)	(41.4)
	Total		203	149	162	514 (100.0)

Chi-square = 59.518 (p<.01)

environmental, and 27.22 for economic benefits, $p < .01$, respectively) (see Table 7).

4.0 Conclusions and Implications

Results of this study indicate that place attachment to a potential river trail is related to past trail and river use as well as proximity of residence, but not to years of residency. Those with higher place attachment are more likely to see the potential benefits of the future

river trail. Although little resistance toward the river trail was recorded, it is important for trail developers to continually communicate with residents about plans for the trail, as well as provide clear messages on the trail's benefits to the community as it is developed. Given that place attachment increased with people who were trail users, and those with higher place attachment perceived greater benefits from the trail project, it may be helpful for trail developers to plan special events that would

Table 6.—Place attachment (raw scores) and trail benefits

		Place attachment (raw scores)
Recreational benefits	<i>r</i>	.434**
	<i>n</i>	(511)
Environmental benefits	<i>r</i>	.416**
	<i>n</i>	(511)
Economic benefits	<i>r</i>	.369**
	<i>n</i>	(511)

**Correlation is significant at the .01 level (2-tailed).

bring first-time users to the river, and begin to cultivate a sense of place among them. According to Shamai (1991), place attachment develops on a continuum, with knowledge of and exposure to place being the first steps.

Respondents in the sample had lived in Cortland County a long time. As seen in other studies (McCool & Martin 1994; Smith 2002; Williams et al. 1995), some long-time residents may be resistant to change, especially if it will affect something in their environment. They may want to “keep things the way they are” and not promote a “tourist trap” being developed in their backyards. Other studies have found that newcomers tend to have a more “regional place identity” (Williams, et al. 1995) or a more “conceptual attachment” to place (Ryan 2005) than longtime residents, resulting in a more expansive view of change.

In addition, respondents were more likely to perceive potential recreational and environmental benefits, but were less likely to see economic benefits. It may be worthwhile to provide information to the public on the economic benefits realized by other communities to increase their awareness and support for the trail. By stressing that economic development along the river will be secondary to preserving the integrity of the river and its ecosystem, residents may begin to understand how the river trail will be managed to balance its many benefits.

Although residents do feel attached to the river, there was some evidence that many may take it for granted. Since the research (Moore & Graefe 1994; Smith 2002) shows that people who feel attached to a place or resource are more likely to volunteer to maintain or enhance it, or support it monetarily (Kyle, Absher, & Graefe 2003), it is important to keep people aware and engaged in the Tioughnioga River Trail project through press releases, special events, and other venues.

Lastly, it is important for managers and developers to be sensitive to the differing levels of place attachment and understand that much still needs to be learned about differences across groups, such as gender and ethnicity/race (McAvoy 2002; Virden & Walker 1999). This study did not address such differences, yet Stokowski (2002) reminds us that the “politics of place,” addressing power, access, decision-making, equity, and cultural influence, must become a part of our thinking as we continue to further understand place attachment and its use in recreation resource management.

Table 7.—Place attachment (recoded categories) and trail benefits

Benefit scale	Total (n=511)	Place attachment (recoded categories)			F-value	p-value
		Low (n=198)	Medium (n=150)	High (n=163)		
Recreational benefits	3.27	2.98 ^a	3.34 ^b	3.57 ^c	37.00	.000
Environmental benefits	3.20	2.93 ^a	3.22 ^b	3.50 ^c	31.77	.000
Economic benefits	2.72	2.45 ^a	2.71 ^b	3.05 ^c	27.22	.000

Values are mean scores on a scale ranging from 1=no benefit to 4=great benefit.

Values with different superscripts are significantly different at the .01 level.

5.0 Citations

- Bricker, K., and Kersetter, D. 2000. **Level of specialization and place attachment: An exploratory study of whitewater recreationists.** *Leisure Sciences.* 22: 233-257.
- Godbey, G., Graefe, A., and James, S. 1992. **The benefits of local recreation and park services: A nationwide study of the perceptions of the American public.** Ashburn, VA: National Recreation and Park Association.
- Hammitt, W.E., Backlund, E.A., and Bixler, R.D. 2004. **Past use history and place bonding among avid trout anglers.** In J. Murdy, comp., ed., *Proceedings of the 2003 Northeastern Recreation Research Symposium.* Gen. Tech. Rep. NE-317, pp. 306-312. Newtown Square, PA: USDA, Forest Service, Northeastern Research Station.
- Kyle, G., Bricker, K., Graefe, A., and Wickham, T. 2004. **An examination of recreationists' relationships with activities and settings.** *Leisure Sciences.* 26: 123-142.
- Kyle, G., Absher, J.D., and Graefe, A.R. 2003. **The moderating role of place attachment on the relationship between attitudes toward fees and spending preferences.** *Leisure Sciences.* 25: 33-50.
- Kyle, G., Graefe, A., Manning, R., and Bacon, J. 2003. **An examination of the relationship between leisure activity involvement and place attachment among hikers along the Appalachian Trail.** *Journal of Leisure Research.* 35(3): 249-273.
- Leisure Information Network. 1997. **The benefits catalogue.** Toronto, ON: Canadian Recreation and Park Association
- McAvoy, L. 2002. **American Indians, place meanings, and the Old/New West.** *Journal of Leisure Research.* 34(2): 383-396.
- McCool, S., and Martin, S. 1994. **Community attachment and attitudes toward tourism development.** *Journal of Travel Research.* 32(3): 29-34.
- Moore, R., and Graefe, A. 1994. **Attachments to recreation settings: The case of rail-trail users.** *Leisure Sciences.* 16: 17-31.
- Moore, R., and Scott, D. 2003. **Place attachment and context: Comparing a park and a trail within.** *Forest Science.* 49(6): 877-884.
- Ryan, R. 2005. **Exploring the effects of environmental experience on attachment to urban natural areas.** *Environment and Behavior.* 37(1): 3-42.
- Shamai, S. 1991. **Sense of place: An empirical measurement.** *Geoforum.* 22(3): 347-358.
- Smith, S. 2002. **A community assessment of sense of place and perceived need for nature-based experiences in the Town of Trenton, New York.** Unpublished master's thesis, State University of New York, Cortland, New York.
- Stokowski, P. 2002. **Languages of place and discourses of power: Constructing new senses of place.** *Journal of Leisure Research.* 34(4): 368-382.
- Todd, S., Anderson, L., and 601 graduate students. 2003. **Community input of Cortland County residents in the development of the Tioughnioga River Trail Project.** Unpublished study, State University of New York at Cortland.
- Viriden, R., and Walker, G. 1999. **Ethnic/racial and gender variations among meanings given to, and preferences for, the natural environment.** *Leisure Sciences.* 21: 219-239.
- Warzecha, C.A., and Lime, D.W. 2001. **Place attachment in Canyonlands National Park: Visitors' assessment of setting attributes on the Colorado and Green Rivers.** *Journal of Park and Recreation Administration.* 19(1): 59-78.
- Wickham, T., and Graefe, A. 2002. **Attachments to places and activities: The relationship of psychological constructs to customer satisfaction attributes.** In S. Todd, comp., ed., *Proceedings of the*

2001 Northeastern Recreation Research Symposium, Gen. Tech. Rep. NE-289, pp. 356-364. Newtown Square, PA: USDA, Forest Service, Northeastern Research Station.

Williams, D.R. 2002. **Post-utilitarian forestry: What's place got to do with it?** In Proceedings of the Human Dimensions of Natural Resources in the West Conference, pp. 114-123. Fort Collins, CO: Human Dimensions Unit, College of Natural Resources, Colorado State University.

Williams, D.R., and Vaske, J.J. 2003. **The measurement of place attachment: Validity and generalizability of a psychometric approach.** Forest Science. 49(6): 830-840.

Williams, D.R., McDonald, C., Riden, C., Uysal, M. 1995. **Community attachment, regional identity, and resident attitudes toward tourism.** In Proceedings of the 26th Annual Travel and Tourism Research Association Conference, pp. 424-428. Wheat Ridge, CO: Travel and Tourism Research Association.

Recreational and Commercial Fishing: Experience and Impacts

A DISCRIMINANT ANALYSIS OF SOCIAL AND PSYCHOLOGICAL FACTORS INFLUENCING FISHING PARTICIPATION

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Abstract

Lake Ontario, one of North America's Great Lakes, provides coastal residents of New York State with a sportfishery integral to both local traditions and the economy. Recent and projected declines in the number of state residents fishing Lake Ontario have generated concerns among fishery managers and business owners. In order to identify management and marketing strategies that can be used to increase fishing participation, an understanding of the influence of social and psychological factors on participation during childhood, adolescence, and adulthood is needed. Examination of both existing angler market groups (e.g., males) and market groups with growth potential (e.g., females) could provide further insight into increasing participation. This study identifies the social and psychological factors that influenced fishing participation for a sample of 1,050 Lake Ontario anglers (i.e., 525 males and 525 females). A mail survey, based on the elements included in a wildlife recreation involvement model by Decker et al. (1987), was conducted in 2001. Discriminant analysis was used to quantify the influence of these elements on fishing participation for males and females during childhood, adolescence, and adulthood. Elements identified as strongly influencing fishing participation for both males and females were opportunity, perceived ability, and fishing-related customs during childhood; affiliation, opportunity, and commitment during adolescence; and affiliation and commitment during adulthood. Based on study results, management and marketing strategies for increasing fishing participation were developed.

1.0 Introduction

Fishing is one of the most popular recreational activities in New York State, bringing in an estimated \$3.6 billion in direct and indirect angler impacts from both freshwater and marine fishing in 1999 (TechLaw Inc.

2001). While projected total participation in recreational fishing statewide is anticipated to increase between 1996 and 2005, the number of anglers in the 18- to 44-year-old age class is expected to decrease by an estimated 7.9 percent or 32,049 anglers due to population shifts (Connelly et al. 1999). This decrease in the number of anglers in this age group indicates that by 2025, decreases in older angler age groups will occur as well. Concerns about this projected decrease have been raised by fisheries managers and promoters in New York's Lake Ontario region. Strategies for offsetting this decline are necessary to prevent negative economic impacts and to maintain the cultural importance of fishing as a tradition along New York's Lake Ontario coastline.

Developing marketing and management strategies for offsetting fishing participation by targeting specific angler market groups (e.g., females anglers) may be an effective mechanism for increasing angler participation in the future. Because of the low percentage of anglers in New York State who are female (12% in 1996; Connelly et al. 1997), this market group in particular has potential for expansion. In addition, strategies for maintaining current levels of participation by existing market groups (e.g., male anglers) also need to be identified. However, in order to successfully develop these strategies, the factors that influence fishing participation for these market groups need to be studied.

Decker and others (1987) developed a wildlife-related recreation involvement model that identifies the goals and motivations that influence wildlife-related recreation involvement. Three goals are identified in the model: affiliation, achievement, and appreciation. Motivational elements include support of family and friends, expectations of family and friends, customs (i.e., traditions), values associated with the activity, opportunity, perceived ability, and commitment. The model suggests that involvement in recreational activities changes through time and follows several stages (i.e., process initiation, interest satiation, trial involvement, continued involvement, and involvement maturation). Application of this model to fishing, specifically, could be

useful in identifying the concepts that influence angler participation.

Although the model by Decker and others (1987) identifies stages of involvement in wildlife-related recreation, many studies indicate that individuals may be socialized into recreational activities such as fishing. Mannell and Kleiber (1997) describe “socialization into leisure” as the process by which children “acquire the motives, attitudes, values, and skills that affect their leisure choices, behavior and experiences throughout their lives.” Several studies indicate that children who experience recreational activities with their parents are more likely to participate in these same activities as adults (Hendee 1970; Sofranko and Nolan 1972; Yoesting and Burkhead 1973; Siemer et al. 1989a). As individuals age, the elements influencing their fishing participation are likely to change as involvement becomes more closely linked to the amount of leisure time available. According to Duda and others (1999), anglers indicated that the lack of time they had available for fishing was due to work obligations (69% of responding anglers), family obligations (22%), education-related activities (13%), and other recreational activities or hobbies (9%).

The influence of social and psychological factors related to gender socialization are also likely to be important to participation. Kane (1990) suggests that the leisure socialization process of children is likely influenced by gender roles. While the leisure socialization of male children often focuses on “competence, mastery, and independence, female leisure socialization fosters dependency, restrictive exploration, and limited physical play” (Block 1982). Shaw et al. (1995) found that male adolescents spent significantly more time than female adolescents in sports and other physical activities. In addition, Culp (1998), in her analysis of adolescent females and outdoor recreation, found that adolescent females perceived many barriers to their participation in outdoor recreation activities. Duda et al. (1999) indicates that many females are not fully initiated into fishing until adulthood, causing them to either drop-out of the sport or fish less often than men.

The social and psychological concepts associated with the process of socialization into fishing need to be studied

to identify long-term solutions to increasing fishing participation. In order to identify these concepts, this study examines fishing participation by males and females during childhood, adolescence, and adulthood, up to age 44. The hypotheses to be studied are that specific social and psychological concepts (i.e., opportunity, support from friends and family, expectations from friends and family, value of fishing, perceived fishing ability, customs, commitment, affiliation, achievement, and resource appreciation; adapted from Decker et al. 1987) influence fishing participation for both males and females during childhood, adolescence, and adulthood (i.e., each life stage was studied as a separate hypothesis). Discriminant analyses were used to identify the influence of these factors on the fishing socialization of male and female anglers. Because an equal number of males and females are sampled for this study (in order to enable comparisons between male and female anglers), the actual proportions of female and male anglers that fish in the eastern Lake Ontario region are not represented by the sample. Recall biases may exist since anglers were asked to recall their fishing involvement during adolescence and childhood.

2.0 Methods

2.1 Mail survey design

In the fall of 2000, a random sample of 1050 anglers (525 males and 525 females) was collected from New York State Department of Environmental Conservation fishing license stubs for the 1999 calendar year for Oswego, Jefferson, and Wayne counties along eastern Lake Ontario. Individuals who satisfied all three of the following criteria were included in the sample: (1) gender (i.e., an equivalent number of males and females were selected); (2) age (i.e., individuals were between the ages of 18 and 44 in the 2000 calendar year); and (3) state of residence (i.e., individuals were residents of New York State at the time of their license purchase). An equivalent number of males and females were included in the sample to ensure an adequate number of women in the survey and, thus, enable gender comparisons.

The survey questionnaire included questions on angler demographics, levels of fishing participation, and the social and psychological concepts influencing angler participation during the life stages of childhood (ages

birth to 12; Erikson 1963), adolescence (ages 13 to 17; Erikson 1963), and adulthood (ages 18 to 44; based on the 18- to 44-year-old age class projected to decline by Connelly et al. 1999). Survey questions regarding the social and psychological concepts influencing participation were based on the goals and motivations identified in a wildlife recreation involvement model by Decker and others (1987). Three goals were identified in the model and defined in relation to fishing involvement for the purposes of this study as follows:

- *Affiliation*—The angler's purpose for fishing is to spend time with others.
- *Achievement*—The angler's purpose for fishing is to improve his or her fishing expertise and/or to catch fish of a particular species or size.
- *Appreciation* (henceforth called *resource appreciation*)—The angler's purpose for fishing is to experience and appreciate the natural environment.

Motivational elements identified in the fishing participation model were defined in relation to fishing involvement as follows:

- *Expectations*—The expectations, as perceived by anglers, of friends and relatives concerning the angler's fishing involvement.
- *Support*—The level of support that anglers perceive they receive for their fishing involvement from family and friends.
- *Customs*—The level of importance of fishing to the angler's family traditions and activities.
- *Value of fishing*—The recreational value of fishing to anglers based on the enjoyment that they derive from the sport.
- *Opportunity*—The physical access anglers have to fishing equipment, fishing locations, and free time for fishing.
- *Perceived ability*—The perceptions of anglers concerning their fishing skills and ability to fish.
- *Commitment*—The extent to which anglers are dedicated to fishing.

All questions were short answer, requiring the respondent to check off his or her response, write in a number (e.g.,

age, average number of times fished per year), or use a seven-point Likert scale to respond. The Likert-scale questions were directed at obtaining information on the motivations and goals influencing fishing participation. Respondents were asked to circle the number corresponding with their level of agreement (on a scale from -3 (strong disagreement) to 0 (neutral) to 3 (strong agreement)) to different statements related to these goals and motivations.

Level of participation questions were included for childhood, adolescence, and adulthood, and based on the frequency distributions of responses and three angler participation categories identified by Duda and others (1999): infrequent anglers (i.e., those who fished at least once in one to two of the past 5 years), sporadic anglers (i.e., those who fished at least once in three to four of the past five years), and avid anglers (i.e., those who fished at least once a year). To account for life stages during which respondents did not fish, a "no participation" category was created. Seven levels of participation were identified for each life stage: 0 - no participation; 1 - infrequent (i.e., respondents fished every other year or less); 2 - sporadic (i.e., respondents fished almost every year); 3 - annual-low (i.e., respondents fished on average between 1 and 5 times per year); 4 - annual-medium (i.e., respondents fished on average between 5.1 and 10 times per year); 5 - annual-high (i.e., respondents fished on average between 10.1 and 20 times per year); and 6 - annual-highest (i.e., respondents fished on average over 20 times per year).

2.2 Mail survey implementation

Surveys were mailed to the sample of anglers in January and February of 2001 using a modified Total Design Method (Dillman 1978). The first and third mailings included a cover letter and a copy of the survey; the second and fourth mailings were reminder postcards. An interval of ten days was set between each mailing. In order to identify the existence of non-response bias, a short mail survey was sent by certified mail to 50 non-responding anglers. Follow-up telephone calls were used to contact individuals who did not respond to this mailing. In addition, the dates of return of the long angler surveys were recorded for each respondent in order to identify if response biases were related to participation categories.

2.3 Data analysis

Data from the surveys was entered into SPSS for analysis. Mean levels of angler participation for 25 non-respondents (out of the 50 sampled) and all respondents were compared using a two-independent-sample t-test. Significant differences at $\alpha = 0.05$ were identified. Correlations were calculated between the return dates of surveys and respondents' participation levels to identify potential response biases related to participation.

Likert-scaled variables were grouped into factors representing the motivational and goal elements identified by Decker and others (1987) and adapted for the purposes of this study. The mean value for each group of variables was calculated to generate the value of each factor for respondents. Six discriminant analyses were conducted to identify the influence of these factors (independent variables) on level of participation (dependent variable) at each life stage and for both genders. Individuals who did not fish during specific life stages were not included in the discriminant analyses for those life stages. Eigenvalues were used to identify the amount of variation explained by each significant discriminant function. Wilks' Lambda was used to identify the discriminating ability of discriminant functions (Hair et al. 1998). Potency values, calculated from eigenvalues and discriminant loadings, were used to identify the relative importance of each independent factor to the dependent variable for each life stage (Hair et al. 1998). For the purposes of this study, potency values greater than or equal to 0.200 were considered to have a notable influence on the level of participation. In addition, the percentage of respondents classified correctly according to each discriminant analysis was examined. Percentages greater than 16.7% were considered to be higher than if respondents were grouped by chance alone. The percentage of cross-validated respondents classified correctly using the "leave one out" approach (i.e., each case in the analysis is classified by the discriminant function derived from all cases except for the case being tested) was also identified. The percent of respondents classified correctly was then compared to the percent of cross-validated respondents classified correctly. Differences between these two percentages were noted.

3.0 Results

3.1 Non-response and response bias analyses

Two-independent-sample t-test comparisons between survey respondents and the 25 non-respondents revealed a significant difference ($p \leq 0.05$) between the adult mean levels of participation for respondents (mean participation level = 3.90) and non-respondents (2.88). These data indicate that the mean participation level for the population of anglers residing within the eastern Lake Ontario counties may be lower than that of the sample used in this study. However, because this study examines the influence of social and psychological concepts on continued participation, the sample is likely to provide results that enable greater insight into the concepts influencing higher levels of participation. Correlations used to identify response bias revealed no significant relationships between respondents' age and participation level ($r = 0.010$), and the date the questionnaire was returned and respondents' participation level ($r = -0.080$).

3.2 Demographics

A breakdown of respondents by their demographic characteristics is included in Table 1. The analysis of demographic variables indicates that the sample is largely representative of married Caucasian anglers residing in rural areas and small cities. The homogeneity of this sample is important for increasing the discriminating ability of the discriminant analyses.

3.3 Factors influencing fishing participation during childhood

One function was identified as significant in each of the discriminant analyses conducted for female and male respondents during childhood. A moderate amount of variation is explained in both analyses as shown by moderate eigenvalues. Wilks' Lambda is also moderate for both analyses, indicating a moderate amount of differentiation between participation level groups. The percent of female respondents classified correctly with the discriminant function is 50.5 percent while the percent of males is 48.5 percent (Table 2). These percentages are higher than what would be expected due to chance alone. The percent of cross-validated respondents classified correctly is 22.3 percent for females and 33.1 percent for males. While neither of these percentages is high, both are higher than would be expected due to chance

Table 1.—Demographics of study respondents.

Demographic characteristics	Percentage/Mean
Gender	
Females	51%
Males	49%
Age	Range 18 to 44 Mean 33 yrs.
Education	Mean 13.7 yrs.
Household	
Respondent lives with spouse/significant other and with/without children	78%
Respondents lives with parent(s)/other relatives	8
Respondent lives alone	7
Respondent is a single parent living with/without children	4
Respondent lives in college dorm or with friends	3%
Children	
Respondent has children	66%
Respondent does not have children	34%
Race	
Caucasian	91%
African American	1
Native American	6
Other	2%
Location of residence	
Rural areas or villages under 5,000 in population	61%
Small cities or suburbs between 5,000 and 24,999 in population	22
Medium cities between 25,000 and 99,999 in population	12
Large cities over 100,000 in population	5%

alone. Factors having moderate to high potency values for both genders are perceived ability, opportunity, and custom (i.e., tradition). In addition to these factors, support of family and friends influenced participation by female respondents. For males, the value of fishing was found to be important in determining the level of fishing participation.

3.4 Factors influencing fishing participation during adolescence

One function was identified as significant in the discriminant analyses for female and male respondents during adolescence. A moderate-to-high amount of variation is explained in both analyses as shown by eigenvalues of 0.747 for females and 0.891 for males. Wilks' Lambda is moderate for both analyses, indicating a moderate amount of differentiation between participation levels. The percent of female respondents classified

correctly is 44.9 percent, while the percent of males is 57.9 percent (Table 2). The percent of cross-validated respondents classified correctly is 27.1 percent for females and 42.9 percent for males. Although these percentages are higher than would be expected due to chance alone, the percentage for females is not high. Using potency values, the factors found to influence fishing participation in both males and females during adolescence were affiliation, opportunity, and commitment. In addition, the fishing participation of females was influenced by the support of friends and family, and customs. Male adolescent fishing participation was also influenced by the value of fishing and perceived ability.

3.5 Factors influencing fishing participation during adulthood

Two discriminant functions were identified as significant in the analyses of both female and male respondents. A

Table 2.—Results from the discriminant analyses of level of fishing participation (dependent variable) and social and psychological factors (independent variables) for females and males. Values greater than 0.200 are in bold.

Factor	Female potency values			Male potency values		
	Childhood	Adolescence	Adulthood	Childhood	Adolescence	Adulthood
Affiliation	0.086	0.354	0.458	0.107	0.218	0.240
Resource appreciation	0.000	0.068	0.018	0.021	0.012	0.050
Achievement	0.011	0.020	0.011	0.017	0.006	0.017
Opportunity	0.549	0.243	0.036	0.362	0.457	0.149
Support	0.236	0.317	0.150	0.115	0.142	0.115
Expectations	0.040	0.112	0.181	0.122	0.194	0.387
Custom	0.207	0.252	0.129	0.210	0.108	0.117
Perceived ability	0.384	0.172	0.034	0.726	0.383	0.363
Commitment	0.073	0.415	0.385	0.158	0.231	0.368
Value of fishing	0.069	0.057	0.052	0.236	0.367	0.180
N	103	107	129	130	126	131
Percent of respondents classified correctly	50.5%	44.9%	55.0%	48.5%	57.9%	55.7%
Percent of cross-validated respondents correctly classified	22.3%	27.1%	31.0%	33.1%	42.9%	39.7%

high amount of variation is explained in both analyses as shown by cumulative eigenvalues of 1.098 for females and 1.584 for males. Wilks' Lambda is low for the first function for female respondents and moderate for the second, indicating a high and a moderate amount of differentiation, respectively, between participation level groups. Wilks' Lambda is low for the first function of male respondents indicating a high degree of differentiation between groups, and moderate for the second function (indicating moderate differentiation). The percent of female respondents classified correctly is 55.0 percent while the percent of males is 55.70 percent (Table 2), both higher than due to chance alone. The percent of cross-validated respondents classified correctly is 31.00 percent for females and 39.70 percent for males, both higher than would be expected due to chance alone. Using potency values, the factors with the greatest influence on fishing participation for both genders are affiliation and commitment; participation by male respondents is also strongly influenced by the expectations of family and friends and perceived ability.

3.6 Summarized results by gender

Comparison of potency values between discriminant analyses provides an indication of the changes in the influence of factors on participation level between childhood, adolescence, and adulthood for both genders. For example, perceived ability for both females and males appears to decline in influence on participation between childhood and adulthood (Table 2). Opportunity likewise seems to decline for females while, for males, it appears to increase during adolescence and then decline in adulthood. Support and custom appear to most influence female participation during childhood and adolescence. Custom most influences male participation during childhood, while support has a slight to negligible influence on male participation during all life stages. While the influence of the value of fishing on female participation during all life stages is slight to negligible, the value of fishing does appear to influence male participation during all life stages. Expectations most influence male participation during adolescence and adulthood, but only slightly influence female adult

participation. Affiliation and commitment most influence both male and female participation during adolescence and adulthood.

4.0 Discussion

The results of the discriminant analyses indicate that many of the goal and motivational elements adapted from Decker and others (1987) influence fishing participation, and that the influence of these elements on participation changes throughout the course of an individual's life. For example, during childhood, opportunity, custom, and perceived ability were identified as the most important factors (based on their relatively high potency values; Table 2), influencing participation by both males and females. The relationship between opportunity and participation seems clear: the greater the opportunity a child has to fish, the more frequently the child will fish. As children participate more frequently, their skills at fishing are likely to improve, increasing their perceived ability. If children perceive their fishing abilities to be high, they will be more likely to enjoy the sport of fishing and to want to participate. Custom may encourage increased participation by acting as a type of tradition-based expectation (e.g., my father's father fished, my father fished, so I fish). Families may expect their children to identify with traditional activities such as fishing and to uphold that heritage by continuing to fish. For female respondents, support also influenced fishing participation during childhood. The support of family and friends may be particularly important in increasing participation among female children because female children may be either less interested in fishing alone or not permitted to fish by themselves (a significantly lower proportion of female respondents (27%) than male respondents (48%) fished by themselves as children ($p \leq 0.05$; Kuehn 2003)). For male respondents, the value of fishing as a sport was an important influence during childhood. The enjoyment males derive from the sporting aspects of fishing at this stage in their lives likely motivates them to seek out additional fishing experiences, thus increasing participation. This search for new fishing experiences may also explain why male respondents fished for a greater diversity of fish species than females during childhood (i.e., males fished for an average of 4.58 species during childhood while females fished for an average of 3.35 species, $p \leq 0.05$; Kuehn 2003). Female

respondents, who had a low potency value for the value of fishing, may instead be motivated by other aspects of fishing such as spending time with their family or participating in other recreational activities during fishing trips (e.g., camping).

During adolescence, the factors found to influence participation greatly in both male and female respondents were opportunity, commitment, and affiliation. Opportunity during adolescence, as discussed for childhood, directly influences how often an individual is able to fish. The more frequently individuals are able to participate in fishing, the more likely that their commitment to fishing will increase. The identification of affiliation as an important influence on adolescent participation but not on childhood participation indicates that during adolescence, anglers may begin to actively seek out others with whom they can fish. The participation of female respondents in particular was influenced to a greater extent by affiliation than was the participation of males. Since a much lower percentage of females than males fish in New York State, female participation may be more closely linked to their ability to find a fishing partner. The strong influence of the support of family and friends on female fishing participation during adolescence further indicates that social connections are an important component of fishing to females. Male participation during adolescence may be less influenced by the support of others, a concept supported by the fact that a significantly larger percentage of males than females fish by themselves (Kuehn 2003). Although perceived ability had only a slight influence on the fishing participation of female respondents during adolescence, it influenced male participation greatly, as shown by the high potency value for perceived ability for males. In addition, the strong influence of the value of fishing on participation by males indicates that males may be more focused on the sporting aspects of fishing and the development of fishing skills during adolescence than are females.

During adulthood, the two factors influencing fishing participation for both males and females were affiliation and commitment. Affiliation remains a greater influence on female fishing participation than on male participation, indicating that the social support systems

related to fishing that female anglers develop during childhood and adolescence continue into adulthood. In contrast, the participation of adult male respondents was strongly influenced by perceived ability, a factor that barely influenced female participation (as indicated by a potency value of 0.034). These data suggest that female participation may be most influenced by the social aspects of fishing, while male participation is most influenced by both the social and sporting aspects of fishing. It seems likely that the importance of these social and sport-related aspects of fishing to both males and females leads to a strong commitment to the sport.

5.0 Management Recommendations

The elements included in the fishing participation model adapted from Decker and others (1987) appear to work well in identifying potential influences on fishing participation. In order to identify management recommendations for this model as a whole, the influence of each individual element on fishing participation needs to be considered. Knowledge of these elements can be used to identify how to increase fishing participation at each life stage. During childhood, when opportunity and perceived ability strongly influence fishing participation for both males and females, strategies to increase access to fishing (i.e., both to equipment and location) and focus on skill development need to be implemented (e.g., creating new access areas or promoting existing ones). Making fishing equipment available to children through fishing equipment loaner programs at parks, campgrounds, and other areas frequented by children could also boost participation in the sport. Because of the importance of skill development on childhood fishing participation, parents should be encouraged to bring their children fishing at locations that enable their children to easily catch fish (e.g., panfishing ponds). Skill development could also be enhanced through the inclusion of outdoor/fishing skill development courses in school curriculums, and by including or enhancing fishing skill development activities in youth organizations. The importance of support by friends and family for female children indicates that strategies for increasing participation by children need to focus on parental fishing involvement as well. Educating parents about how their support affects their children's fishing participation could be useful for encouraging parents to

take their children fishing more often. Creating family fishing events could be an effective strategy for increasing family fishing opportunities.

During adolescence, when affiliation and opportunity were identified as strongly influencing fishing participation in respondents, programs designed to increase fishing participation should provide social interaction as well as increased fishing opportunities. Because only an estimated 120 percent of anglers in New York State were females in 1996 (Connelly et al. 1997), adolescent females in particular may have difficulty finding peers with whom they can fish. Efforts to organize outdoor activity groups and social events such as fishing derbies and teen retreat weekends may help maintain female fishing involvement during this life stage and may be equally effective for males. Including fishing and other outdoor skills as part of physical education curriculums in schools can also be useful as maintaining fishing participation during adolescence.

During adulthood, the social linkages both males and females developed related to fishing during adolescence continue to influence their participation, as shown by the large influence of affiliation on adult participation. With less time available for recreational activities because of work and family obligations, many male and female adults seek recreational activities in which they can participate with family and friends. Promoting fishing as a social activity can be effective at attracting these individuals. Holding fishing activities that encourage social interaction such as family festivals that include fishing events can help increase participation by both adults and children.

6.0 Conclusion

The hypotheses studied are that specific social and psychological concepts influence the level of fishing participation for both males and females during childhood, adolescence, and adulthood. The results indicate that most of the factors studied influenced the level of fishing participation during at least one life stage, and that the influence of each factor changed with life stage and differed by gender. Thus, in order to truly understand fishing involvement, one must consider how individuals of both genders are socialized into fishing

during each life stage. If increasing the number of female anglers is a priority for fisheries managers and promoters, then strategies need to be taken which focus on the highly social nature of female fishing activity. Likewise, to increase male fishing participation, strategies that focus both on the sporting and social aspects of fishing need to be identified. Recognizing and promoting the importance of fishing as a tradition can also increase the awareness of individuals about the heritage-based importance of fishing.

7.0 Citations

- Block, J.H. 1982. **Socialization influences on personality development in males and females.** In M. M. Parks, ed., *APA Master Lecture Series on Issues of Sex and Gender in Psychology*. Washington, D. C: American Psychological Association.
- Connelly, N.A., T.L. Brown, and B. A. Knuth. 1999. **New York Statewide Angler Survey. Report 5: Insights Into the Future of Fishing in New York.** Albany, NY: New York State Department of Environmental Conservation.
- Connelly, N.A., T.L. Brown, and B. A Knuth. 1997. **New York Statewide Angler Survey. Report 1: Angler Effort and Expenditures.** Albany, NY: New York State Department of Environmental Conservation.
- Culp, R.H. 1998. **Adolescent girls and outdoor recreation: a case study examining constraints and effective programming.** *Journal of Leisure Research.* 30(3): 356-379.
- Decker, D.T., T.L. Brown, B.L. Driver, and P.J. Brown. 1987. **Theoretical developments in assessing social values of wildlife: toward a comprehensive understanding of wildlife recreation involvement.** In D.J. Decker and G.R. Goff (eds.), *Valuing Wildlife: Economic and Social Perspectives*. Boulder, CO: Westview Press.
- Dillman, D. 1978. **Mail and Telephone Surveys: The Total Design Method.** New York: John Wiley.
- Duda, M.D., V.L. Wise, W. Testerman, A. Lanier, S.J. Bissell, and P. Wang. 1999. **The Future of Fishing in the United States: Assessment of Needs to Increase Sportfishing Participation.** Harrisonburg, VA: Responsive Management National Office.
- Erikson, E. 1963. **Childhood and Society.** New York: W. W. Norton and Co.
- Hair, J.F., R.E. Anderson, R.L. Tatham, and W.C. Black. 1998. **Multivariate Data Analysis. 5th ed.** Upper Saddle River, NJ: Prentice Hall.
- Hendee, J.C. 1970. **Rural-urban differences reflected in outdoor recreation participation.** *Journal of Leisure Research.* 1: 333-341.
- Kane, M.J. 1990. **Female involvement in physical recreation—gender roles as a constraint.** *Journal of Physical Education, Recreation, and Dance.* 61(1): 52-56.
- Kuehn, D. 2003. **The influences of gender on fishing participation in New York's Eastern Lake Ontario counties.** *Proceedings of the 2002 Northeastern Recreation Research Symposium.* USDA Forest Service Gen. Tech. Rep. NE-302. April 13-16, 2002. Bolton Landing, NY. pp 271-277.
- Kuehn, D. 2002. **The Social and Psychological Factors that Influence Fishing Participation: A Study of Gender and Life Stage.** Ph. D. Dissertation. Syracuse, NY: State University of New York College of Environmental Science and Forestry.
- Mannell, R.C., and D.A. Kleiber. 1997. **A Social Psychology of Leisure.** State College, PA: Venture Publishing, Inc.
- Shaw, S.M., D.A. Kleiber, L.L. Caldwell. 1995. **Leisure and identity formation in male and female adolescents: a preliminary examination.** *Journal of Leisure Research.* 27(3): 245-263.

- Siemer, W.F., T.L. Brown, and D.J. Decker. 1989a. **An Exploratory Study of Lake Ontario's Boating Salmonid Anglers: Implications for Research on Fishing Involvement.** Human Dimensions Research Unit Series No. 89-4. Ithaca: Cornell University.
- Siemer, W.F., T.L. Brown, and D.J. Decker. 1989b. **Fishing Motivations and Involvement of Boating Salmonid Anglers on Lake Ontario.** Human Dimensions Research Unit Series No. 89-6. Ithaca: Cornell University.
- Sofranko, A.J., and M.F. Nolan. 1972. **Early life experiences and adult sports participation.** Journal of Leisure Research. 4(1): 6-18.
- TechLaw Inc. 2001. **The Economic Contribution of the Sportfishing, Commercial Fishing, and Seafood Industries to New York State.** Stony Brook, NY: New York Sea Grant.
- Yoesting, D.R., and D.L. Burkhead. 1973. **Significance of childhood recreation experience on adult leisure behavior: and exploratory analysis.** Journal of Leisure Research. 1(4): 365-372.

FISHING HERITAGE FESTIVALS, TOURISM, AND COMMUNITY DEVELOPMENT IN THE GULF OF MAINE

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Abstract

No formal studies have been conducted previously to assess the social and economic impact of fishing heritage events on Gulf of Maine fishing communities. This paper documents how fishing communities in the Gulf of Maine celebrate a centuries-old yet declining traditional maritime way of life. In February 2005, a telephone survey of 13 gulf fishing communities was conducted as a first step toward understanding the social and cultural significance of fishing heritage festivals. The respondents' answers provide a glimpse into the symbolic, religious, and socio-cultural significance of fishing-related festivals and ceremonies. The survey qualifies the economic impact or demand for fishing heritage tourism through attendance estimates and records, and documents the conflicts that have resulted between heritage tourism and fishing communities. This paper provides planners and policy-makers with new information about public interests in fishing heritage and an indication of the potential socio-economic impacts of heritage event development on fishing communities in the Gulf of Maine.

1.0 Introduction

The marine environment of the Gulf of Maine is unique. The gulf is a semi-enclosed sea defined by underwater banks to the south and east, and to the north and west by the coastlines of Massachusetts, New Hampshire, Maine, and the Canadian provinces of New Brunswick and Nova Scotia. The gulf consists of some 36,000 square miles of ocean and 7,500 miles of shoreline (GoMOOS 2003). The coast is punctuated further with approximately

5,000 islands. Its coastal morphology ranges from shallow estuaries and broad, sandy beaches to deep, penetrating rivers and high-cliffed shorelines (Shipp et al. 1985). The underwater landscape of the gulf is as variable as its uplands, consisting of a variety of submerged banks, basins, and ridges. Its waters are home to a wealth of fish species including cod, haddock, mackerel, herring, salmon, and lobster, and marine mammals such as baleen whales and harbor and gray seals.

The wide-ranging environments and resources of the gulf have also resulted in an equally wide-ranging number of technological innovations used by people to settle along the coast and harness its natural resources. The initial peopling of the Gulf of Maine began approximately 12,000 years ago. It is only in the last 500 years, however, that the region witnessed extensive coastal settlement and development, and massive exploitation of its fisheries. European explorers in the 16th and 17th centuries recognized the region for its extensive forests, fine farming land, protected harbors, penetrating rivers, but especially the abundant fish and fishing banks. In the centuries following its initial discovery by foreign explorers, ships would be used to facilitate extensive New World colonization from Europe to fish and exploit the region's vast terrestrial natural resources, and to conduct productive local and long-distance trade. Due to the galleons, shallows, sloops, and schooners that plied its waters, and the resulting maritime culture that developed on its shores, the Gulf of Maine has inherited one of the greatest maritime histories of the United States.

The gulf continues to serve as a fish basket for the world, but 500 years of over-fishing may have irreversibly harmed the gulf's fish populations, which have declined precipitously in the last century (Millennium Ecosystem Assessment 2005; U.S. Commission on Ocean Policy 2004). Because fish stocks in the Gulf of Maine are so severely depleted today, traditional maritime-oriented ways of life are also in decline, changing the face and structure of many coastal communities. In particular, established fishing communities are forced to adapt to new social, economic, and environmental conditions

in part because of a lack of marine resources from over-fishing and pollution, and increasingly stringent fishery management regulations. These communities are also being supplemented with new technology-based industries and tourism, and are heavily impacted by coastal development, gentrification, and the emergence of retirement communities.

In recognition of the dramatic collapse of fish populations in the Gulf of Maine and the resulting socio-economic crisis faced by the region's fishing communities, this paper examines how cultural heritage may be used by planners and developers to capitalize upon these communities' existing social and cultural capital, and how investment in this capital may provide fishing-dependent communities with one option for economic diversification. The use of festivals as a venue to improve understanding and cooperation within communities and among the fishing industry, fisheries managers and government, marine conservation groups, and the general public is also discussed. Finally, this paper proffers that the consideration of socio-cultural values is an essential step in guiding festival development in order to maintain and build upon existing social and cultural capital, and consequently provide economic benefit through heritage tourism.

2.0 Public Interest in Cultural Heritage

Although it is difficult to measure the worth of cultural heritage in dollars and cents, national studies show that there is a growing demand for heritage-based tourism among travelers in the United States. Surveys by the Travel Industry Association of America (TIA) document a significant demand for cultural experiences by travelers in 2003. Of the 146.4 million adult travelers in the U.S., 118.1 million (or 80.7%) participated in a cultural or historical activity or event (TIA 2003: 5). Of this group, 41 percent or 59.5 million attended a cultural heritage fair or festival.

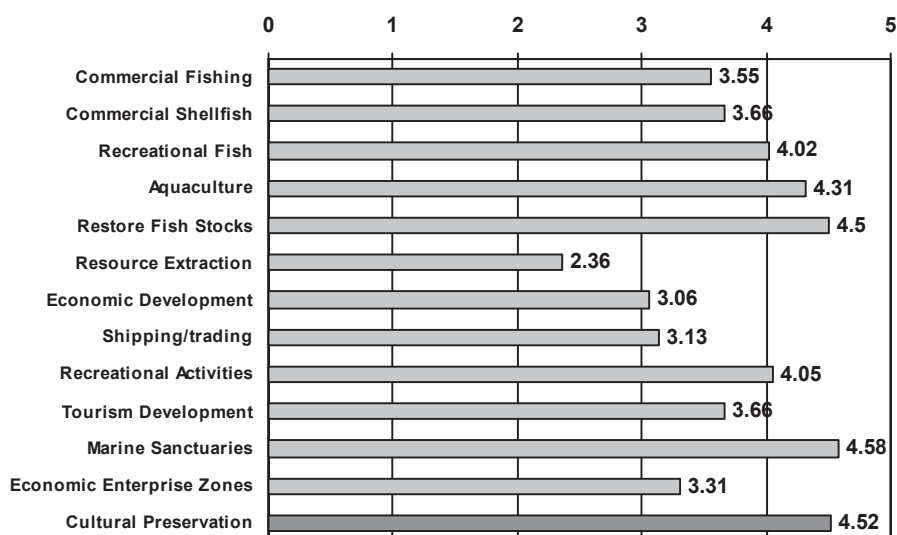


Figure 1.—NH seacoast survey participants were presented with a list of 13 options for future uses of marine resources in the Gulf of Maine. Participants were asked how they felt about each activity based on a 5-step Likert-scale (1 = extremely bad, 2 = somewhat bad, 3 = neither bad nor good, 4 = somewhat good, 5 = extremely good). (Robertson et al. 2005)

The growing trend and interest in cultural heritage and in attending heritage festivals and events is apparent in the Gulf of Maine region. Surveys of tourists, residents, and fishermen along the New Hampshire seacoast have revealed significant interest in fishing history and culture (Fig. 1) (Robertson et al. 2005). Collectively, when asked whether fishing heritage should be preserved, those surveyed responded overwhelmingly in favor of heritage preservation (75% agree, 25% unsure/disagree) (Robertson et al. 2005; Tango-Lowy and Robertson 1999). Additionally, a majority of survey respondents ranked their interest in marine environmental and fishing history museums (ca. 70%) and cultural events or festivals (74%) above all other educational and recreational initiatives, except for whale-watching (82%) (Robertson et al. 2005). Seacoast fishermen surveyed also revealed that historical/cultural preservation was more important to them than restoration of wild fish stocks, indicating a stronger concern for preservation of a traditional way of life than for preservation of a food source.

Although there is a high level of interest in fishing heritage and cultural events among the seacoast survey's respondents, only 5 percent indicated that they attended cultural events more than five times in a year. However,

this low figure can also be interpreted to mean that few opportunities exist for people in New Hampshire to participate in cultural festivals and events. The preference for these events in the New Hampshire, as well as the demand exhibited through attendance levels to Gulf of Maine fishing heritage festivals as demonstrated by the present research project, shows not only a strong measure of interest in fishing heritage preservation, but also suggests that cultural events are a viable and sustainable economic development activity for Gulf of Maine communities.

3.0 Methods

In February 2005, telephone interviews were conducted by the authors with event sponsors and organizers of Gulf of Maine fishing festivals. Subjects were asked about when, where, and how many years the festival has been celebrated, levels of attendance, activities, sponsors, and the involvement of fishermen and fishing families in the festivals and ceremonies. Interviewees were also asked to address what they believe the festival means to their community socially, culturally, and economically. The estimates of attendance established the level of demand for the festival within the local community as well as participation from outside the community. In most cases, information offered by interviewees broadly qualified the importance of the festival in economic terms to local businesses through increased visitation.

4.0 Survey Results

This study identified 13 towns and cities with fishing heritage or seafood festival events and ceremonies (Fig. 2, Table 1). Although it is very likely that other local festivals exist, the festivals surveyed represent those with the most visibility, public participation and sponsorship. Festivals in Rhode Island and Connecticut are also included in this study, as the fishermen in these states work primarily in the gulf and within the gulf's fishing industry and infrastructure. Festivals are typically held during the summer months. The oldest tradition is the Fishermen's Feast celebrated in the North End of Boston, MA, which began officially in 1911. Although many fishing-related ceremonies are considerably older, particularly those with religious or spiritual influence, most festivals in the region were not officially established and organized until after the mid-20th century.



Figure 2.—Map of 13 communities surveyed that are dependent upon Gulf of Maine fisheries and have annual fishing heritage festivals.

4.1 Attendance

The attendance at fishing festivals and ceremonies in urban areas is approximately 15,000-30,000. Festivals in towns and rural communities (defined here as towns with a population less than 5,000) draw approximately 1,000-3,000 participants (Table 2). Participants in festivals and ceremonies include primarily local cultural or ethnic groups and families that have strong generational ties to fishing and related maritime traditions or industries. Other participants include advocacy groups such as Fishermen's Wives Associations and Fishing Cooperatives, local and state government, local businesses, Chambers of Commerce, and tourists. Surprisingly, in many instances, fishermen tend to be absent from the festivals because they are at sea fishing.

4.2 "Fishing" Festivals

The cultural events surveyed in this project can be broadly categorized into "Fishing" and "Seafood" Festivals. "Fishing Festivals" are imbedded with religious and spiritual values and incorporate ethnic and cultural qualities. These festivals are influenced primarily by Portuguese, Madeiran, Cape Verdean, Sicilian or mainland Italian cultural heritage, and the religious

Table 1.—Primary fishing cultural events in the Gulf of Maine.

LOCATION	EVENT	YEARS
Boston, MA	Fishermen's Feast	1911-2005
Gloucester, MA	St Peter's Fiesta	1931-2005
Rockland, ME	Maine Lobster Festival	1947-2005
Provincetown, MA	Portuguese Fishermen Festival	1947-2005
Stonington, CT	Blessing of the Fleet	1954-2005
New Bedford, MA	Summerfest	1969-2003
New Bedford, MA	Working Waterfront Festival	2004-2005
Boothbay Harbor, ME	Fishermen's Festival	1973-2005
Point Judith, RI	Blessing of the Fleet	1976-2005
Hampton, NH	Hampton Beach Seafood Festival	1988-2005
Stonington/Deer Isle, ME	Fisherman's Day	1989-2005
Eastport, ME	Eastport Salmon Festival	1991-2005
Gloucester, MA	Seafood Festival	1993-2004
Chatham, MA	Chatham Maritime Festival	2003-2005
Portland, ME	Blessing of the Fleet	unknown

Table 2.—Estimated attendance at fishing cultural events.

LOCATION	FESTIVAL	POP. (2000)	ATTENDANCE
Boston, MA	Fishermen's Feast	589,141	100-200,000
Hampton, NH	Hampton Beach Seafood Festival	14,937	100,000
Rockland, ME	Maine Lobster Festival	7,609	100,000
Gloucester, MA	St. Peter's Fiesta	30,273	50-60,000
New Bedford, MA	Working Waterfront Festival	93,768	30,000
Point Judith/Galilee, RI	Blessing of the Fleet	14,985	15-30,000
Provincetown, MA	Portuguese Fishermen Festival	3,431	20,000
Stonington, CT	Blessing of the Fleet	1,100	5,000
Stonington/Deer Isle, ME	Fisherman's Day	3,028	2,000
Boothbay Harbor, ME	Fishermen's Festival	5,294	1,500-2,000
Chatham, MA	Chatham Maritime Festival	6,625	1,500
Eastport, ME	Eastport Salmon Festival	1,640	900-1,000
Portland, ME	Blessing of the Fleet	64,249	unknown

aspects of the festivals are based in Catholicism. The religious ceremonies and rituals associated with these cultures were brought to the region by immigrant families and fishermen. The Fishermen's Feast of Boston, for example, is associated with a tradition called the 'Madonna del Soccorso', which originated in the 16th century in Sciacca, Sicily and takes place every year on the Day of the Assumption (August 15). Fishing

festivals are typically organized and led by members of the local community rather than local government or business organizations. These festivals often incorporate a religious march or ceremony that includes a "Blessing of the Fleet," an event where Catholic bishops or priests bless fishing vessels in order to provide divine protection and ensure a prosperous fishing season. Other fishing communities that are of northern European descent

or “Yankee” tend not to have religious ceremonies, but do celebrate fishing heritage with boat parades rather than fleet blessings. A balance of parade and blessing is achieved in some cases, as for example in Provincetown, MA, in what is described as a very colorful event shared by the fishermen, artisans and the gay community.

These festivals also tend to bring families and individuals that have left the region back into the community. In addition to Blessing of the Fleet ceremonies, the festivals often involve unique activities and fundraising events such as pageants (e.g., “Daughter of the Ocean,” “Son of a Beach,” “Captain Eelgrass” and “Goddess of the Sea”), parades, boat races, arts and crafts displays, and oddities such as the Greasy Pole Contest in Gloucester, MA and the Codfish Relay Race in Stonington, ME.

4.3 “Seafood” Festivals

“Seafood Festivals” are usually organized by Chambers of Commerce and focus on maximizing economic benefits to the local community and businesses. These festivals typically have a corporate sponsor, and feature a variety of waterfront or seaside activities and entertainment. The fishing and local ethnic groups tend not to be represented or participate in these festivals. Seafood festivals often have more effective event marketing and public relations representation, which may account for greater levels of attendance. Seafood Festivals such as the Hampton Beach Seafood Festival (est. annual attendance of 100,000), for example, provide a wide array of activities and entertainment including live music, fireworks, sky divers, a 5K road race, and culinary demonstrations.

4.4 Foodways

Foodways are an important and essential part of Fishing and Seafood Festivals. Both types of events showcase the diversity of local fish harvests as well as display new uses of underutilized fisheries. The New Fish Festival, held a day prior to St. Peter’s Festival in Gloucester, MA, specifically offers culinary demonstrations and menus of underutilized fish, such as skate, by local restaurateurs. However, the focus is usually on traditional, regional, and ethnically prepared seafood dishes. Portuguese and Italian recipes and foods dominate festivals including recipes such as *atum* (marinated tuna) and *bacalhau* (salted or dried codfish flavored with spices, garlic, parsley, and

onions). Classic New England seafood recipes such as fried, broiled, and steamed haddock, mussels, clams, and lobster are also typically served. Festival food is not only a primary means of social interaction that affirms ethnic and cultural identity, but also brings together diverse groups that traditionally do not interact or “sit at the same table.”

4.5 Conflicts and Issues

There can be divisiveness between the fishing community and other local groups and tourists over festivals. For example, in 2001 Portland, Maine discontinued the Blessing of the Fleet ceremony because of the carnival-like atmosphere that surrounded the event. Portland fishermen still conduct a Blessing of the Fleet, but it is a more solemn and somewhat private ceremony. Events that promote aquaculture, such as the Eastport Salmon Festival and the Wellfleet OysterFest, have also drawn criticism from sport as well as commercial fishermen because of the perceived and potential negative impact of aquaculture on environmental quality. Though not necessarily indicative of conflicting interests, on Fisherman’s Day in Stonington, ME, locals clearly distinguish themselves from “strappers” (i.e., camera-carrying tourists).

Fishermen, besides their occasional appearances to land fish catches, are usually absent from festivals. With the exception of the New Bedford Working Waterfront and Chatham Maritime Festivals, rarely do fishermen interact with the public to tell stories, describe or show their way of life, or discuss fishery management issues. Most festivals are not used by fishermen as a public relations opportunity. Members of wives associations believe that the festivals are not a time to delve into fishery “issues” and said that fishermen were unlikely to share information because they are protective of their trade secrets. Festivals are also typically held during what is now a very short fishing season and fishermen opt to spend their time at sea. There also is reluctance on the part of fishermen to interact with the public, suggesting that public relations is better left to advocacy groups such as those comprised of fishermen’s wives. However, there is a trend toward improving appreciation of fishing heritage. For example, the relatively new Chatham Maritime Festival (est. 2004)

focuses in part on providing an “educational setting centered on the lives, skills and traditions of the fishing industry and preserving natural resources” (<<http://www.chathammaritimefestival.org/>>). It also tries to schedule the festival so that fishermen can participate in activities and events.

4.6 Trend Toward Fishing Heritage Tourism and Education

The trend of engaging the public in the appreciation of fishing cultural heritage through festivals in New England is growing. Festivals, such as the Working Waterfront Festival in New Bedford, MA, are now sponsored or directed by Chambers of Commerce, government agencies, and non-profit and community organizations such as the Lions Club or Fishermen’s Wives Association. The New Bedford festival, which began in 2004, is held in one of the region’s only national urban waterfront parks. The new event focuses to a greater extent than its predecessor, Summerfest (est. 1969), on educating the public about the fishing community, its history, and the area’s cultural heritage. A considerable investment has also been made in authenticating and beautifying the waterfront area. In this way, the New Bedford festival intends to strengthen community identity and pride through development of the maritime landscape and built heritage. Moreover, the event showcases local businesses and artists providing significant economic benefit to the local community.

Event organizers are marketing the festival to tourists seeking authentic cultural and learning experiences. The organizers surveyed in this study indicate that tourists are attracted to waterfront areas where fishing piers and associated landing activities take place and where they can experience or watch a way of life first-hand. For example, in Chatham, MA, tourists can view fishing activities from a platform, or in Plymouth, MA, tourists can walk the pier or watch fishermen from the windows of waterfront restaurants. The Maine Lobster Festival in Rockland, ME, though not focused on cultural heritage per se, is noted in popular publications such as *Gourmet Magazine* which describe witnessing fish landings and the work around the waterfront as a genuine cultural experience.

5.0 Rockland Lobster Festival: An Example of Sustainable Economic Development

The port of Rockland is located in the upper Midcoast region of Maine. The population of Rockland in 2000 was 7,609 (U.S. Census). Employment estimates of fishermen in Rockland vary from 40 to 250, but an additional 2,500 fishermen are believed to live within Knox County (Hall-Arber et al. 2001: 360). The region has a high degree of fishing dependency, second only to Downeast Maine. Rockland was once one of the region’s most important groundfishing ports, but because of deteriorating groundfish populations and subsequent strict regulations, the town’s fishermen have shifted to herring and lobster fishing (Hall-Arber et al. 2001: 339). Rockland is an important community for marketing and shipping of these fish products.

Tourism and service-based industries have grown considerably in Rockland in the last decade, and the Rockland Lobster Festival appears to be one important factor in the growth of the tourism sector. The diversification of such ‘basic’ industries in the region has had positive economic results, but the industry shift toward tourism has also resulted in somewhat negative social impacts from gentrification, conflict between fishermen, tourists, retirees and retail businesses, and competition for the town’s waterfront space. In a study by the MIT Sea Grant College Program that measured the degree of gentrification in coastal communities, Rockland ranked fifth among 36 New England fishing communities surveyed (Hall-Arber et al. 2001: 339).

No formal studies have been conducted to fully assess the social, cultural, and economic impact of “Fishing” heritage festivals on Gulf of Maine communities; however, the Rockland event is an example of a successful “Seafood” festival and sustainable rural economic development activity. An interview with the marketing director of the non-profit Rockland Festival Corporation, which plans the event, provided detailed information about public involvement, attendance and economic impact of the lobster festival. Approximately 10,000 people attended the festival in 1947. In 2004, attendance was estimated at 100,000. The Rockland Festival now receives the assistance of over 1,000 community

volunteers. Rockland is one of the few places that charges admission and accounts partially for the amounts of seafood sold during the festival; therefore, the direct economic impact to the community can be roughly estimated. In 2004, the Rockland Lobster Festival sold 69,600 admission tickets for \$7-10, resulting in a conservative gross estimate of \$487,200 in ticket sales. During the 4-day festival, 12 tons or 24,000 pounds of lobster were sold as well as several tons of shellfish and finfish. At a conservative retail estimate of \$6.00/pound for lobster, the income from lobster sales is estimated at \$144,000. The Lobster Festival also sells souvenirs (e.g., t-shirts, coffee mugs, etc.) and tickets to other concerts and events organized by the festival committee. Not including the indirect economic benefit the festival provides to local businesses, the festival's gross receipts are estimated at approximately \$1 million. In the last 5 years, significant proceeds have resulted and over \$225,000 has been donated back to the community of Rockland in the form of new emergency vehicles, tourism facilities and park renovations.

Rockland calls itself the "Lobster Capital of the World," and because of its major role in the landing, marketing, and trans-shipment of herring and lobster, it is an "essential provider" to the Gulf of Maine fishing industry (Hall-Arber et al. 2001: 357). The MIT Sea Grant College survey of Rockland revealed that many residents believe that the town is moving toward a tourist-based economy, yet others believe that when fish stocks rebound the town will again be dominated by the fishing industry (Hall-Arber et al. 2001: 357). The health of these two basic industries in Rockland is in fact strongly related, if not dependent upon the success of the other. Because Rockland has other natural assets and recreational resources, tourism will likely continue even if fishing stops. Likewise, rebuilt fish stocks would allow Rockland to thrive as an essential provider of fish products and limit the town's increasing dependence on tourism. The lack of lobster and other fish products, however, would certainly have significant consequences for tourism and the Rockland Lobster Festival.

Rockland has not made significant investment in the town's physical cultural capital, such as the preservation of its historic waterfront. Nor has it developed

educational and fishing heritage programs similar to those underway at cultural events such as the New Bedford Working Waterfront Festival. Although there is already significant demand for the Rockland Lobster Festival, by capitalizing upon the town's fishing history, preserving the historic and working waterfront, and improving public education, Rockland can perhaps be assured greater and continued economic success and simultaneously strengthen community pride and build social capital through appreciation of fishing heritage.

6.0 Social and Cultural Value of Heritage Festivals

Coastal communities have not fully developed their cultural heritage as a means of providing added income by fostering the general public's and tourist's interest in heritage conservation and desire for authentic and unique cultural experiences. What is certain, and revealed by community citizens, visitors of the New England seacoast, and fishermen is that cultural heritage is highly valued. The values individuals place on cultural heritage preservation, whether the preservation of a way of life, the built heritage, archaeological resources, or a festival or ceremony, can be broadly categorized in the following manner (Table 3).

If heritage and fishing festivals are to be utilized in the promotion of cultural tourism, government and economic and community development organizations should consider stakeholders' interests in these values. Although social and cultural values are difficult to quantify, interviews with community members, as shown in this study, can help to qualify the importance of values to a community. Unchecked tourism without considering stakeholder interests may result in the deterioration of the very values that make a region or community attractive for cultural heritage tourism.

7.0 Conclusion and Recommendations

This research paper has shown that: 1) there is significant public interest in the preservation of cultural heritage and in learning about the fishing history and industries of the Gulf of Maine; 2) fishing communities can and do benefit socially and economically from cultural events such as fishing festivals; and 3) community and stakeholder value assessments are an important step in

Table 3.—Social and cultural values associated with cultural heritage (Alcamo and Bennett 2003; Throsby 2002).

VALUE	DESCRIPTION
Recreation and Tourism	Relaxation, leisure activities.
Sense of Place, Identity, Community Pride	Sense of belonging and community or cultural affiliation. Comfort, safety, and familiarity afforded by association with community as well as recognizable structures and landscapes in human and natural environments.
Spiritualism, Religion	Enlightenment, self-reflection, continuity and understanding of place in the universe.
Social and Civic Relations	Meetings, interactions, communication, and celebration with others at communal structures, places, and sites.
Aesthetics, Authenticity	Beauty, harmony, natural setting, historical and cultural integrity. Genuine experiences and connections with culture and environment.
Symbolism, Artistic Inspiration	Places, sites, monuments and objects that convey meaning and inspiration. Influences folklore and art, and formation of national or cultural symbols.
Research, Science, Education, Knowledge	Cognitive development, understanding of past events, conditions, and cultures.

developing cultural heritage tourism related to fishing in the Gulf of Maine.

As with any heritage celebration or preservation activity, cultural events serve as a kind of socio-cultural glue that affirm identity, legitimize existence and lifeways, and keep communities connected through a shared past. In the case of fishing festivals, the celebrations and ceremonies are reminders of a way of life that is perhaps unfortunately fleeting. The Fishermen's Feast in the North End of Boston, MA, for example, begins with a procession of the Madonna del Soccorso to the water's edge in Boston Harbor where a blessing is performed. But there is no longer a fishing fleet there to bless, and only a "Blessing of the Fishing Waters" takes place now, perhaps in hopes that fish abundance will one day return and along with it fishermen and their boats. Although the fishing community of the North End has all but disappeared, and the remaining ethnic community is continually under assault from gentrification and development pressures, there remains intact a sense of place, cultural identity and spirituality, which is strengthened by the Fishermen's Feast celebration and ceremonies. The attraction of the feast to the city population and tourists alike also provides added income

for the local residents and businesses. The predominantly Sicilian North End community has survived the loss of fishing in part because of its ability to diversify in an urban setting and preserve its built heritage. However, for those communities that remain largely fishery dependent, particularly the small communities of Downeast Maine, the pressures of heritage tourism and gentrification could have devastating socio-economic results for these traditional fishing communities.

As fish continue to disappear from our waters, fishing heritage festivals are an effective way to keep communities rooted in tradition, strengthening a community's social ties and cultural identity. Although not currently practiced, the festivals could also serve as a tool for fishermen, or their representatives, to communicate to the general public some of the social and economic pressures that affect their livelihoods. Moreover, heritage tourism events could assist fishery dependent communities diversify their economy, and help to subsidize the income of fishermen with what is now a severely restricted fishing season in the Gulf of Maine. Studies have not been conducted to measure the financial impact of Fishing and Seafood Festivals in exacting amounts; however, event organizers interviewed

in this study qualified that their communities receive significant economic benefit from tourists staying at hotels or inns, eating at restaurants, shopping in local stores, and paying admission to festival events. Only the abundant presence of fish will ultimately save fishing communities from disappearing, but festivals, ceremonies, and rituals that celebrate the culture and lifeways of the local fishing communities is one option for community development and diversification. When qualifying stakeholder and community interests, such events can clearly result in long-standing traditions with positive social, cultural and economic effects.

8.0 Citations

- ACHP. 2002. **Heritage Tourism and the Federal Government: Federal Heritage Tourism Summit I**. Report of Proceedings, November 14, 2002. Washington, D.C.: Advisory Council on Historic Preservation.
- Alcamo, Joseph, and Elena M. Bennett. 2003. **Ecosystems and Human Well-Being: A Framework for Assessment**. Ed. Millennium Ecosystem Assessment. Washington, D.C.: Island Press.
- GoMOOS. 2002-2003. **About the Gulf of Maine**. Gulf of Maine Ocean Observing System. <<http://www.gomoos.org/aboutgulfme/>>.
- Hall-Arber, Madeleine et al. 2001. **New England's Fishing Communities**. MIT Sea Grant College Program, MITSG 01-15. Cambridge, MA: MIT Sea Grant College Program.
- Millennium Ecosystem Assessment. 2005. **Ecosystems and Human Well-being: Synthesis Report**. Washington, D.C.: Island Press.
- Shipp, R. Craig, Stephanie A. Staples, and Walter H. Adey, eds. 1985. **Geomorphologic Trends in a Glaciated Coastal Bay: a Model for the Maine Coast**. Washington, D.C.: Smithsonian Institution Press.
- Tango-Lowy, Torene, and Robert A. Robertson. 1999. **Assessment of Tourists' Attitudes Toward Marine Aquaculture: A Preliminary Investigation of UNH's Sea Grant Discovery Passengers**. Proceedings of the 1999 Northeastern Recreation Research Symposium, 1999 April 11-14; Bolton Landing, NY. Comp. and Ed. Gerard Kyle. Gen. Tech. Rep. NE-269. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station.
- Robertson, Robert A., Torene Tango-Lowy, and Erika L. Carlsen. 2005. **Assessment of Tourists and Open Ocean Aquaculture: An Investigation of Isles of Shoals/Rye Harbor and UNH's Sea Grant Passengers**. Durham, NH: UNH Sea Grant College Program.
- Throsby, David. 2002. **Cultural Capital and Sustainability Concepts in the Economics of Cultural Heritage. Assessing the Values of Cultural Heritage**. Ed. Marta de la Torre. Los Angeles: The Getty Conservation Institute.
- TIA. 2003. **The Historic/Cultural Traveler, 2003 Edition**. Washington, D.C.: Travel Industry Association of America.
- U.S. Commission on Ocean Policy. 2004. **An Ocean Blueprint for the 21st Century**. Final Report of the U.S. Commission on Ocean Policy—Pre-Publication Copy. Washington, D.C.: U.S. Commission on Ocean Policy.

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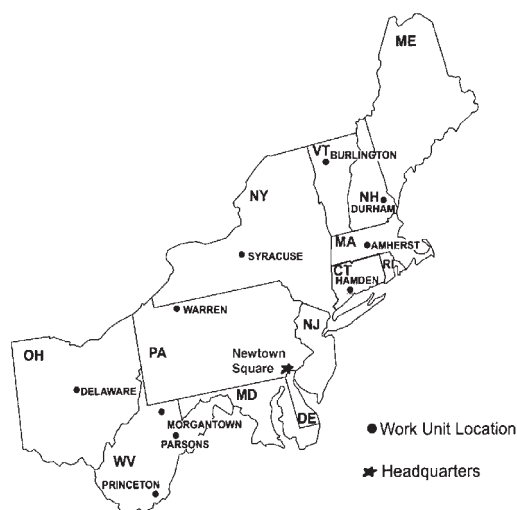
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