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Northeastern Recreation Research Symposium Policy Statement

The Northeastern Recreation Research Symposium seeks to foster quality information exchange between recreation, tourism, and resource managers and researchers throughout the Northeast. The forum provides opportunities for recreation and tourism research managers from different agencies, state, and government levels, as well as those in the private sector to discuss current issues, problems, and research applications in the field. Students and all those interested in continuing education in recreation and tourism management are particularly welcome.

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Proceedings of the 2001 Northeastern Recreation Research Symposium

April 1-3, 2001

On Lake George in Bolton Landing, New York

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Keynote Address

MAKING RESEARCH MORE RELEVANT: GIVE IT A TRY!

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Abstract: Barriers to research use are common to most scientific disciplines and areas of investigation. This paper addresses three interrelated issues to enhancing the effectiveness of science to aid decision making specifically to outdoor recreation, leisure and tourism: (1) clearly defining and framing research problems, (2) enhancing the flow of research findings to those who need them, and (3) enhancing education and training of researchers and practitioners. Suggestions are offered to help deal with these and related barriers.

Introduction

Problems concerning the effectiveness and utilization of research associated with leisure, outdoor recreation, and tourism are neither a new topic nor a problem unique to these areas of inquiry. Academic and research institutions engage in continual dialogue with both private and public sector administrators to enhance applications of research and related information-gathering activities.

The purpose of this paper is to provoke dialogue among researchers and users of research about enhancing the effectiveness of science to aid leisure, outdoor recreation and tourism decision making. No pretense is made that the author will address all the salient issues germane to this topic nor that the issues addressed are covered to their entirety. The intent is to identify some key issues that serve as barriers to achieving the greatest application of research.

In no particular order or relative importance, three issues are addressed:

1. Clearly defining and framing research problems,
2. Enhancing the flow of research findings to those who need them, and
3. Enhancing education and training of researchers and practitioners.

Of course, these issues are interrelated and tied to other variables impacting research utilization.

Most barriers to effective research application are not unique to the leisure, outdoor recreation and tourism field. Many are self-evident and have been addressed in many writings (e.g., Cole & Cole, 1967; Schweitzer & Randall, 1974; McCool & Schreyer, 1977) at conferences, symposia and workshops (e.g., McCool & Cole, 1997), and in academic classrooms and continuing education sessions (e.g., Anderson et al., 1995). Deliberations at the eleven Northeast Recreation Research (NERR) Symposiums have explored these issues as well.

Research use is impeded at both a macro- and micro-scale level. At the macro-scale, institutional constraints often separate the cultures of the research community and the users of research and other data (hereafter refereed to as managers). For example, the reward system for researchers is often tied to the number and perceived quality of refereed publications, "pure" or theory-based research rather than research focused on problem solving and application of research findings, statistics rather than data interpretation and peer recognition in a specific academic or professional discipline. For many researchers or their supervisors, refereed publications are of greater value and count more than applied products. Arguably, many applied projects, while valuable, do not lend themselves well to refereed outlets. Further, many in the academic community are under pressure to obtain funding for graduate students and/or enhance the reputation of their program, sometimes at the expense of effective administration and oversight when their "plate is full."

Managers on the other hand often view research as "ivory tower play" not likely to be useful. Managers are frequently not evaluated or rewarded on the basis of project management for using research or data once it is collected, analyzed and delivered to them. They often do not actively interact with the research community or keep abreast of the scientific literature (like many researchers as well). However, the broadening participation of managers and researchers at the NERR Symposium and other similar gatherings (e.g., Jacobi & Manning, 1996) may demonstrate a growing interest in dialogue and potential collaboration.

At the micro-scale, researchers and managers need to work on communication skills and dialogue to define and frame researchable problems better, and to work collaboratively in problem solving so new information can be analyzed and critiqued and conclusions drawn. While researchers may or may not be involved in shaping decisions, they can help synthesize data into a format that is easily understood and displayed for interpretation. To accomplish such lofty goals requires time and energy spent by both groups in developing mutual interest and respect as well as learning the language representing each other's perspective and discipline. Developing interpersonal relationships is essential in doing so.

Of course, not all research is directly applicable to solving particular resource or management problems. Some theory-based research investigations enhance the knowledge base of a particular discipline, issue or general phenomena. Nevertheless, such research does have a clientele. And a particular group of researchers at some point should be expected to use their findings and contribute to the resolution of real world problems. For example, while basic advances in geographic information system (GIS) technology and interactive computer capabilities might be defined as theory-based research, what is learned has exciting potential to contribute to new and innovative online information systems (e.g., the Internet) that tourists can use to plan travel itineraries and learn about resources and opportunities of specific

locations (e.g., Buhalis, 2000; Lime et al., 1995; Lime et al., 1996; Sheldon, 1997). Commercial and public sector providers are greatly increasing their use of such technologies as well.

Some problems do not require formal research and may be solved through knowledge and experience of managers. Nevertheless, the science community can resolve some problems by contributing to literature reviews and documenting the state-of-knowledge on particular issues. Such activities may lead to the identification of information gaps and important research needs (e.g., Lucas, 1987; Lime, 1996; Lundgren, 1996; Cole et al., 2000; Fulton et al., 2000a; Mattson & Shriner, 2001).

Clearly Defining and Framing Research Problems

Dialogue with researchers and managers, along with various writings (e.g., Bardwell, 1991), frequently confirms that problems and research questions are not well defined. In example after example, participants in research projects lament that often it was not clear what managers wanted to know and/or that researchers did not reaffirm the research question or frame the question in a way that could be effectively investigated. According to Bardwell's (1991) provocative investigation of problem-framing and problem-solving, managers all too often engage in inadequate problem exploration. Bardwell reports on an Interaction Associates (1986) study of problem-solving tendencies which suggests that 90 percent of problem solving is spent: (1) solving the wrong problem, (2) stating the problem so it cannot be solved, (3) solving a solution, (4) stating problems too generally, and (5) trying to agree on the solution before there is agreement on the problem.

How a problem is defined and framed dictates the research direction and whether or not the data generated ultimately will be used in problem solving. In many respects, problem definition is the most important and critical component of a research project. But does this aspect of science receive the emphasis necessary to solve problems? Probably not! Research partners often devote a disproportionate amount of their budget, energy and time to research methods and the actual conduct of the research at the expense of clearly defining and framing the research question(s) before the research gets underway. In such cases managers may come away from a project saying, "That's not what I wanted!" or "I thought I was going to get . . . !" As the *real* problem begins to emerge after the research is underway, researchers may report, "That kind of data isn't possible from this study!" or "To get that, we'll need to do another study!".

Over forty years of research and management to operationalize the carrying capacity concept illustrates the frustration of inadequate problem definition and problem framing. Concern for various issues related to tourism and outdoor recreation impacts has led to discussions of, "How many is too many?" Such thinking is frequently driven by the notion that *visitor numbers* or *amount of development* is the primary force behind the carrying capacity approach and that restricting or limiting human use to some "magic number" is the solution for unacceptable impacts.

By more appropriately reframing the "How many is too many?" question to identify the *desirable or appropriate conditions* for a particular location or region, analysts concerned with unacceptable impacts can more effectively address their "real" problems. Once these challenging questions are answered, then it is appropriate to explore the realities of various management actions to evaluate if they indeed resolve the problems of concern. One such practice may be to limit or restrict the amount or type of use, but until systemic and structural questions are addressed, operational questions, such as the selection of management tools or actions to use for a particular situation, must be delayed (McCool & Lime, in press; Anderson et al., 1998). As such, a systematic process is employed that separates value judgements of *what ought to be* from the more prescriptive judgements of *how to accomplish* desired goals and objectives. Several planning frameworks, including Limits of Acceptable Change (LAC) (Stankey et al., 1985; McCool, 1994), Visitor Impact Management (VIM) (Graefe et al., 1990), Quality Upgrading and Learning (QUAL) (Chilman et al., 1990), and Visitor Experience and Resource Protection (VERP) (USDI, National Park Service, 1997), all call for the formulation of specific management objectives by specifying indicators and standards of quality. Monitoring activities are further required to assess when carrying capacity has been reached or exceeded. Management direction is then deployed to ensure that standards of quality are not violated.

Improving problem definition and problem framing calls for a shift in focus or way of thinking in which more emphasis and energy is directed to defining the specific problem(s) concerning an issue and framing the problem(s) so data or information needs can be articulated to guide the research. Without agreement on the problem, how is it possible to agree on the course of action to address the problem--and ultimately to agree on a solution! In situations where there is assumed agreement that the nature and scope of the problem is self-evident and a certain course of action will be needed to resolve that problem, we easily can become frustrated once into the research and later conclude that we are investigating a solution in search of the problem!

What are some approaches, activities or suggestions to enhance problem identification and framing?

- *A team approach: field manager-researcher partnership to foster communication, collaboration, understanding and buy-in.* Field level managers (e.g., at a park, forest, resort, refuge) need to be key players in project negotiations with the researchers to form a partnership from the get-go. Often, field managers are left out of the loop in identifying research needs because state, regional or national offices strongly dictate research direction and focus. While such an approach can be appropriate for many research questions, resource-specific needs are often best conceptualized and ultimately driven from field locations.

  If possible, managers should be actively involved in data collection and analysis to foster ownership in a

project and commitment to seeing the results utilized. Meetings or other forms of active communication are necessary to develop and refine issues and plans. Building such understanding will have the most impact on the specific direction the project takes. The product(s) of such negotiations should be clear and produce a specific understanding of what the manager wants to know and what are the data needs to answering those wants and meeting expectations.

- *Problem analysis before the research begins.* As part of the problem definition and framing of research questions, a careful analysis of the problem is necessary. Perhaps for some projects much more emphasis should be placed on treating the problem analysis as a separate task in the research process. For example, once a manager identifies a general problem or issue, a researcher or research team in collaboration with managers could conduct a state-of-knowledge review to ascertain what is known and not known about the topic. The activity probably should be funded as an independent exercise and the results used to decide if further research is warranted. This approach would suggest such a task could be deployed through an independently conducted analysis by an individual or small group, by a team effort (e.g., Lime et al., 1985; Stankey et al., 1985), or in a workshop setting with a formal collection of published papers (e.g., Lime, 1996; Gregersen et al., 1996; Fulton et al., 2000b). While such an approach might require additional project management and review, it very likely could lead to a more thoughtful articulation of specific problems, a translation of the problems into clearly framed issues or hypotheses and guard against a premature commitment to an array of research activities and funding that might not be necessary at this time. Additional research might be postponed or canceled, thus saving limited resources for other priority uses. On the other hand, the analysis might uncover critical new information needs and shift the research accordingly.

Both suggestions call for management systems in which various management levels are committed to and held accountable for generating information that will find its way into an evaluation and potential implementation process. Resources need to be allocated and responsible employees formally directed to make necessary commitments throughout the life of a project.

Enhancing the Flow of Research Findings to Those Who Need Them

Deciding how to package and deliver the results of research and other information-gathering activities to managers can be frustrating. And what is done may not always result in the most useful products. The problem is neither new nor confined to those in the outdoor recreation, tourism and leisure fields. Adequate reporting of research-related activities falls on the shoulders of both researchers and managers. Funding is often limited or nonexistent for researchers to disseminate their results beyond a basic set of products. Researchers are often not required to produce more than a basic technical report. A summary of major findings and possible implications may or may not be required.

Managers responsible for overseeing a particular project may not be especially knowledgeable of the research discipline or particulars of a study. They can become intimidated by the jargon used by researchers and/or the nature and scope of a project. Sometimes project management of research becomes an "additional duty as assigned." Frequently project management suffers when an individual has dozens of projects to track and cannot keep up with the administrative responsibilities and oversight. A manager may become reluctant to say "No" to making payments for progress that seems less than complete, or to change or guide the focus of a project. If manager involvement has not been an ongoing responsibility throughout the project, then it will be increasingly difficult to keep current on project details and ensure the work is progressing as planned and the researcher is held accountable. As noted in the previous section, research use remains hampered if managers are not significantly involved in the project, cannot formally allocate or readjust their time effectively to meet responsibilities, and are not held accountable by their superiors for their participation. Upper-level management support and commitment to use the research is extremely critical, as well. Of course, use of the research does not imply carte blanche acceptance and deployment of research implications. It seems to imply, however, that the findings would be part of a deliberation and decision making process.

What are some approaches, actions or suggestions to enhance the packaging and delivery of research findings?

- *A final technical report is not enough.* Delivering a final report without some face-to-face dialogue with users of the report may insure very limited review and use. In such cases the reports may be shelved or filed away with the recipient having little idea what the study *means*! Of course, if this is all the recipient of the research wants, the researcher must comply and move on.

- *Quarterly reports, final technical report, summaries, formal publications and meetings.* Depending on the nature and scope of a project, maximum learning, utilization and accountability requires that these five types of reporting mechanisms be required for all research endeavors. In each case, funding should be provided, perhaps for each task independently, to accomplish these activities. Seemingly, and all too often, funding for these activities are not included or are sorely inadequate because of limited funds–the funds are for the research! But, without these activities the chances of success as envisioned by the originators may be thwarted or the outcomes may not achieve expectations.

  Quarterly reports ensure accountability and tracking, providing informative progress reports for a variety of interests for review and comment.

Meetings are essential, and if possible should be required throughout the project -- during the pre-project period, at one or more times during the conduct of the research and as a closeout to formally report on and discuss the findings and implications with research clients. Pre-study meetings seem essential if managers are to endorse the research fully and commit staff and other resources to the effort. These early meetings and discussions also provide an opportunity for upper level managers responsible for using the research findings to ascertain if the possible results of the research are appropriate or if the research might be too confining or could hold them accountable in ways which they would not be comfortable. (This is an entirely different topic and begs another set of questions, but it is entirely related to research utilization because it has to do with intellectual honesty of the research community and reporting what is found–not focusing on and reporting what the manager or research client wants to hear!) Meetings help project managers and research clients, as well as researchers, all to stay on top of the project and allow for a broader audience to regularly learn about progress (or lack thereof) and how the potential results of the work may contribute to the specific goals and objectives associated with resolving a problem and meeting management objectives.

Closeout meetings provide an opportunity for thoughtful discussion concerning what the research means and implications for management. When possible these meetings should be held between the time reviewers return comments on the draft technical report to the researcher and the final report is completed. In this way there may be maximum dialogue to insure important points are fully addressed and presented in the final report. Dialogue at this time also can uncover additional or extended analyses that will enhance the usefulness of the research that might not happen following a meeting after all the required documents are delivered.

Final technical reports document the overall context and conduct of the research and provide a detailed description concerning methodologies, data analysis and presentation of results. Sufficient detail should permit replication of the research as needed.

Arguably, technical reports need not extensively discuss the implications of the research findings. Once the author(s) presents the data thoughtfully highlighting the salient findings, the manager and their associates should take the lead in deciding what the findings mean and how to most effectively use the information generated. Of course, the researcher can be part of the dialogue and decision making, as was the case for carrying capacity investigations at Arches National Park during the 1990s (Lime et al., 1994; Manning et al., 1995; Manning et al., 1996). In those studies tabulations and raw data served as grist for several meetings and intense discussion concerning crowding norms and indicators of the quality of the visitor experience. Ultimately the information was used to specify indicators and standards and to develop monitoring protocols (USDI, National Park Service, 1995).

The point is that managers usually want the research results as soon as possible after the work is completed. So why not provide that data to them as quickly as possible with a minimum of extraneous verbiage and direct the focus of data interpretation to the ultimate benefactors of the information? If an effective manager-researcher partnership is in place, the researcher probably will be brought into "So what?" discussions concerning implications. Furthermore, once the formal reporting requirements of the research have been satisfied, additional analyses and/or dialogue concerning study implications by the researcher could still be negotiated–with or without additional funding.

Summaries provide a concise reporting of the salient findings and implications that, depending on the purpose and scope of the research, can be used by managers or researchers as "press releases" to inform client personnel, the general public, special interest groups and the media. While often required to accompany a final technical report, research summaries or notes can be more formal and published through a technical series by the authors or the funding organization (e.g., Field et al., 1998; Pierskella et al., 1999; Warzecha et al., 2000; Lewis & Baxter, 2001). The intent is to provide a short (no more than 4-6 pages in length), concise and technically-sound statement of the findings that can be readily absorbed and understood by a broad audience. Such inexpensive products can be widely distributed and further summarized or reported on by other users. Consideration also should be given to joint authorship of summaries with management staff who participated in the project (e.g., Lewis & O'Neill, 2001), not so much as a courtesy but as recognition of their ownership and contributions to the completed work.

Formal publications, of course, including refereed journal articles, papers in proceedings, government agency reports and popular magazine articles, also serve as important avenues for research dissemination. For applied research concerning the National Park Service, for example, it might be appropriate in all grants and cooperative agreements to require that at least one manuscript be submitted to *Park Science, the Journal of Park and Recreation Administration* or some other management-oriented outlet. Again, including management staff who contributed to the research as co-authors should be considered whenever possible (Manning et al., 1999).

- *Researchers and managers co-author papers at conferences and symposia.* Akin to the joint authorship for research summaries or other publications, project partners should be encouraged to collaboratively present their findings at meetings–as they often do in technical and dialogue sessions at the annual NERR conferences (Jacobi & Manning, 1996).

Not only do these activities enhance opportunities for managers to buy-into the research and its utilization, it also allows individuals from "different cultures" to get to know one another on a personal basis and helps build mutual respect, understanding and learning. Developing a "good chemistry" among people who are trying to work toward mutual goals should not be underestimated!

- *Student papers should be independent of the project scope and purpose.* Normally a funding agency or client would not be in the business of funding student papers. Research assistants seeking to use the research for a master's paper or Ph.D. dissertation should do so as a separate task from the funded research. Keeping the two tasks independent can reduce the time necessary to complete products for the research client and can help students understand there usually are conceptually different purposes and outcomes associated with academic papers and products for managers. Furthermore, keeping the tasks separate can protect a student's interests and research direction because sometimes the funding agency and the principle investigator (i.e., the student's advisor) will change the focus of the project.

- *Multidisciplinary team projects.* More and more frequently team efforts are used to address complex and controversial issues concerning leisure, outdoor recreation and tourism. The goal is usually to bring together a mix of disciplines to tackle problems that require multiple viewpoints and perspectives. Such projects can be fraught with administrative headaches and necessitate strong project management to accomplish their intended purposes. One way to achieve maximum collaboration and communication is to designate a coordinator to provide oversight and to provide timely progress reports (e.g., Lime, 1989; Mahn et al., 1998). Several recent projects focusing on recreation carrying capacity issues in the National Park System seem to have received high marks for the level of collaboration among a variety of researchers and resource managers (e.g., Lime, 1989; USDI, National Park Service, 1995; Hof et al., 1994; Manning et al., 1998). In each case there were extensive pre-study meetings to define and frame research questions, active participation by field managers in data collection and/or oversight, frequent meetings during the conduct of the research to access progress and broad participation by agency staff and researchers in discussions about the implications and use of data generated. Furthermore, funding to accomplish these activities was earmarked *up-front* to ensure they were not omitted or postponed. There was an apparent institutional setting among various levels in the management system committed to and held accountable for implementing, or at least giving strong consideration to implementing, the research. Of course, as key management players move elsewhere or change their perspectives on the issues, there is no assurance the decisions will remain in place or be extended.

An alternative approach to deploying formal research projects per se, is to convene an expert panel or team to visit a site and offer their informed and collective ideas about a particular question (Hof & Lime, 1997). In collaboration with area staff, of course, an interdisciplinary team could spend several days at a location exploring the general problem of concern, defining and framing specific questions pertinent to the problem(s), understanding management objectives and purposes, seeing existing resource conditions and discussing how to resolve the most critical problems. The team would conclude their visit with an interactive meeting with decision makers and offer a set of written recommendations concerning the issue(s) at hand. Depending on the nature and scope of the effort, this activity could be done voluntarily or with varying levels of financial remuneration. The results of such exercises would be useful in further planning activities by area staff and public involvement. Follow up activities with the public could be used to test the advice given and refine future direction. Such "design teams" have been used successfully in Minnesota for more than a decade to explore community development concerns in urban areas (Hof & Lime, 1997).

- *Extension agents to bridge the communication gap.* Specified individuals associated with user client groups (e.g., land management agencies, state tourism organizations, state extension services and academic institutions) could serve an important role as "go-betweens" to aid research use (McCool & Schreyer, 1977). Of course, the research community itself can develop handbooks, manuals and other products to transfer knowledge to a broader audience than the original client (e.g., Cole et al., 1987; Cole, 1989a; Cole, 1989b; Marion, 1991; Anderson et al., 1998; Wang et al., 2000). The most useful contribution of such actions might be in carrying the findings and implications of a particular project to the broadest audience possible without expecting these activities to be conducted by the originators of the information. Besides the written word, a variety of other communication techniques can be deployed to accomplish such objectives. For example, the Internet increasingly is being used to disseminate information for lay as well as working professional audiences.

Enhancing Education and Training of Researchers and Practitioners

Academic institutions and employers increasingly are calling for professional degree programs that develop leaders, communicators and integrative thinkers. Such pleas surely are voiced in programs addressing leisure, tourism, outdoor recreation and natural resources planning and management.

In spite of calls for more liberal education for working professionals, many programs continue to emphasize basic facts and principles and demonstrate a reluctance to increase complementary liberal arts training at the expense of reducing some content coverage (e.g., Wellman, 1995;

Propst et al., 2000). Critics of traditional education argue that growing citizen participation in resource decision making activities, for example, demands that managers gain expertise and confidence in dealing with the general public to address and incorporate diverse values into thoughtful decisions (Propst et al., 2000).

To address the need for a more liberally educated workforce, analysts have called for a change in the learning environment. Professional degree programs must foster a greater balance of learning basic facts and principles with student-driven learning in which students are better prepared to seek out and work with the public and to accept the public's participation in making decisions about resources and multiple values. Many of these "new" professionals would be subject matter experts who facilitate consensus and dialogue building (McCool & Patterson, 2000). In addition to their technical skills, they also should possess effective interpersonal skills to address and solve problems. At the same time, faculty and other researchers would need to know more about the questions, problems and actions of managers taken to fulfill their responsibilities.

What are some approaches, actions or suggestions to enhance the education and training of students, researchers and practitioners concerning the conduct and use of research?

- *Interaction with diverse publics.* Students could benefit greatly by meeting and conversing with various publics interested in leisure- and tourism-related issues. Such activities could be incorporated into professional courses with exposure to children, seniors, persons with disabilities, single parent families, and so forth. The focus could be to learn through face-to-face dialogue about their concerns and how they value resource conditions and opportunities. Group interaction can aid in developing skills in listening, communication and synthesizing diverse opinions and values (e.g., using qualitative research methods).

- *Exposure to real world problems and solutions.* Courses that expose students to problems faced by real world practitioners and researchers help them understand the realities of work beyond the classroom and can aid them in selecting additional course work to hone their skills in fruitful areas. Increasingly, educators are developing courses, seminars and field excursions that involve speakers from various disciplines and perspectives. One example is a course entitled "Social policy and management in National Parks and protected areas" offered at the University of Wisconsin, Madison (by Dr. Donald Field). Visiting practitioners offer real world experiences and lead discussions following their presentations aimed at developing critical thinking and analysis skills for students. Internships and practica reinforce academic lessons, as well (Hartigan, 2001).

- *Group projects and problem solving.* Closely connected to the previous two suggestions are synthesis courses of one or more academic sessions that address problem solving activities for real world problems. Most are undergraduate courses, but it would seem highly beneficial to mandate similar courses for graduate students. Sometimes called "capstone" courses, students and faculty collaborate with area practitioners to define and frame a research problem, generate data to address the problem(s) specified and conduct problem solving exercises in which new data is analyzed and evaluated. Finally, conclusions are drawn and presented in written form and orally. Client groups participate in the project as appropriate and engage fully in the review of the project. Students are challenged to apply aggressively what they know and learn during the process and, through group interaction, enhance their knowledge base built on actual experience (Kolb, 1984). These experiential learning opportunities take away the fear and inexperience of working in the real world and working within a group setting. They also aid students in finding and performing well in cooperative education positions, internships and other programs that may lead to permanent employment.

- *Incorporating more liberal education courses into the curriculum of professional majors.* By adding liberal education courses to complement students' professional majors such as forestry, recreation and leisure studies or landscape architecture, they should acquire integrative and strategic thinking skills to envision the direct connections to their majors and minors. The capstone courses noted above could benefit greatly from direct links to selected courses in political science, geography, sociology, ethics, history, demography, rhetoric, computer science, professional writing for the major and so forth. To implement such strategies, academic departments and programs must accept that some coverage of traditional course work will have to be eliminated, reduced or integrated into other course offerings.

- *Continuing education.* "Lifelong learning" has gained support as employers and staff try to keep up with changing technologies, principles and ways of doing business. Continuing education is more necessary than ever because the workforce is growing increasingly older and more and more employees have not had formal course work for many years (e.g., Wellman, 1995). Resource management and tourism agencies are increasingly forced to deal with new paradigms, issues and models including sustainability, ecosystem-based management, integrated resource management, benefit-based outcomes, resource and social conflicts, access to resource opportunities and citizen participation in decision making. Those and other new topics require continual upgrading of employees' knowledge base, technical skills, and expertise.

  Of course, on-the-job experiences contribute to continual learning, but so do structured programs to expose professionals to new knowledge. Questions about the effectiveness of such programs are

legitimate but some continuing education programs, such as one in the Minnesota Department of Natural Resources, have found that participants exhibit increased self-confidence in their jobs, expand communication networks among employees, are more timely in implementing new ideas and concepts throughout the agency and provide more consistent and informative presentations to the public (Anderson et al., 1995). Efficiency, shared learning and other benefits can be realized through interagency and collaborative training (students as well as instructors) in which various constituency groups share information and perspectives.

Continuing education and learning for managers and researchers also can be realized through conference "dialogue sessions," sabbatical programs at specific sites or institutions, volunteering, personal travel and reading. And, never underestimate the learning potential of observation and constructive listening.

Conclusion

The barriers to research utilization identified in this paper and suggestions to help ameliorate them represent only a few of the issues that are relevant to this topic. These ideas beg a variety of answers to important questions such as how to garner institutional support and how to fund more meetings or special analyses to specify problems and frame research questions, and to discuss progress, final results and implications. Then there are calls for more extensive review of plans and technical reports, and preparation of research summaries and other publications. Efforts to enhance continuing education for working professionals also are costly and compete for scarce financial and other resources. Pleas also have been made to alter the learning environments of undergraduate and graduate education programs so new professionals in the workplace will be able to demonstrate a greater balance between basic knowledge in their major field and liberal education skills. In spite of these and other potential ideas to enhance research utilization, research and management budgets are usually not "fat," and many projects are significantly strapped simply to "make ends meet."

Accomplishing these suggestions requires creating an institutional setting in which *all levels of the management system (management, research or academic) are committed to and are held accountable for activities that enhance research utilization.* Sometimes creating such a setting is hampered by not setting priorities or simply by a reluctance to do things differently. Increased buy-in and accountability could mean incorporating specific elements related to research utilization more explicitly into annual performance standards for affected employees that would result in salary increases and/or advancement.

Accomplishing such lofty goals will not come quickly or without controversy, and skepticism concerning the value of these actions will continue. Nevertheless, a "from-the-ground-up" approach in which dedicated individuals seek institutional change may give credibility to these principles and help market and implement them.

Looking to successful actions by others and replicating or altering them to fit new situations is undoubtedly one important way to demonstrate a need for and benefits of new perspectives. This was illustrated in this paper with examples of successful continuing education programs such as those in Minnesota that gained support at all levels of management throughout a particular Department of Natural Resources division (Parks and Recreation). The successes to date have engendered an employee ground-swell to continue training on a one- or two-year cycle. The successful implementation of capstone courses at many academic institutions suggests another shifting paradigm, as do specific courses to bring into the classroom practicing professionals to expose students and faculty to real world problems and the realities of addressing them. Many research project managers are realizing the benefits of taking sufficient time to frame researchable problems carefully, making sure there is true collaboration of researchers and managers throughout the research, including the reporting, discussion and implementation phases of a project.

For the academic and research community, for example, this approach could mean rewarding applied research and application on an equal or nearly equal footing with the production of theory-based refereed journal articles. Arguably there are ample opportunities to publish aspects of applied research in journals as there are to publish so called pure or theory-based research findings concerning leisure, outdoor recreation and tourism in applied outlets. State-of-knowledge and literature synthesis pieces also are of high scientific and application value, and persistence by interested, respected people in the field should raise their perceived worth. Credit for expanding undergraduate and graduate courses that are successful in developing better leaders, communicators and integrative thinkers also should continue to be recognized and rewarded. Mentoring with students and graduates as well as promising high school students that could be recruited into professional programs also should be acknowledged.

The management community should reward managers who demonstrate exemplary skill in managing research activities as well as conducting their other duties. Such activities should take on an importance of much more than "other duties as assigned." Organizational advancement also could be enhanced by interacting with the research or academic community in student learning activities and mentoring.

Ultimately, how well individuals communicate and work together reflects how well problems and research gets framed, research is used, employees are educated and conduct themselves and institutional settings shift paradigms. Real as well as perceived barriers to successful research utilization will not disappear, but they can be diminished or managed by dedicated and persistent people who strive to *do the right things*. So consider trying some of the suggestions offered in this paper! Striving to be a good example will clone our co-workers, colleagues and students. Hopefully the next generation of managers and researchers will continue to progress by *doing things right* to enhance research utilization.

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Crowding Issues in Resource Management

BALANCING TRADEOFFS IN THE DENALI WILDERNESS: AN EXPANDED APPROACH TO NORMATIVE RESEARCH USING STATED CHOICE ANALYSIS

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Abstract: Wilderness experiences are thought to be comprised of or defined by three dimensions, including social, resource, and management conditions. Decisions about how to manage wilderness recreation in Denali National Park involve potential tradeoffs among the conditions of resource, social, and managerial attributes of the wilderness experience. This study expands the normative approach to wilderness research by developing a decision-making model that considers social, resource, and managerial attributes of the wilderness experience within a holistic context. Specifically, stated choice analysis is used to evaluate the choices overnight wilderness visitors in Denali National Park make when faced with hypothetical tradeoffs among the conditions of social, resource, and management attributes of the wilderness portion of the park.

Introduction

There is general agreement in the recreation literature that wilderness experiences are comprised of or defined by three dimensions. These dimensions include the social conditions experienced (e.g., the number of other groups encountered), the resource conditions experienced (e.g., the amount of human impact at camping sites), and the management conditions imposed (e.g., the number of backcountry permits issued) (Hendee, Stankey, & Lucas, 1990). In general, wilderness recreationists are thought to prefer a wilderness experience characterized as having few encounters with other groups, a pristine natural environment, and a high degree of freedom from management control. While this is the ideal, in reality attempts on the part of managers to provide ideal conditions along one dimension of the wilderness experience typically involve having to make concessions along one or both of the other dimensions of the wilderness experience. As a result, decisions about how to manage wilderness involve potential tradeoffs among the conditions of resource, social, and managerial attributes of the wilderness experience. For example, the number of permits issued for recreational use of a wilderness area could be increased to allow more public access, but this might result in more resource impacts and encounters among groups within the wilderness area. Conversely, reducing the number of recreational use permits issued might reduce resource impacts and encounters among groups, but would allow fewer people to enjoy the wilderness area.

The normative approach to recreation research has been used to study a broad range of wilderness management issues, including crowding, ecological impacts, and management practices (Manning, 1999a). A fundamental element of the normative approach to recreation research is the measurement of indicators and standards of quality. Traditionally, wilderness studies designed to measure indicators and standards of quality have focused on a single dimension of the wilderness experience, without explicit consideration of related and potentially competing issues associated with other dimensions of the wilderness experience (Manning, 1999a). Recent studies in outdoor recreation have suggested that normative research should more explicitly consider the tradeoffs inherent in park and wilderness management decision-making (Hall, in press; Lawson & Manning, 2000; Manning, Valliere, Wang, & Jacobi, 1999).

This study expands the normative approach to wilderness research by developing a decision-making model that considers social, resource, and managerial attributes of the wilderness experience within a more holistic context. Specifically, stated choice analysis is used to evaluate the choices overnight wilderness visitors in Denali National Park make when faced with hypothetical tradeoffs among the conditions of social, resource, and management attributes of the wilderness portion of the park.

Denali National Park and Preserve

Alaska's first National Park, Mt. McKinley National Park, was established in 1917. In 1980, with the passage of the Alaska National Interest Lands Conservation Act, Mt. McKinley National Park was expanded from two million acres to six million acres, and renamed Denali National Park and Preserve. At the same time, most of the original two million acres of the park was designated wilderness. Today, this two million acre wilderness forms the core of Denali National Park and Preserve.

Visitor use of the Denali wilderness is managed through a permit system to maintain the area's primitive, undeveloped character. Through the permit system, the Park administers strict quotas on the number of overnight visitors issued a permit for each of 43 wilderness management units. The quotas exist to prevent resource degradation and to provide visitors with opportunities to experience solitude. During the busy summer months, quotas for many of the management units are regularly reached and some visitors interested in an overnight trip in the Denali wilderness are turned away or forced to hike and camp in less preferred management units.

The primitive character of Denali's wilderness is maintained through other management techniques as well. For example, traditional backcountry facilities such as bridges and trails are not provided in the Denali wilderness. Instead, visitors must navigate by map and compass, and visitors are frequently challenged with technical stream-crossings. There are no established campsites in the Denali wilderness, either. Visitors may camp anywhere within the management unit for which they were issued an overnight permit. As a result, visitors are often able to camp out of

sight and sound of other groups, in places with little or no evidence of previous human use.

Park managers and planners are currently working on updating the wilderness management plan for Denali National Park and Preserve. Revision of the wilderness management plan will include making decisions to maintain, reduce, or decrease the number of permits issued for each of the Denali wilderness management units. Previous research conducted by Bultena, Albrecht, and Womble (1981) studied the extent to which wilderness visitors in Denali National Park and Preserve supported use limitations. The authors conclude that future decisions concerning use limitations in Denali National Park and Preserve will have to weigh the importance of protecting park resources and the quality of visitors' experiences against the benefit of granting more visitors access to the Denali wilderness. This study uses stated choice analysis to provide Denali National Park and Preserve managers with information about overnight wilderness visitors' attitudes and preferences regarding such tradeoffs.

Stated Choice Analysis

Stated choice analysis models have been developed in the fields of psychometrics, econometrics, and consumer marketing to evaluate public preferences or attitudes (Green & Srinivasan, 1978). In stated choice analysis, respondents are asked to make choices among alternative configurations of a multi-attribute good (Louviere & Timmermans, 1990a).[1] Each alternative configuration is called a profile, and is defined by varying levels of selected attributes of the good (Mackenzie, 1993). For example, respondents may be asked to choose between alternative recreation settings that vary in the number of other groups encountered, the quality of the natural environment, and the intensity of management regulations imposed on visitors. Respondents' choices among the alternatives are evaluated to estimate the relative importance of each attribute to the overall utility derived from the recreational setting. Further, stated choice analysis models are used to estimate public preferences or support for alternative combinations of the attribute levels (Dennis, 1998).[2]

Stated choice analysis has been applied to study public preferences and attitudes concerning a range of recreation-related issues. Louviere and Timmermans (1990a) suggest ways in which stated choice models can be used to evaluate alternative recreation policies. Specifically, the authors state that one of the strengths of choice models is their predictive ability. That is, choice models provide recreation managers with foresight about how the public is likely to respond to various policy alternatives. Further, choice models provide managers with information about people's preferences for arrangements of resources, facilities, and/or services that may not currently exist.

There is a growing body of literature describing the application of stated choice analysis to outdoor recreation management issues in parks (Louviere & Timmermans, 1990b; Louviere & Woodworth, 1985; Schroeder, Dwyer, Louviere, & Anderson, 1990). Other natural resource related applications of stated choice analysis include studies of river flow management (Adamowicz, Louviere, & Williams, 1994), tourism (Haider & Ewing, 1990), recreational hunting (Boxall, Adamowicz, Swait, Williams, & Louviere, 1996; Bullock, Elston, & Chalmers, 1998; Mackenzie, 1993), hazardous waste facility siting (Opaluch, Swallow, Weaver, Wessells, & Wichelns, 1993; Swallow, Weaver, Opaluch, & Michelman, 1994), watershed management (Johnston, Swallow, & Weaver, 1999), and wildlife management (Adamowicz, Boxall, Williams, & Louviere, 1998).

Study Methods

Selection of Attributes and Levels

Wilderness areas are managed, in general, to provide visitors with opportunities to experience solitude in a relatively unmodified natural environment with few management restrictions and facilities (Merigliano, 1990). Substantial research has been conducted to identify social, resource, and managerial setting attributes that reflect these general management objectives and contribute to or detract from the quality of the wilderness recreation experience (Merigliano, 1990; Roggenbuck, Williams, & Watson, 1993; Shindler & Shelby, 1992; Whittaker, 1992). These attributes are commonly referred to in the recreation literature as indicators of quality.

Manning (1999b) summarizes the results of a number of studies that have focused on identifying potential indicators of quality. Based on a review of this literature, six wilderness setting attributes were selected for this study to define the social, resource, and management conditions of the Denali wilderness setting profiles. Three levels were defined for each of the six wilderness setting attributes, based on recommendations from the Park's director of Resource Management and the Park's Planner. Table 1 lists the attributes and levels used to define alternative Denali wilderness settings in the study.

Pairs of hypothetical Denali backcountry settings were generated by combining the six wilderness setting attributes at varying levels, based on an experimental design. The experimental design resulted in four questionnaire versions, each containing nine pairwise comparisons (Seiden, 1954).[3] An example of a typical Denali wilderness setting comparison is presented in Figure 1.

Survey Administration

Overnight wilderness visitors in Denali National Park and Preserve are required to obtain a permit and a bear resistant food container from the Visitor Center prior to their backpacking trip. The stated choice analysis survey was administered to overnight wilderness visitors at the Visitor Center when they returned the bear resistant food container at the end of their backpacking trip. The survey was administered from July 24 through September 2, 2000. The choice experiment was conducted as part of a larger study of Denali overnight wilderness visitors. Individuals who did not participate in other parts of the larger study were

Table 1. Denali Wilderness Setting Attributes and Levels

Social conditions

Number of other groups encountered per day while hiking:
- Encounter 0 other groups per day while hiking
- Encounter up to 2 other groups per day while hiking
- Encounter up to 4 other groups per day while hiking

Opportunity to camp out of sight and sound of other groups:
- Able to camp out of sight and sound of other groups all nights
- Able to camp out of sight and sound of other groups most nights
- Able to camp out of sight and sound of other groups a minority of nights

Resource conditions

Extent and character of hiking trails:
- Hiking is along intermittent, animal like trails
- Hiking is along continuous single track trails developed from prior human use
- Hiking is along continuous trails with multiple tracks developed from prior human use

Signs of human use at camping sites:
- Camping sites have little or no signs of human use
- Camping sites have some signs of human use – light vegetation damage, a few moved rocks
- Camping sites have extensive signs of human use – bare soil, many rocks moved for wind protection and cooking

Management conditions

Regulation of camping:
- Allowed to camp in any zone on any night
- Required to camp in specified zones
- Required to camp in designated sites

Chance of receiving an overnight backcountry permit:
- Most visitors are able to get a permit for their preferred trip
- Most visitors are able to get a permit for at least their second choice trip
- Only a minority of visitors are able to get a backcountry permit

Backcountry Setting A

- Encounter up to 2 other groups per day while hiking.
- Able to camp out of sight and sound of other groups *all* nights.
- Hiking is along continuous, *single track* trails developed from prior human use.
- Camping sites have *some* signs of human use – light vegetation damage, a few moved rocks.
- Required to camp at *designated sites*.
- Only a minority of visitors are able to get a backcountry permit.

Backcountry Setting B

- Encounter up to 4 other groups per day while hiking.
- Able to camp out of sight and sound of other groups *most* nights.
- Hiking is along intermittent, animal-like trails.
- Camping sites have *some* signs of human use – light vegetation damage, a few moved rocks.
- Required to camp at *designated sites*.
- Most visitors are able to get a backcountry permit for their *preferred* trip.

Figure 1. Example Denali Wilderness Setting Comparison

recruited for the stated choice experiment. Study participants were asked to complete one of four versions of the questionnaire on a laptop computer. In each of the nine choice questions, respondents were asked to read through each setting description (A and B) and indicate which they preferred. The response rate for the stated choice analysis survey was 81.2%, resulting in a total of 311 completed questionnaires (approximately 78 respondents for each version of the questionnaire) and 2,799 pairwise comparisons.

Study Findings

The responses to the stated choice questions were analyzed using logistic regression analysis.[4] The regression coefficients for the Denali wilderness setting attributes, together with their standard errors, Wald Chi-Square values, and P values are presented in Table 2. All coefficients are significantly different than zero at <.001% level, except the coefficients on "Up to 2 other groups" and "Intermittent animal like trails". The overall fit of the model is supported by the results of the Hosmer and Lemeshow goodness of fit test ($\chi^2 = 3.492$, $p = 0.836$).

The magnitude of significant coefficients reflects the relative importance of the corresponding level of the attribute to Denali overnight wilderness visitors. The values of the coefficients in Table 2 imply that signs of human use at campsites influence Denali overnight wilderness visitors' utility or satisfaction more than any other wilderness setting attribute considered in this study. Specifically, camping site conditions characterized as having "Extensive signs of human use" are evaluated less favorably by Denali overnight wilderness visitors' than any other level of the six wilderness setting attributes studied. Additionally, camping site conditions characterized by "Little or no signs of human use" are preferred more than any level of any other wilderness setting attribute included in the study.

The magnitude of the coefficient estimates in Table 2 indicate that solitude related attributes represent a second tier of importance to Denali overnight wilderness visitors. That is, while the number of encounters with other groups per day while hiking and opportunities to camp out of sight and sound of other groups are less important wilderness setting attributes relative to campsite impacts, they demonstrate a relatively large influence on Denali overnight wilderness visitors' utility. The extent and character of trails, regulations concerning where visitors are allowed to camp in the Denali wilderness, and the availability of backcountry permits are less important to Denali overnight wilderness visitors, relative to campsite impacts and solitude related attributes of the Denali wilderness.

The relationship between the levels of each wilderness setting attribute and the average utility associated with all possible combinations of the six Denali wilderness setting attributes are plotted in Figures 2a-2f. The values on the x-axis of each plot represent the level of the corresponding Denali wilderness setting attribute, and the values on the y-axis represent the amount by which the utility of the corresponding level of the attribute deviates from average utility or satisfaction. The values on the y-axis are expressed in units of utility, which is a measure of relative preference. Levels of attributes with high utility values are preferred to levels of attributes with lower utility values. The plots provide further insight into the relative importance of the wilderness setting attributes to Denali overnight wilderness visitors. For example, utility drops sharply as campsites change from having "Some signs of human use" (+0.2073) to "Extensive signs of human use" (-0.7896) (Figure 2d), whereas the loss of utility is less dramatic as the opportunity to camp out of sight and sound of other groups changes from "All nights" (0.2952) to "Most nights" (0.1452) (Figure 2b).[5]

The results of the stated choice experiment suggest that Denali overnight wilderness visitors support some level of management over where visitors may camp and a certain degree of visitor use limits. Denali overnight wilderness visitors' utility remains unchanged as regulations over where visitors may camp increases from "Allowed to camp in any zone on any night" to "Required to camp in specified zones" (Figure 2e). However, utility decreases to its lowest point with respect to camping regulations when visitors are "Required to camp in designated sites". A similar trend is observed concerning overnight wilderness use limits. Denali overnight wilderness visitors' utility associated with this attribute is statistically the same whether use limits are at their least restrictive level (i.e., "Most get a permit for their preferred trip") or at the intermediate level (i.e., "Most get a permit for at least their second choice trip") (Figure 2e). Use limits that result in only a minority of visitors receiving a permit lead to the lowest utility related to use limits (i.e., the chance visitors have of receiving a permit). A possible explanation for these results is that Denali overnight wilderness visitors may realize that without certain management restrictions, the resource and social setting attributes of the Denali wilderness are likely to deteriorate beyond acceptable conditions.

An additional use of the model developed in this study is to predict the preferences of Denali overnight wilderness visitors for alternative wilderness management scenarios. As an example, two hypothetical Denali wilderness management alternatives will be considered. The first alternative will be referred to as the "Solitude Alternative" and the second alternative will be referred to as the "Freedom Alternative" (Table 3). Under the "Solitude Alternative", overnight wilderness visitors would encounter zero other groups per day while hiking and be able to camp out of sight and sound of other groups all nights. However, the two management attributes would be at their most restrictive levels. That is, visitors would be required to camp in designated sites and only a minority of visitors would be able to get a backcountry permit. Under the "Freedom Alternative", overnight wilderness visitors would be able to camp in any zone on any night, and most visitors would be able to get a permit for their preferred trip. However, visitors would encounter up to four other groups

Table 2. Coefficient Estimates for Wilderness Setting Attributes

Variable	Coefficient	Standard Error	Wald Chi-Square	P Value
Encounters with other groups per day while hiking:				
0 other groups	-	-	-	-
Up to 2 other groups	0.0649	0.0433	2.2458	0.1340
Up to 4 other groups	-0.5044	0.0438	132.8263	0.0001
Able to camp out of sight and sound of other groups:				
All nights	-	-	-	-
Most nights	0.1452	0.0435	11.1482	0.0008
A minority of nights	-0.4404	0.0452	94.8138	0.0001
Hiking is along:				
Intermittent, animal like trails	-	-	-	-
Single track trails developed from human use	-0.0281	0.0443	0.4028	0.5256
Multiple track trails developed from human use	-0.2912	0.0428	46.3399	0.0001
Camping sites have:				
Little or no signs of human use	-	-	-	-
Some signs of human use	0.2073	0.0440	22.1506	0.0001
Extensive signs of human use	-0.7896	0.0485	264.9717	0.0001
Regulation of camping:				
Allowed to camp in any zone on any night	-	-	-	-
Required to camp in specified zones	0.1398	0.0476	8.6202	0.0033
Required to camp in designated sites	-0.2117	0.0452	21.9484	0.0001
Chance visitors have of receiving a permit:				
Most get a permit for their preferred trip	-	-	-	-
Most get a permit for at least their second choice	0.1430	0.0443	10.4236	0.0012
Only a minority get a permit	-0.2157	0.0434	24.6555	0.0001

Figures 2a-2f. Denali Wilderness Setting Attribute Levels and Corresponding Utility

Figure 2a. Hiking Encounters per Day

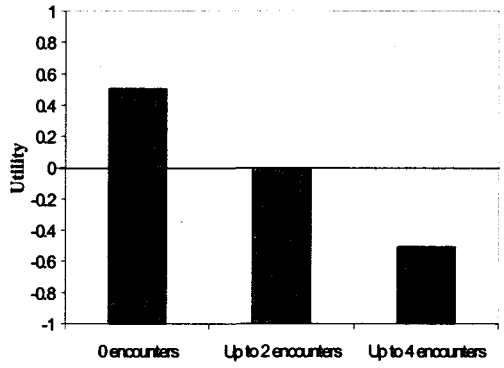


Figure 2b. Able to Camp Out of Sight and Sound of Others

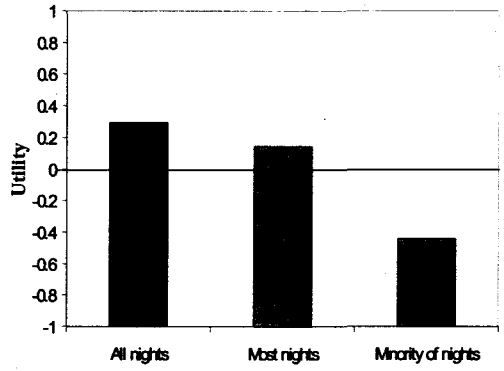


Figure 2c. Extent and Character of Trails

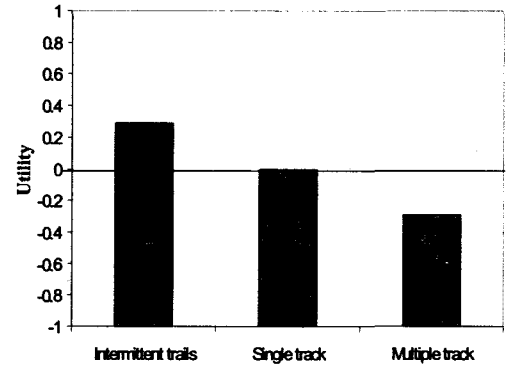


Figure 2d. Extent of Impact at Campsites

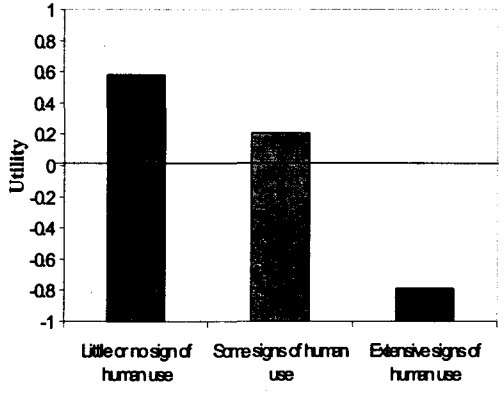


Figure 2e. Camping Regulations

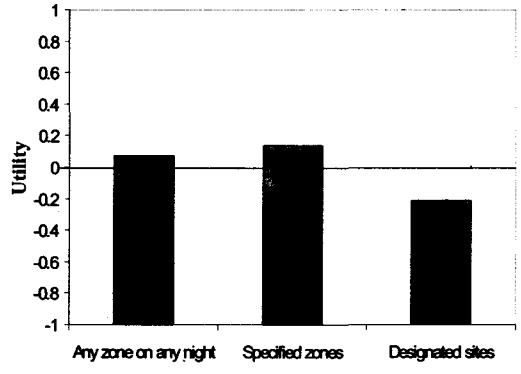
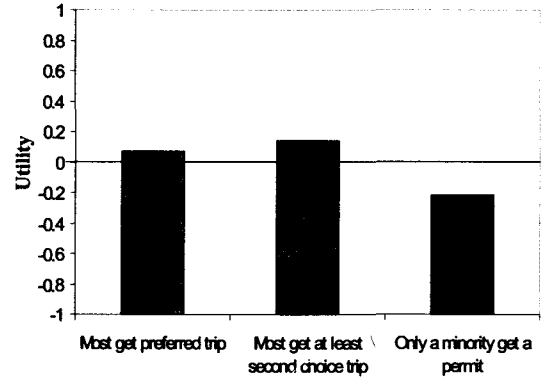


Figure 2f. Availability of Backcountry Permits



per day while hiking, and they would be able to camp out of sight and sound of other groups only a minority of nights. In both alternatives, the extent of social trails, and the amount of impact to campsites would be fixed at the intermediate level.

At the heart of the comparison between the "Solitude Alternative" and the "Freedom Alternative" are Denali overnight wilderness visitors' evaluations of the tradeoff between freedom of access to the Denali wilderness and the opportunity to experience solitude. The model predicts that in a hypothetical referendum, 75% of Denali overnight wilderness visitors would choose the "Solitude Alternative" and only 25% would choose the "Freedom Alternative" (Table 3).[6] This result implies that in general, Denali overnight wilderness visitors would prefer to forgo some freedom from management to improve opportunities to experience solitude.

Table 3. Scores for Two Hypothetical Denali Wilderness Management Alternatives

	Solitude Alternative	Freedom Alternative
Hiking Encounters:	0 other groups per day	Up to 4 other groups per day
Campsite Solitude:	All nights	A minority of nights
Hiking Trails:	Single track trails	Single track trails
Campsite Impacts:	Some signs of human use	Some signs of human use
Camping Regulations:	Designated sites	Any zone on any night
Availability of permits:	Only a minority of visitors receive a permit	Most get a permit for their preferred trip
Voting Proportion	75%	25%

Conclusions

In this study, stated choice analysis has been used to expand the normative approach to wilderness research by explicitly considering tradeoffs among the social, resource, and managerial dimensions of the Denali wilderness experience in the measurement of indicators and standards of quality. The results of the stated choice analysis presented in this paper have several important implications for wilderness management in Denali National Park and Preserve.

Consistent with the findings of previous wilderness research, Denali overnight wilderness visitors place particular importance on the extent of impacts at camping sites (Roggenbuck, Williams, & Watson, 1993). Management actions that provide Denali overnight wilderness visitors with places to camp that have no more than some signs of human use will make substantial positive contributions to the quality of their wilderness experiences. Camping conditions characterized by sites with extensive signs of human use greatly detract from the quality of visitors' wilderness experience in Denali. Further, Denali overnight visitors place relatively high importance on having limited contact with other groups while hiking and camping.

Several aspects of the study findings suggest that visitors would be willing to tolerate, and in fact support, management restrictions, including use limits, to achieve desired social and resource setting attribute conditions. For example, the results suggest that Denali overnight wilderness visitors are indifferent between the current regulation in Denali National Park and Preserve which requires visitors to camp in specified zones and being allowed to camp in any zone on any night. Additionally, the results suggest that visitors' utility does not diminish if limits on the number of backcountry permits issued are increased from the least restricitive level considered in this study to the intermediate level, even though their chances of receiving a permit for their preferred trip would be reduced. As noted above, a possible explanation for these findings is that Denali overnight wilderness visitors might consider a certain degree of management regulations necessary to achieve desirable social and resource conditions in the Denali wilderness.

On a more general level, the model allows managers to evaluate visitor attitudes toward alternative management scenarios. This allows managers to consider combinations of setting attributes that are not currently in place, but may offer a better alternative than the status quo. Additionally, alternatives being considered under the new wilderness management plan can be generalized to the model, and managers can predict public response to each alternative. The results of the example application of the choice model provide further evidence that visitors are willing to trade off freedom from management restrictions for desired social conditions. Specifically, the results demonstrate that in a hypothetical referendum, Denali overnight wilderness visitors would prefer a wilderness setting that emphasizes

solitude through relatively restrictive management actions over a more congested wilderness setting with limited management restrictions by a margin of three to one.

From a management perspective, these results suggest that the majority of Denali overnight wilderness visitors support backcountry permit quotas in Denali National Park and Preserve to protect the primitive character of the park. A moderately restrictive quota system that is designed to enhance overnight wilderness visitors' opportunities to experience solitude and to maintain relatively undisturbed campsite and trail conditions will receive the greatest support from Denali overnight wilderness visitors. However, the results of the example application of the choice model indicate that there is also a substantial proportion of Denali overnight wilderness visitors (25.0%) that place high importance on freedom from management restrictions despite reduced opportunities to experience limited contact with other groups while hiking and camping. This finding suggests that Denali overnight visitors are at least somewhat diverse in their attitudes concerning the management of the Denali wilderness. Managers at the park could address this diversity through management of the Denali wilderness based on the concept of zoning to provide a spectrum of opportunities for visitors. For example, the quota system could be designed in such a way that quotas for most zones within the Denali wilderness are set at levels that emphasize opportunities for visitors to experience solitude, while quotas for a few zones of the wilderness are set at levels that provide greater visitor access.

The results of this study indicate that certain conditions of each of the six Denali wilderness setting attributes provide a greater than average level of utility to Denali overnight wilderness visitors. However, Figures 2a-2f illustrate that when the conditions of the Denali wilderness setting attributes deteriorate beyond "threshold" levels, they provide less than average levels of utility (e.g., when camping sites deteriorate from having some signs of human use to extensive signs of human use). These findings imply that the wilderness experience in Denali National Park and Preserve can be substantially improved by restoring the social and resource conditions of the wilderness from beyond "threshold" levels. Likewise, the wilderness experience can be protected from substantial decline by keeping wilderness setting conditions from deteriorating beyond "threshold" levels.

The threshold levels for each of the six Denali wilderness setting attributes, illustrated in Figures 2a-2f, could be used by park managers to help formulate standards of quality. For example, Figure 2a demonstrates that fewer than two encounters with other groups per day while hiking provides a greater than average level of utility to Denali overnight visitors and that encounters with more than two other groups per day while hiking provides a less than average level of utility. Therefore, a potential standard of quality for this attribute might be set at "up to 2 encounters with other groups per day while hiking". The use of stated choice analysis data to help formulate standards of quality for wilderness setting conditions represents a potential improvement to the conventional normative approach in recreation research, in that resulting data reflect the tradeoffs visitors are willing to make among the conditions of social, resource, and managerial attributes of the Denali wilderness.

A potential limitation of this study is that the relative importance of the Denali wilderness setting attributes considered are influenced by the levels of the attributes selected. Our findings may have varied if we had used different levels to represent the range of conditions for each attribute. For example, we may have found the relative importance Denali overnight wilderness visitors place on the chance of receiving an overnight backcountry permit to be greater if we had used "Visitors have a 5% chance of receiving a backcountry permit" rather than "Only a minority of visitors are able to get a backcountry permit". However, the levels of the Denali wilderness setting attributes were selected to represent a realistic range of conditions for each of the Denali wilderness setting attributes, based on current conditions in the Park. As a result, it seems reasonable to conclude that the results of this study realistically represent Denali overnight wilderness visitors' attitudes and preferences concerning the conditions of social, resource, and managerial attributes of the Denali wilderness experience.

Previous recreation research indicates that attitudes and preferences concerning indicators of quality may be influenced by personal characteristics of visitors, such as the level of experience an individual has (Bryan, 1977; Ditton, Fedler, & Graefe, 1983; Graefe, Donnelly, & Vaske, 1986, Munley & Smith, 1976). Further research could be conducted to examine differences in the way novice and experienced Denali overnight wilderness visitors evaluate tradeoffs among the conditions of social, resource, and managerial attributes of the Denali wilderness. This information would provide managers with a better understanding of the preferences of different types of overnight wilderness visitors and could be used to identify wilderness setting conditions that are most suitable for different types of overnight wilderness visitors.

The findings of this study reflect the attitudes and preferences of overnight wilderness visitors in Denali National Park and Preserve concerning management of the Denali wilderness. The use of stated choice analysis should be considered for studies of visitors' preferences in other wilderness areas. Results of such studies would provide a basis for comparison of wilderness users' preferences for wilderness setting conditions across different types of wilderness areas. Further, while much attention has been focused on the preferences and attitudes of overnight visitors to wilderness areas, the amount of research focused on day use visitors is more limited (Roggenbuck, Marion, & Manning, 1994). However, day use constitutes a substantial proportion of visitor use in many wilderness areas (Lucas, 1980; Manning, Ballinger, Marion, & Roggenbuck, 1996; Roggenbuck & Lucas, 1987). Stated choice analysis can further inform wilderness management decisions through studies of day use visitors' preferences for the conditions of social, resource, and managerial attributes of the wilderness experience.

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Footnotes

[1] Stated choice analysis is based on the decision making framework of random utility theory, and is the basis of the analytical model used in this study. Refer to Hanemann (1984) for a comprehensive presentation of the random utility framework.

[2] Stated preference methods, including conjoint analysis, are related to stated choice methods, and are also used to evaluate public preferences for multiple attribute goods. Respondents to conjoint analysis studies are asked to rate or rank alternatives, rather than choose among alternatives. For a detailed discussion of conjoint ranking see Dennis (1998) and Mackenzie (1993). For a detailed discussion of conjoint rating see Mackenzie (1993), Stevens, Belkner, Dennis, Kittredge, and Willis (2000), and Teisl, Boyle, and Roe (1996).

[3] The orthogonal fractional factorial design was constructed by Don Anderson of StatDesign Consulting, Evergreen, Colorado.

[4] See Hosmer and Lemeshow (2000) for information about logistic regression analysis.

[5] To test whether differences in utility associated with changes in the level of an attribute are significantly different than zero (e.g., the change in utility associated with a change in the opportunity to camp out of sight and sound of other groups from "All nights" to "Most nights"), two additional logistic regression analyses were performed. In the two additional analyses the wilderness setting attributes were represented in the statistical model using *dummy* coding rather than *effects* coding. Results of the additional analyses indicate that the difference in utility associated with being "Allowed to camp in any zone on any night" versus being "Required to camp in specified zones", and the difference in utility associated with "Most visitors are able to get a permit for their preferred trip" versus "Most visitors are able to get a permit for at least their second choice trip" are not significantly different than zero. All other utility differences associated with different levels of the attributes were found to be significantly different than zero.

[6] See Opaluch, Swallow, Weaver, Wessells, & Wichelns (1993) for a demonstration of the methods used to calculate estimated voting proportions for management alternatives.

COPING, CROWDING AND SATISFACTION: A STUDY OF ADIRONDACK WILDERNESS HIKERS

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Abstract: Hikers in the wilderness areas of New York's Adirondack Park use a combination of physical and cognitive coping behaviors to maintain satisfaction with their wilderness experience. A total of 102 hikers in 16 Adirondack wilderness areas were interviewed and asked to complete a single-page survey. The in-depth interviews and surveys of hikers' importance and satisfaction ratings for a set of wilderness characteristics and conditions were used to measure and describe Adirondack wilderness hikers' employment of the four coping behaviors of spatial displacement, temporal displacement, product shift and rationalization. Results indicate users were employing coping behaviors across four wilderness area use intensity categories, often in combination and with few differences in their overall satisfaction.

Introduction

Since explorers Verplanck Colvin, George Washington Sears and Bob Marshall tramped its woods and waters, and fought for their protection, New York's Adirondack Park has become a popular recreation destination. Of its 6.5 million acres, essentially half are in the public domain, open for various forms of recreational use, and protected by the landmark 'forever wild' clause of the state Constitution. The 1972 Adirondack Park State Land Master Plan (APSLMP) and its subsequent revisions, have established a system of designated wilderness in the Park that parallels that of the federal Wilderness Preservation System (NYS APA, 1987). New York now has 17 wilderness areas within the Adirondack Park, each with distinct natural and social conditions and characteristics and visitor use patterns.

As visitor use of some of these wilderness areas has increased, the ability of a wilderness hiker to have unconfined recreational experiences and to experience solitude may be disappearing in some areas while thriving in others. Hikers who are confronted with wilderness conditions that challenge their ability to have a satisfying recreational experience may rectify this dissonance through one or more of four coping behaviors.

The coping behaviors used by visitors came under study by recreation researchers as a potential explanation for the consistently high satisfaction levels reported by recreationists despite concurrent reports of crowding (Cole et al., 1995). If wilderness visitors are able to alter their recreational experience, their expectations from it, or their perspectives of it, they may be able to maintain their satisfaction despite encountering conditions, such as crowding, that they saw as dissatisfying. Coping behavior theory is divided into two types of behaviors: physical and cognitive, both of which were adapted for recreation research from studies of stress coping and crowding done by urban sociologists (Graefe et al, 1984; Manning, 1999).

Physical coping, or displacement, occurs when a hiker changes their use pattern, removing themselves from the wilderness environment in which they felt, or expected to feel conflict. The hiker may be *displaced spatially* to a substitute wilderness environment that meets their needs, if one is available, or they may also be *displaced temporally* by altering the time at which they visit the wilderness to avoid conflict. Past research often defined displacement as a visitor movement away from conditions of user-user crowding (Heberlein & Shelby, 1977; Kuentzel & Heberlein, 1992; Shelby et al., 1988). Recent research indicates that this is perhaps too narrow a definition as hikers may be displaced by a number of factors that could cause dissatisfaction or conflict, including management actions (Hall & Cole, 2000).

Cognitive coping can take two forms: product shift and rationalization. *Product shift* is the process by which a hiker alters their expectations or perspectives of the wilderness opportunity to be in line with the conditions they encounter or expect to encounter (Shelby et al., 1988; Hammitt & Patterson, 1991; Shindler & Shelby, 1995). For example, a hiker may come to accept wilderness as a place in which they may encounter large numbers of other hikers and trailside and campsite litter. *Rationalization* is a revaluing of the wilderness experience that occurs when a user weighs their investment in the wilderness opportunity against any dissatisfying conditions encountered (Manning & Ciali, 1980; Stewart, 1992; Manning, 1999). Rather than view the trip as a waste of time or money, for example, the user will devalue dissatisfiers and place a higher value on positive aspects of the experience to rectify cognitive dissonance.

Past research has predominantly sought empirical evidence of user coping behaviors and also sought to determine their cause. While some success has been made documenting shifting patterns of use (Becker, 1981; Anderson & Brown, 1984; Shelby et al., 1988; Kuentzel & Heberlein, 1992), there has been limited success in establishing causal connections between user coping and crowded conditions and other wilderness experience dissatisfiers. Hall and Cole's (2000) recent paper is a decided change in this trend as they were able to document user displacement caused by user dissatisfaction with management actions.

The limited success of many past studies of user coping response is somewhat related to the research methods employed to attempt to measure coping behavior. Most past research has employed self-reporting mail surveys and

other off-site and impersonal methods, which have been unable to capture the complexity and opportunistic nature of user coping responses and satisfactions. This study makes use of a hybrid design, combining in-depth interviews conducted in the field, with field-administered surveys. The field interviews and survey attempted to measure and explain the employment and effectiveness of physical and cognitive coping behaviors by Adirondack wilderness hikers to avoid perceived dissatisfiers.

Methods

This study was exploratory in its design, as it attempted not only to measure the extent to which Adirondack wilderness hikers were employing physical or cognitive coping behaviors, but also to measure their effectiveness. Departing from past studies of coping, this study made use of qualitative in-depth interviews in an attempt to document and describe the complex nature of coping, a distinct advantage of the probing and adaptive qualitative interview method. To better understand the attributes of wilderness that hikers find important and factor in their satisfaction, a brief survey and Importance-Performance analysis of wilderness characteristics and conditions were used. This data was also used to measure the effectiveness of the four coping behaviors.

Both the interviews and surveys were administered in the field so that wilderness hikers could be questioned during the course of their recreational activity. The advantage to this technique is that the interviewer is able to probe hikers responses to questions, leaving less chance for misinterpretation, and encouraging the hiker to respond based on their current or actual experience. This technique attempts to avoid the concern that hikers surveyed through the mail weeks or even months after their wilderness experience may respond to questions either hypothetically, or with unrealistically positive memories of past trips. Individuals may tend to distance themselves from negative experiences and may more often remember the positive aspects of an experience.

The Adirondack Park serves as an excellent location to study coping behaviors as its 17 wilderness areas, that total over 1.02 million acres, provide a range of opportunities, contained in the Wilderness Opportunity Spectrum (Hendee et al., 1990). These areas have a range of visitor use intensity levels from a few hundred per year in the Pepperbox Wilderness to 140,000 in the High Peaks Wilderness Complex, all in relatively close proximity to each other and to major urban settings. One wilderness, the William C. Whitney Wilderness, was removed from the sample, because of its divergent visitor use pattern of canoeing and boating rather than hiking, and the remaining 16 areas were organized into four use level categories based on New York State Department of Environmental Conservation visitor data. Data collection was stratified between each of four Adirondack wilderness use level categories, which were set as: "Intensive Use," for the Eastern Zone of the High Peaks, with its estimated 123,000 user trips a year, with the remaining areas divided among "Heavy Use," "Moderate Use," and "Light Use." As wilderness use densities are known to fluctuate between weekdays, weekends, and holidays (Dawson et al., 2001), sampling was stratified not only among the use level categories but also between weekdays, and weekends and holidays.

After encountering a hiker along the trail, asking for their cooperation in an interview, and obtaining permission to tape record the interview, each hiker was asked a set of 12 general questions. Opening questions in the interviews served to establish rapport with the hiker, and document their residency and past wilderness hiking experience. Hikers were then asked a series of questions that established whether or not they had coped with dissatisfying conditions in wilderness. Further questions were asked to probe hikers responses and to encourage them to elicit stories of their responses to dissatisfying or unexpected and undesirable conditions in wilderness. For example, hikers were asked if they had ever felt crowded in an Adirondack wilderness area, or encountered dissatisfying social conditions. If they responded that they had, follow-up questions were asked to determine if these dissatisfying experiences had caused them to be displaced from a preferred location, for example. Interviews took place at popular wilderness destinations like mountain peaks and ponds, in campsites, and also along trails wherever hikers were encountered.

After the interviews, which lasted from 15 minutes to an hour in length, each hiker was asked to fill out a single-page survey. The survey was comprised of a set of eight statements of wilderness characteristics and four statements of wilderness conditions. Hikers scored each statement on a six-point importance scale (0 to 5) and a five-point satisfaction scale (-2 to 2). The interview and survey sought similar information using different approaches to attempt to complement each other and capture a clearer understanding of the phenomenon of coping and displacement. The interviews asked hikers to relate stories of their experiences and use patterns of Adirondack wilderness in their own words, while the survey simply asked them to rate certain characteristics and conditions of wilderness.

At the end of the field season, interviews and interviewers comments and observations were transcribed and analyzed, in the qualitative thematic coding tradition, using *The Ethnograph* software package. Interview transcripts were read and analyzed in detail and selections of text were marked or coded as pertaining to a coping strategy or other important thematic elements. Data from the single-page surveys was entered and analyzed using the Statistical Package for the Social Sciences software (SPSS version 10.0 for Windows). Statistical tests included: chi-square statistics to test patterns of coping among the four use levels and independent sample t-tests of importance and satisfaction scores among coping or non-coping groups.

Importance-Performance analysis (I/P analysis) is an effective way to visually assess the relative significance of specific attributes on the overall satisfaction of a recreationist (Hammitt et al., 1996; Smith & Tarrant, 1999).

In I/P analysis means of importance and performance – in this case, satisfaction – scores are plotted on the y and x-axis, respectively. Four quadrants are assigned the following labels and represent whether management attention is needed for various attributes: "Keep up the good work" (high satisfaction, high importance), "Possible Overkill" (high satisfaction, low importance), "Low Priority" (low satisfaction, low importance), and "Concentrate Here" (low satisfaction, high importance).

Results and Discussion

A total of 102 wilderness hikers were interviewed between Memorial Day and Labor Day of the summer of 2000, after spending 51 days and 36 nights interviewing on the trail, hiking approximately 390 miles in 16 wilderness areas and driving 5,941 miles between trailheads and home. On only one occasion did hikers decline to be interviewed – both were training for the Ironman Triathlon in Lake Placid and wouldn't stop running.

Of the 102 hikers interviewed, 66 were male and 36 female, ranging in age from 12 to 74 with a mean age of about 35 years. A majority of the sample was overnight hikers, with 72 camping out at least one night. The remaining 30 were day hikers, not spending a night in the wilderness. Most were residents of New York State, with 69 hikers reporting they lived in the state, while 23 were from other states and 10 resided in Canada.

A series of questions was asked to determine whether or not the individual had made use of any coping strategy. For example, one question asked of every hiker was: "Have you ever felt crowded in an Adirondack wilderness area and if so, what did you do about it?" As this series of questions was open ended and responses often the subject of probing following questions, qualitative analysis was used to make determinations regarding the employment of coping behaviors.

Of the 102 people interviewed, 54 had used one or more forms of coping behavior, while 48 had not. Physical coping behaviors were the most prevalent with 35 hikers employing temporal displacement, and 28 hikers employing spatial displacement. Cognitive coping behaviors were used to varying degrees, with 33 hikers using product shift, and 8 hikers using rationalization. What follows are examples of each of the four coping behaviors as reported by hikers in the sample.

Temporal Displacement

Qualitative determinations indicated that the 35 hikers employing temporal displacement were distributed across the spectrum of wilderness use intensity categories and were using the physical coping behavior in two ways. Hikers using temporal displacement were either shifting their time of wilderness use from weekends to weekdays, or from the summer season to either spring or fall. These hikers reasoned that the times they preferred, weekdays and the spring and fall, were times of lower use intensity in their preferred wilderness.

In the course of interviewing a 40-year-old Rochester, New York man in the Five Ponds Wilderness, he explained that he had felt crowded by other users at various times hiking in the High Peaks Wilderness Complex (HPWC). Still wanting to hike in the HPWC, this man and his wife described their strategy of avoiding dissatisfying situations of crowding this way:

> Yeah, like Johns Brook, we [are] going to do towards the end of this month and we're not going to start until Monday. Just because I know going up to Johns Brook Pass there will be a lot of weekend warriors and I hope to let them clear out if they are [hiking] on a weekend. And then, on a non-holiday setting for the week, I'm hoping that [it] is going to cut down on traffic. So, we are going to come in from the Garden [Trailhead] on a weekday just for that reason.

This hiker and his wife were making use of temporal displacement to maintain their satisfaction with the HPWC, avoiding the Johns Brook Valley corridor on a weekend as in the past they had felt crowded by the number of other users there. This man and his wife were not alone in their attempts to avoid feeling crowded by "weekend warriors," among many other potential dissatisfiers.

Spatial Displacement

A total of 28 hikers interviewed reported changes in the use of Adirondack wilderness areas that indicated they were spatially displaced. Like those hikers temporally displaced, the spatial displaced hikers were using the behavior in two ways. These hikers were either being displaced from one wilderness area to another (inter-wilderness displacement) or from one location in a wilderness area to another (intra-wilderness displacement).

Crowding in the Eastern Zone of the HPWC has spatially displaced one 24-year-old woman, from Warner, New Hampshire, interviewed at the Uphill Brook Lean-to, in the HPWC, a few miles from Lake Colden. She reported feeling crowded and was dissatisfied with litter and waste she saw when hiking past Marcy Dam and Lake Colden.

> I am just like, whoa, I can't imagine wanting to stay at either of those places. It is just, it is not really a wilderness experience when you have that many people out there and they're noisy.

She reported she had been displaced to lesser-used parts of the HPWC, indicating she was using intra-wilderness displacement. Though she said she would never camp at Marcy Dam or Lake Colden, she said she would consider hiking through those areas if their was a specific wilderness destination she wanted to access that required passing through there. This is evidence of cognitive coping behavior use as well.

Product Shift

This cognitive coping behavior was the second most commonly used coping behavior among hikers in this study, as indicated by their responses to interview questions. A total of 33 hikers reported cognitive changes

in their expectations or perspectives of a wilderness experience to accommodate conditions they encountered.

For example, one 48-year-old male hiker from Rochester, New York, interviewed in the Siamese Ponds Wilderness placed a high value on solitude and preferred to hike in wilderness areas with a low use intensity level. However, he also liked hiking with a group of friends, who sometimes hiked in the HPWC for the high peaks experience. As a result, he made use of product shift to maintain his satisfaction in the face of dissatisfying crowding on a HPWC peak:

> If the other guys all wanted to do one, I would do it. But, I know what to expect and wouldn't be disappointed.

This hiker, based on previous experience with crowding in the HPWC had redefined that wilderness experience and now expected to encounter crowding when hiking there. Product shift was allowing this hiker to join his friends on a HPWC trip and be satisfied overall with that trip despite not being able to experience the solitude he valued. While had redefined the HPWC experience, some hikers used rationalization to revalue the wilderness experience.

Rationalization

For some hikers their investment in the wilderness experience, in time and money for example, is of more value than dissatisfying conditions like crowding, and they are rationalize satisfaction from their trip. This cognitive behavior adaptation proved difficult to measure, perhaps as it likely occurs subconsciously, with only eight hikers in the sample determined to be using it.

A 26-year-old Canadian hiker interviewed on Mount Marcy in the HPWC said the trail erosion, human impacts and large numbers of other hikers he had encountered were "just part of the deal," and would not dissuade him from hiking in the High Peaks because "they are close, they are very accessible, and of course free." Unable to invest the time and money necessary to hike in the wild expanses of northern and western Canada, this Ottawa man chose the HPWC and reported being satisfied overall with his experience there.

Coping behaviors were clearly being used by these Adirondack hikers to maintain their satisfaction with their wilderness experience. Chi-square tests yielded no statistically significant differences between the four wilderness area use intensity categories for those using no coping behaviors and those making use of coping behaviors (Table 1) (Chi-square = 4.3; df = 3; p = 0.24). Theoretically, coping behavior employment should have some relation to wilderness use intensity. Hikers making use of spatial displacement would likely be found in areas with a lower use intensity level, while hikers coping cognitively would likely be found in areas with a higher use intensity level. The equal distribution of physical and cognitive coping behavior use across wilderness area use intensity categories is likely due to a balancing effect of spatially displaced hikers in lesser-used areas while hikers coping cognitively were found in high use intensity areas.

Table 1. Comparisons of Sample Size and Percentage between Coping Behavior Usage and Wilderness Area Use Intensity Category in 16 Adirondack Wilderness Areas in 2000

Wilderness Area Use Intensity		No Coping Behavior Use	Coping Behavior Use
Light	N	8	5
	[redacted]		
Moderate	N	16	28
	[redacted]		
Heavy	N	16	12
	[redacted]		
Intensive	N	8	9
	[redacted]		
Total	N	48	54
	[redacted]		

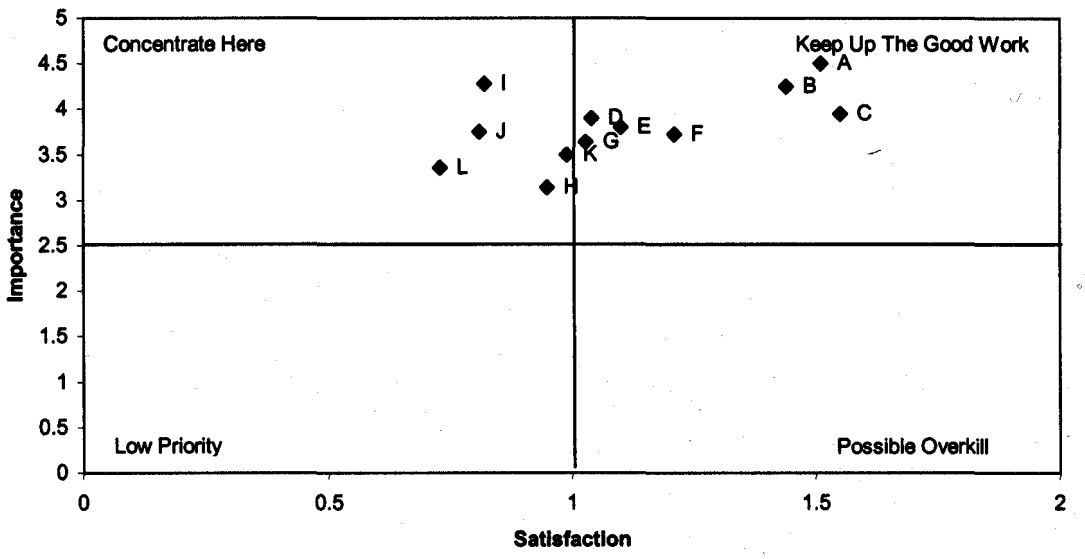
Importance and satisfaction scores from the entire sample indicate that Adirondack wilderness managers are, in general, providing the quality of experience that these Adirondack wilderness users were seeking. Importance and satisfaction means for each of the 12 wilderness characteristics and conditions were high (Table 2). In addition, these high mean scores indicate wilderness visitors are using coping behaviors to maintain their satisfaction.

Table 2. Mean Importance and Satisfaction Scores with 12 Wilderness Characteristics and Conditions for 102 Adirondack Wilderness Hikers Interviewed in 2000

Attribute	Importance	Satisfaction
[redacted]		
Natural Environment	4.50[a]	1.51
Personal & Social Experiences	4.25	1.44
Physical Activity	3.95[a]	1.55
Exploration & Remoteness	3.90	1.04[a]
Solitude	3.80	1.10
Connections with Nature	3.72	1.21
Wilderness Skills	3.64[a]	1.03
Connection with Others, Inspiration	3.14	0.95
[redacted]		
Litter and Waste	4.28	0.82[a]
Wilderness Information	3.75	0.81
Management Conditions	3.50	0.99
Number of Other Users	3.36	0.73[a]

[a] Statistically significant t-test differences (alpha = 0.05) between the mean scores of those using and those not using coping behaviors.

Due to the high importance and satisfaction means for every attribute, the quadrant lines, based on the grand mean of means, were not included in Figure 1, as is traditional in I/P analysis. The reasoning for this change is the very high level of importance ratings for all 12 variables. Rather than drawing quadrant lines on the grand mean of means, the figure was divided on middle of the importance scale at 2.5, and on the upper quarter of the satisfaction scale at 1 (satisfied).



Legend

A) Natural Environment	E) Solitude
B) Personal and Social Experiences	F) Connections with Nature
C) Physical Activity	G) Wilderness Skills
D) Exploration and Remoteness	H) Connection with Others, Inspiration
I) Litter and Waste	K) Management Conditions
J) Wilderness Information	L) Number of Other Users

Figure 1. Importance-Satisfaction Analysis of Wilderness Opportunities and Conditions Reported by Hikers in 16 Adirondack Wilderness Areas in 2000

Highest importance and satisfaction were placed on the quality of the natural environment (attribute A), personal and social experiences in wilderness (attribute B) and with the physical activity component of the wilderness experience (attribute C). Hikers were also highly satisfied, but placed a slightly lower importance on their ability to make connections with nature (attribute F).

Interestingly what is considered a hallmark of any wilderness experience, solitude (attribute E) fell almost exactly on the grand mean of means for both importance and satisfaction. Attributes for all four wilderness conditions, such as litter and waste (attribute I), had lower satisfaction ratings in relation to their high importance ratings, indicating each condition should be of some concern to wilderness managers.

The importance and satisfaction survey data was further analyzed in conjunction with the qualitative determinations of whether a hiker was using a coping behavior. The importance and satisfaction scores of those who had made use of any of the four coping behaviors were separated from those who used no coping behavior. Mean scores for each group were compared using independent sample t-tests with a significance level set at alpha = 0.05.

Of the 12 importance attributes, three showed statistically significant differences between those making use of some coping behavior and those not using any (Table 2). Those hikers who had not used a coping behavior in Adirondack wilderness placed a higher importance on the physical challenge of their wilderness experience, improving their wilderness travel skills, and their enjoyment of the natural wilderness environment than those using coping behaviors.

Differences were found for three of the 12 satisfaction attributes, where three were found to have statistically significant differences between those using a coping behavior and those not (Table 2). However, the three statistically significant importance attributes were not the same as the three statistically significant satisfaction attributes. Those using coping behaviors were less satisfied with the amount of litter, number of other users encountered on a wilderness trip, and exploration and remoteness in wilderness than those not using coping behaviors.

Study Implications

High overall satisfaction levels with few significant differences between those who have made use of coping behaviors and those who have not, coupled with the fact

that both groups were evenly distributed across the spectrum of wilderness use level categories, indicates a greater complexity and interaction of coping behavior employment than was previously expected. So, while the hikers in this group who have and have not made use of coping behaviors may have been standing on the same mountain peak or beside the same pond, they were looking at the wilderness around them with different eyes, seeing a different place, and having different experiences.

There were hikers in the sample that were indeed seeking solitude and wildness and were using coping behaviors to ensure that they found those conditions. However, there were also those who, regardless of parking difficulties, frequent contact with other users, eroded trail conditions, and noisy campsites, said they will keep returning to the highly used Eastern Zone of the High Peaks Wilderness Complex, or to the crowded summit of Giant Mountain on a holiday weekend as these things simply do not reduce their satisfaction. Maybe it is a physical challenge and mountain views they are seeking and as long as their ability to feel the burn in their legs and lungs on the way to a summit view is not impeded by social or managerial conditions, their satisfaction remains high.

So while these Adirondack wilderness hikers may, at times, perceive crowding from other wilderness visitors, coping behaviors are working to allow them to maintain high satisfaction levels. Those making use of coping behaviors were less satisfied with the amount of litter, number of encounters with other hikers, and the sense of exploration and remoteness (in other words, the wildness of wilderness) and considered the physical challenge, improvement of wilderness skills, and the natural wilderness environment to be less important than those not using any coping behaviors.

Wilderness managers and recreation researchers should note that results of this study lend empirical evidence to what researchers have long expected about coping behavior employment – that hikers were using coping behaviors to maintain their satisfaction with certain wilderness characteristics and conditions.

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PERCEIVED CROWDING AT BOSTON HARBOR ISLANDS NATIONAL PARK AREA

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Abstract: The increasing popularity of outdoor recreation has led to concerns about the level and types of visitor use that can be accommodated in parks and related areas without causing unacceptable impacts to the recreation experience. Such impacts represent the social component of carrying capacity, and include perceived crowding. Crowding within recreation environments has received substantial research attention. However, most studies have been in wilderness or river recreation settings. Perceived crowding is not free of physical settings. Research indicates that perceptions of crowding do in fact differ by site and therefore exploring crowding perceptions in a diversity of recreation areas. This study focuses on perceived crowding at Boston Harbor Islands National Park Area, a new unit of the national park system in the Boston metropolitan area. During the summer of 2000, randomly selected visitors at the Boston Harbor Islands completed an onsite survey. Results indicate that most visitors to the islands do not feel crowded. However, a number of other impacts that affect the recreation experience were identified. Several management implications are apparent.

Introduction

The increasing popularity of outdoor recreation has led to concerns about the impacts of rising visitation. Initial concerns focused on impacts on environmental resources. However, it soon became clear that the recreation experience was affected too. In his monograph titled "The Carrying Capacity of Wild Lands for Recreation," Wagar (1964) noted that increasing visitor use affected not only environmental resources but the quality of the recreation experience. Concerns over the impacts on the recreation experience led to a growing interest in the issue of crowding. The notion that there is some level of visitor use beyond which the quality of the recreation experience diminishes to an unacceptable degree forms the basis of the concept of social carrying capacity. This concept has provided a framework for theoretical and empirical research on crowding.

Crowding in parks and related areas is the focus of a large and growing body of scientific literature. Crowding has been defined as "a negative and subjective evaluation that the specified number is too many" (Shelby et al., 1989). Crowding is often interpreted as a normative concept, dependent on a number of factors and circumstances. Most of the early crowding studies were conducted in wilderness or river recreation settings. However, since the early 1990s researchers have begun to study crowding in a variety of other recreation settings such as national monuments (Andereck & Becker, 1993; Manning, Valliere, Wang, Lawson & Treadwell, 1999) and natural history museums (Budruk, 2000).

Factors Influencing Crowding

The literature on crowding in parks and related areas indicates that a variety of factors can influence crowding perceptions (Manning, 1985; Manning, 1999). These can be broadly grouped into three categories: visitor characteristics, characteristics of those encountered and situational variables.

Visitor characteristics such as recreation activity engaged in, motivations for outdoor recreation, preferences and expectations for use levels, experience level and attitudes toward management have been shown to influence crowding perceptions. For example, in their study of visitors at a national park in Alaska, Bultena, Field, Womble and Albrecht (1981), examined hikers' preferences and expectations for seeing others. Respondents indicated feeling more crowded when contacts with others exceeded their preferences or expectations.

The character of others encountered can also influence perceived crowding. Such factors include type and size of group, behavior, and the degree to which groups are perceived to be alike. For example, a study of crowding at an intensively developed outdoor recreation site by Gramann and Burdge (1984), indicated that crowding perceptions were positively related with recreationists' exposure to threatening behavior of other visitors.

The situation in which encounters take place has also shown to influence perceived crowding. Factors such as type and accessibility of a recreation area, location within an area, time or season, and environmental quality and design can influence crowding perceptions. Results of a study of visitors to a wilderness area in West Virginia by Vaske, Graefe and Dempster (1982) indicate that perceived crowding is influenced by environmental impacts left by others.

Measuring Crowding

Over the years, crowding has been measured in a variety of ways, both as a single composite item as well as a multiple-item scale. Examples of single composite items include a four-level categorial response scale ranging from "no, not

at all" to "yes, very crowded" (Westover & Collins, 1987); a seven-point Likert scale with the following categories: "not at all crowded", "slightly crowded", "moderately crowded", and extremely crowded" (Bultena et al., 1981); and a qualitative measure asking "how do you feel about the number of others around here tonight" (Absher & Lee, 1981). Other studies have used multiple-item scaling techniques. In a study on use levels and crowding on the Colorado River in the Grand Canyon National Park, Shelby (1976), used a nine-item scale with a 0.91 reliability coefficient (as cited in Shelby, Vaske & Heberlein, 1989). However, the use of multiple-item scales has inherent problems even though such scales can be reliable and allow the researcher to examine multiple dimensions of crowding perceptions. Multiple-item scales can place a substantial burden on respondents. Further, combining multiple items into a single crowding scale score can make comparing of results difficult. Finally, the results themselves may be less intuitively meaningful and therefore less directly useful to decision-makers (Shelby et al., 1989).

Heberlein and Vaske (1977) have attempted to overcome these problems by developing a nine-point single-item measure of crowding that asks respondents to indicate how crowded the site was at the time of their visit. The scale is designed such that seven of the nine points measure varying degrees of crowding, therefore allowing the scale to be sensitive to even slight degrees of perceived crowding. This single-item crowding measure has been used in both experimental as well as theoretical studies. It has been shown to be useful in a variety of recreation activities including hunting, boating, hiking, fishing, museum visitation, and recreation settings such as backcountry, frontcountry, rivers and museums. In a study comparing crowding perceptions at multiple locations (Shelby et al., 1989), this single-item nine-point Likert scale was both useful and reliable. This nine-point, single-item measure of crowding has been widely adopted in the crowding literature.

Boston Harbor Islands National Park Area

Unlike other national parks, Boston Harbor Islands National Park Area is managed by a partnership of a thirteen-member board appointed by the U.S. Secretary of the Interior, representing the National Park Service, a range of federal, state and local agencies, and private organizations. It represents a unique recreation setting for a number of reasons. First, the National Park Area is located adjacent to downtown Boston, a major cultural and economic metropolitan area in New England. Approximately forty million people live within 250 miles of the park. Second, the National Park Area comprises over 30 islands, containing a wide diversity of natural, cultural and historic resources. Finally, the islands offer a variety of recreation experiences including camping, wildlife observation, boating, fishing, historic tours and solitude. Currently, six islands are open seasonally to the public, free of charge, and have park staff or volunteers to welcome visitors. Ferries are used to transport visitors from the mainland to the various islands.

Study Objectives and Methods

The overall purpose of this study was to formulate social-based indicators and standards of quality relevant to the Park's management objectives. Specific objectives were to analyze park use patterns, identify potential indicators of quality and evaluate and select indicators of quality for park management zones. Questionnaires were developed for visitors to six areas within the park: the ferry from Long Wharf to George's Island, the ferry from Hingham to George's Island, World's End, Little Brewster Island, Deer Island and Thompson Island. Data collection was conducted during the summer of 2000 using on-site visitor surveys. A total of 695 visitors were surveyed between the end July and the beginning September. The survey was conducted on 8 weekend days and 9 weekdays between 9:00am and 6:00pm.

Study Findings

Visitor Characteristics

The average age of respondents was 41 years. Most visitors were relatively well educated averaging 16.5 years of formal education. The sample was relatively well balanced by gender with 54.2% of respondents female and 45.8% male. Respondents were primarily white (82.6%), followed by Asians (2.6%), African Americans (2.4%), and American Indian or Alaskan Natives (0.6%). The plurality of respondents were from Boston (22.6%) or surrounding communities (48.3%). International visitors comprised 4.1% of the sample.

Visitation Characteristics

A little over half of the sample (54.1%) were first time visitors. However these results varied among sites. Visitors to Deer Island (77.8%), Little Brewster (96.7%), and Thompson Island (76.5%) were primarily first-time visitors. World's End received a comparatively smaller percentage of first-time visitors (26.9%). Two-fifths of respondents (39.1%) on the ferry from Hingham, and a half of those (54.8%) on the ferry from Long Wharf were first-time visitors. Respondents visited primarily in groups consisting of family (39.8%) or friends (23.4%). Average group size was around 15 people with a median of 5.

Visitor Experiences

Popular recreation activities at Boston Harbor Islands include walking/ hiking (80.1%), sightseeing (73.1%), touring historical/cultural sites (46.2%) and picnicking (45.3%). Visitors on the Hingham ferry reported walking/hiking (24.3%) and sightseeing (23.0%) as their primary recreation activity. Visitors on the Long Wharf ferry reported sightseeing (28.3%) to be their main activity. Each island has a variety of recreation activities to offer, and primary activities reported at other sites included sightseeing (43.2%), and touring historical/cultural sites (32.4%) at Little Brewster Island; walking/hiking (36.4%) and touring cultural/ historical sites (27.3%) at Thompson

Island; sightseeing (81.7%) at World's End; and sightseeing (100%) at Deer Island.

Elements of the experience enjoyed most by respondents included scenery/views (20.2%), Fort Warren (12.9%), specific activities like hiking or beachcombing (9.1%), and peace and quiet (9.0%). Respondents indicated that lack of or poor maintenance of facilities (24.3%), lack of information (7.5%) and infrequent ferry schedules (6.9%) detracted from the enjoyment of the visit.

When asked about what they thought should be changed about the way visitors experience Boston Harbor Islands, two-fifths of respondents (40.5%) indicated that everything was fine the way it is. However, others indicated a need for more information/ education (16.8%), and more facilities and services (15.7%).

Crowding at the islands does not appear to be an important issue. Nearly three-fourths of respondents (72.7%) indicated not feeling crowded at all. Overall crowding perceptions averaged a relatively low 2.1 on the nine-point Likert scale. Nearly all respondents indicated that they were satisfied with their recreation experience.

Visitor Impacts

Overall, a little over a tenth of respondents (14.9%) indicated that visitors are causing negative impacts to the Boston Harbor Islands. Litter, broken glass, trash, garbage, graffiti, vandalism, crowding, unsupervised children and noise were the most commonly cited impacts. Around one-fourth of respondents (23.5%) were unsure if any negative impacts were occurring.

Discussion and Management Implications

The Boston Harbor Islands Partnership is in the process of preparing a general management plan that will provide a foundation to guide and coordinate all subsequent planning and management. The plan suggests that managers desire to increase visitor numbers to the park. Findings suggest that most visitors to the Boston Harbor islands do not consider the area to be crowded. This suggests that carrying capacity at the islands has not yet been approached. Management may therefore appropriately encourage an increase in visitor use.

The literature on crowding indicates that party size affects crowding norms (Manning, 1985). A majority of visitors prefer encounters with more small-sized groups as compared to few large-sized groups (Lime, 1972, Stankey, 1973). Study results indicate that around a third of groups that visit the islands consist of ten or more persons, which is fairly large for an outdoor recreation site. An increase in use at the islands may result in a subsequent increase in large visitor groups, potentially detracting from the visitor experience. Managers might therefore need to vary use levels at different islands to ensure a range of experiences from solitude to group related activities.

Crowding is now not an issue at Boston Harbor Islands National Park Area. With increasing use levels however, this may change. As noted earlier, crowding is a normative concept. It is a value judgment influenced by many factors. The literature on crowding suggests that factors other than the number of visitors can influence crowding perceptions. These factors include situational variables and characteristics of others encountered. When asked about negative impacts, 14.9% of respondents indicated they felt visitors were causing negative impacts to the park area. These impacts include litter, broken glass, trash, garbage, graffiti, vandalism, unsupervised children and noise. Such factors may at some point begin to exacerbate crowding perceptions. Managers may therefore need to monitor and evaluate these potential impacts.

Recreation carrying capacity is a useful concept in outdoor recreation, and includes natural resource and social components. Clearly, resource conditions (litter, graffiti) and social conditions (use levels) are inter-related and affect perceived crowding. Managing for perceived crowding will therefore require an integrated approach that includes both natural resource as well as social considerations.

Research on crowding in outdoor recreation indicates that visitors often have standards by which they judge a situation as crowded or not. Shelby et al. (1989) suggest that "when people evaluate an area as crowded, they have at least implicitly compared the impact that they experienced with their perception of a standard." It is therefore important that managers at the Boston Harbor Islands National Park Area develop indicators and standards of quality for both resource and social conditions. These indicators and standards of quality might vary by island, recreation opportunity and management agency.

Conclusion

Boston Harbor Islands National Park Area is a unique recreation setting that offers a variety of recreation activities. The park does not have a crowding problem at current use levels. However, with increasing use levels, this may change. The normative approach toward crowding suggests that crowding is influenced by a number of factors such as impacts to environmental resources. Managers therefore need to pay attention to problems of litter, graffiti, noise, and vandalism that are present on the islands. Managing for carrying capacities at the islands will require an integrative approach that encompasses both natural resource as well as social considerations. Finally, managers are encouraged to establish indicators and standards of quality for both resource and social conditions. These standards might vary by island, recreation opportunity and management agency.

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TRANSPORTATION PLANNING AND SOCIAL CARRYING CAPACITY IN THE NATIONAL PARKS

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Abstract: The U.S. national park system accommodates nearly 300 million visits annually. Most visitors come to the national parks in automobiles, and this poses several management challenges. Delays at national park entrances caused by traffic congestion detract from the visitor experience. Inadequate parking facilities further compromise the visitor experience and lead people to park along roadsides, damaging park resources and causing traffic hazards. At times, visitors must be turned away from some national park areas because transportation infrastructure is not sufficient to meet visitor demand.

National Park Service transportation planning has focused on addressing these issues through development of alternative public transportation systems. A number of national parks are planning and operating public transportation and shuttle systems to reduce visitors' reliance on personal transportation. While new transportation systems may mitigate traffic congestion and parking problems, these systems could potentially cause other problems. For example, the fleet size, scheduling, and routing of transportation systems can directly affect the number and distribution of visitors in a national park. Efforts to design transportation systems that protect and enhance the quality of the visitor experience in national parks can be improved with information about the social carrying capacity of these areas.

This paper presents carrying capacity research conducted to support planning in Yosemite National Park. Crowding-related standards of quality were formulated in heavily visited areas of this national park. A simulation model was developed to estimate the relationship between crowding-related standards of quality and visitor use levels and distribution. This information can be used to assist national park managers to design and operate transportation systems that integrate considerations of social carrying capacity.

Introduction

Our national parks contain important natural, cultural, and historical resources. Their importance is reflected in the fact that they currently receive nearly 300 million visits per year (National Park Service, 2001b). With increasing visitor use comes potential impacts to park resources and the visitor experience. Most visitors to national parks come via private automobile. Reliance on the automobile challenges park managers with a host of management issues that include traffic congestion, insufficient or inadequately managed parking, noise, and limited opportunities to use non-motorized travel or alternative transportation modes. The interaction between impacts created by automobile traffic, park resources and the visitor experience is the focus of this paper. Changes to transportation systems within national parks can potentially affect the visitor experience. These effects can be positive, or as we will demonstrate, potentially negative, depending on how alternative transportation systems are designed and developed.

In this paper, we will:

- Demonstrate the historic connection between transportation and the national parks
- Outline current thinking about transportation planning in the parks
- Describe management challenges associated with transportation planning
- Demonstrate linkages between transportation and social carrying capacity
- Provide demonstrations of different transportation scenarios as they relate to social carrying capacity
- Demonstrate how transportation planning can be informed by carrying capacity research and vice versa

The Historic Roots of Transportation in the National Parks

Transportation to and in national parks has not always been considered a problem by national park officials. In fact, mechanized transportation was important to the growth and success of the national park system. Early efforts by railroad operators to bring visitors to national parks brought political and economic support to the fledgling park movement. While the motivations of early railroad barons nay not have been fully altruistic, their support of the preservation movement lent a utilitarian air to an argument that was passionate, but otherwise lacking in pragmatic basis. In fact, support by railroads may have helped with the creation of the National Park Service. With the Union Pacific railroad's "See America First" campaign, growing numbers of tourists were encouraged to visit the national parks, thus giving the national park movement national recognition (Runte, 1997).

With the advent of the mass produced automobile, the popularity of national parks blossomed. Many early preservationists embraced the presence of automobiles in the national parks. The growing availability of automobiles to the middle class helped the national parks capture even greater public support. The few "purists" or as Edward H. Hamilton , correspondent for *Cosmopolitan* magazine dubbed them, "nature cranks," were outvoted by the large majority of preservationists who initially embraced the automobile as an opportunity to increase public popularity of the national parks (Runte, 1997). In fact, even John Muir accepted automobiles into his beloved Yosemite to increase public support for preservation of the parks. In a letter to Howard Palmer, Secretary of the American Alpine Club, Muir wrote "all signs indicate automobile victory, and doubtless, under certain precautionary restrictions, these useful, progressive, blunt-nosed mechanical beetles will hereafter be allowed to puff their way into all the parks and mingle their gas-breath with the breath of the pines and waterfalls, and, from the mountaineer's standpoint, with but little harm or good" (Bade, 1924).

The popularity of visiting national parks by automobile grew quickly. For example, in Yosemite National Park, by 1916, more visitors entered the park by automobile than by train. The following season, the ratio was nearly three to one, and by 1918, the ratio was almost seven to one (Lillard, 1968). By the mid 1950s only 1 to 2 percent of all park visitors entered by public transportation (Long, 1956). This trend has continued through present times.

Current Thinking and Challenges Facing Transportation Planning in the Parks

In recent years, the National Park Service has taken notice of the deleterious effects of automobiles on both park resources and the visitor experience. According to the National Park Service Transportation Planning Workbook (1999), "much has changed in the past 80 years. Parks have become so popular and so readily accessible that many park roads are inundated with increasingly long lines of vehicles. Many NPS facilities and infrastructure are stretched to their limits. Congestion and its accompanying pollution threatens to degrade the visitor experience as well as the priceless natural and cultural resources that have been so carefully preserved."

In response to the challenges facing park managers, the Department of Interior and the Department of Transportation began working together in 1997 to formulate solutions to park transportation issues. The Department of Interior and the Department of Transportation entered into a Memorandum of Understanding in November of 1997 to respond to high visitation levels and the corresponding problems that result from growing volumes of traffic and spiraling demands for visitor parking. The challenge of balancing stewardship of park resources against the pressure for more public access has become increasingly difficult in recent years. The Memorandum of Understanding lays the foundation for developing more comprehensive, intermodal, and financially efficient transportation systems while addressing the National Park Service's dual mandate of preserving natural and cultural resources and providing for a meaningful, pleasant visitor experience (National Park Service, 2001c).

In 1999, when unveiling Acadia National Park's new alternative transportation system, then Secretary of Interior Bruce Babbit remarked "Our parks don't have too many people, but they can, and often do, have too many cars. There is almost a tyranny of the automobile, where honking, fumes and hectic search for parking actually limits and inhibits our experience of nature. Two years ago, we sought a better way. Today I'm proud to announce that we've found it." Secretary Babbit continued "From Yosemite to Yellowstone, to the Grand Canyon and Zion, the Park Service is looking at emerging technology to help fulfill our 83-year-old mandate to provide access to, and preserve unimpaired, our greatest natural resources" (National Park Service, 2001a).

The emerging technologies former secretary Babbit spoke of were intelligent transportation systems (ITS), and alternative transportation systems (ATS). Some of the strategies and tools used by these systems include:

- Enhanced roadways
- Provision for non-vehicular travel modes
- Enhanced visitor information
- Encouragement of use of alternate travel modes
- Improved "way-finding" signage (ITS)
- Restricted access to roadways
- Iternative Transportation Systems (e.g., buses, light rail)

One of the primary strategies employed by transportation planners thus far in the national parks has been the use of ATS. In a number of parks, including Grand Canyon, Acadia and Zion, plans for ATS have been created, and in some cases, implemented. These systems offer potential solutions to some of the transportation problems that many parks face. For example, by introducing ATS, the number of private automobiles entering parks will be reduced thereby reducing traffic congestion, alleviating parking problems, and reducing adverse impacts created by noise and air pollution. Additionally, opportunities for further interpretation may become available when groups of people are together on a public transportation system.

Linkages between Transportation and Social Carrying Capacity

Since alternative transportation systems can directly affect the number and distribution of park visitors at various attraction sites within a park, implementation of ATS can potentially affect the carrying capacity of parks. Carrying capacity is generally defined as the maximum number of visitors that can be accommodated in a park or related area without unacceptable impacts on park resources or the quality of the visitor experience (Manning, 1999). Contemporary approaches to managing carrying capacity, including Limits of Acceptable Change (LAC) (Stankey et al., 1985) and Visitor Experience and Resource Protection

(VERP) (National Park Service, 1997; Manning, 2001), rely on formulation of indicators and standards of quality. Indicators of quality are measurable, manageable variables that reflect management objectives for resource protection and the quality of the visitor experience. Standards of quality define the minimum acceptable condition of indicator variables. ATS can potentially affect indicators and standards of quality, and ultimately carrying capacity through variations in fleet size (number of vehicles in fleet and capacity of each vehicle), scheduling and routing.

Case Study: Yosmite National Park

In a study of carrying capacity in Yosemite Valley, visitors at the base of Bridalveil Fall were asked questions regarding park conditions that added to or detracted from the quality of the visitor experience (Manning, Valliere, Lawson, Wang & Newman, 1999). The number of persons at one time (PAOT) at the fall emerged as an important indicator of experiential quality. Visitors were also asked to rate the acceptability of a series of computer-generated photographs showing a range of people at the base of the fall. These data provide a basis for helping formulate a standard of quality for PAOT at this site.

A computer simulation model of visitor use of Bridalveil Fall was also developed (Manning et al., 1999). This model was used to estimate PAOT at the base of the fall. Figure 1 traces PAOT over the minutes of a simulated day. Average daily use at Bridalveil Fall is approximately 3,500 visitors, and the simulated day ran from 7:00am (0 minutes) to 8:00pm (780 minutes). The mean PAOT (69) is represented by a horizontal line.

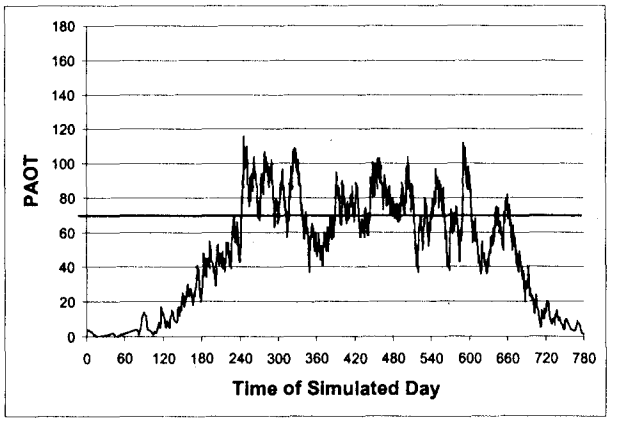

Figure 1. Simulation of Current Conditions at the Base of Bridalveil Fall

Two alternative scenarios were then developed and run using the computer simulation model. These scenarios were designed to simulate visitor use under an ATS. Both scenarios held total daily use of Bridalveil Fall constant at 3,500 visitors, but varied arrival schedules. In the first scenario, visitors arrived in groups of 180 every 30 minutes, and findings from this scenario are plotted in Figure 2. In this scenario, mean PAOT, represented by the higher horizontal line, increased dramatically to 98. In the second scenario, visitors arrived in groups of 45 every 7.5 minutes, and findings from this scenario are plotted in Figure 3. In this scenario, mean PAOT, represented by the lower horizontal line, decreased to 62.

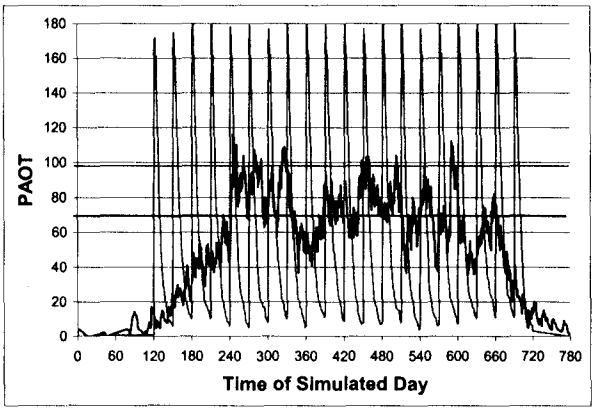

Figure 2. Simulation of Current Conditions and 30 Minute Scheduled ATS at the Base of Bridalveil Fall

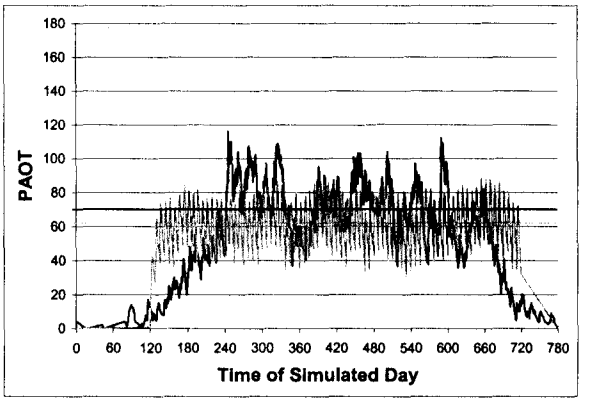

Figure 3. Simulation of Current Conditions and 7.5 Minute Scheduled ATS at the Base of Bridalveil Fall

These results suggest that PAOT, which is a salient indicator of the quality of visitor experience is transportation dependent. Infrequent, large groups can increase average PAOT, thereby effectively decreasing carrying capacity. Further, more frequent, moderately sized groups, can decrease average PAOT, thereby effectively increasing carrying capacity.

Conclusions

Instituting ATS may improve conditions on park roads, but has the potential to both improve and degrade social conditions at park attraction sites. In general, small groups delivered frequently at regular intervals tend to decrease PAOT, while large groups, delivered less frequently, will tend to increase PAOT.

Transportation systems can affect social carrying capacity as measured by indicators of visitor experiential quality. Transportation planners therefore need to carefully consider carrying capacity issues. Integration of transportation planning and social carrying capacity is necessary to institute park planning that does not degrade the quality of the visitor experience. By doing so, park managers can address issues of transportation capacity and social carrying capacity within a single framework. Computer simulation modeling allows manipulation of several dynamic variables at one time (e.g., rate of delivery, group size, scheduling, routing) offering a more comprehensive assessment of potential transportation alternatives, and can be an effective tool integrating transportation planning and social carrying capacity research.

Potential exists for future research into the integration of social carrying capacity and transportation planning. First, applying a variety of transportation scenarios to a park-wide computer simulation model could provide a more complete picture of the interaction between social carrying capacity and transportations systems. Second, inclusion of indicator variables that apply to both transportation planning and social carrying capacity into studies and planning could give managers a broader understanding of how park systems function.

Integration of transportation planning and carrying capacity offers potentially important mutual benefits. Carrying capacity can provide estimates of appropriate use levels at strategic sites within a park, and these data can be used to help design the routing and scheduling of a transportation network. Moreover, an appropriately designed transportation network can be a vital tool in implementing a carrying capacity plan.

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The Role of Information in Travel Planning Decisions

ASSESSING INFORMATION NEEDS AND COMMUNICATION BEHAVIORS OF NATIONAL FOREST SUMMER VISITORS

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Abstract: Information needs and satisfaction with various media are studied on the San Bernardino National Forest. Personal contact with rangers or staff is preferred, and about one–third to one–half of all visitors reported using various print media (brochures, maps, etc.). Least used were websites or mass media. Second, an adaptation of communication theory, uses and gratifications, is tested. Results suggest that the uses and gratifications scales are reliable and stable, and that visitors want orientation, reassurance and educational messages, in decreasing order of importance. Each of these topics was compared between day and overnight visitors.

Introduction

Participation in various outdoor recreation activities has significantly increased over the past decade. Increases have been particularly high in forestlands that are adjacent to urban areas. Of particular concern is the knowledge that visitors from these areas may have about natural resource management policies or proper use of forestlands for recreation. One approach is to study the communications between recreation area managers and current or potential visitors. Included would be an investigation into visitors' information needs and communication behaviors (Absher, 1998). Upon knowing visitors' information needs and communication behaviors, managers would be able to enact more effective and efficient ways to reach out to visitors, and better focus management efforts in terms of environmental education, minimal impact information, alerting visitors of policy changes, or simply assuring that visitors are able to achieve the highest quality experience.

Group Differences

Visitor communication in resource management has typically employed various print and non-print communication media such as interpretive bulletin boards, flyers, and brochures. Often the task has been to instill awareness, generate interest, and influence or modify behavior. Programs are only effective if the information positively influences recreationists' attitudes, and more importantly, creates an acceptable behavioral ethic during and after the visit to a recreational setting (Cole, 1999). For example, Oliver, Roggenbuck and Watson (1985) identified a fifty percent decrease in tree damage and litter in a campground as a result of creating awareness among campers via brochures about low-impact camping. Correspondingly, Cole, Hammond and McCool (1997) found that hikers exhibited a significant increase in knowledge after exposure to environmental messages encouraging low-impact practices.

However, the overall effectiveness of various print and non-print communication media is questionable, as the message is constrained due to the inability to reach all recreationists (Cole et al., 1997). Face to face communication can be much more effective, due to the credibility of the source of information (Knopf & Dustin, 1992; Vander Stoep & Roggenbuck, 1996), as in the case of a backcountry ranger informing a backpacker about the risks involved in the backcountry. Roggenbuck and Berrier (1982) found greater effectiveness with the combination of brochures and personal contacts among campers. Similarly, Olson, Bowan and Roth (1984) noted an increase in visitors' knowledge and attitudes via the use of brochures and direct personal communications, while the use of signs was much less effective among visitors. When given a choice, forest visitors seem to prefer face-to-face interaction to written or displayed information (James, Absher & Blazey, 1999).

However, visitor communication is typically concentrated on-site where the learning environment is informal and attention to the educational message is optional. It has been suggested that specific user groups with low awareness, knowledge or experience should be targeted with offsite communications (Confer, Mowen, Graefe & Absher, 2000). If information is received prior to site visitation or activity participation, there is the possibility that users will be more aware of appropriate behaviors and will choose to visit the 'right' place/setting (Vander Stoep & Roggenbuck, 1996). To achieve this objective, it is essential to understand the process of information search, as well as preferences for communication media among visitors (Brown, McCool & Manfredo, 1987).

Finally, information needs and communication behaviors often lack homogeneity across all users because they are dependent upon various factors such as level of experience, proximity to the destination, ethnic background, and activity participation. First time visitors are more likely than repeat visitors to seek information about a new setting. Hence, they might be more inclined to read the information provided by management, such as interpretive bulletin boards, flyers, and brochures. They might also be expected to seek basic and additional information about the setting (Rogers & Ramthun, 1998). On the other hand, more experienced visitors or skilled recreationists may be more likely to pursue personal contacts to gather information about the setting, or may in fact feel comfortable in acting on incomplete or inaccurate information. For example, Williams and Huffman (1986) noted a difference in the process of information use by more and less experienced

visitors; wherein specialized hikers demonstrated a greater propensity to seek additional information than non-specialized hikers. Finally, ethnic or group composition variables may be a factor. Parker and Winter (1996) reported that Hispanics were less likely to approach a management agency for information, and more likely to obtain information about a recreation area via family or friends. Also, Hispanics have shown a greater proclivity to learn about the rules and regulations, while their preferred medium of communication was print media (Winter & Chavez, 1999). In summary, information needs and behaviors may vary by user group.

Communications Approach

Based on the above review, it is apparent that information services may be critical links enabling managers to communicate effectively with a broad range of visitors. Information needs and communication behaviors have been a relatively new subject of study within the outdoor recreation field, and research has primarily focused on the application of social psychological theories, notably persuasion theory and/or close variants of theories of reasoned action (Absher, 1998). Although the use of social psychological theories offers a valuable way to understand communication behaviors, research should incorporate other existing theories from various disciplines to further extend our understanding of communication patterns. To be clear, the dismissal of currently used theories, notably socio psychological derivatives, is not advocated here. Rather a more integrated interdisciplinary approach is encouraged — one that may complement, advance or provide a more complete assessment (Absher, 1998).

A relatively untested approach to deciphering information and communication behaviors comes from the mass communication field. A popular theory known as "uses and gratifications" (U&G) has been employed over the last 50 years to study the public's perception of gratifications sought and obtained via engagement in mass communications across a variety of modalities such as television programs, phone usage and print media. It is important to note that gratifications sought and gratifications obtained are not synonymous. Gratifications sought (GS) are defined as 'needs, expectations, or motivations for media use,' while gratifications obtained (GO) reflect 'actual fulfillment' of the gratifications sought (Dobos, 1992, p. 30). The causal link between gratifications sought and gratifications obtained is important because, if sought after gratifications are not obtained during the process of media engagement, then the likelihood of further engagement is reduced, and future communication opportunities may be lost.

Basically, the U&G approach assumes that viewing audiences differ in the gratifications they seek and obtain while engaged in the mass media (Vincent & Basil, 1997). Also, this theory assumes that viewing audiences are not passive receivers but rather are actively involved in making a conscientious and motivated attempt to seek various gratifications (Anderson, 1987; McQuail, 1983). It is due to the various purposes or gratifications sought by the audiences that the outcome of the viewing experience fluctuates among individuals engaged in similar mass media outlets (Anderson, 1987).

That said, U&G might vary by setting. In other words, various media outlets may be sought for different gratifications. For example, newspapers were sought for sociopolitical knowledge and self-understanding was obtained by books, while broadcast media such as interpersonal channels, film, and television programs granted 'more affective gratifications' when compared with newspapers (Katz, Gurevitch & Haas, 1973 in Dobos, 1992, p. 31). Recently, Vincent and Basil (1997) indicated that newspaper reading resulted in better knowledge of current events when compared with newsmagazine reading among college students. It is evident that individuals resort to various media types to seek and fulfill various gratifications. It is unclear at this time which information needs are fulfilled in outdoor recreation settings.

Even though U&G has been extensively employed in media studies (mass communications), rarely has there been an attempt to incorporate this theory or other mass communication theories in the context of outdoor recreation, although the applicability is implicitly evident and strongly recommended (Absher, 1998). To date, a few exploratory studies have been conducted (Absher & Picard, 1998; Absher, 1999).

Uses and Gratifications Scales for Outdoor Recreation

The basic U&G principles were adapted and pilot-tested among Forest visitors to establish theoretical validity by Absher and Picard (1998). Based on this work this study focused on a four-dimension implementation of U&G scales: *Orientation*, *Instrumental*, *Educational* and *Reassurance*. Each dimension highlights one practical aspect of the outdoor recreation experience. The first dimension, *Orientation*, refers to seeking information about forest activities, events and various places within the forest. The second dimension, *Instrumental*, refers to visiting the Forest or Forest Service sites to gather logistic information about parking facilities, day-use permits and operating hours. The third dimension is *Educational*. As the name implies, it refers to seeking or visiting the forest to learn about various plants, wildlife, and preservation and conservation ideas and concerns. The fourth dimension, *Reassurance*, refers to the use of information to avoid getting lost, avoid potentially dangerous situations, and know where to get help if the need arises. A total of 24 uses and gratifications items were randomly arranged using a six-point, Likert scale format, ranging from strongly agree to strongly disagree. The dimensions demonstrated reliability alpha values ranging from .78 to .87. Analysis based on these scales indicated clear differences in the use of communication services across users groups (Absher, 1999).

Objectives

The work reviewed above provides a platform to build upon in terms of better understanding of visitor communications and further refinement of the U&G scales. Information services use needs to be systematically investigated. This involves various media as well as new measurement scales. Following from Absher and Picard (1998) and Absher (1999) the U&G scales need to be further tested to determine reliability among various user groups. Thus, the objectives of this paper are to:

1. Apply U&G theory to the assessment of information needs, preferences and uses among two major segments of National Forest summer visitors (overnight and day users), and
2. Assess the use of and satisfaction with various information sources (media) by these user groups.

Methods

Data were collected within the Angeles and San Bernardino National Forests, both located in Southern California. Both of these National Forests offer a diverse array of recreational opportunities including camping, hiking, swimming, boating, picnicking, sightseeing and fishing. A sampling plan was designed to target users on six days during the months of July, August and September 1997. The sampled sites included ten campgrounds and nine day-use areas.

Interviewers attempted to sample all users at each site on the designated sampling periods. A single member of each group was requested to respond to the interview questions, which took about ten minutes to complete. A total of 633 subjects were approached, of which 566 users completed a questionnaire and 67 refused to be interviewed, yielding an 89 percent response rate. There were 379 respondents that were sampled at campgrounds and 217 in day-use areas. The three–page survey instrument was administered onsite, and a Spanish version was also available. The Spanish version was needed because California has a high Spanish speaking population and some of those users might feel more comfortable responding in their native tongue.

Respondents were asked about their frequency of visitation to National Forests within the last 12 months, and the primary activity undertaken during the course of their trip. A total of 16 items related to information needs and communication behaviors based on U&G theory as adapted by Absher and Picard (1998) were employed. As explained earlier, the U&G scales was conceptually designed with four dimensions that demonstrated to be reliable based on Cronbach's alpha values: *Orientation*, *Instrumental*, *Educational* and *Reassurance*. The original scales had 24 items, but 8 items were dropped due to redundancy or lack of statistical power, as recommended by Absher and Picard (1998). The remaining 16 items, four for each U&G sub–scale, were randomly ordered on the questionnaire with a six–point Likert type scale format, ranging from strongly agree to strongly disagree. These variables were subsequently reverse coded so that higher levels of agreement resulted in higher U&G scores.

Other sections of the questionnaire asked respondents to indicate the media sources they used in planning their trip and their satisfaction with the same media in terms of their usefulness. Basic sociodemographic and recreation use questions completed the questionnaire.

Results

Profile of Subjects

Among the 566 respondents, 65% reported they were White/Caucasian, 22% claimed to be Hispanic, and below 13% classified themselves into other ethnic groups (Black/African American, Native American or Alaska Native, Asian or Pacific Islander). About 39% reported incomes between $40,000 and $75,000, 28% indicated between $20,000 and $39,999, 13% reported below $20,000, and about 20% noted above $75,000. Visitors were predominantly from the Southern California region (97%), with about 3% from other states.

Within the past 12 months, 23 percent of the respondents indicated they visited the National Forest six or more times, while an equal number (23%) reported one visit. During their current visit, 23 percent reported a stay of 1 day or less (day users), while 77percent were overnight visitors. This data is the result of an intentional stratification in the sample, and should not be used as a general estimate of the day use proportion in the forest. This variable was used to define the two analysis groups below.

Activities pursued at the forest varied with visitor ethnicity. About half of the day users (51%) were White, compared to nearly three-quarters of the overnight users (72%). Hispanics were twice as prevalent among day users (34%) than among overnight users (16%). About one-eighth of both campers (12%) and day users (15%) were members of other minority groups.

Information Needs and Communication Behaviors

Table 1 shows that the most used information sources were family/friends (60% or the respondents), followed by maps (55%), brochures and flyers (54%), and rangers/staff (53%). Next came three moderately used media: trail/road signs (49%), bulletin boards (42%) and guidebooks (37%). Only the World Wide Web (Internet) and radio/TV/newspapers/magazines registered low usage (13% each).

Independent of how often the various media were actually used, respondents were asked to rate their satisfaction with the sources they did use. Technologically newer and conventional mass media, such as the World Wide Web (Internet) and radio/TV/magazines/newspapers, registered low levels of satisfaction as well as relatively low use levels. Information from rangers or other Forest Service employees, and from family and friends, received the highest levels of satisfaction. These are, of course, the two personal media on the list. Maps, brochures & flyers, bulletin boards, guidebooks, and signs along roads or trails (all print media) seem to fall in the middle in terms of satisfaction.

Table 1. Communication Media Use and Usefulness (Satisfaction) by Group

Variable	Day User	Overnight User	All	Significance Test
1. Media used[2]				
Brochures/flyers	53.8%	53.7%	53.7%	.535[2]
Rangers/ FS employees	44.5	55.5	52.9	.023
Bulletin boards/notices at sites	42.0	42.0	42.0	.539
Signs along roads/trails	52.1	47.6	48.6	.224
Maps	47.1	57.8	55.3	.026
Websites	7.6	14.2	12.7	.034
Radio/TV/newspaper/magazines	15.1	12.7	13.3	.296
Guidebooks	32.8	32.2	36.9	.169
Family/friends	57.1	60.6	59.8	.287
2. Medium usefulness (satisfaction)[3]				
Brochures/flyers	3.34	3.34	3.33	.964[1]
Rangers/ FS employees	3.69	3.69	3.62	.459
Bulletin boards/notices at sites	3.54	3.38	3.41	.131
Signs along roads/trails	3.51	3.26	3.31	.024
Maps	3.55	3.39	3.42	.192
Websites	3.00	2.94	2.95	.732
Radio/TV/newspaper/magazines	3.23	2.90	2.99	.028
Guidebooks	3.49	3.37	3.39	.296
Family/friends	3.50	3.59	3.56	.427

[1] This section is based on a t-test between groups.
[2] This section reports the percentage that used the medium listed, and significance test is based on Chi-square test (Fisher's exact) of groups by use percentage.
[3] Scale is 1= "Not at all satisfied" to 5= "Extremely satisfied."

In order to better understand these results, they were compared between the day and overnight groups. The significance tests in Table 1 show that there were few differences. Overnight visitors reported using three media sources more often than their day use counterparts: rangers/employees, maps, and websites. And they rated their satisfaction (usefulness) with signs along roads/trails and radio/TV/newspaper/magazines lower.

Uses and Gratifications Scales

The items within each U&G dimension were subjected to a Cronbach's alpha reliability analysis to identify their internal consistency (see Table 2). The first dimension, Orientation, had a standardized alpha of .78; the second dimension, Instrumental, registered .78; the third dimension, Educational, had .87, while the fourth dimension, Reassurance, was .83. These reliability values are considered good to very good, and are consistent with the earlier works of Absher and Picard (1998) and Absher (1999), with no one scale differing by more than .05 from the pilot test. This suggests that the U&G scales are stable and reliable at least for this user population.

As far as the actual needs these scales measure, the Instrumental scale was the lowest rated at 2.78 out of 5. Then came Educational (2.86), Reassurance (3.07) and finally Orientation (3.30), the highest rated of the four. This suggests that orientation concerns are the predominant need followed by reassurance and educational functions.

To check this further, the day and overnight users were compared with a t–test of the mean scores (Table 2). The differences for each scale were relatively small, ranging from .06 to .13 scale points. None of the group comparisons were statistically significant, which suggests that the information needs are the same for each group. Apparently it makes no difference whether they are day users or longer term visitors in terms of the kinds of information visitors are seeking.

Summary and Conclusions

In summary the results show that visitors reported personal interaction (family/friends or rangers/staff) when communicating about outdoor recreation more than other forms of communication. Printed media (bulletin boards, guidebooks, maps, brochures, and signs) were in the middle range of use, and mass media outlets (Internet, radio, TV, newspaper, magazines) were used relatively infrequently.

There were some differences between those who stayed overnight and day users, with overnight users always reporting more use of those media that were significantly different (rangers/employees, maps, and websites). One management implication from these results is that personal services are highly valued. Whether they are provided by a staffed office, roving patrols, or non–agency employees such as volunteers or partners (e.g., chambers of commerce), the users rate these information sources highly.

Table 2. Uses and Gratifications Scales, Alpha Reliability and Group Comparisons

U&G Subscales[1]	Cronbach's Alpha:		Mean Scores and Group Comparison:				
	Standardized Item Alpha	Previous Alpha[2]	Overall Mean	(Std. Dev.)	Overnight Users' Mean	Day Users' Mean	t-test Signif.
Orientation Scale	.83	.78	2.70	(1.46)	2.71	2.65	.92
Instrumental Scale	.74	.78	3.22	(1.18)	3.23	3.17	.89
Educational Scale	.85	.87	3.14	(1.22)	3.18	3.06	.15
Reassurance Scale	.88	.83	2.93	(1.26)	2.97	2.84	.33

[1] Questions used a six–point Likert Scale format, reverse coded, so that 6= Strongly Agree and 1= Strongly Disagree.
[2] Compared to pilot study results (Absher, 1998).

The print media are also being accessed by many visitors (roughly a third to a half of all visitors). Managers will need to more carefully assess the impact of these media to assure effectiveness in message delivery. The websites and mass media are not being used much and in some cases are low rated in terms of usefulness. The application of these technologies/media would need to be improved if they are to be more successful for a broad range of visitors.

The U&G scales were shown to be reliable and consistent for these forest visitors. Orientation concerns were the top rated need, followed by reassurance and educational functions. Moreover, there were no significant differences in these needs between the two groups studied. Managers may want to review the mix of messages they, and perhaps their partners, provide through various media to ensure that these functions are met in ways that are accessible to both day and overnight users.

Finally, this study provides only a brief account of U&G scale performance. The original U&G development work intended to produce scales that could be used broadly in outdoor recreation, and the results from this application of the scales is encouraging. Nonetheless, they should be more fully tested across a variety of outdoor recreation settings and activity types to gauge their suitability and impact in general use.

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THE COMMODIFICATION PROCESS OF EXTREME SPORTS: THE DIFFUSION OF THE X-GAMES BY ESPN

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Abstract: The purpose of this study was to explore the commodification process of extreme sports. Specifically, this study is to investigate how X-Games as a sport event has been spread among the teenagers by ESPN in order to use extreme sports commercially. The diffusion theory was utilized as a theoretical framework to explain this process because the diffusion theory is a useful perspective to explain how new ideas are spread among the members of a social system. In other words, X-Games as an innovation has been diffused through both ESPN (mass media channel) and the participants and viewers of X-Games (interpersonal channel) over time among teenagers (the members of a social system). Especially, this study focused the role of ESPN as a change agent in the diffusion process of X-Games. For the purpose of this study, a research question was suggested, "Does ESPN influence the consumption of commodities related to extreme sports?". A path model was constructed to examine this research question. This model was designed to investigate the causal link between the amount of X-Games televised by ESPN and the consumption of commodities related to extreme sports. The result indicated that the model was consistent with the data.

Introduction

Individual sports and outdoor activities, like skateboarding, in-line skating, rock climbing, parasailing, mountain biking, skyboarding, disc golf, and snowboarding, that contain a certain degree of risk have become increasingly popular in the 1990s. These leisure activities are known by various names, such as "thrill seeker" vacations (du Lac, 1995), "whiz" sports (Midol, 1993; Midol & Broyer, 1995), "panic" sports (Kroker, Kroker, & Cook, 1989), "risk" sports, and " extreme" sports (ESPN, 1995; Rinehart, 1995; Robinson, 1992). Two terms, risk sports and extreme sports, are broadly accepted.

Robinson (1992) argued that risk sport activities differ from traditional sport activities by posing elements of real or perceived physical danger within a context of outcome uncertainty. He also defined the risk sports "as a variety of self-initiated activities that generally occur in natural-environment settings and that, due to their always uncertain and potentially harmful nature, provide the opportunity for intense cognitive and affective involvement" (p. 53). The origin of using the word "extreme" in those activities goes back to the 1970s in France when two Frenchmen referred to their conquest of Chamonix couloirs as "ski extrême" (Youngblut, 1998). Youngblut described the word "extreme" as "far beyond the bounds of moderation; exceeding what is considered reasonable; radical" (p. 24). Pedersen and Kelly (2000) contended that the term "extreme" was used in the context of sports to describe any sporting activity that was taken to "the edge." Then, they defined it as "a variety of sporting activities that have almost nothing in common except for high risk and an appeal to females and males from the ages of 12-to-34" (p. 1). Synthesizing the definitions of Robinson and Pedersen and Kelly, extreme sports are defined as a variety of individual sporting activities that challenge against uncertain and harmful nature to achieve the enjoyment itself, especially, among the young generation.

The Entertainment Sports Programming Network (hereafter, ESPN) X-Games is a commercialization of extreme sports. According to ESPN's Director of Programming, Ron Semiao, he got the idea for ESPN's X-Games in 1993. The idea was to create a sport event, such as the Olympic Games, held in both Summer and Winter every four years. Thus, ESPN began hosting X-Games in Summer and Winter annually, called them Summer X-Games and Winter X-Games. The idea of ESPN's Director, wishing to innovate a sport event in Summer and Winter, such as the Olympiad, has come true as X-Games. Needless to say, in terms of a communication channel to people, ESPN has played an important role to disseminate X-Games to people. ESPN claimed that "the 1998 X-Games attracted a record 250,000 spectators and gathered more than 400 of the world's top alternative sports athletes to compete for prize money/medals in nine sports categories" (X Games fact sheet – X at V, 1999, p. 1). In addition, they said that they reached 76 million households through ESPN, 64.4 million households through ESPN2, and approximately 171 million households worldwide via ESPN International in 1999 Summer X-Games. Since ESPN changed the name from "The eXtreme Games" to "X-Games in 1996, ESPN has hosted "The X-Games" each year in both Summer and Winter, as planned.

In the meantime, extreme sports are alternative sports against the mainstream. In spite of its uncommercial characteristic as the alternative sports, they have flourished commercially. Maurstad (1998) noted, "The X-Games present a sporting event for a post-punk audience raised on MTV. ... This wide world of sports represents a complete inversion of the old order in which team sports and team ideals were the standard that jocks lived by" (p. 1). The X-Games was created in 1995 by ESPN in order to enhance profit and entertainment in the form of sponsorship and endorsement of non-sports and sport-related activities, goods, services, and merchandise. In other words, the X-Games is a sports event created to commercialize extreme sports by a media company.

In fact, not only ESPN, the first network to televise extreme sports as a sport event, but also the other television networks (e.g., Fox Sports Net, NBC, MTV, and XOZ) are dealing with extreme sports or have a plan to do so (Larson, 1999). Many major advertisers have paid attention to extreme sports and have even sponsored them. It is said that the main reason why they are interested in the X-Games is that most of participants and viewers are teenagers who have strong purchasing power. For this reason, it is expected that many television networks will make efforts to commmodify the extreme sports continuously. Moreover, this type of intervention by media or sponsors demonstrates the commodification process of extreme sports regardless of the nature of alternative sports. In other words, the extreme sports, which have tried to resist commercialized and competitive forms (Rinehart, 1998), are becoming new objects of commodification.

The purpose of this study is to explore the commodification process of extreme sports. This study is also to examine how extreme sports evolved into X-Games as a sport event by ESPN. Thus, it is assumed that ESPN has played an important role as a change agent to diffuse extreme sports among people in order to use extreme sports commercially. In this matter, diffusion theory provides a useful theoretical framework to achieve the purpose of this study. According to Rogers (1995), "diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system "(p.5). Thus, diffusion theory is useful approaches to explain how new ideas are spread among the members of a social system. Therefore, this study is to explore the commodification process of the extreme sports by applying diffusion theory. Specifically, it is investigated how X-Games as a sport event has been spread among people by ESPN in order to use extreme sport commercially.

Method

The purpose of this study was to explore the commodification process of extreme sports. Specifically, this study is to investigate how X-Games as a sport event has been spread among people by ESPN in order to use extreme sports commercially. The diffusion theory was utilized as a theoretical framework to explain this process because the diffusion theory is a useful perspective to explain how new ideas are spread among the members of a social system. In other words, X-Games as an innovation has been diffused through both ESPN (mass media channel) and the participants and viewers of X-Games (interpersonal channel) over time among teenagers (the members of a social system). Especially, this study focused the role of ESPN as a change agent in the diffusion process of X-Games.

For the purpose of this study, a research question was suggested, "Does ESPN influence the consumption of commodities related to extreme sports?" In addition, hypotheses to test this research question were proposed as follows:

Hypothesis #1: There is a positive association between the amount of X-Games televised by ESPN and the number of participants in X-Games.

Hypothesis #2: There is a positive association between the number of participants in X-Games and the amount of consumption of commodities related to extreme sports.

Based on these hypotheses, a path model was constructed (Figure 1). The path model was applied because it is a causal model for understanding relationships between variables. It is assumed that independent variable, the amount of X-Games televised by ESPN, will have an impact on the number of participants in X-Games as a control variable, and in turn will have an impact on the amount of consumption of commodities related to extreme sports as a dependent variable.

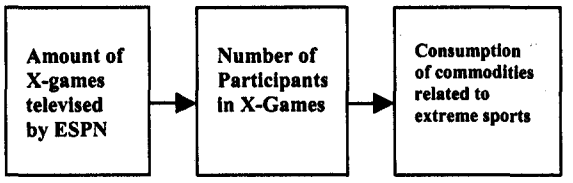

Figure 1. Path model

In order to test this path model, the second data were collected as follows. The amount of X-games televised by ESPN 1 and ESPN 2 in a yearly base from 1993 to 1999, the number of participants in X-games in a yearly base from 1991 to 1998, and the amount of consumption of commodities related to extreme sports from 1990 to 1999 in a yearly base were tabulated. Moreover, a least squares path analysis program by Hunter and Hamilton was employed to analysis.

Results

In order to assess the fit of the model, the amount of X-games televised by ESPN (X)→ the number of participants in X-games (Y) → the amount of consumption of commodities in extreme sports (Z), it should be compared by the predicted value of the correlation between X and Z to the obtained value of that. If this model is correct, the predicted value and the obtained value of the correlation between X and Z are equal. Thus, the predicted value of the correlation between X and Z is the product of the correlation between X and Y and the correlation between Y and Z (Tables 1 & 2).

The predicted correlation between ESPN (X) and Participants (Y) was (0.74) (0.91) = 0.63. Thus, the error in predicting this correlation is approximately (0.93) – (0.63) = 0.26. This error is trivial. Furthermore, the significant test of the error size (z=1, p > .05) indicated that the data are consistent with this model. In addition, χ^2 (1) = 0.99, so that p > 0.05, again indicating that this model is consistent with the data (Figure 2).

Table 1. Correlation Coefficients

Variable	ESPN (X)	Participants (Y)	Consumption (Z)
ESPN (X)	1.00		
Participants (Y)	0.74*	1.00	
Consumption (Z)	0.93*	0.91*	1.00

* Correlation is significant at the 0.05 level (2-tailed).

Table 2. Path Coefficients

Variable	ESPN (X)	Participants (Y)	Consumption (Z)
ESPN (X)			
Participants (Y)	0.74		
Consumption (Z)		0.91	

0.74 0.91
ESPN (X) → Participants (Y) → Consumption (Z)

Figure 2. Path Model with Path Coefficients

Discussion

According to the test of the path model, the hypotheses were supported; that is, there is a positive association between the amount of X-Games televised by ESPN and the number of participants in X-Games; there is a positive association between the number of participants in X-Games and the amount of consumption of commodities related to extreme sports.

One of the limitations of this study will be that this study examines the commodification process of the extreme sports in the macro level. Therefore, the future researches in the micro level should be followed. For instance, the specific roles of ESPN to diffuse extreme sports, the psychological or sociological motive of participants for extreme sports, the characteristics of individual participants in terms of adopter categories, and the interpersonal network of participants should be examined in the future research.

Despite this limitation, this study will have several implications. First, this study will be worthy as a pilot study on extreme sport or X-Games. In fact, there have been few researches on extreme sports or X-Games. Especially, there has been no research, which empirically examine the commodification process of X-Games. Furthermore, this study will provide theoretical base for the future research on X-Games. The various researches on X-Games or extreme sports in the micro level or individual level can be conducted. As previously noted, one of the strengths of diffusion theory is its broad applicability. Another implication of this paper will be that it tries to apply diffusion theory to another field, namely, the field of leisure sports marketing.

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MARKETING NATIONAL PARKS: OXYMORON OR OPPORTUNITY?

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Abstract: Although the "national park" concept is universally acknowledged, marketing of the 4,000+ areas so designated worldwide varies dramatically. Some park systems – such as those of Canada and Australia - are extensively marketed, in the sense that considerable resources are devoted to traditional strategic and tactical approaches to the potential user. Other systems pay relatively little attention to these concerns, because of entrenched avoidance of the marketing process (U.S.) and/or perception that the total visitor count is either so high that marketing is unwarranted (U.S.) or so low that marketing is unaffordable (many developing nations). This paper reviews selected issues of "national park" marketing from the viewpoints of the varied interests: managerial (park unit, region, and system); commercial (concessions, external enterprises, and visitor/tourism bureaus); and target audience (actual and potential visitors). Its primary objective is to raise awareness of the possibilities for (and limitations of) greater marketing effort and mutual benefit, in terms of effectively influencing consumer attitudes, beliefs, and purchase decision making.

Marketing and the National Park Philosophy

The concept of marketing to draw additional visitors to national parks is oxymoronic to many park administrators. As management of national parks has come to embrace not only internal challenges, but external ones as well, the visitor is often regarded as exactly the latter. Resource preservation is seen as the clear priority (Arnberger, Views) (Lowry, Paved). Very little has been published/researched on the "purchase decision" behavior of the visitor, and little has been committed for either accomplishing such research or implementing broad market appeals. The default influences have, therefore, been publicity (media coverage, independent photographic essays, etc.), highway signage, and on-site brochure distribution. If, however, the concept of marketing is not wholly alien, who is best equipped to address the challenge? Should it be a coordinated system effort? An opportunity for unit initiative? The role of the commercial interests that will most directly benefit? Or the task of visitor promotion agencies at all levels, whose mission already includes marketing? We shall begin by examining the traditional 4Ps of marketing in the context of the "national park."

Product

"National parks" are variously defined. In the broadest sense, they are areas held in the global interest by national authorities, or under national guidelines, absent an international governance other than United Nations/UNESCO World Heritage designation. Most "national park" systems have capitalized on the idealized image of the "national park" by applying this designation as liberally as possible. Park-administrating authorities generally differentiate "national parks" (superior scenic and/or wildlife-based areas) from other areas (primarily historic sites, but also including, as in the U.S. case, numerous subcategories: national monuments, national preserves, national recreation areas, national historical parks, etc.) (National Park Service, Index). Hereafter, despite the above caveats, all "national" areas will be referred to as national parks.

Parks (including most of the subcategories noted above) are also administered by state, provincial, county, and city agencies. Non-national parks are generally seen as more oriented to regional recreation, but may nonetheless be marketed proactively (Iowa, Marketing Plan/SHOW). While the most outstanding areas are generally protected within the national systems, there are significant exceptions. For example, Niagara Falls is a state park; Mount Vernon, Williamsburg, and the sites of the National Trust are run by independent foundations; and Monument Valley is within a native American reservation. National parks are designated by national governments, generally through legislative bodies (Congress, Parliament), but also via Executive declaration, and almost always with broad "public" approval (although not necessarily corresponding to local interests). The most common denominator is that national parks designate existing lands and/or waters as having a protected status. These may be naturally pristine (Yellowstone, Glacier, Auyuittuq), but they may also require significant rehabilitation/conversion (Shenandoah, Great Smokies, Golden Gate), restoration (Castle Clinton), or outright re-creation (Bent's Old Fort, Fort Stanwix, Louisbourg), and all require ongoing management. While many units are the result of political expediency, more recently, park systems have attempted to be proactive in unit designation, identifying ecosystem and historic theme components, and actively seeking appropriate areas for donation/purchase to add to the roster. Three of the more successful efforts of this type are the spectacular lands set aside in Alaska in 1978 and 1980, and the ongoing Canadian and Australian expansion based on biome categories.

Nationally-protected areas are the enlightened withdrawal of lands and waters in the "public" interest. They are most often found in advanced economies that can afford such withdrawals, or developing economies that recognize the self-serving commercial value of such withdrawals or are coerced into making them by external pressures. National park units vary widely in what they offer the visitor

(natural and scenic values, military-industrial-cultural themes, anthropological sites, recreational opportunities), making marketing a particular challenge on a system basis. The primary unifying characteristic of national park units is their extraordinary diversity (National Park Service, Index).

Price

Fees for park entry are on average, extremely low; many units are free, and even the most expensive U.S. units charge only $20 for a carload. Annual passes make the cost of any single visit even less expensive. However, access significantly affects total cost, particularly in reaching remote areas. The cost of reaching units in Alaska and the Canadian Arctic, outlying U.S. possessions in the Caribbean and Pacific, and virtually all parks in developing economies, at least in terms of foreign visitors, renders such visits infeasible for most potential visitors.

Promotion

Park Administrators (Federal, Region, State, Unit)

Promotion of parks varies widely; four examples will serve to illustrate the disparity. The United States National Park Service, within the Department of the Interior, has never broadly embraced marketing as a system concept. (Of the Federal entities embracing marketing, only the military, the Post Office, and Amtrak actively promote their services.) Some park regions have issued pamphlets featuring the units within their jurisdiction, and each unit offers superb standardized brochures on request or arrival, but these are passive approaches (National Park Service, Organ Pipe Cactus et al). The long-standing NPS compilation, "Visiting a Lesser-Known Park," is basically an effort to divert visitation from overcrowded units rather than a promotional device per se (National Park Service, Visiting). The primary NPS "National Park Index" is issued infrequently, and is also primarily a passive listing (National Park Service, Index).

The historic rationale for avoiding marketing is readily apparent. Even the modest fees collected by most NPS units have been transferred to the Federal Treasury, rather than retained for the benefit of the unit; given this reality, and the NPS focus on resource protection and management, it is little wonder that marketing seems irrelevant. At numerous "lesser-known" sites, "marketing" consists of little more than often-inappropriate count-enhancement activities barely related to the commemorative purpose of the site (e.g. noonday concerts at Federal Hall National Memorial in New York's Wall Street district) (Hogenauer, Courier). A quasi-independent entity, the National Park Foundation, whose basic mission is encouraging private sector (largely corporate) philanthropy (National Park Foundation, Charter and Mission), has implemented an ambitious promotional device, the National Park Passport (National Park Foundation, Passport/SHOW), intended to motivate unit visitation by providing inked-impression stamps and a pocket-sized "passport" for their entry. While this has doubtless increased awareness of the extent and diversity of units, and motivated some to visit additional units to collect the stamps, the lack of other than a self-motivating incentive limits its viability as a true marketing tool.

Reams of information are available to those who seek it out - everything from coffee table photographic essays, to those superb brochures obtained in advance or on-site, to - more recently - creative Internet websites offering considerable detail. But active marketing has been limited. The earliest majestic Western parks were marketed, by the railroads benefiting from the carriage of visitors without alternative access (Runte, Promoting). However, aside from in-house tours including parks, today's bus companies and airlines (and rental car companies dependent on them) do little to market national parks (or most of their other destinations, to be fair). Tour books (such as Birnbaum, Fodor, or the AAA series) list parks in objective fashion as attractions to visit once in the area. Today's larger units rely in part on independently produced commercial brochures supported by national advertisers (e.g. Yosemite Magazine, one of American Park Network's 17 national park titles; these have a total circulation of some 3.8 million) (American Park Network, Yosemite, 1998), and on non-profit "cooperative association" publications (Southwest Parks).

In recent years, a proliferation of Presidentially-declared national monuments has been assigned to non-NPS agencies for administration. These have included the Bureau of Land Management (especially most recently with the flurry of new declarations by Bill Clinton), the U.S. Forest Service (Mt. St. Helens), and the U.S. Fish and Wildlife Service. None of these is presently involved in wide-scale marketing activity.

Nationally-directed national park marketing is perhaps best exemplified by the extensive efforts of Parks Canada. For several years, both regional support groups and individual unit marketers have taken on the challenge of marketing the national parks. This is evidenced by such innovations as the "Heritage Logs" and accompanying stamps (Parks Canada, Heritage), as well as the widespread use of the beaver logo, focused on Parks Canada's 1985 centennial. However, marketing has been impelled particularly in the most recent years, as revenue generation at the unit level has been elevated in importance, and overall market awareness has increased significantly (Parks Canada, Policy). To an extent, "marketing" within Parks Canada is more a term, and/or a plan, than a system-wide implementation, but its inclusion does indicate awareness of the need for positioning, quality service delivery, target audience identification, and increases in visitor counts (Parks Canada, Halifax). As in most systems, heavily-visited areas represent the greatest challenge: maintaining the balance between preservation and steadily increasing

popularity (University of Calgary, Communiqué) (Zinkan, Changing).

As a fourth specific example, Australia has, in recent years, solidly embraced tourism development, national park designation, and marketing, with a particular focus on the vast, remote, and thinly-populated regions. Areas like Kakadu (home territory of Crocodile Dundee) and Uluru (the former Ayers Rock) are widely promoted, in part as a result of ancillary commercialization in their otherwise-empty vicinities. The administration of Australia's "national" parks has, uniquely thus far, been delegated to the respective states and territories, and there is no visible federal oversight agency as found elsewhere (New South Wales, About Us). Nevertheless, the active promotion of the areas has contributed greatly to a significant expansion of tourism, particularly by international visitors.

Commercial Enterprises

One of the key arguments raised against national park marketing is the widely-held view that national parks themselves are not commercial enterprises, and therefore there is no role for marketing. However, few national park areas are immune to the exploitation of their visitors. Since visitor needs are diverse, and the national parks themselves rarely accommodate most, let alone all, reliance upon supplemental suppliers is essential. Few visitors are satisfied with the "natural" state of the parks, but even fewer are aware of the extent to which the units are "managed" for their visiting pleasure (wildlife control; trail, road and facility development; point of interest identification and improvement; etc.). Most in-park concessions to date have been limited to accommodations, food service, and ancillary sales (souvenirs, clothing), but there is considerable pressure to privatize more, including visitor center construction and management, interpretation and guided tours, and the like. The in-park concessionaire has generally been a limited marketer, because demand - highly concentrated in short seasons - has exceeded supply, and rates (i.e. revenues) are proscribed by concession agreement. However, the emergence of the Internet and the relative ease of maintaining e-mail lists of potential purchasers have enabled in-park concessionaires to tap this avenue of marketing (Amfac/Furnace Creek Inn).

Commercial enterprises in the immediate environs of national parks are the most numerous, most at risk, and most likely to already be spending considerable sums on self-serving marketing effort, almost always tied in to the innate appeal of the park itself. At the Tusayan complex south of Grand Canyon National Park's south rim, in Arizona, a host of businesses competes for the tourist's attention in what has become a full-fledged strip of attractions, even offering high-tech interpretations that visitors might anticipate finding within the park (e.g. National Geographic's IMAX Theater) (National Geographic, IMAX). Similar commercialization is found in the vicinity of many units (all communities near the Great Smokies; St. George, UT; Bar Harbor, ME; etc.). Such commercialization is not limited to the more popular units of park systems. Even in remote Wrangell-St. Elias National Park and Preserve in Alaska, a portion of which is only accessible via a 61-mile unpaved road, tourism development is having a major impact ("indeed, much of the increased exposure [to tourism] can be attributed to the residents [of isolated Kennicott] themselves (particularly the owner of the lodge...), who have succeeded in marketing the community as a recreation destination") (Ringer, Growth).

Increasingly, national/global enterprises - global brands or major national advertisers already heavily involved in traditional marketing effort - are seen as the saviors of national park marketing, in that "modest" proportions of their budgets are allocated to approaching national park visitors directly, in support of the park "cause" (American Park Network, Yosemite).

Visitors Bureaus (National, State, Local)

These entities accept at least partial responsibility for marketing national parks within their respective jurisdictions. Virtually all U.S. states and Canadian provinces utilize the same techniques for marketing their inventory of tourist offerings: a comprehensive brochure, a map, a toll-free number, and an Internet site. Given that virtually all are mandated to promote "equally," passively including all attractions, however worthy or unworthy, is the norm, generally in the context of "tourist regions" that cover all of their respective geography. More locally, Chambers of Commerce often serve as the umbrella vehicle for promoting "area businesses" as a group. Thus, there is a clearly-evident body of interests seeking more active marketing of the units themselves, whereby they might reap a portion of the ancillary economic benefit. These interests primarily include area accommodations, restaurants, and attractions (even those wholly unrelated to the park's theme[s]), eager to attract the visitors' dollars.

Place (Distribution)

In terms of **place**, accessibility of the various areas, most likely regarded as a given by most potential visitors, is one of the most critical aspects of marketing, particularly as more remote sites enter the systems. There are three categories of accessibility: routine, challenging, and inaccessible.

Routine access cannot be presumed, particularly as more remote areas are included in national park systems. There is no objective definition of routine access, but at least two sub-categories can be presumed: a road leads directly to the site; or access is only by water, but frequent boat service is available. The first category is the least problematic for the visitor; most national park sites are in fact routinely accessible. Routine driving access, whether via private car, rental car, or tour bus, renders the site easily included in

any trip plan. Routine water access is limiting only in terms of schedules or - for the more popular experiences (e.g. Gros Morne's Western Brook Pond, or Golden Gate's Alcatraz) - vessel capacity.

Challenging access includes accessible units that cannot be regarded as routine given the time, cost, or distance involved. At least four sub-categories can be presumed: challenging because access is seasonally constrained or precluded (e.g. sites in the Canadian Rockies and Alaska); challenging because access is only by costly aircraft (scheduled or charter) (e.g. sites in American Samoa, the Queen Charlotte Islands, Alaska); challenging because scheduled boat service is not readily available for water access (e.g. Beaubear's Island, St. Croix Island); and challenging because access is via long and/or arduous (uphill) hiking (e.g. Abbott Pass Refuge Hut, Howse Pass, Athabasca Pass). (Challenging access is actually desirable in some locations to preserve the natural integrity of the site - and not incidentally, concurrently limit visitation).

Inaccessible access comprises units that despite their designation are "unreachable." (Units rendered inaccessible due to temporary weather phenomena, disasters, or access interruptions are not included.) Units are inaccessible because they are officially closed to the public (e.g. Yucca House, Hohokam Pima); inaccessible because they have been "lost," or" mislaid" due to obscurity or lack of ready information (e.g. Loyalists Exhibit); or inaccessible because they are surrounded by restricted private lands (e.g. Bois Blanc Lighthouse).

Target Audience

Who constitutes the market for these places? While this question may superficially be answered "visitors," the market for national parks is the total present - and future - global population for whom these areas are held in perpetual trust. But inasmuch as little in the way of traditional marketing segmentation has been undertaken, generally the emphases are on *total visitors*, by unit and overall (National Resources Defense Council, Reclaiming), and *seasonal peaking*, with its attendant problems.

Specific categories of present-day visitors can be generalized, which suggest various avenues of marketing approach. In order of proximity, there are four categories of visitors: those at home or office, remote from the park; those en route to the area of the park, but still distant; those near the park; and those actually in the park. Within each of these groupings, there are potential markets by age, income, lifestyle, ethnicity, even gender, and of course persons exhibiting interests relevant to the unit's primary attributes (historians, Civil War buffs, transport buffs, hikers, campers, etc.). Unfortunately, most national park visitors come with only a vague notion of what the park has to offer, relying on on-site specifics to determine the length and focus of the actual visit. While this may not match the idealized conception, it clearly affects the nature of the marketing approaches that might be useful.

What is Appropriate Marketing, Anyway?

Marketing is most commonly regarded as a process, one to which members of most societies are subjected - often to their discomfort. It is concerns over the process - specifically, the costs and "inappropriateness" of its implementation - that most deter the national park marketing process from moving forward. But more than a process, marketing is a philosophy - one that embraces proactive methods of encouraging the market's response to the product. Support for the marketing philosophy relative to national parks is what is most needed; the specific techniques, and the budget for their implementation, are less problematic. While the total number of U.S. NPS visitors is impressive (287 million in 1998), consideration of the total population of the United States (265 million, 1996), the number of units (officially, 384), the increasing number of foreign visitors, and the deceptive effect of multiple counting suggests that only a minuscule fraction of the U.S. population visits multiple parks or parks multiple times. Marketing can certainly help ensure that more people benefit from all the parks have to offer.

In terms of **product**, the national park will always be many products in one: wilderness, nature, history, interpretation, recreation, commercialization, even civilization (e.g. Riding Mountain, Prince Albert, Grand Canyon south rim). Emphasis on several seriously-overcrowded units diverts attention from the vastly more numerous underutilized areas whose quality is no less evident upon examination (National Park Service, Visiting). Often there is little or no control within the administrating agency as to product proliferation (i.e. additional units, failing to be "nationally significant"); this in part was the motivation for proposed legislation mandating a more thorough examination of units both within, and proposed for addition to the existing system (Congress, Common Sense). Over the years, some existing park units have been delisted (i.e. de-classified), but these are relatively rare (Hogenauer, Gone). Perhaps most significantly, park nomenclature is confusing in its proliferation. One response to this, as well as clear evidence of an underlying marketing strategy, is the recent tendency to rename NPS units as national parks, rather than monuments (Black Canyon, Death Valley, Joshua Tree) or recreation areas (Cuyahoga Valley).

In terms of **price**, fees should be commensurate with the customer-desired benefits, not simply amounts offsetting expended costs. Marketing expenses, if such were to be incurred, would have to be offset by increased fees and/or appropriations. The traditional low- (or no-) fee park entry concept is being rethought, often to the consternation of unsuspecting visitors (in 1996, significant fee increases in Canadian parks created considerable difficulty for both visitors and staff). Fees collected should be retained at the

unit level, with supplemental appropriations provided where necessary to optimize unit performance. An income tax deduction for park visits, based on the educational value therefrom, should be implemented, partially offsetting actual visitor cost, and stimulating visitation (and benefits) across the board.

In terms of **promotion**, appropriate national park marketing is that which cost-effectively reaches the proper target audience, encouraging this audience to partake of the visitation benefits provided. More than anything, marketing is information, placed so as to effect the purchase decision in favor of the marketer. Information on national parks has historically, as noted, been largely passive, not active. Evidence of marketing interest at the highest levels of NPS administration can be found, but the speed of marketing integration into system operations has been glacial. A 1998 planning articulation of NPS "goals" lists 31 long-term goals to be achieved in 3 to 20 years; *none* refer to marketing of the units or system (National Park System Goals). A 1999 Director's Order (Director's Order #17: National Park Service Tourism) mandates extensive interaction with, and proactive approaches to the "tourism industry," thus relating the NPS itself to another category (Order, sections 4.1, 4.5). The Order further provides for hierarchical implementation at the international, national, regional and park levels (Order, section 5). Funding for the mandated activities, however, is not clear, and in at least one NPS unit, detailed specifications for a person to assume responsibilities for many types of marketing activity are assumed to be filled by a *volunteer!* (City of Rocks). Clearly, there is a dissonance between maintaining resources "unimpaired for future generations" and making them available now through effective promotion to the current ones.

An even more elaborate exposition of the possibilities is found in the premiere issue of an Employees & Alumni Association newsletter, "Arrowhead" (Arrowhead), in which an extensive "Message Project" examined visitor perceptions and NPS response at length. The Project, evolving from an earlier effort to promote the Golden Eagle Passport (an annual pass to multiple federal agency lands), concluded that there was "an extraordinarily limited understanding, or even awareness, of the depth and breadth of the National Park System." The public was seen to perceive national parks as "a handful of natural wonders, Western wilderness areas, and vacation destinations." In response to this, the NPS undertook a broad review of methods and management of the "communications" process, and found that materials all look different, the arrowhead is inconsistent, the System is overlooked, there are only 25 public information officers among (then) 379 units, there is inadequate attention to visitor segmentation, and parks are protected "from" people, rather than "for" them. These are major findings that most at NERR2001 will see as valid, particularly in the context of possible proactive marketing in response. These are also of major significance in advancing the prospects for NPS marketing overall (Arrowhead).

In terms of **place**, parks should "guarantee" access to a visitor. Any officially-designated "national park" unit should be readily-accessible to the public, either routinely, or, at the very least, periodically on a scheduled guided visit offered on a non-profit basis. Inaccessible units – including those not yet "open" for visitation, should be delisted (i.e. otherwise-classified).

In terms of **target audience**, the aforementioned four categories of visitor suggest possible marketing approaches. *Those at home or office, remote from the park,* by far the most numerous, need to be motivated to initiate a visit. Marketing should be undertaken by the overall agency, with national advertising, 1-800 information, and spot advertising in local markets, supported by a substantial Internet presence. *Those en route to the area of the park, but still distant* need to be motivated to include the site in their itinerary. En route signage and appropriate print media, as well as possible outdoor advertising are required.

Those near the park likewise need to be motivated to include the site in a trip-in-progress. Again, en route signage, print media, and outdoor are recommended. And finally, *those actually in the park* need to be motivated to spend more time enjoying the park's benefits. More effective promotion of the available activities is required, including accommodation incentives to extend length of stay in the area. In many units, creation of additional activities will also be required. Further, trade promotion – reaching out to, rather than defensively responding to the tourism industry – should be undertaken, with the appreciation that any park authority IS part of the tourism industry.

Conclusions

In summary, national park marketing should adopt traditional methods, but apply them to their specific circumstances. Nomenclature should be simplified, detached units should be treated independently, and product mix and line should be periodically revisited.

Fees collected should be retained at the unit level, with supplemental appropriations provided where necessary to optimize unit performance. An income tax deduction for park visits, based on the educational value therefrom, should be implemented, partially offsetting actual visitor cost and boosting visitation.

Any officially-designated "national park" unit should be readily-accessible to the public, either routinely, or, at the very least, periodically on a scheduled guided visit offered on a non-profit basis. Inaccessible sites should be relegated to some alternative category, rather than designated as part of a national park system.

Marketing should focus on expanding the overall market substantially, by actively encouraging the "right" target audience for each unit. Four visitor groups must be addressed: those at home/office, those en route yet still distant, those nearby, and those already in the unit.

"National park" units should be actively marketed on a coordinated system-wide basis, with the involvement of unit managers and local interests benefiting from such marketing. The most successful efforts will be those where unit management and local interests are mutually supportive, and where the target audiences most effectively addressed by marketing are correctly identified. Tourism industry promotion should also be implemented.

Marketing national parks should be a cooperative effort, spearheaded by a competent group within the administrative agency, but including state/provincial and local government, and related commercial interests (transport, in-park concessions, and area businesses). Controlling authority should come from the largest feasible component of the park system, most often the national authority. But cooperation is essential, and likely to be more readily forthcoming from the respective interests if the effort is well-coordinated. Goals such as those in the laudable NPS Message Project should be vigorously pursued. While marketing activities may appear irrelevant or detrimental to some, expansion of overall awareness of, interest in, and trial of national parks is highly desirable and likely to pay enormous dividends in terms of engendering public support.

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Demographic Trends in Outdoor Recreation Participation & Travel

WILDLIFE-ASSOCIATED RECREATION IN THE NORTH CENTRAL REGION: PARTICIPATION PATTERNS AND MANAGEMENT IMPLICATIONS

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Abstract: The North Central Region (IA, IL, IN, MI, MN, MO, WI) is a diverse area of the United States. Compared to the remainder of the country, the region as a whole is demographically similar in terms of mean age, education, household income, and gender. However, the North Central region has a higher proportion of Whites and a slightly lower proportion of people residing in urban areas. Compared to the remainder of the United States, residents of the region are more likely to have hunted and/or fished during their lifetime and are more likely to have hunted and/or fished in 1995, the year of the latest National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Residents of the region are also more likely to participate in nonconsumptive wildlife-associated recreation activities such as observing, feeding, photographing, and maintaining natural areas for wildlife around the home; and taking trips for the purpose of observing, feeding, and photographing wildlife. Thus, residents of the region are more likely to participate in all wildlife-associated recreation activities addressed by the survey. Within the region, there is considerable diversity. Household income differs by about 25% among states in the region and ethnic diversity differs considerably as well. States within the region range from predominately white rural to ethnically diverse urban. Wildlife-associated recreation participation differs considerably among states. Some of the differences are easily explained while others are not. Easily explained is that the highest proportion of hunters resides in the most rural state while the lowest proportion of hunters reside in the most urban state. This pattern does not apply to fishing or any of the nonconsumptive activities. Participation differences within the region are probably attributable to combinations of population characteristics and available natural resources. The diversity of participation patterns within the region affects public natural resource managers and suggests treating the region as subunits to more effectively address resource management issues.

Introduction

States in the North Central Region (IA, IL, IN, MI, MN, MO, WI) are diverse in terms of demographic characteristics and wildlife-associated recreation participation levels. This presents challenges for managers who must allocate funds and manage the natural resources of these states. The purposes of this paper are to examine participation in wildlife-associated recreation in the region and in each state, to compare the region to the remainder of the United States, and to compare states within the region in order to provide managers with some insight into the patterns and challenges in the region. The activities examined are hunting, fishing, and wildlife watching. Wildlife watching consists of observing, feeding, photographing, and maintaining natural areas for wildlife within one mile of the home (residential activities) and taking trips of one mile or more for the purpose of observing, feeding, and/or photographing wildlife (nonresidential activities). First, the region is compared to the remainder of the U.S. in terms of participation. Then, states are compared demographically and in terms of participation. Finally, because of space limitations, one activity (hunting) is examined in greater detail, including the relationship between hunting participation and available natural resources.

Methods

The 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation was used in this analysis. The survey has been conducted by the Census Bureau for the US Fish and Wildlife Service approximately every 5 years since 1955 (U.S. Dept. of Interior, 1997). The survey actually consists of three surveys that result in three data sets. The screening survey consists of demographic and limited participation data and is considered to be representative of the population of the United States in general. The sportsmen survey consists of detailed participation and expenditure data about hunting and fishing and is considered to be representative of hunters and anglers residing in the United States. The wildlife watching survey consists of detailed participation and expenditure data about nonconsumptive wildlife associated recreation activities and is considered to be representative of wildlife watchers residing in the United States. The screening survey was the primary source of data used in this analysis. Although the screening survey contains only limited participation data, it permits comparisons of participants with nonparticipants as well as participation among participants in all activities (fishing, hunting, and wildlife watching). Participation data collected using the screening survey are for 1995 and most of the data presented in the summary publication (U.S. Dept. of Interior, 1997), which are collected using the detailed surveys, are for 1996. Because of the methodology used by the Census Bureau to select and adjust the weights for the detailed surveys, and the fact that the data are collected for different years, the total numbers of participants calculated using the screening survey differ from the total numbers of participants calculated using the detailed surveys.

Results

Comparison of the Region to the Remainder of the U.S.

Residents of the North Central Region were more likely than residents of the remainder of the U.S. to hunt, fish, and participate in all wildlife watching activities (Table 1). A higher percentage of residents of the region (28% vs. 22%)

Table 1. Participation Comparisons of North Central Region and Remainder of Country: Age 16 and Older

Characteristic	North Central Region Mean	Not North Central Region Mean	Ratio NC/Not NC
% ever hunted	28%	22%	1.25
% of above who hunted in 1995	42%	32%	1.33
95 hunting expenditures-category	3.23	3.38	0.95
95 hunting days-category	3.18	3.10	1.03
% ever fished	58%	51%	1.14
% of above who fished in 1995	50%	45%	1.10
95 fishing expenditures-category	2.54	2.57	0.98
95 fishing days-category	3.28	3.06	1.07
% observed wildlife	33%	25%	1.30
% feed wildlife	38%	29%	1.29
% photo wildlife	12%	9%	1.29
% wildlife plantings	14%	11%	1.23
% taking wildlife trips	17%	14%	1.23
95 trip expenditures-category	2.02	2.22	0.91
95 trip days-category	2.50	2.49	1.00

have ever hunted and a higher percentage of those who have ever hunted (42% vs. 32%) continued to hunt in 1995. Expenditures and days of participation are collected as categorical data in this data set and the means of these categories are listed in Table 1. Larger numbers mean higher levels of participation. Because of the limited number of categories, differences in expenditures and days of participation can be expected to be small. Hunters in the region spend slightly less and hunt slightly more than hunters who reside outside the region. The last column in Table 1 is an index derived by dividing the region column by the column for the remainder of the U.S. This is a quick reference to the differences. A number greater than one, indicates the region exceeds the remainder of the U.S. in this respect. A number that is less than one indicates the remainder of the U.S. exceeds the region. The magnitude of the ratio indicates the amount of the difference.

The patterns for fishing were similar to those for hunting. A higher percentage of residents of the region (58% vs. 51%) have ever fished and a higher percentage of those who have ever fished (50% vs. 45%) continued to fish in 1995 (Table 1). Although the patterns are similar, the differences are not as great as for hunting. Again, anglers in the region spend slightly less and fish slightly more than anglers who reside outside the region. The row labeled "% of above who fished in 1995" can be viewed in a loose way as a fishing retention rate. This rate is higher in the region than outside of it. The same was true of hunting. It should be noted that, the retention rate for fishing is higher than the rate for hunting. This may be due, in part, to the more strenuous nature of hunting, which causes people to drop out as age limits activities. In the case of the angler who is also a hunter, there may be some substituting of fishing for hunting as the participant ages.

The data set does not contain the same type of participation data for wildlife watching activities as for hunting and fishing. Data exists only for 1995 participation. Expenditures and days of participation are given for nonresidential wildlife watching activities only (i.e., for "% taking trips" in Table 1). Residents of the region are considerably more likely to participate in all of these activities than residents of the remainder of the U.S. They spend slightly less and participate about the same number of days as residents of the remainder of the U.S.

Thus, residents of the region appear to be more active than residents of the remainder of the U.S. by almost all participation measures presented in Table 1. Although the differences are small, residents of the region spent less in 1995 on all activities than residents of the remainder of the U.S. This is interesting because they spent at least as many days participating in the activities.

Comparison of States within the Region

Demographics -- States within the region differ considerably in terms of key demographic characteristics (Table 2). Residents of IA have the lowest income ($39,535) while residents of WI have the highest at $49,788, a difference of over $10,000 (over 25%). There are also considerable differences in racial/ethnic diversity and residence (urban/farm) among states. IA has the least diversity (98% white) while IL has the most (82% white). IA is the least urban (55%) while IL is the most urban (82%). Most of the extremes (highs or lows) occur in IA and IL. The three states with the lowest incomes have with the highest proportion of residents living on farms. There are considerable differences between states in demographic characteristics that can affect probability of participation as well as participation levels. The more rural nature of IA, for example, can provide more opportunities for certain kinds of recreation while the relatively low income can affect types and levels of participation.

Hunting -- The most noticeable difference in hunting participation across states (Table 3) is the low proportion of residents who have ever hunted in IL (17%), the most urban state. Not only does IL have the lowest proportion who have ever hunted; it also has the lowest retention of hunters in that only 29% of those who have ever hunted continued to hunt in 1995. This suggests that IL residents are more likely to drop out of hunting than residents of the other states. We cannot state this with certainty because tenure at a specific location is not measured in the survey. It is possible that people lived and hunted in another state and then moved to IL into perhaps, a more urban environment, and stopped hunting at that time. It is also possible that people lived and hunted in a rural area and then moved to an urban area within the same state and then stopped hunting. This is valuable information for managers and marketers concerned with decreases in numbers of hunters.

Table 2. Demographic Comparisons of North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
Age (yrs)	45.9	44.2	45.5	44.4	43.9	46.7	44.3
Education (yrs)	12.8	13.4	12.8	13.1	13.1	12.9	13.3
Household Income	$39,535	$49,481	$42,411	$49,122	$45,696	$41,648	$49,788
% Working	69%	67%	65%	65%	71%	62%	73%
% White	98%	82%	89%	85%	92%	91%	94%
% Black	0%	11%	8%	12%	2%	7%	3%
% Asian	1%	3%	1%	1%	3%	1%	1%
% Hispanic	1%	6%	3%	2%	2%	1%	2%
% Reside Urban	55%	82%	60%	68%	61%	63%	66%
% Reside Farm	33%	14%	32%	28%	26%	35%	29%

Table 3. Participation Comparisons of Hunting in North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
% ever hunted	36%	17%	25%	29%	37%	32%	33%
% of above who hunted in 1995	42%	29%	36%	46%	50%	40%	50%
95 expenditures-category	2.88	3.45	2.86	3.22	3.34	3.20	3.39
95 days-category	3.12	3.20	3.45	3.30	2.74	3.18	3.27

Three of the lower income states with the highest percentage of residents living on farms (IA, IN, and MO) have the lowest expenditures for hunting. The two highest income states have the highest expenditures for hunting. Even though the income is reported as household income for all residents, and the expenditures are reported only for participants, it is interesting to note that there appears to be an association between these variables. Days spent participating do not appear to be related to income. This may be attributable to several factors. Often, higher income individuals have less time available for recreation. Also, because hunting is usually done in a rural environment, proximity of the resource may be an important factor in frequency of hunting.

Fishing -- As is the case for hunting, IL has the lowest proportion of residents who have ever fished (51%) and the lowest proportion of those who have ever fished and who continued to fish in 1995 (Table 4). However, the differences between states do not approximate those seen in Table 3 for hunting. This suggests that fishing appeals to a wider range of individuals and/or that there are more opportunities available to fish than there are to hunt. Certainly, urban residents in the Chicago area of IL have a great lakes fishing opportunity relatively close at hand. MN, with its abundant water resources, has the highest proportion of residents who ever fished and the highest proportion who fished in 1995. Expenditures for fishing across the states have a narrower range than hunting expenditures and do not appear to be strongly associated with income.

Wildlife watching -- The proportion of residents involved in wildlife watching activities in 1995 is given in Table 5. Overall, residents were most likely to observe and/or feed wildlife and least likely to photograph wildlife within one mile of the home. Expenditures and days participating tended to lie in a fairly narrow range. Again, residents of IL were least likely to participate in all wildlife watching activities. Residents of IA ranked second in probability of taking a wildlife watching trip, but spent the least on wildlife watching trips.

A closer look at hunting -- The previous sections discuss participation from the standpoint of proportion of the population participating. This section reviews this information for hunting and looks at hunting from different perspectives that may be important to those managing the resources and/or marketing the activity. This section shows how this information can be used and interpreted in different ways to facilitate different management/marketing objectives. The lowest proportion participating in hunting (17%) and the

Table 4. Participation Comparisons of Fishing in North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
% ever fished	61%	51%	54%	58%	70%	62%	62%
% of above who fished in 1995	54%	45%	51%	48%	56%	49%	52%
95 expenditures-category	2.47	2.63	2.35	2.44	2.65	2.65	2.52
95 days-category	3.26	3.14	3.45	3.27	3.17	3.59	3.19

Table 5. Participation Comparisons of Wildlife Watching in North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
% observed wildlife	36%	26%	32%	33%	39%	38%	33%
% feed wildlife	40%	30%	41%	41%	39%	40%	42%
% photo wildlife	10%	10%	10%	14%	14%	13%	14%
% wildlife plantings	15%	12%	14%	14%	14%	13%	18%
% taking wildlife trips	21%	15%	15%	17%	23%	16%	18%
95 trip expenditures-category	1.68	2.03	2.11	1.96	2.04	1.98	2.22
95 trip days-category	2.35	2.62	2.63	2.51	2.32	2.35	2.59

lowest retention rate (29%) both occur in IL (Table 3). The highest proportion participating (37%) and the highest retention rate (50%) both occur in MN. Because it has the lowest rates, IL might be targeted as a state in which an effort is to be made to increase hunting and to identify the reasons for the low retention rate. From another perspective, because it has the highest rates, MN might be targeted as a state in which efforts to increase hunting and retention rates might meet with greater success. MN might be seen as having a more solid base on which to build hunting. Or, a manager may wish to study a high participation state such as MN in order to identify reasons for the higher rates. Information from such a study might be of value in increasing participation in a state such as IL.

Managers and marketers are interested in the location of their clientele. An education program or marketing campaign can be implemented more effectively if the location of the clientele can be narrowed down as much as possible. Hunting is usually thought of as a rural activity and hunters might be expected to be likely to live in rural areas. This is true for most states in the region (Figure 1). Once again, however, IL stands out. More than half of the hunters in IL reside in urban areas (using Census urban/rural classifications). This means that campaigns targeting rural areas will miss almost 60% of the hunters in IL. In MI and WI, almost half of the hunters reside in urban areas. Even in IA, the most rural state, almost 40% of the hunters reside in urban areas. In most states, hunters are likely to be found either in urban areas or on farms. Only IA and MN have more than 10% of their hunters residing in rural nonfarm areas.

Residents of IL are unlikely to hunt (Figure 2). Residents of MN are over three times as likely to hunt as are residents of IL. Obviously, a campaign targeting hunters by way of the general population would meet with more success and be more cost effective in MN than IL. Figure 2 can easily be misinterpreted resulting in the erroneous conclusion that MN has the most hunters and IL has the least. This is not true because of the differences in population among the states. Figure 2 shows the probability that an individual in each state is a hunter. It does not quite show the probability that an individual selected at random is a hunter when hunters are not distributed uniformly throughout the state (Figure 1). Figure 2 gives some insight into how education programs and marketing campaigns can and cannot be conducted effectively in each state.

Managers and marketers are also interested in the size of the market. Someone interested in targeting a campaign toward current hunters would do well to look in MI, which has considerably more hunters than any other state in the region (Figure 3). As Figure 3 also shows, IL with its low participation rate has more hunters than IA with its higher participation rate. This is due to the large population differences between these states. The hunters in IL are harder to find than those in IA (Figure 2). This is also due to the large population differences between these states.

Links between the resource and activity are important to managers and marketers. MI contains the largest number of acres and highest percentage of forest land and the largest

Figure 1. Hunter Distribution by Urban/Rural Classification and State (Percent of Total Hunters)

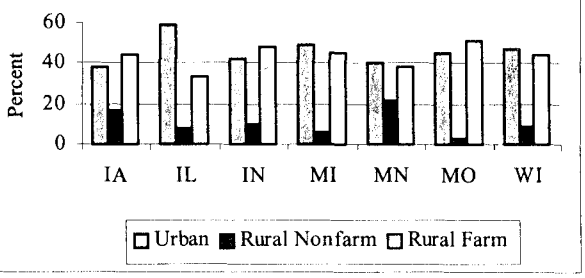


Figure 2. Comparison of Hunting Participation by State: Age 16 and Older

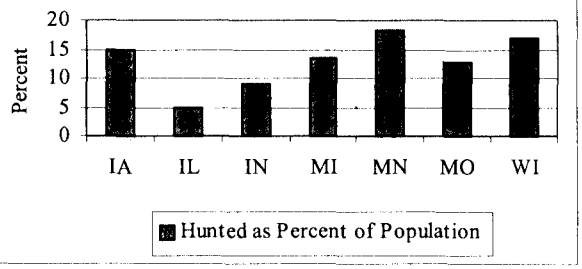
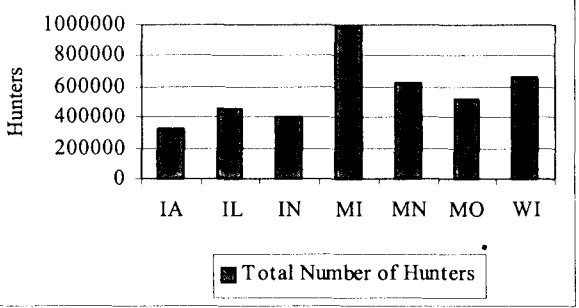


Figure 3. Comparison of Hunters by State: Age 16 and Older



number of hunters in the region. It does not, however, have the highest proportion of hunters (as a proportion of the population). Across these states, the probability of participation is positively correlated with the total amount of forest land (Pearson correlation coefficient .59) and with per capita forest land (.79) (Powell et al., 1993; U.S. Dept. of Interior, 1997). A stronger correlation (.87) was found between the total number of hunters and the total amount of forest land in a state. This could indicate that the abundance of resources in a state has resulted in a hunting ethic in that state. It is possible that the resources had a larger impact on probability of participation in the past which has decreased as interest in hunting in general has decreased. An earlier study by Allen and Dwyer (1978), however, did not find acres of forest land to be a significant predictor of hunting license sales by county in IL. This is an area that warrants further study.

Summary and Conclusions

This study has shown numerous differences between the North Central Region and the remainder of the United States. Probability of participation is greater in the region than in the remainder of the U.S. for all activities considered. Retention rates for hunting and fishing are also greater in the region.

Variation among the states is also considerable. IL ranks last in terms of probability of participation for all activities considered and for retention rates for hunting and fishing. However, due to its large population, IL does not rank last in terms of total number of hunters. These differences present challenges for managers and those interested in identifying and marketing to hunters in these states.

Finally, positive correlations exist between various measures of forest land and measures of participation among the states in the region. Larger amounts of forest land imply more hunters and a higher probability of participation in hunting. This study did not address whether increasing or decreasing the amount of forest land in a state would increase or decrease hunting.

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THE NEW ENGLAND TRAVEL MARKET: GENERATIONAL TRAVEL PATTERNS, 1979 TO 1996

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Abstract: Generations of travelers who select New England as a primary destination are examined over time from the years of 1979 through 1996 and the analysis serves to update an earlier review of generational travel patterns of the region (Warnick, 1994). Changes in travel patterns are noted by overall adjusted annual change rates by demographic and geographic regions of residency. Generations, as defined by Strauss and Howe (1991), are then reviewed as the generation cohort ages over time during this 18 year period. New England was found to be an evolving market and it had rebounded from early decline trends of popularity in destination as noted in the 1994 study. Travel was up in the '90s across all age categories; however, generational trend patterns indicated that the 13th Generation and the older half of the Baby Boom Generation held only slightly higher participation rates in choosing New England as a primary destination over eight 10-year lag periods as each generation aged. Other generational participation rates declined at rates greater than the overall population during the same time periods. When the lag periods were examined, participation rates declined from 1984 through 1994 for each generation examined, but they were positive after the 1985 to 1995 lag period for each of the generations. Keywords: travel trends, New England destination travel, travel markets, generations, participation rates.

Introduction

During the last decade this author has extensively examined the New England travel market (Warnick, 1999; 1997a-c; 1995a-b; 1994; 1993a-c; 1992a-b; 1991; 1990; 1989). These studies have examined such concepts as overall travel trend patterns and rates of travel, geographic markets and the propensity to travel, target market regions for New England destinations, and outdoor recreation activity patterns and volume of participation of Northeast and New England destination travelers. In 1994, the domestic travel patterns to New England on demographic and geographic dimensions were examined and provided the first insights into generational travel patterns. Warnick has also examined generational travel patterns in several other studies (1994; 1993c; and 1995b).

The NERR 1994 study revealed the following major findings: 1) the choice of New England as a primary destination indicated that New England had become a mature destination choice among U.S. domestic travelers; 2) no gain or a declining popularity for New England as a travel destination among 18- to 24-year-olds; 3) the Baby Boom generation appeared to offer potential; but the real question was whether they would come to New England in the '90s and beyond; 4) the decline in market demand for New England, put into question potential losses for activity pursuits such as skiing, hiking and other outdoor recreation activities; and 5) generational findings, although preliminary in nature due to limited long term data, suggested that as younger generations aged New England was less popular whole only older generations held a stronger desire to visit New England as a primary destination as they aged.

The concept of generations was first advanced by Strauss and Howe (1991). It was been found to be a new way to examine trends and changes in participation patterns in both recreational activity pursuits and travel behavior (Warnick, 1994, 1993c, 1995b). It also becomes a way to provide some insights into the future as one examines the past and existing behavior of current generations. One can make some assumptions based on our current knowledge of existing generations. For example, the members of the Baby Boom generation are moving into the 55 and over age cohorts and we have traditionally marketed to this segment; but other segments are also becoming important. An older, but large segment of the population, the Baby Boomers, will, within this decade, begin to enter their pre-retirement and retirement years. In addition to being empty nesters and they should have more travel time and more diversity in travel choices as they age. Second, by reviewing age categories, generations and generational cycles in participation in travel over time, new patterns about travel behavior can be revealed. Third, Strauss and Howe (1991) developed the theory of the "cycle of generations" and they suggested by understanding these cycles and the generational characteristics insights into current and future behavior may be also appreciated. For example, the Silent Generation reaches a period of time in their life span where Strauss and Howe (1991) predict and document that they will become more "sensitive" as a generation while at the same time many of their grandchildren, members of the Millennial Generation are in a "protected" period of their life spans. Thus, intergenerational travel (grandparent and grandchild) travel or destination promotional activities may become an evolving trend. Thus, by tracking the generation or age group through the stages or process of aging is an improved and new way to predict future consumer trends is possible.

Purposes of Study

The purposes of this research paper are three-fold: 1) to examine domestic travel to New England during the '80s and through the mid–'90s within the context of generations; 2) to determine how participation rates in domestic travel <u>within</u> individual age categories changed over time (from 1979 through 1996); 3) to determine how participation rates in domestic travel of generations changed as these groups passed from one age category into the next (i.e., from 25 to 34 in 1980 to 35 to 44 in 1990)? Do lag periods of generational change indicate any different patterns of travel participation trends? Does a particular generation travel more or less as it ages and how do generations compare during similar period of their life spans (i.e., young adults or rising adult stages).

Method

Data for this study was drawn from the Simmons Market Research Bureau's *Study of Media and Markets* (1979 through 1996). An average annual adjusted percentage change rate, two-point moving average and descriptive statistics were the basic statistics used to examine the data. Participation rates and generations served as the primary variables. Lag periods, covering ten-year spans, were also used to determine increases or declines in participation rates of New England destination travel as a generation aged. The generations and their birth years examined as defined by Straus and Howe (1991) included: G.I. Generation – born between 1904 & 1925, Silent Generation – born between 1926 & 1943; Baby Boom Generation – born between 1944 & 1960; and the 13th Generation – born between 1961 & 1982. Other generations, the Lost/Missionary Generations (born before 1904) – are passing on and were not statistically sufficient in numbers to be represented in the database. The Millennial Generation – the newest generation – born from 1982 to the present has not yet reach the adult age in 1996 to be represented in the data base. The theory of the "Cycle of Generations" (Strauss & Howe, 1991) indicated that each generation is type caste and takes on a personality cycle which is predicable. The types and personality cycles (with the level currently existing underlined here) include the following: 1) "Idealist" – the Baby Boom Generation which cycles through levels of indulged, narcissistic, moralistic, visionary; 2) "Reactive" – the Thirteenth or X Generation which cycles through levels of criticized, alienated, pragmatic, reclusive; 3) "Civic" – GI and Millennial Generations which cycle through the protected (Millennial), heroic, powerful, busy (GI); and 4) "Adaptive" – the Silent Generation which cycles through levels of suffocated, conformist, indecisive, and sensitive. Strauss and Howe indicate that the type and personality cycle are has repeated over the time, and are impacted by concepts such as social moments or significant changes in generational thinking. The Simmons data base includes data on travelers who pick New England as a primary destination and with 18 years of data, one can monitor who is going to New England and how has those markets have changed over time by generations.

Selected Findings

The participation rate of all adults selecting New England as a primary destination averaged 3.7% over the 18-year period. The adjusted annual change rate indicated 1.5% growth per year. This translates into gain on average of about 200,000 primary destination travelers per year. The peak years were 1995 and 1996 at 9.5 and 9.4 million destination travelers respectively. The year with the fewest destination travelers was 1991 when 4.2 million destination travelers selected New England as a primary destination but the down year rebounded in 1992. However, these summary statistics are misleading as dramatic gains were experienced in the economic recovery period of 1995-1996 when travel nearly doubled to New England as a primary destination. Prior to 1995, travel to New England appeared to generally decline overall with only slight or periodic positive changes.

The New England's demographic markets participation rates, which selected New England as a destination choice, changed positively for all six age cohorts and included the following results: 18- to 24-year-olds – grew by 2.6%; 25- to 34-year-olds – grew by 8.6%; 35- to 44-year-olds – grew by 3.7%; 45- to 54-year-olds – grew by 1.8%; 55- to 64-year-olds – grew by 6.5%; 65 and older – grew by 5.5%. Thus, the age group with the largest increase and from previous studies we recognize are also active outdoor participants are the 25- to 34-year-olds. The two oldest age categories also had large average annual increases. However, these patterns also reflected the large gains in the 1995-1996 period which offset the declines experienced in earlier years.

The New England's geographic markets, which selected New England as a primary destination choice, changed positively for all four major markets areas and included the following results: the Northeast market grew by 5.1%; the South grew by 3.4%; the Midwest grew by 5.6%; and the West grew by 11.5%. The composition of New England's geographic markets of primary destination travelers indicated the following changes that 1) the Northeast comprises 62.4% of New England's market (compared to 66% in 1994); 2) a larger portion of the New England travel market were now from more distant markets, particularly the Midwest which accounted for about 18% on average but has exceeded 20% of the market of New England destination travelers in the '90s.

When age categories were examined over time a different view of travel to New England was revealed. The overall changes of domestic travel within age categories indicated that the rate of growth appears more pronounced or dramatic in recent years for age categories under 35 years of age. Rates grew at a rate of 5+% per year. The rates of age groups over 35 also grew; but, the rates grew at a slightly slower rate of just under 3% percent per year or less for those 35 to 54 years of age. Age categories where New England destination grew the most in popularity was the 55 to 64 and older category (up 6.5% per year) and 25- to 34-year-olds (up 8.6% per year). However, the problem with these data changes are we are only looking at static age categories. Furthermore, the changes reflect an age category analysis where members of different generations pass through the age years. In addition, the data also were impacted by dramatic changes in the mid-'90s after a decade of almost continued decline. Thus, a need exists to look at generations as they move through time as an age cohort. (See Table 1.)

First, some observations about the changes in overall generational impacts. In 1979, Baby Boomers were 35 or under. By 1989, a watershed year, Baby Boomers were in the 25 - 34 and 35 - 44-year-old categories and a portion were moving into the 45 to 54-year-old categories. Within the 18 to 24-year-old category for example, domestic travel participation rates declined steadily from '79 through '91 and then began to rebound after 1991 and then more than doubled by the year 1996. Boomers were being replaced by the 13th Generation during this time period. The "Baby Bust" or "13th Generation" fully comprised the 18 - 24-year-old cohort after the year 1983. Overall, the

Table 1. New England Travel Market, 1979 to 1996

New England Summary:	1980	1982	1984	1985	1986	1988	1990	1992	1994	1995	1996	Decade Average	Adj. Annual Change Rate	Two-Point Moving Ave.
Adult Part. Rate	4.3%	4.2%	4.1%	3.5%	3.8%	3.0%	3.3%	2.9%	2.5%	5.0%	4.9%	3.6%	3.2%	1.5%
#New Eng. Trav.('000)	6,814	6,772	6,889	5,960	6,581	5,324	5,903	5,307	4,727	9,467	9,395	6,285	4.4%	2.6%
Age Cohorts:	1980	1982	1984	1985	1986	1988	1990	1992	1994	1995	1996	Decade Average	Adj. Annual Change Rate	Two-Point Moving Ave.
Adult Overall Rate	4.3%	4.2%	4.1%	3.5%	3.8%	3.0%	3.3%	2.9%	2.5%	5.0%	4.9%	3.6%	3.3%	1.5%
18 to 24	3.3%	3.4%	3.0%	3.0%	2.8%	2.5%	1.9%	2.3%	2.0%	3.9%	4.2%	2.8%	2.6%	1.5%
25 to 34	5.8%	3.5%	4.0%	3.8%	4.4%	2.6%	3.5%	1.9%	2.1%	5.8%	5.5%	3.7%	8.6%	3.1%
35 to 44	5.2%	5.5%	5.3%	4.3%	4.3%	3.7%	4.5%	3.5%	3.0%	5.0%	5.4%	4.2%	3.7%	0.6%
45 to 54	5.1%	5.3%	5.0%	4.0%	3.9%	3.9%	3.9%	3.5%	3.6%	5.4%	5.1%	4.2%	1.8%	0.5%
55 to 64	3.5%	4.2%	4.7%	3.3%	4.6%	3.7%	2.5%	3.2%	2.6%	5.8%	5.6%	3.8%	6.5%	3.5%
65 and Older	2.3%	3.7%	2.7%	2.5%	3.0%	2.1%	2.6%	3.2%	1.8%	3.8%	3.2%	2.7%	5.5%	2.7%
Target Region:	1980	1982	1984	1985	1986	1988	1990	1992	1994	1995	1996	Decade Average	Adj. Annual Change Rate	Two-Point Moving Ave.
Northeast	14.3%	13.4%	13.1%	10.8%	11.5%	8.8%	10.2%	8.4%	5.7%	13.2%	14.3%	10.6%	5.1%	1.1%
South	1.8%	1.9%	1.6%	1.4%	1.5%	1.3%	1.4%	1.3%	1.4%	1.8%	2.0%	1.6%	3.4%	1.2%
Midwest	1.3%	1.5%	1.7%	1.8%	2.1%	1.7%	1.7%	1.2%	2.0%	3.0%	2.8%	1.8%	5.6%	4.9%
West	1.3%	1.3%	1.2%	1.0%	1.2%	1.3%	0.9%	1.9%	1.5%	3.9%	2.7%	1.6%	11.5%	8.4%
Target Region Composition:	1980	1982	1984	1985	1986	1988	1990	1992	1994	1995	1996	Decade Average	Adj. Annual Change Rate	Two-Point Moving Ave.
Northeast	72.9%	70.7%	70.5%	66.7%	65.6%	61.5%	66.3%	61.3%	47.0%	54.4%	58.7%	62.4%	-0.6%	-1.3%
South	10.6%	12.0%	9.9%	10.1%	9.7%	10.7%	10.2%	10.8%	13.1%	8.4%	9.4%	10.9%	2.3%	0.1%
Midwest	10.3%	11.6%	14.2%	17.6%	18.9%	19.3%	17.8%	14.4%	27.5%	20.9%	20.1%	17.9%	6.2%	4.6%
West	6.3%	5.7%	5.3%	5.6%	5.8%	8.5%	5.8%	13.5%	12.4%	16.3%	11.4%	8.7%	8.9%	6.1%
Total Travel Destinations of Northeast Market ('000):	1980	1982	1984	1985	1986	1988	1990	1992	1994	1995	1996	Decade Average	Adj. Annual Change Rate	Two-Point Moving Ave.
All Destinations	130,431	132,419	126,112	119,659	121,750	122,738	130,839	139,497	130,938	187,340	187,988	135,001	2.3%	2.2%
Northeast	25,426	21,642	28,141	24,064	22,931	23,877	21,780	19,585	21,019	34,822	34,908	24,270	2.7%	2.3%
New England	4,965	4,788	4,860	3,975	4,318	3,276	3,913	3,252	2,220	5,152	5,519	3,958	5.6%	1.8%
Mid-Atlantic	7,135	8,064	8,307	7,276	6,268	6,978	5,772	4,435	4,210	7,450	7,917	6,560	2.0%	1.2%
Other Regions	13,326	8,790	14,974	12,813	12,345	13,623	12,095	12,171	14,589	22,220	21,472	13,767	3.9%	3.4%
NE Share of All	3.8%	3.6%	3.9%	3.3%	3.5%	2.7%	3.0%	2.3%	1.7%	2.8%	2.9%	2.9%	1.4%	-1.0%
NE Share of NoEa	19.5%	22.1%	17.3%	16.5%	18.8%	13.7%	18.0%	16.6%	10.6%	14.8%	15.8%	16.3%	1.5%	-0.7%
Mid-Atl Share of NoEa	28.1%	37.3%	29.5%	30.2%	27.3%	29.2%	26.5%	22.6%	20.0%	21.4%	22.7%	27.2%	-0.4%	-0.9%

Source: Simmons Market Research Bureau. 1979 to 1996. Study of Media and Markets. Vol. P-4, Travel. New York, New York.
NOTE: Years 1979, 1981, 1983, 1987, 1991, and 1993 are not shown due to space limitations; however, data are included in statistical analysis.
Use summary statistics (average, annual change rate, moving average) with caution.

entire population participation rates for the selection of New England as a primary destination were off by "0.7%" after each of the eight 10-year lag periods from 1979 through 1996.

Second, "Silent Generation" members were largely in the 35 to 54 age categories from 1979 through 1983; then moved ahead into 45 to 64-year-old groups. Their domestic travel behavior participation rate to New England declined from 1979 - 1983 in the 35 to 44 age category. In 1979, the New England travel participation rate was 5.4% and it declined to 3.6% in 1983. The older half of the "Silent Generation," age 45 to 54, experienced a decline in New England travel participation from 5.2% in 1979 to 3.9% in 1996 and after all of the 10 year lags were examined the average decline change was an overall decline of "-1.0%". With only a few years of data available, the travel tendencies of the 13th Generation actually grew as they aged from 18 to 24 and then later as they moved to the 25 to 34-year-old segment of their life span. Rates nearly doubled from 1985 to 1995 and 1986 to 1996.

Third, the "Baby Boom Generation" held the most stable New England travel participation rate over the decades when the other generations were examined. However, the oldest of the Baby Boomers showed signs of increased participation rates. These rates grew from 4% to over 5% after a decade of aging. The Silent Generation for the decade lags of 1979 to 1984 generally found their rates declining; however, these rates changed the least in 1986 to 1996 lag periods and less decline was noted in the older portion of this generation.

Fourth, the 1989 and 1995 years were watershed years when noted directional changes occurred in nearly all of the age category participation rates. These findings represent a positive note for the domestic travel industry in New England. In particular, the participation rates have appeared to have rebounded in the mid-'90s; particularly in the 1995-1996 years. Will these changes and growth trends be maintained? However, a word of caution must be observed because participation rates only indicate what percent the overall population and individual members of age categories participate and not how frequently they participate. (See Table 2.)

The generation change data can also be compared by generations. For example, the depth and wealth of the data now allows us to compared the young life stage of Baby Boomers to the 13th Generation. In the mid-'90s, the rates for the 13th Generation were higher than for the Baby Boomers a decade earlier when they were at the same life span stages. (See Table 3.)

When the transition of generational participation rates were examined by domestic travel to New England, one may examined the data by the pure change or examine it within the context of overall population change in participation from one decade to the next. Within the context of eight periods examined here (1979 to 1986 and 1989 to 1996), decade lag changes could be tracked by participation rates of age categories and generations. Although there was growth over time; the rates were not as high as they were after a decade of aging and transition for most generations tracked here with the exception of the 13th Generation. Travel to New England overall, was up 3.2% on average; however, significant gains were most noteworthy in the mid-'90s. The Baby Boom Generation's participation rate in New England destination travel actually declined after a decade of change with the exception of the oldest Boomers. The older half of the Baby Boom Generation (those aged 35 to 44 in the mid-'80s), had participation rates which actually increased slightly. For example, the 35 to 44 rates in 1986 were 4.3% and in 1996 the rates were 5.1% after a decade of aging. No real patterns of change can be read into the changes in the GI Generation's travel patterns. Limitations of the data do show through here. For example, the decades of travel data here are not all purely of one complete generation, as each generation spans more than 10 years and over time, the age category will change in composition of generations.

Conclusions

Over time and a replication of previous research with more data, reveals new and different changes. New England is an evolving or a rebounding market destination choice. After a downturn in the early '90s, the New England destination choice has rebounded and contributed to an overall growth trend is destination choice. The size of the market is up, the Northeast market rebounded in participation choice and more distant markets are also selecting New England as a primary destination. Furthermore, nearly all age categories have rebounded in participation.

The value of examining generations as suggested by Strauss and Howe (1991) does provide a new and somewhat different look of travel behavior as generations are examined and their participation over time changes as they age. New questions are raised after examining these data. For example:

1. Why is New England not growing as rapidly as we might expect in popularity with the current young adults? Rates are up significantly in the mid-'90s; but will they last? Why are the most active travelers isolated within two separate age segments (25- to 34-year-olds and 55- to 64-year-olds)? Is the popularity of the Millennial Generation simply a short-term event?
2. The Baby Boomers still appear to a potentially strong future market. Will they continue to travel more as they age and will they continue to travel to New England?
3. The best news appears to be the rebirth in interest of traveling to New England among the youngest adults, those 18 to 24. The 13th Generation is coming to New England and rates are increasing in their travel choices of New England even as they age.

More data is still needed and it would be even better if the data were available by actual individual birth year and by volume of travel instead of simple number of destination travelers. Individual and regional travel destination businesses and attractions would do well to monitor the behavior of their markets over time. This would reveal changes in patterns of interest and overall choice behavior as each individual generation ages and makes new life cycle choices and plans in the future.

Table 2. Generational Changes in New England Domestic Travel Participation Rates: 1979 to 1989 through 1986 to 1996

Generation, Age Category and Year	1980	1990	Change	1982	1992	Change	1984	1994	Change	1985	1995	Change	1986	1996	Change	Ave. Decade Change Rate
13th Generation																
18- to 24-year-olds (83-86)							3.0%			3.0%			2.8%			
|->25- to 34-year-olds (93-96)								2.1%	-0.9%		5.8%	2.8%		5.5%	2.7%	0.8%
Baby Boom Generation																
18- to 24-year-olds (79-86)	3.3%			3.4%												
|->25- to 34-year-olds (89-96)		3.5%	0.2%		2.3%	-1.1%										-1.1%
25- to 34-year-olds (79-86)	5.8%			3.5%			4.5%									
|->35- to 44-year-olds (89-96)		4.5%	-1.3%		3.5%	0.0%		3.0%	-1.5%							-1.2%
35- to 44-year-olds (79-86)							5.3%			4.3%			4.3%			
|->45- to 54-year-olds (89-96)								3.6%	-1.7%		5.4%	1.1%		5.1%	0.8%	0.1%
Silent Generation																
35- to 44-year-olds (79-86)	5.2%			5.5%												
|->45- to 54-year-olds (89-96)		3.9%	-1.3%		3.5%	-2.0%										-1.6%
45- to 54-year-olds (79-86)	5.1%			5.3%			5.0%			4.0%			3.9%			
|->55- to 64-year-olds (89-96)		2.5%	-2.6%		3.2%	-2.1%		2.6%	-2.4%		5.8%	1.8%		5.6%	1.7%	-1.0%
G.I. Generation *																
55- to 64-year-olds (79-86)	3.5%			4.2%			4.7%			3.3%						
|->65 and over (89-96)		2.6%	-0.9%		3.2%	-1.0%		1.8%	-2.9%		3.8%	0.5%				-1.3%
Overall Population Travel Rate																
Early Rate	4.3%			4.2%			4.1%			3.5%			3.8%			
|-> One Decade Later Rate		3.3%	-1.0%		2.9%	-1.3%		2.5%	-1.6%		5.0%	1.5%		4.9%	1.1%	-0.7%

* The generation change of the GI Generation is report for consistency only; this generation's domestic travel participation rates are confounded by the presence of two other older generations (those 85+).

Source: Simmons Market Research Bureau. 1979-1996. Study of Media and Markets, Vol. P-4. Travel.

Note: Lag periods 1979 & 1989, 1981 & 1991, 1983 & 1993 are not shown due to space limitations; however, data are included in statistical analysis.

Table 3. Generational Diagonal in Domestic Travel Behavior in New England

	-----The Early '80s-----								-----The Early '90s------							
Year------>>>	1979	1980	1981	1982	1983	1984	1985	1986	1989	1990	1991	1992	1993	1994	1995	1996
Life Stage and Age Cohort																
Elder																
65 and Older	Lost/GI	Lost/GI	Lost/GI	Lost/GI	Lost/GI	Lost/GI	Lost/GI	Lost/GI	GI	GI	GI	GI	GI	GI	GI	GI
Travel Part. Rate	3.1%	2.3%	3.0%	3.7%	2.4%	2.7%	2.5%	3.0%	2.3%	2.6%	2.0%	3.2%	2.5%	1.8%	3.8%	3.2%
Midlife																
55 to 64	GI	GI	GI	GI	GI	GI	GI	GI	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent
Travel Part. Rate	4.2%	3.5%	3.9%	4.2%	3.4%	4.7%	3.3%	4.6%	4.0%	2.5%	3.2%	3.2%	3.0%	2.6%	5.8%	5.6%
45 to 54	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent
Travel Part. Rate	5.2%	5.2%	5.2%	5.3%	4.0%	5.0%	4.0%	3.9%	2.9%	3.9%	3.0%	3.5%	3.9%	3.6%	5.4%	5.1%
Rising Adult																
35 to 44	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Silent	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom
Travel Part. Rate	5.4%	5.2%	5.4%	5.5%	3.6%	5.3%	4.3%	4.3%	3.1%	4.5%	2.6%	3.5%	3.4%	3.0%	5.0%	5.4%
25 to 34	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom
Travel Part. Rate	4.5%	5.8%	4.7%	3.5%	4.5%	4.0%	3.8%	4.4%	2.7%	3.5%	1.9%	1.9%	2.5%	2.1%	5.8%	5.5%
Youth																
18 to 24	Boom	Boom	Boom	Boom	Boom	Boom	Boom	Boom	13th	13th	13th	13th	13th	13th	13th	13th
Travel Part. Rate	4.6%	3.3%	3.4%	3.4%	3.9%	3.0%	3.0%	2.8%	1.8%	1.9%	1.6%	2.3%	1.9%	2.0%	3.9%	4.2%

Source: Simmons Market Research Bureau. (1979 through 1996).
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WELCOME CENTER RESEARCH: HOW VALUABLE IS SECONDARY RESEARCH?

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Abstract: Community tourism research often focuses on characteristics and patterns of visitors to an area. Issues such as economic impacts, length of stay, travel plans and demographic descriptions are common topics of research projects conducted for tourism development agencies. However, research often fails to utilize readily obtainable information, such as guest book information that may be routinely collected. Conversely, data collected in guest books at Welcome Centers is often collected, quickly tabulated, reported monthly then ignored. When collected over a period of time and analyzed, data collected using this relatively unobtrusive method may provide a rich source of information about tourism in an area. In addition, it may provide insights into the validity of other tourism studies conducted.

Introduction

This paper was part of a larger study funded by the Alachua County Visitors' Bureau. The aim of the overall project was to determine the frequency and use patterns of the Alachua County Welcome Center. The purpose of this portion of the study was to examine data routinely gathered to determine any possible patterns that may be evident. The variables of interest were gender, city and country of origin, destination, and time of year and day. This study was an initial step in demonstrating how secondary information can be used by tourism agencies either as primary or as supporting information.

Community tourism research has focused on economic impacts, length of stay, travel plans and demographic descriptions. Welcome Centers provide a stopping point for tourists to rest, gain information, use facilities, and picnic. They help to contribute to the economic impact of tourism to the area, and are crucial for setting the stage of the travelers' experience. Welcome Centers are usually located at state borders but can also be found at the county level. Visitors stopping at the state border welcome centers tend to be out-of-state residents, traveling for business or pleasure searching for information (Pennington-Gray & Vogt, 2000). Furthermore, visitors to the interior welcome centers tend to be in-state residents traveling for leisure (Pennington-Gray & Vogt, 2000).

Past research has focused on the reasons for stopping compared to the actual behavior of visitors. For example, people may stop in order to take a break, stretch their legs or to use the facilities, but while doing this may inadvertently gain information which influences their future behavior. Additionally research has focused on users versus non-users, demographic information has shown that when compared to non-users, people who stop at welcome centers typically have higher incomes, larger party size, and tend to be on pleasure trips. Furthermore, much research has focused on the economic impact of visitors and the effect of the welcome centers on their actual behaviors and expenditures. More recently research has focused on the location and available facilities at the welcome centers as well as their impact on visitors.

Methodology

Since opening in December 1997, all people visiting the Alachua County Welcome Center were asked to sign a guest book. Information requested included questions pertaining to their city and country of origin, destination, party size, date, and time of visit. The information collected was used only to measure the volume of visitations, thus making the case for the continued funding of the center. Over a three-year period, a total of 12,000 responses were collected. A random selection of approximately 6,000 entries were entered into SPSS version 10.0 and analyzed. Frequencies provided information about gender, location, and destination, and the results were then further analyzed in order to better describe the usage patterns of the Welcome Center.

Findings

This study yielded the following results: 54% of the visitors to the Alachua County Welcome Center were male (Table 1). Visitations occurred mostly during the afternoon hours (12-3 pm) with 40.3% of visitations at this time period (Table 2-4). There was 65.6% of visitors coming from outside of Alachua County and the top five states of origin were Florida, Georgia, Michigan, Ohio, and Tennessee respectively. There was also a fair representation of International visitors with the top five countries of origin being Canada, Australia, Great Britain, Germany, and France. For the travelers, the top five counties of destinations were Alachua, Orange, Hillsoborough, Marion, and Pinellas (Table 5).

Table 1. Gender of Visitors

Gender	Frequency	Percent
Male	2803	54.0
Female	2385	46.0
Total	5188	100.0

Table 2. Time of Visitation

Time	Frequency	Percent
Morning	1590	33.6
Afternoon	1908	40.3
Evening	1232	26.0
Total	4730	100.0

Table 3. Year of Visitation

Year	Frequency	Percent
2000	1196	20.2
1998	1158	19.5
1999	3571	60.3
Total	5925	100.0

Table 4. Month of Visitation

Month	Frequency	Percent
January	343	5.8
February	407	6.9
March	554	9.4
April	744	12.7
May	766	13.0
June	356	6.1
July	620	10.6
August	985	16.8
September	684	11.6
October	413	7.0
November	4	.01
Total	5876	100.0

Table 5. Visitors' Origin

County	Frequency	Percent
Inside Alachua	2057	34.4
Outside Alachua	3915	6506
Total	5972	100.0

Discussion

The results of this study indicated that readily obtainable information received at Welcome Centers could provide insight into travel behaviors of tourists. However, the information may be limited depending on the types of questions that are asked. Demographical information and open ended questions should be included in guest books in order to better understand such things as purpose of travel, length of stay, and reasons for stopping at the Welcome Center. Future studies should examine economic feasibility of county funded Welcome Centers in light of technological advances and ease of access to information.

Conclusions and Recommendations

Welcome Center Research is an interesting area that suggests the need for further research in order to better gain insight into the travel habits and behaviors of visitors to a particular area. Secondary research allows the individuals to examine what habits may already exist, however, more intrusive methods must be utilized in order to gain more detailed information such as reasons for stopping. Welcome centers provide information that may be useful to travelers, however, through this research study it was observed that location of the center may also affect visitor type. Much research has examined such issues as county verses state welcome centers, as well as theme of the welcome center. Providing incentives for completing guest book sign in may also help to increase the amount of information offered by visitors. Future research should continue to examine travel habits as this information may greatly help to affect the tourism industry as a whole.

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Methodology in Outdoor Recreation Research I: Interventions

UNIQUE PROGRAMMING: AN EXAMINATION OF THE BENEFITS OF A FREE CHOICE PROGRAM

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Abstract: This study was an investigation of a free choice program and the benefits free choice yields on the developing characteristics of self-esteem and intrinsic motivation among adolescent girls. Both quantitative and qualitative data were collected at Brown Ledge Camp, an all girls summer camp outside of Burlington, Vermont, during the summer of 2000. Quantitative results indicate that intrinsic motivation increases over the course of the free choice program. The qualitative data appears to support the literature that both intrinsic motivation and self-esteem increase when participants are given the freedom to make their own recreation participation decisions.

Introduction

Adolescence has been identified as a time of dramatic developmental change (Henderson, 1995; Larson, 2000; Marcia, Waterston, Matteson, Archer, & Orlofsky, 1993; Shaw & Kemeny, 1989; Shaw, Kleiber, & Caldwell, 1995). During this time, social ideals are impressed upon adolescents through families, friends, peers, teachers, government and media, to name just a few. Young girls in particular are faced with issues tied to femininity as well as their role in society (Eskes, Duncan, & Miller, 1998; Kane, 1990; Wearing, 1992). Such overwhelming and bewildering pressures often result in low levels of self-esteem.

One approach proven to be effective in increasing levels of self-esteem among young women is leisure engagement (Diener, Emmons, & Larsen, 1986; Shaw et al., 1995). More specifically, the free choice, self-direction and intrinsically motivated behavior associated with selecting leisure activities may significantly enhance self-esteem and opportunities for self- expression (Larson, 2000).

Self-esteem and Intrinsic Motivation

Diener et al. (1986) contended that people's personalities develop and are expressed in leisure experiences; that personality expression is at its best in an unrestricted situation that allows for freedom of choice. Hence, highly structured leisure programs (e.g., many summer camps and extra-curricular school activities) that rely heavily on external motivating factors such as public recognition and awards do little to foster the development of intrinsic behavior (Deci & Ryan, 1991). Young people who are given the opportunity to participate in activities in which they are intrinsically motivated may lead to many other positive developmental benefits. For example, Larson (2000) suggested that intrinsically motivated participation, high involvement and concentration in activities encourages the development of initiative, thus leading to creativity, leadership and altruism in addition to many other elements of positive development. Additionally, Eskes, Duncan, and Miller (1998) found that young women who have high levels of intrinsic motivation may have enhanced levels of self-esteem and feel a sense of empowerment.

While intrinsic motivation has proven to be important to the successful development of adolescents, so too has freedom of choice. The notion of freedom of choice is not new to leisure research, and has been identified as a fundamental element in a leisure experience (Datillo, 1999; Mannell & Kleiber, 1997; Mannell, Zuzanek, & Larson, 1988; Samdahl, 1986). That is, in order for an experience to be considered true leisure, it must to some degree be freely chosen, free of constraints, free from social roles, freely self-determined, etc. Ellis and Witt (1984) posited that freedom of choice in leisure consists of four major elements: 1) perceived competence, 2) perceived control, 3) intrinsic motivation, and 4) playfulness. Moreover, Mannell et al. (1988) contended that perceived freedom, intrinsic motivation and self-expression are closely linked. If a person lacks the freedom to choose an activity, then their intrinsic needs will not be met, and they will have difficulty expressing themselves and their personality.

Individuals have different interpretations and definitions of what freedom is and how it exists in a leisure experience. This may be due, at least in part, to the fact that freedom has been examined as a state of mind, therefore making it difficult to operationalize and measure (Hemingway, 1996). Freedom as a program structure rather than as a state of mind is truly unique and yields a rich field of as yet untapped data.

Purpose of the Study

The primary purpose of this exploratory study was to examine the benefits of a free choice recreation program and the extent to which free choice increases intrinsic interest and motivation to participate among adolescent girls. This study purpose was based on the theory that when individuals are given the freedom to choose their recreation activities, their motivation for participation will either be, or overtime become, intrinsic and that participants will benefit from increased self-esteem and possibly other positive developmental outcomes. Two exploratory questions guided the study:1) do young women experience increased levels of self-esteem over the course of a free choice program? and 2) do young women experience increased levels of intrinsic motivation over the course of a free choice program?

Methods

Sampling Site

The site for this study was Brown Ledge Camp, an all girls camp located just outside of Burlington, Vermont on Lake Champlain. Known as the "different camp," Brown Ledge offers an unrestricted (i.e., free choice) program schedule in which activity selection and duration of participation is entirely elective for the campers. Campers are free to decide in which activity to participate in at any time on little more than a moments notice during activity hours. Staff members are hired as counselors in a specific activity and are available at all times during activity hours to receive campers.

Brown Ledge is an eight-week camp. Campers can enroll at Brown Ledge for their choice of three sessions: 1) July, 2) August, and 3) full season. The July and August sessions are each four-weeks long, while the full season, as the name implies, is the entire eight-weeks. Of the 180 campers, approximately half stay for the full season each year. Full season campers tend to be older than four-week session campers, and also tend to have more years experience at Brown Ledge.

Brown Ledge was founded in 1926 by Harry E. Brown (H.E.B.). In implementing the unique philosophy at Brown Ledge, H.E.B. established three fundamental ideas that fostered the free choice program: 1) "Play-life' is considered to be one of the most important factors in the development of personality, 2) Brown Ledge Camp deliberately chooses a wide range of sports or "play" activities to use as means to an end, and 3) these "play" activities are used as vehicles by which to arrive at health, poise, self-confidence – in a phrase, increased personal power.

Selection of Subjects

Brown Ledge campers range in age from eight to eighteen, and come from several countries around the world. Subjects for this study were young women enrolled at Brown Ledge during the summer of 2000, aged 12 through 18, and residents of the United States. These delimitations were established so as to better facilitate understanding of the questionnaire and communication during the interview process.

Collection of Data

Because the benefits of freedom have traditionally been difficult to operationalize, both quantitative and qualitative methods were used to measure the benefits of the free choice program. The quantitative element was meant to address the original issues of self-esteem and intrinsic motivation and to provide baseline data, while the qualitative element was meant to add depth and richness to developments that may or may not have contributed to self-esteem and intrinsic motivation over the course of the summer. That is, the qualitative data may either challenge or reinforce quantitative statistics resulting from the quantitative data.

The study was conducted in three phases: 1) a self administered questionnaire was mailed to the subjects approximately three weeks prior to their arrival at camp, 2) during the summer, those who agreed to complete the questionnaire were asked to participate in the qualitative aspect of the study, and 3) a second self-administered questionnaire was mailed to the subjects approximately three weeks after their departure from camp. The first phase of the study, or "pre-camp questionnaire", was meant to measure levels of self-esteem and intrinsic motivation prior to experiencing the free choice program. The third phase, or "post-camp questionnaire", was meant to measure levels of self-esteem and intrinsic motivation after experiencing the free choice program. During analysis, the two phases could be compared and analyzed accordingly. Third phase surveys were mailed not only to subjects who had responded during the first phase of the study, but also to all subjects in order to encourage a high response rate.

Quantitative Data Collection

Both the pre- and post-camp questionnaires consisted of three sections. Section one consisted of The Rosenberg Self-Esteem Scale (RSE) designed to measure self-esteem in adolescents. Section two consisted of the Weissinger and Bandalos Intrinsic Motivation Scale, designed to measure self-determination, competence, commitment, and challenge among participants in recreation activities. In section three, subjects were asked a series of questions about their background such as age and number of years they have spent at camp, whether or not they have sisters or friends from home at camp, and how they heard about camp.
Approximately 49% (n=92) pre-camp questionnaires were returned, 31% (n=52) post-camp questionnaires were returned, and 16% (n=29) returned both. Subjects ranged in age from 12 through 17 with a mean age of 14 years. The mean number of years spent at Brown Ledge ranged from 0 through 8, with a mean number of years of 2.7.

Qualitative Data Collection

Subjects volunteered to participate in the interview process early in the camp season. A total of 25 individuals volunteered; 9 full season campers, 10 full season, 1st year Junior Counselors (JC's), 4 July session campers, and 2 August session campers. Interviewees ranged in age from 12 through 17. Interviews did not impinge upon nor conflict with camp activities. Interviewing was therefore limited to only a few hours a day. To simplify the logistics of setting up interview times with all 25 interviewees, five focus groups and two one-on-one interviews were established. Two of the groups consisted only of full session campers (i.e., one 5-person focus group, and one 4-person focus group), one consisted only of full season 1st year JC's (i.e., 8-person focus group), one consisted only of July session campers (i.e., 4-person focus group), and one consisted only of August session campers (i.e., 2-person focus group). One-on-one interviews were established with

the oldest volunteers, both of whom were 2nd year JC's and were experiencing their last summer at Brown Ledge. The researcher felt that the two year JC program, and the fact that 2000 was going to be the last summer at camp for these participants, constituted a far different experience for these two interviewees and therefore warranted individual interviews.

Interviews were conducted shortly after campers arrival, and just before their departure from camp. Therefore, interviews were conducted the first week of camp for the July session and full season campers, at "switchover" (i.e., the four-week point when the July session campers leave and the August session campers arrive), and at the end of camp. Because interviews were being done at "switchover" with the July and August focus groups, the researcher took advantage of the opportunity to meet with some of the full season groups as a sort of 'progress report.'

A previously established set of questions such as "why is _____ your favorite activity?" and "how do you decide which activity you want to participate in?," guided each focus group and interview, until and unless the conversation took on its own personality. Similar questions guided the interviews in the middle and at the end of camp.

To ensure sufficient data collection and triangulation, data was collected from many sources in addition to campers. Observations, informal interviews with long-time counselors and parents, historical documents written by the founders of the camp, photos depicting many aspects of the camp environment, and current records of the camp reputation and philosophy were collected and evaluated. Many of these sources provide additional insight to the success of the free choice philosophy with which the camp operates.

Discussion of Results

The first result of this study indicated that intrinsic motivation level increased for young women who participated in the free choice program offered at Brown Ledge (see Table 1). Intrinsic motivation has been identified repeatedly as an essential element to a true leisure experience. Further, in order for intrinsic motivation to exist, activities must be freely chosen by the participant, free from all external motivating factors. The philosophy of the Brown Ledge program caters to this notion. Young women enrolled in the program are required to make decisions for themselves, with little outside influence or judgment from family and friends. Though campers are encouraged to participate in activities, they are also given the freedom not to choose, rather to spend time in their cabin or talking with friends, etc. Thus, when activities are chosen, they are free from external pressure, reward or judgment, and are therefore intrinsically motivated.

The data for this study however, did not show a significant increase in self-esteem for participants in the free-choice program, though it was approaching significance (see Table 1). This finding is contrary to what may have been expected, as previous research repeatedly suggests that participation in recreation activities, and furthermore, freely chosen leisure activities greatly increases self-esteem among participants (Diener, Emmons, & Larsen, 1986; Larson, 2000; Shaw, Kleiber & Caldwell, 1995. Thus, the result that subjects experience increased intrinsic motivation would also suggest that subjects would experience increased self-esteem. Results from prior research in this regard, in addition to the nearing significance found here indicate that further research is warranted.

Emerging themes from qualitative data appear to support the literature that participants in a free choice program benefit from increased levels of self-esteem and intrinsic motivation. Elements of self-esteem and intrinsic behavior emerge from the data.

Self expression (self-esteem):

> My friends at home are different than my friends at camp. [My camp friends have] confidence…I can sum it up in one word. Confidence. (Anna, 17)

Perceived control (intrinsic motivation):

> I'm able to be on my own, make my own decisions… there's a lot of trust. They trust that you know what you are doing. Between the counselors, and campers, and trust in yourself, too. (Zoe, 15)

Table 1. Paired t-Tests of Pre- and Post-Test Means for Self-Esteem and Intrinsic Motivation

	Pre-test Mean	Post-test Mean	N	df	t
Self-Esteem	3.23	3.29	35	34	-1.002
Intrinsic Motivation	5.04	5.19	36	35	-2.078*

sig. @ .05 level

Competence (intrinsic motivation):

> Brown Ledge helped me work through things because it helped me see that I could excel in things. I can do things, I am talented. (Zoe, 15)

Results of this study suggest that the free choice program offered at Brown Ledge provides participants with increased levels of intrinsic motivation, and the potential for increased levels of self-esteem with no discrimination against individuals who spend less time in the program. A limitation to this study was that it was short-term in nature. That is, this study evaluated the benefits received by the participants in the free choice program only immediately after leaving Brown Ledge. There are some limitations to this study that must be considered. First, the researcher was and is an avid Brown Ledger. This may have affected both the quantitative survey responses and qualitative interview responses of the participants. Additionally, because campers volunteered to participate, those who had negative feelings toward camp may not have been well represented.

Future Research

There are several opportunities for future research within this current project. It may be interesting in the future to assess the long-term benefits of the program by surveying subjects months, and even years after their participation. Following campers from their first years at camp at age ten or younger, through the Junior Counselor program (i.e., ages 16-18) may yield some interesting developmental results. Additionally, Brown Ledge has a strong and devoted alumnae following. A project evaluating this group, their feelings toward camp, and an investigation of the benefits they perceive themselves to have received from camp, may provide valuable insight into some long-term benefits the Brown Ledge program provides. An exploratory study of parents' opinion of Brown Ledge Camp and whether their daughters are effected by it may present some interesting findings. Further, the Brown Ledge philosophy may naturally attract adolescent girls are motivated, confident individuals. In order this possibility, it may be valuable to conduct a comparative study between Brown Ledge Camp and its unique philosophy with a camp with a more structured, planned program.

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OUTDOOR EXPERIENTIAL-BASED TRAINING: MOTIVATIONAL AND ENVIRONMENTAL INFLUENCES AFFECTING OUTCOMES

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Abstract: The purpose of this study was to go beyond the examination of the single construct of team building by measuring the impact of motivational and environmental factors on the effectiveness of an outdoor-based training (OBT) intervention. The study assessed the self-perceptions of trainee attitudes and attributes that influenced the constructs of motivation to learn, learning which was operationalized as team building, and the motivation to transfer newly acquired knowledge to the work setting. There were six social and situational factors selected as independent variables: age, number of years with the current employer, presence of a supervisor, previous team building experience, fear and work environment favorability. A conceptual framework of trainability in OBT was proposed and tested in this study. In examining the relationships between the constructs motivation to learn, learning, motivation to transfer learning and the independent variables, it was concluded that fear, especially social fear, negatively impacted each of these constructs just as work environment favorability positively influenced all of them. Age and previous team building participation significantly influenced team building outcomes. Additionally, men and women differed significantly on the overall scale of team building. The motivation to transfer learning was also affected by previous experience as well as the number of years a trainee had been with the employer. The presence of one's supervisor was not a factor in any of the equations. This evaluation further described the effectiveness of outdoor-based training given trainee attitudes prior to and following a training experience. Many of the primary findings of this study are congruous with the work of others (Huczynski & Lewis, 1980; Hicks, 1984; Noe & Schmitt, 1986; Galpin, 1989; Dunford, 1992; McGraw, 1992) in both traditional training settings as well as OBT. By understanding the strength of these relationships and going beyond solely measuring training outcomes, the results of this study have contributed to understanding some of the factors that influence outdoor-based training programs.

Introduction

Outdoor-based training (OBT) programs utilize adventure activities to foster the personal and professional development of corporate managers including but not limited to team development, leadership skills, decision making, and self-awareness (Beeby & Rathborn, 1983; Mossman, 1983). Outdoor-based training activities generally fall into one of five categories: socialization games, group initiative tasks, ropes courses, outdoor pursuits and "other adventures" (scenarios and distantly related exercises in development training) (Agran, Garvey, Minor & Priest, 1993).

The crux of the research in OBT is that these five categories of activities form the collective treatments that have been studied and reported in the literature in the past. Due to the nature of these activities, there is ambiguity as to which classification some activities fall under, thereby confusing study results and limiting generalizability. As an example, researchers have melded group initiatives and rock climbing courses into one treatment (Priest, 1996).

Adding to this confusion is that OBT can be classified into one of four kinds of formats just like other outdoor adventure programs. As with recreational programs some outdoor-based trainings are offered as entertainment, giving the participants the "lite" version of the team ideals but mostly emphasizing the fun and enjoyment of being with colleagues. Other OBT are offered in an educational format, providing short programs designed to convey new knowledge, awareness and concepts while demonstrating the importance of teamwork. The third type of program is the developmental program, which is aimed at changing the way participants act, think and feel. The objective is to enhance functional behaviors and introduce new ways of conduct. These sorts of programs are offered where there is organizational commitment to real, specific team building. And, finally, therapeutic programming in OBT targets work groups or teams in conflict. Programs are designed specifically to repair relations, manage strife and address dysfunctional behaviors (Priest, 1996).

This booming trend toward the use of adventure programs in management training is not without its issues. Much controversy and debate exists as to whether or not these types of training programs impact or change participants' work attitudes, behaviors and effectiveness in the job place. Critics contend that outdoor training, among other things, is a waste of time and money as well physically unsafe (Miner, 1991; Wagner, Baldwin, & Roland, 1991; Wiesendanger, 1993). Identical outdoor-based team building programs for Master of Business Administration (MBA) students have also been received with skepticism (Wagner, Weis, & Mostad, 1994). There is speculation that, although most organizations and business schools support this notion of teamwork and teams, only lip service is given to the actual process because business schools do not know how to teach team skills (Dyer, 1987). If that is not enough, adventure educators (or facilitators as they are referred to in the marketing literature) moving within formal organizations as agents of change in itself is a controversial issue because they have crossed over into the domain of the organizational development consultant (Flor, 1991). And, lastly, there is also criticism of OBT providers who fail to adequately assess their client's objectives up front so as to design a program in a format that meets the needs of the trainee and the organization.

The increased popularity and spending on outdoor adventure-based training programs has not been paralleled by compelling empirical research and evaluation that would provide evidence demonstrating the effectiveness in either the corporate world or in the business school structure (Beeby & Rathborn, 1983; Tarullo, 1992). If OBT programs are indeed everything they are touted to be, their longevity as a training technique may be short-lived if the impacts and subsequent influences on participants are not documented. Outdoor training has come to a crossroads. It needs to have its credibility as a viable tool in organizational development established or be dismissed as a fad in professional training techniques that provides fun without results (Buller, Cragun & McEvoy, 1991).

Theoretical Model of Trainability in Outdoor-Based Training Programs

When determining the likelihood of real training effectiveness, regardless of the venue - indoors or out of doors - or who the trainer might be, the influence and importance of program participant attitudes, values, interests and expectations cannot be overlooked. The degree to which a program participant is motivated to learn and to transfer learning is as important to training outcomes as is the trainee's cognitive ability and psychomotor skills. Although a program participant may have the prerequisite cognitive ability necessary to become proficient in the training material, if motivation is lacking or absent, training performance and outcomes can expected to be poor (Noe & Schmitt, 1986). Motivation in the setting of a training program therefore becomes the factor that energizes or powers enthusiasm for the program, the stimulus that sways learning and content mastery, and an agent of maintenance that directly influences the application and retention of newly acquired knowledge and skills (Steers & Porter, 1983).

Trainability is a function of trainee ability, motivation and work environment favorability [Trainability = *f*(Ability + Motivation + Environmental Favorability)], according to Noe and Schmitt (1986). The perceptions of social support for the performance of newly learned behavior and the existence of task constraints within the organization to which a program participant returns are crucial factors to consider. The elements facilitating or inhibiting the motivation to transfer learning are influenced as much by organizational structures, processes and values as they are by participant values and beliefs.

Lack of motivation and enthusiasm for outdoor team training, in particular, may emerge in part due to the barriers that exist in the overall work environment or corporate culture. Consideration needs to be given to the type of culture that exists within an organization and the degree to which that organizational environment is compatible with the type of team building an experiential program provides (McGraw, 1992).

McGraw (1992) speculated that trainability in OBT is susceptible to the influence of trainee fears, although no empirical evidence exists to support this claim. Apprehension may certainly be implied if the fear of physical injury, embarrassment, self-disclosure and judgment are thought to be heightened by outdoor training programs. Other conditions affecting trainee physical and social comfort levels in an OBT program could be related to age, gender, race or years with the organization, but again this aspect of trainability remains untested.

The conceptual framework of trainability in OBT presented in this study was based on a number of variables identified in previous research (see Baumgartel, Reynolds, & Pathan, 1984; Ewert, 1987; Hicks, 1984; Huczynski & Lewis, 1980; Lodahl & Kejner, 1965; McGraw, 1992; Noe & Schmitt, 1986; Peters & O'Conner, 1980; Spector, 1988; Wagner & Roland, 1992) as relevant to the prediction of the relationships between the constructs of motivation to learn, learning or training outcomes, and the motivation to transfer learning (Figure 1).

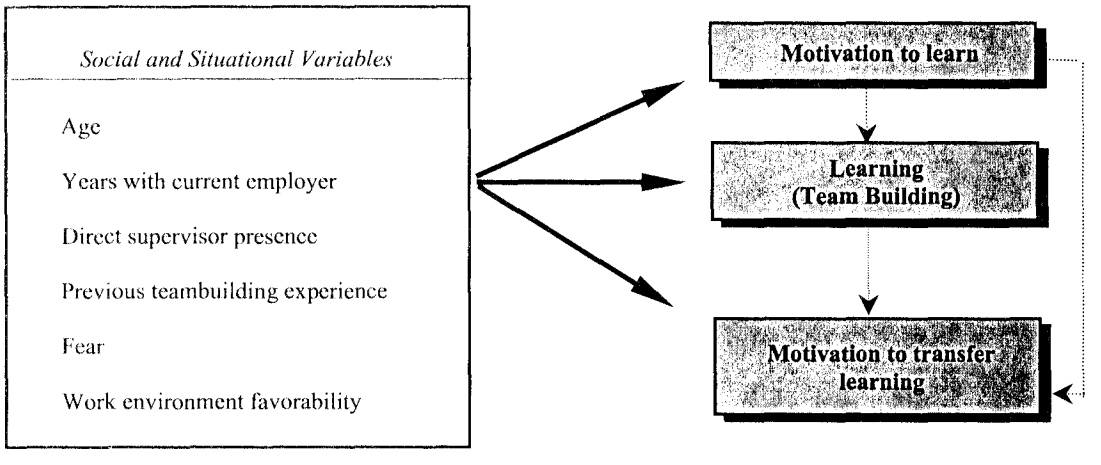

Figure 1. Hypothesized Influences Affecting Trainability in Outdoor-based Training

The model depicts the three dependent variables of this study, motivation to learn, learning measured as team building, and the motivation to transfer learning, in the shaded balloons. The social and situational factors (independent variables) were posited to have direct influences on the outdoor experiential team training program participant and were indicated by the solid linkages. The influence of these independent variables is projected to indirectly affect the relationships between the motivation to learn, learning (team building) and the motivation to transfer learning.

Describing the model begins with the understanding of the dependent constructs of the study. For the purpose of this study, motivation to learn was measured by the degree of job involvement (Lodahl & Kejner, 1965), readiness for training (Baumgartel et al, 1984; Hicks, 1984; Huczynski & Lewis, 1980), and the work place locus of control (Spector, 1988). As defined by Noe and Schmitt (1986) motivation is a desire on the part of the training participant to use knowledge and skills learned in a training program on the job. Training outcomes, or learning, was measured as program participant's self-perceptions and evaluation of the level of team development achieved after the conclusion of their team training workshop. The motivation to transfer the training happens when conditions exist where training participants feel confident about using new knowledge or skills, perceive the application of new knowledge resulting in improved job performance or aiding in the resolution of work related problems and addressing frequent job demands (Baumgartel et al., 1984; Huczynski & Lewis, 1980; Noe & Schmitt, 1986).

Factors hypothesized to influence individual lack of motivation toward participation in outdoor experiential training programs include fear of physical injury, strain or embarrassment; fear of the unknown; fear of self-disclosure; and fear of judgment or evaluation, which tends to be a particular problem for senior mangers (McGraw, 1992). Demographics, specifically, gender and age, as well as the situational factors which include the presence of a supervisor, number of years with the current employer and any previous experience participating in team training programs were also considered as independent variables. Lastly, work environment favorability was predicted to impact all three of the dependent constructs as well. The opportunity to use newly learned behavior is influenced as much by the existence of task constraints in the work environment as it is by the amount of supervisory and peer support given to the trainee back on the job (Noe & Schmitt, 1986).

Although previous research has been weak in design, more recent investigations have had success in demonstrating sustained team development outcomes (Priest & Lesperance, 1994; Smith & Priest, in press), improvement of problem solving, trust, and commitment to group goals (Wagner, Dutkiewicz, Roland, & Chase, 1994) as well as positive increases in group awareness and group effectiveness (Wagner & Roland, 1992).

Purpose of the Study

The purpose of this investigation was to measure the impact of motivational and environmental variables on the effectiveness of an outdoor experiential based training intervention. An organizing framework outlining factors effecting training and transfer in a one-day outdoor experiential based training course was used as a guide in this study. The self-perceptions of trainee attitudes and attributes that influenced motivation to learn, learning or training outcomes measured as team building, and the motivation to transfer newly acquired knowledge to the work setting were assessed. These three constructs were the dependent variables for this study. The independent variables for this study were age, number of years with the current employer, presence of a supervisor, previous experience, fear and work environment favorability.

It was hypothesized that the three dependent variables of motivation to learn, learning and the motivation to transfer learning would be directly related to the six independent social and situational variables.

Groups were solicited for their participation in the study by the training provider based on the organization's indicated commitment to building teams on the pre-course needs assessment form. It was also important that the program goals developed by the training provider focused on team development and were presented in an educational and/or developmental program format. Those groups wanting a recreational experience with the overall goal of the day emphasizing fun and entertainment were not considered for the study. Intact work groups, or as in this case, many smaller groups, coming to the training from the same large organization were the only type of participants selected to participate in the study.

Results and Discussion

The data for this evaluation project was gathered from 109 full time employees coming to an outdoor-based training program from the same organization over the course of several weeks. Twenty-four unusable surveys were discarded from the sample for reasons of incompleteness or overt disregard for filling out the questionnaire. Of the 109 participants in the study, 90 were male and 19 were female with 87 of the trainees indicating that they were in sales and advertising positions, 11 in upper level management and 11 in support positions of the same manufacturing firm. The frequencies and distributions of the social and situational variables of the study are presented in Table 1.

Sixty-five percent indicated that they had been with their current employer ten years or less. Forty seven percent reported to have previously participated in team building. On the day of the training, 80% of the program participants noted that their supervisors were present at the site.

Several measures used in this investigation were developed by the researcher or adapted from prior research. A quasi-experimental design was used to gather data. The Pre-Program Survey was administered to the study's subjects

Table 1. Background Profile of Team Building Participants

Social and Situational Variables	N	%
Gender		
Males	90	82.6
Females	19	17.4
	109	100.0
Age		
20-29 years	8	7.3
30-39 years	39	35.8
40-49 years	39	35.8
50-59 years	21	19.3
60 years and older	2	1.8
	109	100.0
Years with current employer		
10 years or less	71	65.1
11-20 years	22	20.3
21-30 years	12	10.9
more than 30 years	4	3.7
	109	100.0
Presence of a direct supervisor		
Yes	87	79.8
No	18	16.5
Missing	4	3.7
	109	100.0
Previous team building experience		
Yes	51	46.8
No	57	52.3
Missing	1	.9
	109	100.0

when they arrived at the training site and prior to any participation in the training course (Time 1). This questionnaire measured the participant's motivation to learn and pre-course fears. The Post-Training Survey was administered at the conclusion of the team building training (Time 2). This survey was designed to assess the motivation to transfer training, level of team development and trainee perceptions of work environment favorability.

Pearson correlation coefficients were plotted in an effort to determine the size and the direction of the relationships between the constructs of motivation to learn, learning, the motivation to transfer and the independent variables. Regression analysis was used to predict one variable from the others as indicators of motivation to learn, learning and the motivation to transfer learning. Results of the stepwise multiple regression and correlation analysis are shown in Table 2.

In examining the relationships between the constructs motivation to learn, learning, motivation to transfer learning and the independent variables, it was concluded that fear, especially social fear, negatively impacted each of these constructs just as work environment favorability positively influenced all of them. Age and previous team building participation significantly influenced team building outcomes. The motivation to transfer learning was also affected by previous experience as well as the number of years a trainee had been with the employer. The presence of one's supervisor was not a factor in any of the equations.

Table 2. Summary Multiple Regression Analysis of Social and Situational Variables on the Motivation to Learn, Learning and the Motivation to Transfer Learning

	Dependent Constructs					
Independent Social/Situational Variables	**Motivation to Learn (N=108)**		**Learning (Team Building) (N=108)**		**Motivation to Transfer (N=108)**	
	r	Beta	r	Beta	r	Beta
Age	-.019	ns	.205*	.186*	.073	ns
Number of years with current employer	.128	ns	.150	ns	.224*	.177*
Presence of a supervisor	-.024	ns	.117	ns	.039	ns
Previous team building experience	-.107	ns	.184	.182*	.236**	.216**
Fear	-.205*	ns	-.186*	ns	-.323***	-.178*
Work Environment Favorability	.270**	.289**	.420***	.417***	.499***	.515***
	R^2=.084		R^2=.241		R^2=.370	

***Significant at .001
**Significant at .01
*Significant at .05

It is also important to interpret the values found in the rows, as well as highlight the influence of the social and situational variables in explaining the dependent constructs. To this end, it is noteworthy to recognize the R^2 values for each of the regression models. The independent variables demonstrate, by a factor of four, their ability to explain the motivation to transfer learning over their predictive ability to explain the motivation to learn. These independent variables are also a important indicators of team building as demonstrated by the regression model (R^2=.241).

Although the majority of the sample, 80%, indicated that their direct supervisor was present on the day of the training, this had no effect whatsoever on any of the constructs. While 47% of the sample noted previous team building experience, this variable did not come out as a correlate of team building when in the multiple regression equation previous experience proved to be a significant predictor of team building. A closer review of the correlation analysis output revealed a p-value equal to .058, thereby causing this variable to miss the significance cut-off at .05 by a small margin.

The variable fear proved to be a consistent and significant correlate of all the dependent constructs. Yet, fear only managed to stay in the regression equation long enough to be a significant predictor of the motivation to transfer training.

Work environment favorability was found to be the best predictor overall. This variable proved to have the strongest relationship with all of the dependent constructs. Work environment was also the strongest and most significant predictor out of all of the independent variables.

Figure 2 presents the resulting factors found to impact trainability in outdoor-based training programs.

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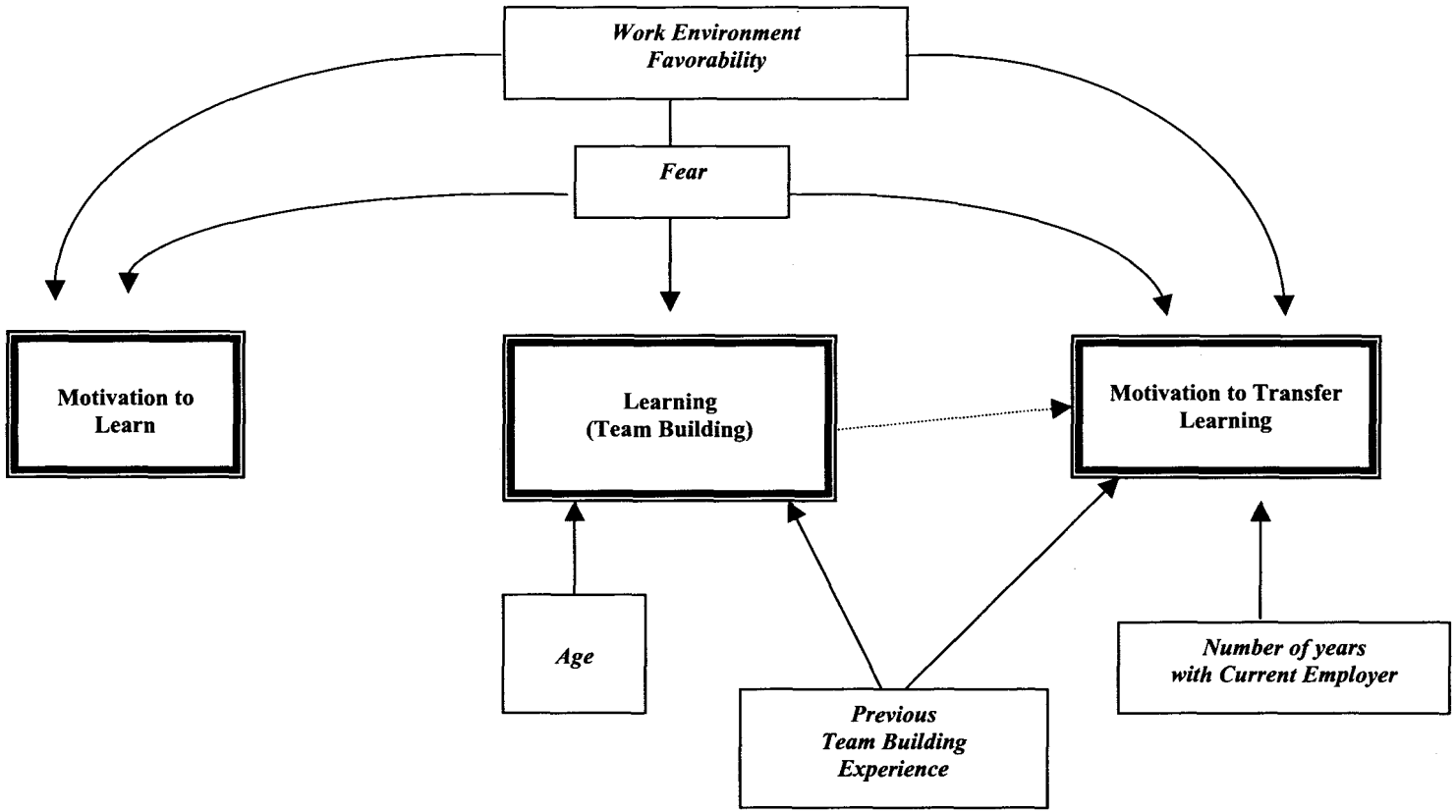

Figure 2. Factors Impacting Trainability in Outdoor-based Training Programs

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USE OF EXPERIENCE SAMPLING METHOD TO UNDERSTAND THE WILDERNESS EXPERIENCE

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Abstract: There is a growing body of research documenting the benefits of outdoor adventure and wilderness-based programs with a variety of special populations. Criticisms of this body of research are that it is not grounded in theory and it is outcome-based, with no investigation into the processes causing the behavior change in individuals. This study attempted to investigate the processes that occurred during wilderness outdoor adventure experiences in relation to social integration between people with and without disabilities. The contact hypothesis, from intergroup relations and social categorization theory, was used as a framework for understanding the social integration process. The role of wilderness in that process was illuminated through the use of experience sampling method with participants with and without disabilities on a series of wilderness canoe trips. This paper focuses on how the experience sampling method was implemented across several wilderness-based canoe trips and the resultant data. Subjects were participants with an outdoor adventure company that provides trips that include people with and without disabilities. During each of the seven trips studied, 2-3 participants were randomly chosen to participate in the experience sampling study. Participants were randomly beeped 4 times per day, when they would complete an experience sampling form. The dependent variables were inclusion and interpersonal attraction. Results showed that the most salient variable related to change in the dependent variables was awareness of the wilderness environment. Social identity theory, as operationalized by the contact hypothesis, was supported as a theoretical explanation of the process of inclusion and interpersonal liking that developed during the wilderness trips. The experience sampling method was helpful in "illuminating" the inside of the "black box" of the wilderness experience.

Introduction

There is a growing body of research documenting the benefits of outdoor adventure and wilderness-based programs with a variety of special populations (Anderson, Schleien, McAvoy, Lais, & Seligman, 1997; Hattie, Marsh, Neill, & Richards, 1997). Criticisms of this body of research are that it is not grounded in theory and it is outcome-based, with no investigation into the processes causing the behavior change in individuals (Hattie, March, Neill, & Richards, 1997). Ewert (1982) stated, "In essence, we have discovered an educational black box; we know something works, but we don't know how or why" (p. 126). This study attempted to investigate the processes that occurred during wilderness outdoor adventure experiences in relation to social integration between people with and without disabilities.

The contact hypothesis, from social identity and social categorization theory, was used as a framework for understanding the social integration process (Desforges et al., 1991; Fiske & Taylor, 1991; Messick & Mackie, 1989; Turner & Oakes, 1986). Social identity theory states that people perceive themselves to be members of certain groups within a hierarchical structure of categories. Groups that contain the self are more positively regarded. The most basic level of categorization is that of humans from non-humans (Fiske & Taylor, 1991). The contact hypothesis is embedded in social identity theory, and states that structured contact allows outgroup members (e.g., people with disabilities) to be regarded more positively and as more like the social perceiver (Desforges et al., 1991). The contact hypothesis outlines five conditions for change to occur: 1) mutual goals and cooperation; 2) high acquaintance potential; 3) egalitarian or supportive norms; 4) equal status; and, 5) disconfirming evidence of the stereotype (Allport, 1954). The wilderness experience can potentially provide all those conditions, as well as change perceptions and attitudes in ways not identified. In this study, the role of wilderness in that change process was illuminated through the use of Experience Sampling Method (ESM), as well as journal writing, conversational interviews, and follow-up structured interviews with participants with and without disabilities on a series of wilderness canoe trips. This paper focuses on how the experience sampling method was implemented across several wilderness-based canoe trips and the resultant data.

Overview of the Experience Sampling Method

The general purpose of the Experience Sampling Method (ESM) is to study the subjective experiences of persons interacting in natural environments. According to Csikszentmihalyi and Csikszentmihalyi (1988), the ESM allows investigators to get a "high resolution description of their (subjects') mental states right as they are happening" (p. 253). Conceptually, ESM exposes the regularities in the stream of consciousness of an individual, and attempts to relate these regularities to the characteristics of the person, of the situation, or of the interaction between person and the situation (Csikszentmihalyi & Larson, 1987). According to Csikszentmihalyi and Larson (1987), "The purpose of using this method is to be as 'objective' about subjective phenomena as possible without compromising the essential personal meaning of the experience" (p. 527).

The usual procedure used in ESM involves having the subject carry an electronic pager that emits random signals several times a day for several days. When the participants are signaled, they immediately respond to a series of questions, usually in a booklet of questionnaires they carry with them. The questionnaires are concise (usually two minutes or less to complete), so daily activity is interrupted as minimally as possible (Voelkl & Brown, 1989).

Questionnaires are designed by the researchers to meet the goals of the study (Csikszentmihalyi & Larson, 1987). Typical questions that have been included on questionnaires include open questions about thought contents, location, social context, primary and secondary activity, time, respondents' perceived situation and

emotional state, and specialized questions related to the dependent variable(s) under investigation. Questions have been asked about affect, cognitive efficiency, motivation, self-image, self-awareness, intervening daily events, alcohol and drug consumption, and perceived control, to name a few (Csikszentmihalyi & Larson, 1987; Kubey & Csikszentmihalyi, 1990; Voelkl & Brown, 1989).

ESM has advantages over direct observation and time diaries, two other methods of gathering data about day-to-day experiences and natural aspects of behavior. According to Voelkl and Brown (1989), when compared to live observation, ESM is not as intrusive, decreasing reactive behavior. It is also much more time efficient for the researcher. Compared to time diaries, ESM elicits data that is immediately recalled and is thus higher in quality than data that must be recalled about an entire 24-hour period, where distortions and rationalizations become contaminants (Csikszentmihalyi & Larson, 1987; Voelkl & Brown, 1989). Time diaries also do not provide the direct link between the person's thoughts and the context, as ESM does. The greatest strength of the ESM is that participants report their subjective states in addition to their objective environments or circumstances, providing richer insight than observation or time diaries (Voelkl & Brown, 1989). In addition, the signal devices can be set simultaneously to provide special opportunities for the analysis of the interdependence of experiences in groups, which would be difficult to achieve by any other method (Csikszentmihalyi & Larson, 1987).

Methodologically, limitations with the ESM are related to validity, reliability, and data analysis. Validity of the ESM have been explored by Csikszentmihalyi and Larson (1987) and by Mittelstaedt (1995). Constructs measured by ESM showed a convergent validity with conceptually related self-reports, such as self-esteem scales, or physiological measures, such as heart rate monitors. The results of ESM have also been found to be significantly different for groups of people, based on level of psychopathology, showing discriminant validity. Reliability of the ESM has been investigated by comparing ESM data with time diary data, showing the two methods to produce almost identical values of time allocation for different activities (Csikszentmihalyi & Larson, 1987). Also, the first half of a week's ESM data on activity involvement did not differ from the second half, confirming internal stability (Voelkl & Brown, 1989).

A major concern with the ESM is that subjects will become stereotyped in their responses and fail to differentiate between situations over time. Analysis of data comparing the variance in the data in the first half to the second half of the week's data showed that, with time, individual responses become more predictable, but activity effects remain stable (Csikszentmihalyi & Larson, 1987). These researchers deduce that there is not so much a lessened sensitivity to environmental effects, but a more precise self-anchoring on the response scales. Hurlburt and Melancon (1987), in an ESM study with a patient with schizophrenia, concluded that the method, which focuses attention on the subject's actual perceptions, seems to facilitate growth and have therapeutic benefits. Mittelstaedt (1995) found that the method provided accurate and honest responses, while increasing self-examination, when she interviewed several subjects after a week of participating in the ESM.

Another concern with the ESM is its intrusiveness. Participant evaluations of ESM conducted by numerous researchers have found the method to be acceptable and not disruptive for 68-95% of the participants involved and found that it represented their experiences well (Csikszentmihalyi & Larson, 1987; Mittelstaedt, 1995; Voelkl & Brown, 1989).

Because data collected using the ESM is clustered, i.e., several questionnaires are completed by one subject, standard statistical procedures that assume a sample of random, independent measurements must be used with care (Samdahl, 1989). Samdahl (1989) has outlined clearly how the data must be analyzed, depending on the unit of analysis used in the study, whether it be the person or the experience. In particular, she warns that the unit of analysis be made clear and that the clustered nature of the sampling be taken into consideration. If these issues are addressed, the data analysis can provide meaningful insights into the nature of the experience and the individuals being studied.

Given the ability of the ESM to capture subjective experiences and objective data about the context of those experiences, it is an ideal method to study how people experience wilderness and others in their trip group. The purpose of this study, then, was to examine the mediating variables that could be related to the positive outcomes that result from involvement in outdoor adventure/wilderness experiences. For purposes of this study, social integration between people with and without disabilities and attitude change were the outcome variables examined in relation to the process variables of the wilderness experience.

Methods

Subjects were participants with Wilderness Inquiry, an outdoor adventure company based in Minneapolis, Minnesota, that provides trips that include people with and without disabilities. Trips ranged in length from three to seven days. During each of the seven trips studied, two to three participants were randomly chosen to participate in the experience sampling study from trip groups of 8-12 people. Subjects included people with and without disabilities. Participants were randomly beeped four times per day, when they would complete an experience sampling form (ESF). Beeper devices used in this study were *Casio* waterproof wristwatches with five independent alarms, which the researcher set each morning according a predetermined schedule developed with a random numbers table. The booklet of ESF's, which were the size of a passport, were carried with participants throughout the day in waterproofed plastic bags. Participants were asked to complete the ESF within 20 minutes of being beeped. The ESF asked for a "think aloud," (Taylor & Fiske, 1981), and then several Likert-scaled and semantic differential questions related to the context of the trip, level of awareness of certain variables related to the contact hypothesis, perceived state, and additional open-ended responses (see Figure 1 for the ESF). Data were analyzed using the sampled experiences as the unit of analysis.

PROTOCOL FOR THE EXPERIENCE SAMPLING METHOD*

INTEGRATION THROUGH ADVENTURE

WILDERNESS INQUIRY

Thank you for agreeing to participate in this research project. Your participation will make a valuable contribution toward understanding more about wilderness-based outdoor recreation and social integration.

In this study, you will use the Experience Sampling Method, which allows the researchers to understand everyday experiences. During this trip, you will wear an alarm wrist watch and carry a booklet of questionnaires. When you are "beeped" by the alarm on the watch, please give honest and candid responses to all questions. The success of this study depends on your willingness to give your candid responses to the questions being asked. Your responses will be kept annonymous.

Please follow this procedure:

1. Each day, the alarm on the watch will go off at random times throughout the day (4-5 times per day), between 8:30 a.m. and 9:30 p.m. The alarm will quit by itself after 20 seconds, but you may press the lower right-hand button to turn it off immediately, if you wish.
2. If the alarm does not go off for more than 5 hours, please let the researcher or trip leader know!!
3. When you are 'beeped' by the alarm, you need to:
   a. Fill out one of the Experience Sampling Forms (ESF's) AS SOON AS POSSIBLE after the beeper signals you.
   b. If more than 20 minutes passes between the "beep" and your filling out the ESF, just put down the time of the 'beep', where you were, what you were doing, and why you could not complete the form. Do not try to fill out how you were feeling.
   c. The first couple of times you fill out the ESF, it will take 4 to 5 minutes, but by the next day, it should take only 2 minutes, because you will become familiar with the ESF.
   d. Be as COMPLETE as possible and yet as BRIEF as as possible. Give us enough information to know where you were, what you were doing and thinking, and how you felt just before the beeper went off.
   e. Fill out as much of the ESF as you can each time you are beeped. Circle the number that best describes how you think or feel on the questions with a number scale below them. If a question does not apply to the particular situation you are in at that time, mark the 'N/A' box (not applicable). Write any comments or thoughts you have by the questions themselves or in the comment section at the end of the questionnaire.
   f. Each situation you are in when you are 'beeped' may be slightly different from those before it, so give as immediate and fresh a response as possible. Don't look back to previous sheets to see how you responded, even if the situation is similar to the one before it.
4. Wear your alarm watch and carry your ESF Booklet with you at all times (as much as possible) during the trip. The watches are waterproof and can be worn swimming or in the rain. Turn both the watch and the booklet in to the researcher or trip leader at the end of each day. We will give you a new booklet of ESF's and reset the alarms.
5. Be sure all the questionnaire booklets and your alarm watch are turned in to the researcher or trip leader at the end of the trip.

THANK YOU!

*Adapted from Kubey, R., & Csikszentmihalyi, M. (1990). Television viewing and the quality of life: How viewing shapes every day experience. Hillsdale, NJ: Lawrence Erlbaum Assoc., Publ.

Time the beeper went off:_____ Time this form was filled out:_____

JUST BEFORE THE BEEPER WENT OFF:

What were you thinking about?_____

What was the MAIN thing you were doing?_____

Who were you with?_____

Where were you?_____

What was your immediate goal, as you were beeped? What were you trying to accomplish?

To what extent were you dependent on the group member(s) you were with to accomplish your goal?

6 5 4 3 2 1 N/A
Very much — Not at all

Was the other group member(s) you were with actively helping you reach your goal?

6 5 4 3 2 1 N/A
Very much — Not at all

Did you and the group member(s) you were with share the same goal?

6 5 4 3 2 1 N/A
Very much — Not at all

How equal did you feel to the group member(s) you were with in this situation?

6 5 4 3 2 1 N/A
Very much — Not at all

Was the person you were with behaving or acting like you expected them to act?

6 5 4 3 2 1 N/A
Very much — Not at all

How well have you gotten to know the group member(s) you were with?

6 5 4 3 2 1 N/A
Very well — Not at all

How much do you like the group member(s) you were with?

6 5 4 3 2 1 N/A
Very much — Not at all

Is the group member(s) you were with typical, or what you expected them to be?

6 5 4 3 2 1 N/A
Very much — Not at all

Did you feel like an equal peer with the group member(s) you were with?

6 5 4 3 2 1 N/A
Very much — Not at all

How much do you feel the staff are supporting equality and fairness?

6 5 4 3 2 1 N/A
Very much — Not at all

How aware of the wilderness environment were you just prior to being beeped?

6 5 4 3 2 1 N/A
Very much — Not at all

How much does the wilderness environment matter to how you are feeling or what you are experiencing?

6 5 4 3 2 1 N/A
Very much — Not at all

Describe how you were feeling just as you were beeped:

	very	quite	some	neither	some	quite	very	
happy	___	___	___	___	___	___	___	unhappy
irritable	___	___	___	___	___	___	___	cheerful
lonely	___	___	___	___	___	___	___	sociable
detached	___	___	___	___	___	___	___	involved
free	___	___	___	___	___	___	___	constricted
excited	___	___	___	___	___	___	___	bored
competitive	___	___	___	___	___	___	___	cooperative
relaxed	___	___	___	___	___	___	___	tense
left out	___	___	___	___	___	___	___	included

Has anything happened to you since you were last beeped that affected how you feel?

Any other comments or thoughts?

Figure 1. The Experience Sampling Form (ESF) Used in This Study

Descriptive data were computed, then raw scores were converted to z-scores and analyzed using stepwise multiple regression. The dependent variables were inclusion and interpersonal attraction.

Results

In all, ESF's from 20 participants were analyzed, with a total of 309 useable questionnaires or "experiences," giving a response rate of 87%. The "topography" of the trip experience was captured through the descriptive results of activity patterns. In summary, the group members, when randomly beeped, were most often with others (86.1% of beeps), involved in a cooperative group activity of some sort (75.1% of beeps), and were around the campsite or out canoeing (78.6% of beeps). They typically perceived a group goal (44.3% of beeps) and their thoughts were usually focused on the current activity in which they were involved (40.8% of beeps).

Descriptive results for the Likert-scaled items on the ESF had average scores of '4' or '5,' meaning that participants were rating the variables being measured on the questionnaire as 'somewhat to much present' in their awareness when they were beeped. The variable, supportive norms, had the highest mean (5.46) with the smallest standard deviation (.88). This variable was consistently rated as being "very much" present in their awareness when participants were beeped. Interpersonal liking was also high (mean=5.12, SD=.99), meaning most members were feeling positive toward each other during the trip. On the semantic differential scaled items, the four items comprising the 'inclusion rating' had means all above '5,' indicating that on average, participants felt some to quite included. For the feeling items, the mean was again above '5' for all items, except the 'excited-bored' item. In general, participants were perceiving positive feelings when beeped throughout the trip experiences.

Results of the correlation and multiple regression analysis are shown in Table 1 and Table 2 respectively. For the multiple regression analysis, the dependent variables were interpersonal attraction and inclusion. The influence or predictor variables were the conditions of the contact hypothesis (interdependence, cooperation, mutual goals, equal status, acquaintance potential, and supportive norms), awareness of wilderness, and effect of wilderness on state/feelings. In Table 1, the correlations between the dependent and predictor variables are shown. Cooperation, mutual goals and awareness of the wilderness were all significantly related to feelings of inclusion. Equal status, acquaintance potential, supportive norms, and awareness of wilderness were all significantly related to interpersonal liking of group members.

As can be seen in Table 2, results of the multiple regression showed that the most powerful predictor of inclusion was awareness of the wilderness environment (R=.40). The second predictor, which best improves upon the prediction of the first variable, was mutual goals. No more variables added to the prediction of variance in inclusion at the .05 level of significance. Given the high correlation between mutual goals, interdependence, and cooperation, it was understandable why these variables did not add any more

Table 1. Correlations between Predictor Variables and Dependent Variables

Dependent Variables: / Predictor Variables:	Inclusion r	Interpersonal Liking r
Interdependence	.17	.01
Cooperation	.37***	.12
Mutual goals	.37***	.16
Equal status	.09	.21*
Acquaintance potential	.15	.61***
Supportive norms	.12	.29**
Awareness of the wilderness	.40***	.21*
Wilderness effect on feelings/state	.19	.06

*p<.05 **p<.01 ***p<.001

Table 2. Results of the Stepwise Multiple Regression

Predictor Variables with Dependent Variables:	Beta	r	R	R^2	R^2 increment
Inclusion Rating:					
Awareness of the wilderness	.40	.40	.40	.16	
Mutual goals	.32	.37	.51	.29	.13
Interpersonal Liking:					
Acquaintance potential	.61	.61	.61	.37	

prediction to the variance in the inclusion score and were not added into the multiple regression equation. Mutual goals accounted for 13% more variance of the variance in inclusion (R^2=.13) than can be explained by awareness of the wilderness environment alone. The most powerful predictor for interpersonal liking was high acquaintance potential (R=.61). The coefficient of determination was (R^2) was .37, meaning that high acquaintance potential could predict 37% of the variance in interpersonal liking at the .05 level of significance. There were no other variables that added to the prediction in variance in interpersonal liking.

Discussion

Social identity theory, as operationalized by the contact hypothesis, was supported as a theoretical explanation of the process of inclusion and interpersonal liking that developed during the wilderness trips, with the salience of the wilderness setting being an added variable. Awareness of the wilderness and mutual goals were the most powerful predictors for change in feelings of inclusion. High acquaintance potential was the most powerful predictor for interpersonal attraction. Being in the wilderness, sharing goals, and spending time together appear to be most related to change in social integration in a group. It is possible that wilderness acts like an "incubator" for more rapid change.

When people are no longer surrounded by a world dominated by human activity, but instead surrounded by wilderness, a change in categorization may shift to the more basic level of human versus non-human. The referenced ingroup becomes 'human,' not 'people without disabilities' or 'people with disabilities.'

The experience sampling method was helpful in "illuminating" the inside of the "black box" of the wilderness experience. The resulting data provided descriptive insight into what people are thinking, feeling, and doing during a wilderness experience. The method also provided theoretical insight, as the questions asked of subjects were framed around the theory under investigation. The resulting data gave the researcher ongoing and fine-tuned clues as to the relevance of the theory in explaining people's experiences. The richness of the ESM data is deep and this paper only presented a small portion of how it could be analyzed to provide illumination into the wilderness experience. Future research could focus on developing a "topography" of the wilderness experience, correlating feelings to activities, and to specific settings. Variables that interfere with the wilderness experience could be explored in greater depth, such as the notion of "crowding," "overuse," and contact with management activities such as backcountry rangers, signs, permit stations, etc.

The ESM does have its limitations. However, in this study, when asked in follow-up interviews, subjects did not feel the method was intrusive. They did feel like it caused them to stop and think about things more than they would have normally, prompting greater introspection. The high response rate (87%) indicated that being "beeped" was not that intrusive, or participants would not have responded so consistently. However, by participating in the ESM, the experience was altered for participants, thus bringing into question the validity of the method in truly capturing experiences as people live them.

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ENCOUNTERS AND THE GUIDED GROUP TRIP: GOING "ON THE SCENE" TO EXAMINE THE SITUATIONAL INTERPRETATION OF ENCOUNTERS

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Abstract: The disconnection between reported encounter norms and the number of encounters visitors can tolerate has disturbed recreation researchers for a number of years. Recent research suggests that visitors, specifically white water rafters on a guided group trip, make sense of encounters not normatively, but through a process of situational negotiation at the moment of the encounter (Jonas, Stewart, & Larkin, 2000). This research suggests that encounters are not evaluated positively or negatively, but are treated as "part of the experience." This study extends this research into other settings (lakes and rivers) and modes of travel (canoe and kayak). Much of Jonas et al.'s findings were supported: trip guides play a crucial role in the negotiation process; and encounters affirm group identity, often one that is superior to the encountered group. Setting and mode of travel differences were noted: encounters were more selectively interpreted on lake trips, where encounters were more often anonymous; and there was less of a "witnessing audience" effect on canoe and kayak trips (subdued activities) than white water rafting (risky activity).

Introduction

The disconnection between what visitors report as their encounter norms and the number of encounters they will actually tolerate during their outdoor recreation trip has troubled recreation researchers for a number of years (e.g., Hall & Shelby, 1996; Patterson & Hammitt, 1990; Roggenbuck, Williams, Bange, & Dean, 1991). Because encounter norms, or the number of encounters a visitor can tolerate in a given area or specified length of time without feeling as though their recreational experience is being compromised, is the operational variable of many of the major research areas in recreation resource management, including conflict, solitude, crowding, and social carrying capacity research, this disconnect is a serious research and managerial problem. The lack of understanding about how people make sense of encounters during their outdoor recreation trip has led to contradictory research findings and given resource managers little direction for how to establish visitor limits or manage for visitor enjoyment.

Some of the weaknesses in encounter research have been linked to the methods of encounter research. Most often, encounter researchers use pre- or post- surveys that ask visitors about the number of encounters they would like to have during their visit (e.g., Hall & Shelby, 1996; Lewis, Lime, & Anderson, 1996; Patterson & Hammitt, 1990). The main criticism of this method is whether visitors are able to decontextualize their encounters and report on them in numerical form. Roggenbuck et al. (1991) suggest that encounter norms may simply be numbers that visitors manufactured for a survey and not meaningful indicators of how many encounters a visitor can tolerate. They have suggested that surveys provide respondents with an option to respond that they "care [about encounters], but cannot give a number" (p. 151). Although this suggestion reduces the potential for respondent error, it is debatable as to whether it moves the level of understanding of encounters any further along. Indeed, even studies which acknowledge that encounters "involve much more than numbers and size of parties encountered" (Patterson & Hammitt, 1990, p. 263) seem hard pressed to find alternative ways to investigate encounters.

A second concern with encounter research is its focus on evaluating encounters as either "positive" (the visitor liked the encounter) or "negative" (the visitor disliked the encounter). Although some researchers have reported successes with this approach, (e.g., Lewis et al., 1996), other researchers have had difficulty finding a congruent relationship between reported encounter norms and subsequent evaluations of encounters. Patterson and Hammitt (1990), for example, reported that 61 per cent of respondents whose personal encounter norms were exceeded at one or more of three encounter sites (trailhead, trail, campsite) reported that the encounters were not "negative" and did not detract from the experience. The lack of congruence between reported norms and evaluations of encounters has led Patterson and Hammitt and others (e.g., Jonas, Stewart, & Larkin, 2000) to question the emphasis researchers place on "negative" encounters without considering how encounters may be "positive" experiences. However, a larger concern with this approach is that it is quite possible that visitors do not evaluate encounters in a way that can be made sense of in the simple and dichotomous categories of "positive" or "negative." Indeed, in the study by Lewis et al. (1996), respondents were more likely to give a neutral (didn't like or dislike) rating than either a positive or negative rating to an encounter. Thus, it is possible that methods which ask visitors to interpret encounters in this evaluative context may poorly capture the meaning of these encounters. Indeed, these categories can easily become complicated on occasions when a "positive" encounter has "negative" repercussions, or a "negative" encounter may lead to serendipitous or "positive" outcomes further along in the trip.

Encounter Research: An Alternative Approach

Encounter research would benefit from employing techniques that approach the study of encounters from alternative theoretical and methodological perspectives. In particular, encounter research would benefit from using methods that can contexualize encounters and be able to analyze them beyond numerical and evaluative criteria. One method that may be very useful for this stream of research is participant observation. Participant observation allows researchers to be "on the scene," or present at the time of the encounter itself, to see what happens as visitors actually encounter one another.

Being "on the scene" for encounters is particularly important in light of recent research which has suggested that the meaning of encounters is situationally negotiated and based on the nature of the social interaction at the moment of the encounter (Jonas et al., 2000). In other words, visitors make sense of encounters as they happen. Together, encountering parties endow certain features of the encounter with meaning, make them significant, and establish a "definition of the encounter." Thus, if encounters are situationally negotiated, what is less important for understanding encounters are the variables associated with particular characteristics of the visitor, the group being encountered, or the setting, and what is more important is the process by which visitors work together to make sense of their encounter.

Participant observation research also provides an opportunity to use alternative sampling strategies to investigate encounters. Most of the past encounter studies have begun by taking a random sample of visitors, then trying to account for differences in encounter norms by relating the norms to a host of visitor characteristics, including age, residence, level of experience, trip length, and activity (e.g., Hall & Shelby, 1996). However, an alternative strategy would be to sample based on a particular characteristic, such as trip context or modality, and explore how encounters relate to this characteristic. This was the approach taken in this study. Encounters for one type of visitor group was explored in this study: the guided group trip.

The Guided Group Trip

The guided group trips of this study have three main characteristics. First, the trip is run by a trip leading organization that provides all of the necessary gear, food, and logistical support, for a fee. Second, participants sign up for a trip according to their desired trip destination. Often people sign up with a companion, but most of the participants are strangers to each other. Finally, and most importantly, guided groups have a trip leader, who literally guides the participants through the trip. Trip guides have a specific purpose: to create an overall enjoyable, fun, exciting, and interesting trip for the participants. Doing anything less is both bad for guiding and bad for business.

Guided group trips are an important segment of the visitor population for encounter researchers to study. Guiding organizations are serving a rising number and proportion of visitors to outdoor recreation areas (Ewert & McAvoy, 2000). According to Friese, Hendee, and Kinziger (1998), there were more than 700 group guiding organizations operating in the United States, serving an estimated 70,000 clients per year. Additionally, findings by Gager, Hendee, Kinziger, and Krumpe (1998) indicate that the number of these types of programs is increasing yearly. More importantly, because people who have never camped or participated in a certain outdoor recreation activity often take their first trip with a guided group, a large proportion of participants on guided group trips are first time visitors to an area and often first time campers. As a result, how encounters are experienced and interpreted in a guided group context may have major implications for establishing how the group participants make sense of encounters on future outdoor recreation trips, including those they may take without a guided group.

Past Research on Guided Group Encounters

Of all of the types of visitor encounters to study with participant-observation methods, guided group trips are likely the easiest to access. Compared to groups of friends or solo hikers, researchers can easily join guided groups by contacting a guiding organization and signing up for one of their trips. As a result, there have been a few participant-observation studies of guided group trips that have explored the nature of encounters. Neumann (1993), for example, joined an "alternative" bus traveling group to the Grand Canyon, and noted what happened when the group encountered other bus groups, particularly the mainstream or "mass" bus tourists, at attractions or rest areas. He found that encounters with other groups made certain group values explicit and relevant, which worked to facilitate solidarity and solidify group identity (in their case, an identity of being "unconventional" and "counter-culture").

Jonas et al. (2000) collected participant observation data on commercial, research, and private river rafting trips in the Grand Canyon. The authors reported three major themes. First, most encounters between groups were evaluated positively by rafters, and seen less as an interference or disturbance and more as *part of* the river-rafting experience. The trip guides were found to have a significant influence as facilitators of the meaning of the encounters. Because it is in the guide's best interest if their passengers have a good trip, the guides made efforts to facilitate a positive interpretation of encounters. Second, as with Neumann's (1993) tour bus study, river rafting encounters had important consequences for group identity. Encountered groups played the role of "witnessing audience," in front of which groups acted out and confirmed identities. For example, an encounter between a river running group and a helicopter group in the Grand Canyon gave the river running group an opportunity to define themselves as superior to and more "authentic" than that of the helicopter group. Finally, encounters on river rafting trips helped to facilitate individual river rafting identities. Encounters gave individuals the opportunities to come together and co-create an "adventurer" identity through exchanging stories, bearing witness, and creating narratives of situational danger.

These works provide a useful foundation for further exploration in the situational negotiation of encounters. However, it is worth exploring if and how these themes appear in other settings or using other modes of travel. Clearly, a river rafting trip in the Grand Canyon is an extraordinary outdoor recreation experience when compared to the typical range of recreational experiences. For most participants, rafting trips in the Grand Canyon are "once in a lifetime" trips, and it is possible that the themes discussed by Jonas et al. (2000) may be unique to the particular setting and/or activity. Thus, it is important to investigate how encounters on other types of outdoor recreation trips and to other locations also make sense of encounters. As such, the research questions for this study are:

How do groups make sense of encounters...
...in other settings?
...with other modes of travel?
Specifically, what similarities or differences are there in how canoeists and kayakers in regions of northern Minnesota and how river rafters in the Grand Canyon make sense of encounters?

Methods

For this study, I worked with a trip-leading organization based out of Minneapolis, called Outdoor Adventures (a pseudonym). I accompanied seven group trips with this organization in the summer of 2000. The trips varied according to length, number of participants, number of guides, mode of travel, and location. The shortest trips were three days long, and the longest trips were seven days long (for a total of 36 observation days). Groups ranged in size from seven to 13 participants, with two or three guides. Three trips were kayak trips and four of the trips traveled by canoe. All trips took place in recreational areas within a day's drive of Minneapolis (Table 1).

My role also varied across the trips. On four of the trips I went along as a registered group participant. On the other three trips, I was an assistant guide (Table 1). As an assistant guide, I worked for the guiding organization and as such I was responsible for the well-being of the participants. However, I was not the main decision-maker; this job was left for the "head guide." Although my ability to take notes was more limited on the trips I worked as a guide, the opportunity to be an "insider" with the trip leading organization proved to be very fruitful, and I gained a better understanding of the role of the trip guide in defining encounters.

I collected observations throughout the day in the form of jottings (abbreviated sentences, key words, phrases). Three times daily – at lunch, in the late afternoon, and late evening – I expanded the jottings into field notes. Within 48 hours upon return home from the trip, I typed my field notes into a computer. At the end of the summer, all of the typed field notes were loaded into NUD*IST (Version 4.0), a computer data coding and retrieval system. I also conducted open-ended interviews with all of the head guides for the guided trips I observed, and transcribed and entered this data into NUD*IST, where it was also coded. I coded and retrieved all of my observations and interview transcriptions that involved or referred to interactions with other visitors, then analyzed this data for themes.

Findings

The following themes emerged from an analysis of the data:

Theme 1: Potential Encounters Are Selectively Interpreted as Encounters

When participants in guided groups come upon other visitors, they can choose one of two courses of action. They can choose to make meaning of the encounter, such as by talking to the visitors or by talking amongst themselves about the visitors. The term for this route of action is "doing interest." Alternatively, trip participants can try to make the encounter as meaningless as possible, or "do disinterest," by avoiding sustained interactions with and conversations about the visitors. Guided groups tend to "do interest" and "do disinterest" at different locations and times throughout a trip. In general, guided groups "did disinterest" while they were at their campsite and during the beginning and middle of the trips. They were more likely to "do interest" while they were traveling and were approaching the end of the trip.

It has long been recognized in encounter research that visitors are more sensitive to crowding at campsites and trails (Burch & Wenger, 1967). For trip leaders of guided groups, encounters at campsites are especially risky because they have very serious repercussions on the trip leader's ability to deliver a good trip if they turn sour. Of particular concern is the trip leader's ability to maintain an atmosphere of fun and intimacy during and after encounters. As one TL put it, "I'm always afraid when people come into our camps that it's going to screw up the mojo." Leaders generally prefer camping away from other groups because they are able to have "better control over the social [interaction] and less distractions." As a result, the trip leaders prefer not to make a big deal out of encounters with groups at campsites. In the following field note, Rick, the TL of the Voyageurs canoe trip, minimizes the disruption caused by an encounter with some motor boaters, quickly changing the subject when the group asked him about it:

Table 1. Characteristics of Trips Observed in Summer of 2000

Location	Mode of Travel	Trip Length	No. of Participants	No. of Guides	Role of Researcher
St. Croix	Small canoe[a]	3 days	8	2	Participant
Isle Royale	Kayak	7 days	8	2	Asst. Guide
Apostle Islands	Kayak	5 days	12	2	Participant
Isle Royale	Kayak	7 days	8	2	Asst. Guide
St. Croix	Small canoe	3 days	11	3	Participant
Voyageurs	Voyageur canoe[b]	5 days	8	2	Participant
White Otter	Small canoe	6 days	10	3	Asst. Guide

[a]Small canoes are 16-foot, two-person canoes.
[b]Voyageur canoes are 22-foot, five- or six-person canoes.

> We were sitting around the campfire, and Rick (TL) was having us go around and tell everyone why we decided to come on the canoe trip. Midway through the round, some noisy boaters came by our island. It sounded like they had slowed down their boat and were close to shore, but we couldn't see them because it was too dark. Rick said why don't we take a break so people can go put on warm clothes. He then disappeared down toward the noise. A few minutes later, we reconvened at the fire. Someone asked Rick what the noise was, and he said that it was nothing, just some people out doing some night fishing. He then asked who hadn't had their turn to talk yet. (Field note, Voyageurs canoe trip)

Encounters while traveling and near the end of a trip, however, are less of a risk simply because they are short, and with less potential for disruption. Trip guides are more willing to "do interest" while traveling, and permit their group to interact with other visitors:

> The paddling was slow as the group enjoyed their last day of kayaking on Lake Superior. We paddled close to the island so we could look at the activity along the shore. We passed by a group of three women who were sitting on an outcrop, taking a break from their hike. We waved our paddles to them, and they waved back. As Sandie [group member] passed them by, she asked them if they'd be at Rock Harbor tonight, and they said yes. Sandie replied, great, we'll see you there and we can all have a beer together. (Field notes, Isle Royale kayak trip)

These findings are similar to what Neumann (1993) and Jonas et al. (2000) found for tour bus and river rafting trips, where the trip leader also played a key role in establishing deciding where and when participants should interact with other visitors.

Theme 2: Encounters Affirm Group Identity

Both Neumann (1993) and Jonas et al. (2000) have suggested that encounters help solidify group identity through a process of "identification through comparison." When groups come into contact with other visitors, they are provided an opportunity to affirm their identity, and often they establish an identity that is superior in some way to the visitors they came in contact with. Typically, the superior identity is one of being a more "authentic" camper who is camping the "right" way. This same phenomenon was seen on the canoe and kayak trips, were the "right" way to camp involved traveling in a human-powered craft, which is better for the environment and a more interesting way to see the area:

> We were paddling away from our campsite and toward the main boat channel. Ellerie points toward one of the motorboats in the channel that was fairly close to the canoe - a small aluminum boat with an outboard motor on it. Three people were sitting in the boat, all facing into the wind caused by the boat's movement. "Look at them," Ellerie said "They don't look like they're having any fun." Amy, Ellerie, and I talk about how noisy those boats are and how cold the wind must feel on the faces of those boaters. (Voyageurs canoe trip)

The encounter need not be face-to-face for it to be used as a vehicle for identity-making. Indeed, all that is sometimes required is a visual or physical encounter, and a group will interpret it in such a way as to develop a sense of superiority or authenticity over other visitors. In the following example, an encounter with a "phantom" motor boating group affirms the group's identity as environmentally conscious saviors of the Apostle Islands:

> As we reached the lee side of the island the wind died down and the kayaking was calm. We passed a point on shore where smoke was rising but no one was around. We paddled past it and then went back to it, and Angie (TL) got out of her kayak and went up the hill with Sheila's water bottle to put it out. When she returned the group cheered, and Patricia took a picture of Angie squirting water on the fire. Sheila said that she thought Angie should win a hazardous duty award. Angie was asked who she thought started the fire, and she said "probably a motor boater, they tend to be the least environmentally friendly of sailors, motor boaters, and kayakers. This doesn't do much to help my prejudices against motor boaters." Patricia said, "I didn't want to say anything, but that's what I was thinking too." The group resumed paddling back to camp. The last stretch of the paddle back was calm and peaceful. Sheila mentioned to everyone that it was her water bottle that was used for the fire dousing. "Give that woman an Oreo!" Jim replied. (Field notes, Apostle Islands kayak trip)

As mentioned earlier, Jonas et al. (2000) also discussed how encounters are often used to develop a superior identity within a group. However, I suggest that the anonymity of an encounter on a large body of water may lead to a more strategic use of encounters by a guided group trip leader. When encounters are anonymous, it is easier for trip leaders (and participants) to "scapegoat" other visitors or blame them for problems, in the way that Angie did with the motor boaters. We really had no idea how or by whom the fire was started. However, Angie and the group used the encounter to not only make themselves look good but to also make motor-boaters look bad. In a more bounded setting, such as a white water river, trip leaders have less of an option to use encounters strategically because most encounters are face-to-face. Indeed, a more strategic use of encounters may be associated with such features of the setting as visual expanse, probabilities of encountering face-to-face, or variety of trip routes.

Theme 3: Encounters Allow Groups to "Act" as a Group

For many group guiding organizations, "group bonding" is a major component of the experience, and often more meaningful to the trip participants than either the activity or the interaction with nature (Arnould & Price, 1993). Indeed, guided group trip leaders work hard to "facilitate" a feeling of cohesiveness among the participants. A crucial way that individuals come to understand of themselves as a group is through action. In other words, when people act as a group, they start to feel like a group.

Both Neumann (1993) and Jonas et al. (2000) talked of the importance of encounters for providing a "witnessing audience" in front of whom groups can act out their "groupness." For the most part, these authors talked of how the groups they observed used other travelers as witnessing audiences in front of whom they performed a group action, such as going down a set of rapids, or visiting a tourist site. For example, Jonas et al. describe how other rafting groups often wait at the bottom of rapids and watch other groups ride the waves and cheer as they make it down safely. However, on kayak and canoeing trips, which are known much more for their opportunities for serenity than for risk, groups may not have access to as many opportunities for "witnessing audiences" as rafting trips because there simply isn't anything exciting or adventurous enough to witness.

Canoe and kayak trips do use encounters with other visitors as a way to act out their "groupness." However, the encountered visitors tend not to be spectators to the performance. Instead, they often become accomplices to the group's performance, and play a role in the performance itself. One common example of how encountered visitors become accomplices is when groups recruit a fellow visitor to take a group photo:

> It was the last full day of the trip. We had kayaked to another island with a beach, and half the group went for a swim while the rest stayed on shore. People were playing in the water and having a really fun time. When the swimmers got out of the water, some people wanted to get some group photos. We organized ourselves into our group pose, front row kneeling, back row standing. Kim (TL) said she'd be the photographer and began to take pictures. After she took one or two, Janet said wait, why don't we ask that man to take them for us so you can be in them? A man had just pulled up to the beach in his motorboat and was walking down the beach in our direction. As he approached, Kim asked him if he wouldn't mind, and he said sure. About five different cameras were handed to the man, and the group posed as he went through all of them. The people who owned the cameras that Kim took pictures with wanted new ones taken with everyone in the picture. (Field notes, Apostle Islands kayak trip)

In this example, the kayak group used the encountered visitor as a way to reinforce that even Kim, the TL, was an important enough member of the group that it was worth disturbing another visitor in order to include her in the group photo.

Another way a group is able to "act" as a group in an encounter is through storytelling. Encounters are a crucial opportunity for groups to tell others the stories of their trip. Storytelling as a way of making meaning of a wilderness experience has been explored by Patterson, Williams, Watson, and Roggenbuck (1998), who found that reliving and sharing of an experience through stories was an important phase of the wilderness experience itself. Indeed, Patterson et al. suggest that perhaps "what people are actually seeking from their recreation experiences are stories which ultimately enrich their lives" (p. 449). Whereas Patterson et al. examined the stories told at the end of an experience, encounters with other visitors during a trip provide opportunities for guided groups to tell their stories during the trip itself. In this first field note, the guided group co-creates a story of surviving a torrential rainstorm with some visitors it passes by:

> We paddled past a group we saw the day before, right before the storm let loose. One of their group came out onto the point and we paddled over to them so that we could talk. "That was some storm last night, wasn't it?" they called out. Scott (TL) said yes, and asked if they were all ok. They said that they were, and that luckily they had found a low spot out of the wind so they only got wet. "So much for 20% chance of rain!" they yelled. Bill joked that if last night was 20% chance of rain, he'd hate to see 100% chance of rain. He also joked that maybe the guy heard the weather report wrong and that what it really said was to expect a chance of 20 inches of rain. These jokes went around the canoes in a "what did he say?" type of way until everyone had heard them. (Field notes, St. Croix River canoe trip)

Other times, encountered visitors are strictly audience members:

> We all got our stuff over to the ferry with plenty of time, and hung out on the dock with the other ferry goers. Nadine began talking to three women hikers, and other people we had seen along the way. Mostly she, and others in our group, talked with other groups about animals, food, and gear. Maureen told them how we saw a total of five moose, a fox, 4 eagles, and lots of birds. One of the food stories was about how we cooked the brownies in the fry pan. We had one of the women take a few last group pictures of us next to a sign that said "Isle Royale National Park." (Field notes, Isle Royale kayak trip)

Storytelling opportunities during the trip itself may be particularly important for the guided group trip. Compared to other visitors who take their trips with friends or family from home, guided group trips are often composed of people who are relative strangers before the trip begins, and who may or may not continue a relationship with after the trip ends. Thus, for these visitors, there may be no opportunity for recounting and retelling the trip with the fellow trip-takers once the group disperses upon return to the city. For this reason, trip leaders like to encounter other visitors near the end of trips:

> I remember waiting for the ferry at the end, because we were talking to other people. And to me, that was a positive thing. I like to see them say, "Guess what we did, you should try this, you should come with us next time," or "It would be great, we were complete strangers just like you are with us, and that would be so fun, you'd love it." (Ben, TL, Isle Royale kayak trip)

As such, telling stories during the trip are extremely valuable sense-making opportunities, and may be the only opportunity for the group to collectively interpret their experience.

Discussion

Overall, much of what Neumann (1993) and Jonas et al. (2000) reported in their studies also emerged as themes in this study. Across settings and modes of travel, guided groups use encounters to create and affirm group identity. Similarly, the role of the trip guides in helping groups know when, where, and how use encounters to build group identity also emerged as theme in this study. Compared to many other visitor types, guided group trip leaders are highly motivated to shape a group's experience in a certain way, and will use encounters to assist in this process.

Setting and mode of travel does appear to make a difference in how encounters are used by guided group trips. Wide, expansive settings give trip leaders and participants more opportunities to have encounters that remain anonymous, which can be used more deliberately to create an identity that is superior to the anonymous visitor. However, more subdued forms of travel may have less of the "witnessing audience" effect found in activities with heightened risk and danger, although encountered visitors are still incorporated into the identity-making process, via their participation in photo-taking and storytelling.

Employing alternative methodological approaches often simultaneously opens the door for examining phenomena from new theoretical perspectives. Indeed, this is the case with participant observation. Studying encounters with participant observation methods allows for access to understanding encounters as situationally defined interactions versus normative manifestations, which is more in line with the theoretical perspective of symbolic interaction (Blumer, 1967) than structural-functional analysis (e.g., Merton, 1973). As a result, alternative approaches often provide different interpretations to phenomena, and indeed, this has happened with encounters. Rather than evaluations of encounters being treated as a comparison to an encounter norm, where positive feelings result when the norm is maintained and negative feelings result when the norm is violated, encounters are treated as events that visitors make sense of as they happen. And often visitors enjoy encounters they may not have expected to, or vice versa; even the best of potential encounters can turn out for the worse.

We should not be surprised or disturbed by the disconnection between encounter norms and evaluations of actual encounters. In fact, we should expect it. Many things can happen when people meet in the outdoors. Rather than asking about the before and after, we should investigate the moment of the meeting: the encounter itself.

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Leisure Motivations of Outdoor Recreationists

DIFFERENCES IN SCUBA DIVER MOTIVATIONS BASED ON LEVEL OF DEVELOPMENT[1]

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Abstract: This study examined SCUBA divers' level of development in relationship to their motivations to dive. During the fall of 1999, 869 divers ranging from beginners to post-experts were surveyed (37% response rate). Respondents ranked 24 motives on a 5-point importance scale. When the data were reduced using factor analysis to tease out major themes, six factors (explaining 60 percent of the variance) emerged: *adventure, learn, escape, social interaction, stature,* and *personal challenge.* When mean scores were compared among levels of development using one-way analysis of variance, all six factors differed significantly ($p<.05$). However, when individual motives were compared, not every motive within each factor -- in fact, only 17 of 24 items -- differed by level of development. The results of this study verified that divers with higher levels of development are motivated to pursue the activity for different reasons, but not always as expected. *Adventure* and *learning* followed the predicted curvilinear pattern of increasing importance from beginners to experts and decreasing for post-experts. *Social interaction* displayed the predicted mirror image of that curve. Unexpectedly, *personal challenge* decreased and *stature* and *escape* increased with development.

Introduction

Motivation to participate in a given activity can be explained by expectancy-value theory, which states that motivation is determined by the attractiveness of outcomes and the expectation that participation will result in desired outcomes. This belief about the likelihood of achieving desirable outcomes fosters a positive attitude and intention to perform a specific behavior. Behaviors that are instrumental for goal achievement are evaluated favorably (Fishbein & Ajzen, 1975).

Expectancy-value theory also states that individuals may have a variety of motives for participating in an activity. Furthermore, persons within that activity may seek totally different outcomes. While some recreation research has focused on motives of those participating in different activities (e.g., the study of cross-country skiers and snowmobilers by Jackson and Wong, 1982), other studies examined the goals of those participating in the same activity (e.g., Ditton, Fedler, and Graefe's 1982 study of types of river floaters).

Since motives have been shown to be influenced by level of past experience (Schreyer, Lime, & Williams, 1984), it seems likely that they would differ by participants' level of development. The theories of specialization (Bryan, 1977; 1979) and amateurism (Stebbins, 1979; 1992) characterize participants' growth and development in leisure activities. Based primarily on outdoor recreationists, Bryan described participants on a continuum ranging from novice to specialist, with stages defined as a function of one's time, money, equipment, skill, and psychic commitment to an activity. Stebbins highlighted changes in "seriousness," where the casual dabbler may eventually progress to an employed professional in the fields of art, entertainment, science, and sport. He described the amateur's development in terms of a career history, with five stages of progression/retrogression: beginning, development, establishment, maintenance, and decline. Using risk recreation activities (e.g., kayaking, climbing, skiing, etc.), Robinson (1992) also focused on commitment to leisure activities. He generated a model for understanding phases and transitions of long-term (enduring) involvement. In each theory, individuals at different stages tended to place importance on, focus on, or strive for different outcomes.

Todd combined aspects of the above theories to operationalize level of development as a single measure. Results for quiltmakers (Todd, 1997; 1999a; 1999b; Todd & Graefe, in press) and SCUBA divers (Todd, 2000) demonstrated that having respondents choose a category of beginner, intermediate, advanced, expert, or "post-expert – not the expert I once was" provided an adequate reflection of development-related factors. In all but one case, mean scores for indices measuring equipment owned, knowledge, experience, perceived skill, participation, commitment, and amateur/professional growth increased from beginner to expert and then decreased for post-experts. (Diving experience was the only exception to this pattern; due to its cumulative nature, experience level continued to increase for post-experts.)

Schreyer, Lime, and Williams (1984) found that veteran river recreationists ranked motives such as "to develop my skills" and "to test my abilities" much higher than novices. Furthermore, with higher levels of experience, the structure of the motive factors became increasingly complex (Williams, Schreyer, & Knopf, 1990). Going beyond

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experience use history, Kauffman (1984) discovered that motives for canoeing changed as participants became more specialized. Differences between scores for nature, exploration, affiliation, and temporary escape suggested at least two levels of specialization, while even larger differences were found for three other expected rewards. Highly specialized canoeists were found to canoe for exercise, recognized the importance of their equipment to their experience, and received a sense of achievement from their experience. These studies suggest that the more specialized and serious participants are about their leisure pursuits, the more important intrinsic rewards of involvement and competence become.

Purpose of the Study

This study examined SCUBA divers' level of development in relationship to their motivations to dive. It was hypothesized that divers' motives would differ by level of development such that the importance of motives related to the intrinsic rewards of involvement (i.e., challenge, adventure, and learning) would increase from beginners to experts and decrease again for post-experts. Conversely, the importance of more extrinsically-related motives (i.e., stature, social interaction, and escape) was expected to decrease from beginners to experts and increase again for post-experts.

Methods

Data were gathered using two methods: focus group interviews and a mail survey. In June 1999, six focus groups were interviewed in five locations across New York's Great Lakes Region: Buffalo/Niagara Falls, Rochester, Syracuse, Oswego, and Clayton (2 groups). At each location, a key informant assembled 4 to 12 divers representing a wide range of levels of diving development. Using an established protocol, a series of 6 questions was asked; resulting discussion (lasting approximately 90 minutes) was tape-recorded. Major themes were extracted from this data to aid in the development of a written questionnaire. The questionnaire contained sections measuring diving experience, self-evaluation, diving motivations, diving in the previous year, constraining factors, diving expenditures, underwater environmental concerns, diving socialization, and demographic information.

This 16-page questionnaire was mailed to a sample of 2850 active and inactive New York State divers. To generate this sample, a database of approximately 6700 addresses was complied from various sources, including a national certifying agency (Professional Association of Diving Instructors [PADI]), a statewide organization (New York State Divers Association [NYSDA]), a dive symposium (Great Lakes Underwater III Symposium), a dive shop (Syracuse's National Aquatic Service, Inc.), a non-profit organization (Bateau Below, Inc.), and several dive clubs (Rochester's Rec Divers club, Buffalo Aqua Club, Syracuse University's dive club, and Central New York Dive Club). Addresses were stratified by major regions across the state. Since primary emphasis was placed on contacting divers in the regions closest to the Great Lakes, all available names from some regions were mailed surveys while a random selection process was used for other regions. The first mailing took place in October 1999, followed by reminder postcards and a second mailing of the survey to non-respondents.

For purposes of this study, respondents were asked to rank 24 motives on a 5-point scale ranging from 1 (not important) to 5 (extremely important). Level of development was operationalized by a self-selected single item; respondents were asked to characterize their current stage of development as a diver by choosing one of the following five categories: beginner, intermediate, advanced, expert, or "post-expert – not the expert I once was."

Factor analysis (principal components method of extraction, varimax rotation) was used to reduce the 24 motives into factors representing primary themes or reasons for diving participation. Cronbach's alpha was then used to test for inter-item reliability among the items in each factor having an Eigenvalue of at least 1.00.

One-way analysis of variance was used to determine if a difference existed among mean scores for each factor by level of development. To compare the differences between mean scores for each pair of developmental levels, Tukey's Honestly Significant Differences (HSD) was used as a post hoc test if the F-value was significant ($p < .05$). To ensure that the scaled factors were not masking the effects of any component statement, each motive was also individually tested using the same procedures.

Results

More than 17 percent of the surveys (490 out of 2850) were returned as either undeliverable or as having been sent to non-divers. While 10 percent is a more common statistic for studies of this sort, a higher rate was not surprising; in order to tap inactive divers for one aspect of the larger project, some of the addresses were at least 10 years old, increasing the chance of outdated information. Of the remaining 2360 potential respondents, 869 surveys were returned for a 37 percent response rate. A non-respondent bias check conducted by telephone revealed that non-respondents did not differ significantly from respondents based on age, gender, education level, number of years spent diving, or level of development. However, significantly fewer non-respondents were certified divers (76 percent versus 97 percent of respondents) or active divers (48 percent versus 69 percent of respondents). Thus it is important to note that diving was likely to have been more salient for respondents than non-respondents when interpreting results.

A profile of the respondents revealed that 80 percent were male. Although the average age was 43, ages ranged from 12 (the minimum age of dive certification) to 80. In general, respondents were well educated and had lucrative jobs. Half of the respondents had received 2- or 4-year college degrees, while another fourth had earned advanced degrees. Fifty percent reported earning more than $60,000 in yearly household income.

When all responses were considered regardless of level of development, the most important motives were related to the diving environment or to the thrill of diving itself. Similar to the findings of Ditton and Baker (1999), the top dive motive was *to look at underwater animal and plant life* (mean of 4.2), followed by *to explore things* (4.1), *for the adventure of it* (3.9), *because it is stimulating and exciting* (3.8), and *to learn more about the underwater environment* (3.7). (See Table 1.) Rated at the bottom of the list were reasons that may have been influenced by societal pressures and norms; these items were related to "showing off" (e.g., *it's sort of an impressive thing to do* [mean of 2.1] and *to use my equipment* [2.6]) or tended to project an image that divers want to dispel as public perception (e.g., *to collect interesting artifacts* [2.4] and *because of the risk involved* [1.7]). The lowest rated item reinforced the notion that perception of risk depends largely on degree of involvement; those who actually participate in the activity consider it safe, while those who are "outsiders" view it as risky.

Table 1. Motives for Diving Participation

Motive	Mean	sd
To look at underwater animal and plant life	4.2	.90
To explore things	4.1	.80
For the adventure of it	3.9	.96
Because it is stimulating and exciting	3.8	1.04
To learn more about the underwater environment	3.7	1.07
To develop my diving skills and abilities	3.6	1.02
For relaxation	3.6	1.17
To experience peace and tranquility	3.4	1.24
For a change from everyday life	3.4	1.16
To gain an experience I can look back on	3.3	1.21
To see historically significant shipwrecks	3.2	1.35
Because I thought it would be a challenge	3.0	1.14
So I could do things with my friends and/or family	3.0	1.29
To give me a feeling of confidence in myself	2.8	1.25
To help keep me physically fit	2.8	1.21
To meet new people	2.8	1.20
To share my skill and knowledge with others	2.7	1.25
To do something creative, such as take pictures or videos	2.7	1.33
To show myself that I can do it	2.7	1.33
To study underwater geological formations	2.6	1.26
To use my equipment	2.6	1.25
To collect interesting artifacts	2.4	1.28
It's sort of an impressive thing to do	2.1	1.12
Because of the risk involved	1.7	1.03

Values are mean scores on a 5-point scale as follows: 1=not important, 2=slightly important, 3=moderately important, 4=very important, and 5=extremely important.

When these data were reduced using factor analysis to tease out major motivational themes, six factors (explaining 60 percent of the variance and having acceptably high scale reliabilities) emerged: *adventure* (with the highest mean scale score of 3.9, reliability coefficient or Cronbach's alpha of .81), *learn* (3.5, alpha of .71), *escape* (3.3, alpha of .72), *social interaction* (3.0), *stature* (2.7, alpha of .71), and *personal challenge* (2.6, alpha of .81). As shown in Table 2, the *personal challenge* theme emerged as the strongest factor, explaining nearly 30% of the variance. This factor was highlighted by 6 items related to challenging and proving oneself, as well as highlighting diving as a slightly impressive, risky experience. The *stature* factor added an additional 10% of explained variance. Similar to Ewert's "image" factor (1993), this theme was characterized by 6 "visible" outcomes of diving, the external "tangible" results about which a diver could possibly "brag." The 4 items in the *escape* factor (nearly 7% of explained variance) encompassed not only relaxation, peace, and tranquility, but also escaping everyday life and everyday people. The *learn* factor (5% of the variance) included 4 items revolving around the natural environment plus developing diving skills and abilities. Another 5% of the variance was explained by the 3 items in the *adventure* factor, and the final factor consisted of a single item related to being with others (*social interaction*).

Of the 847 respondents who selected a category to represent level of development, 198 were beginners, 267 marked intermediate, and 250 were advanced. Only 77 considered themselves to be experts and just 55 labeled themselves as "post-expert" divers. (See Figure 1.)

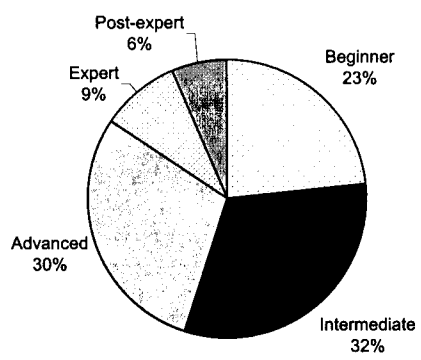

Figure 1. Level of Development

When mean motive scores were compared among levels of development using one-way analysis of variance, all six factors produced significant F-values ($p<.05$). While three factors (*learn*, *adventure*, and *social interaction*) were only able to reveal one significant difference using Tukey's HSD post hoc test, the *stature* factor was the most discriminating, uncovering eight significant differences among levels of development. The remaining two factors fell in between, with *personal challenge* detecting four differences and *escape* finding three. In order to discover if the factors were masking or hiding the effects of any of the individual motives, not only each factor but also its respective items were tested (see Table 3).

Table 2. Results of Factor Analysis of Motive Items
(Principal Components Extraction, Varimax Rotation)

Factor Name and Item Content/Loading	Factor 1: *Personal Challenge*	Factor 2: *Stature*	Factor 3: *Escape*	Factor 4: *Learn*	Factor 5: *Adventure*	Factor 6: *Social Interaction*
To show myself that I can do it	.82					
Because I thought it would be a challenge	.72					
To give me a feeling of confidence in myself	.71					
Because of the risk involved	.62					
It's sort of an impressive thing to do	.62					
To gain an experience I can look back on	.57					
To see historically significant shipwrecks		.76				
To share my skill and knowledge with others		.68				
To use my equipment		.61				
To collect interesting artifacts		.58				
To help keep me physically fit		.51				
To do something creative, such as take pictures or videos		.44				
For relaxation			.77			
For a change from everyday life			.65			
To experience peace and tranquility			.63			
To meet new people			.45			
To learn more about the underwater environment				.82		
To look at underwater animal and plant life				.76		
To study underwater geological formations				.50		
To develop my diving skills and abilities				.43		
For the adventure of it					.72	
To explore things					.61	
Because it is stimulating and exciting					.53	
So I could do things with my friends and/or family						.80
Eigenvalue	7.15	2.32	1.60	1.60	1.08	1.01
Proportion of variance explained	29.8%	9.7%	6.7%	5.1%	4.5%	4.2%
Cumulative variance explained	29.8%	39.5%	46.2%	51.3%	55.8%	60.0%
Mean scale importance score	2.7	2.7	3.3	3.5	3.9	3.0
Cronbach's alpha	.81	.76	.72	.71	.71	--

Table 3. Motivation Factors and Individual Motives: One-way Analysis of Variance Using Mean Scores of Divers with Different Levels of Development

Statement	Total (n=847)	Level of Development: Beginner (n=198)	Intermediate (n=267)	Advanced (n=250)	Expert (n=77)	Post-expert (n=55)	F	p <	# of Differences Detected
FACTOR 1: PERSONAL CHALLENGE	**2.61**	**2.77[a]**	**2.67[ac]**	**2.51[bc]**	**2.27[b]**	**2.71[ac]**	**6.28**	**.0001**	**4**
To show myself that I can do it	**2.69**	**3.18[a]**	**2.84[b]**	**2.35[c]**	**2.03[c]**	**2.63[bc]**	**17.81**	**.0001**	**6**
Because I thought it would be a challenge	2.99	3.05	3.01	2.96	2.82	3.00	0.61	.66	n.s.
To give me a feeling of confidence in myself	2.81	2.90	2.84	2.79	2.52	2.89	1.40	.23	n.s.
Because of the risk involved	**1.73**	**1.86[a]**	**1.76[a]**	**1.68[ab]**	**1.38[b]**	**1.81[ab]**	**3.42**	**.01**	**2**
It's sort of an impressive thing to do	**2.14**	**2.29**	**2.15**	**2.02**	**1.91**	**2.35**	**2.92**	**.05**	**0**
To gain an experience I can look back on	**3.31**	**3.34[ab]**	**3.40[a]**	**3.25[ab]**	**2.97[b]**	**3.56[a]**	**2.67**	**.05**	**2**
FACTOR 2: STATURE	**2.72**	**2.29[a]**	**2.58[b]**	**2.96[c]**	**3.12[cd]**	**3.30[d]**	**33.95**	**.0001**	**8**
To see historically significant shipwrecks	**3.16**	**2.41[a]**	**2.96[b]**	**3.58[c]**	**3.83[c]**	**3.93[c]**	**37.59**	**.0001**	**7**
To share my skill and knowledge with others	**2.74**	**2.15[a]**	**2.46[b]**	**3.01[c]**	**3.72[d]**	**3.53[d]**	**40.64**	**.0001**	**9**
To use my equipment	**2.56**	**2.17[a]**	**2.59[b]**	**2.78[b]**	**2.64[b]**	**2.76[b]**	**7.42**	**.0001**	**4**
To collect interesting artifacts	**2.38**	**2.10[a]**	**2.17[a]**	**2.62[b]**	**2.52[ab]**	**3.13[c]**	**11.95**	**.0001**	**5**
To help keep me physically fit	**2.76**	**2.41[a]**	**2.72[b]**	**2.89[b]**	**2.94[b]**	**3.33[c]**	**8.60**	**.0001**	**5**
To do something creative, such as take pictures or videos	**2.74**	**2.49[a]**	**2.61[a]**	**2.87[ab]**	**3.09[b]**	**3.13[ab]**	**5.53**	**.001**	**4**
FACTOR 3: ESCAPE	**3.27**	**3.05[a]**	**3.27[b]**	**3.38[b]**	**3.27[ab]**	**3.57[b]**	**5.77**	**.0001**	**3**
For relaxation	**3.58**	**3.17[a]**	**3.61[b]**	**3.76[b]**	**3.75[b]**	**3.82[b]**	**8.93**	**.0001**	**4**
For a change from everyday life	3.36	3.23	3.41	3.42	3.13	3.63	2.31	.06	n.s.
To experience peace and tranquility	**3.38**	**3.17[a]**	**3.36[ab]**	**3.46[ab]**	**3.49[ab]**	**3.73[b]**	**2.84**	**.05**	**1**
To meet new people	**2.76**	**2.60[a]**	**2.72[ab]**	**2.86[ab]**	**2.69[ab]**	**3.11[b]**	**2.67**	**.05**	**1**
FACTOR 4: LEARN	**3.54**	**3.42[a]**	**3.50[ab]**	**3.64[b]**	**3.65[ab]**	**3.59[ab]**	**2.88**	**.05**	**1**
To learn more about the underwater environment	3.72	3.63	3.65	3.80	3.75	3.89	1.32	.26	n.s.
To look at underwater animal and plant life	4.18	4.20	4.21	4.21	4.04	4.02	1.08	.36	n.s.
To study underwater geological formations	**2.65**	**2.40[a]**	**2.58[ab]**	**2.79[b]**	**2.99[b]**	**2.80[ab]**	**4.48**	**.001**	**2**
To develop my diving skills and abilities	**3.60**	**3.42[a]**	**3.54[ab]**	**3.74[b]**	**3.81[b]**	**3.64[ab]**	**3.84**	**.01**	**2**
FACTOR 5: ADVENTURE	**3.92**	**3.74[a]**	**3.92[ab]**	**4.03[b]**	**4.00[ab]**	**3.92[ab]**	**4.47**	**.001**	**1**
For the adventure of it	3.86	3.75	3.87	3.97	3.91	3.69	1.96	.10	n.s.
To explore things	**4.13**	**3.87[a]**	**4.10[b]**	**4.26[b]**	**4.35[b]**	**4.30[b]**	**9.30**	**.0001**	**4**
Because it is stimulating and exciting	3.77	3.61	3.80	3.87	3.75	3.76	1.84	.12	n.s.
FACTOR 6: SOCIAL INTERACTION (So I could do things with my friends and/or family)	**2.96**	**2.93[ab]**	**3.12[a]**	**2.92[ab]**	**2.62[b]**	**3.00[ab]**	**2.49**	**.05**	**1**

Means with different superscripts are significantly different (see p-level). Values are mean scores on a 5-point scale ranging from not important (1) to extremely important (5).

Within the *personal challenge* factor, the individual items related to challenge and confidence did not vary significantly by level of development; all divers tended to rate these two motives around 2.9 on the 5-point importance scale. *To show myself that I can do it* was actually the most discriminating item. However, the pattern of mean scores for all items harboring significant differences was exactly opposite of what was predicted: the scores tended to actually decrease from beginner to expert stages and increase again for post-experts (see Figure 2a).

In the *stature* factor, all items produced a significant F-value, with sharing skill and viewing shipwrecks as the most discriminating individual items. However, once again, the pattern was unexpected. Instead of decreasing, mean scores tended to increase linearly from beginners to post-experts. (See Figure 2b.)

For the *escape* factor, all divers tended to seek change from everyday life regardless of developmental level. Relaxation was the most telling item within the factor, showing four differences among levels of development. As shown in Figure 2c, the general trend of mean scores was, once again, not what was predicted.

Learning was valued relatively equally among all levels of development. All divers want to look at and learn about the underwater environment. For the remaining items that did have significant F-values, a pattern finally emerged resembling what was hypothesized for the intrinsically motivating *learn* factor: beginners sought *to study underwater geological formations* and *to develop their diving skills and abilities* to a lesser degree than either advanced or expert divers (Figure 2d).

The same could be said for the *adventure* factor. Here, exploration was the deciding item in this factor, uncovering four significant differences. Although not strong, the predicted pattern for this intrinsically motivating theme was somewhat evident (Figure 2e), with beginners having significantly lower scores than all other levels of divers.

Only one significant difference was detected for the *social interaction* item, and the trend displayed by the data followed the predicted pattern of being least important for experts. (See Figure 2f.)

Conclusions and Implications

First, this study showed that diver motivations do differ by level of development, but not always as expected. The study verified that divers with higher levels of development are motivated to pursue the activity for different reasons, placing more importance on *adventure*, *learning*, *stature*, and *escape* and less importance on *social interaction* and *personal challenge*. All six factors had significant F-values, and examination of each of the 24 individual motives revealed that 17 items differed by level of development. Generally, beginners stood out from the rest, scoring significantly lower than other divers for all themes except those related to *personal challenge*.

Trends in the data showed that the hypothesis was supported direction-wise in only half of the cases. *Adventure* and *learning* followed the predicted curvilinear pattern of increasing importance from beginners to experts and decreasing for post-experts. The extrinsic *social interaction* motivation displayed the predicted mirror image of that curve.

However, unexpectedly, internal *personal challenge* decreased, and external motives of *stature* and *escape* actually increased with development. Theory postulates that participants with more experience, skill, etc. will continue to seek out new challenges to peak their interest and commitment. (The risk element of *personal challenge* is one exception; as Ewert [1993] displayed, the importance of risk tends to decrease with experience.) When considering stature, however, the idea that leisure activity becomes more intrinsic with experience, or done for its own sake, was not supported. Even the one item in this factor that declined for post-experts was somewhat odd. Stebbins (1979, 1992) explained that post-experts move toward sharing with and teaching others as a way to stay involved in a leisure activity once they are in a stage of decline. One explanation for this anomaly may be that, since diving requires a very unique underwater environment, one must be able to physically do the activity in order to teach it, precluding some post-expert divers from sharing their knowledge.

Second, with the exception of the *personal challenge* factor, not all motives within a motive category or factor differ significantly by level of development. Specifically, individual motives related to challenge, confidence, change, looking at and learning about the environment, adventure, and excitement were rated similarly in importance by all divers, regardless of developmental stage.

In sum, it seems that diving is a unique type of leisure activity in terms of motivation. Beginners may initially be drawn to the activity to challenge themselves; however, once the skills and abilities are developed, divers seem to be motivated by the stature of the activity and the visible outcomes associated with it. Besides conflicting with the intrinsic nature of leisure theory, this also somewhat contradicts impressions given by focus group data. Many interviewees stressed that divers often hide the fact that they dive for fear that the public will label them as crazy risk seekers. Many divers, however, began diving with a generation inspired by the television show *Sea Hunt*; this group also heavily emphasized "trophy hunting" and collecting artifacts to display from their adventures, laying a strong foundation to explain the importance of the stature factor.

If it is known how motives differ by level of development, two groups in particular can make great use of that information. First, resource managers, tourism professionals, and community developers could use this information to facilitate planning and promotion of various dive sites, highlighting which outcomes would most likely be satisfied. Likewise, dive shops, clubs, and instructors could better facilitate participants' needs and experiences.

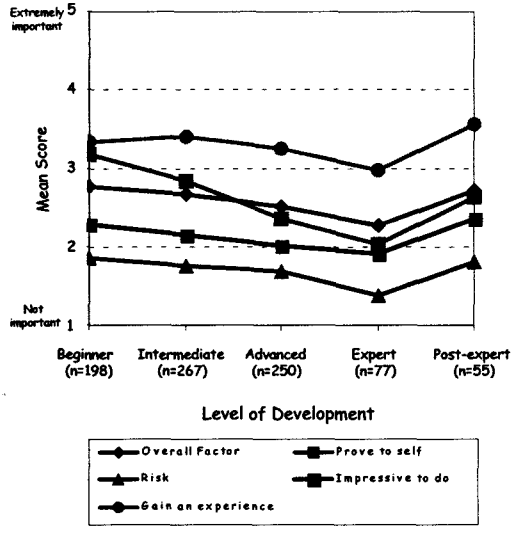

Figure 2a. Personal Challenge Factor by Level of Development

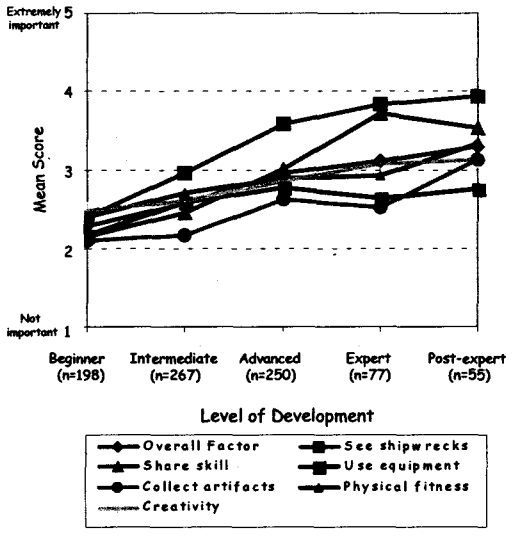

Figure 2b. Stature Factor by Level of Development

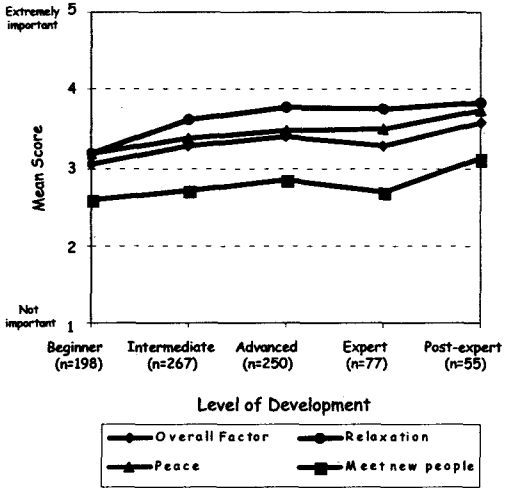

Figure 2c. Escape Factor by Level of Development

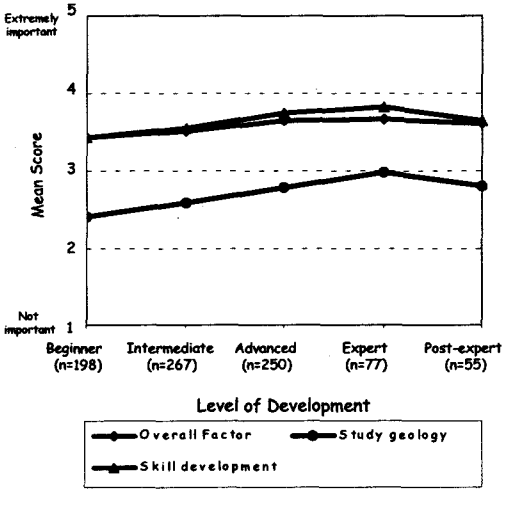

Figure 2d. Learn Factor by Level of Development

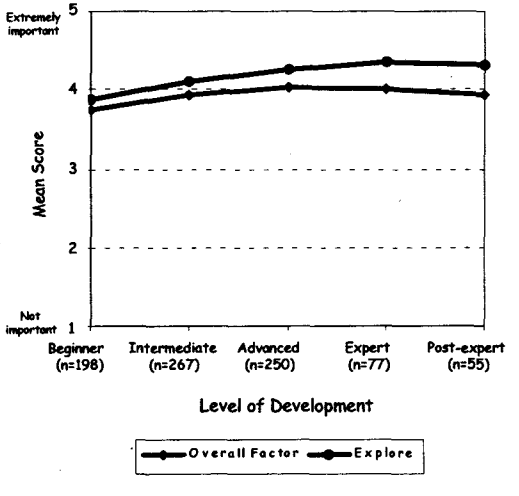

Figure 2e. Adventure Factor by Level of Development

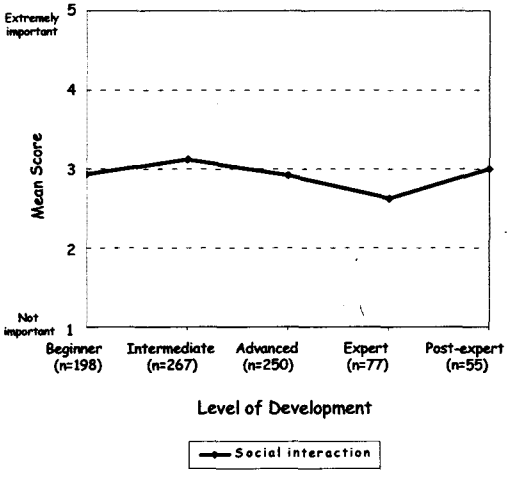

Figure 2f. Social Interaction Factor by Level of Development

From a research perspective, even more light could be shed on how motives change by linking that information to perceived constraints and discontinuance behavior. According to expectancy-value theory (Fishbein & Ajzen, 1975), being unsuccessful at negotiating constraints could affect one's belief about the likelihood of achieving desirable outcomes, in turn fostering a negative attitude and reduced intention to perform a specific behavior. Confirming this, Ewert (1993) found that novice climbers who failed to reach the summit consistently reported lower levels of importance for all motives.

Previous investigations showing significant differences in motives based on different levels of development have primarily focused on experience use history, with motives measured at one snapshot in time (e.g., Schreyer et al., 1984; Williams et al., 1990). Todd's study of quiltmakers (2001) is a rare example of following the same participants over time and using more than experience to indicate developmental level. Results showed that after four years, quiltmakers who had progressed to a higher level of development were able to keep their motives at a consistent level, relying significantly less on quiltmaking to help them work through grief or problems. Quiltmakers who stayed at the same level or even retrogressed, however, seemed to have significantly less "drive" and "control" in their lives.

Longitudinal studies of divers would enable investigators to overcome the most serious limitation of this cross-sectional study: determining whether divers' motives actually change over time. Such studies could contribute to understanding the link between internal cognitive states (attitudes, feelings, and motives) and leisure behavior.

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SKIER MOTIVATIONS: DO THEY CHANGE OVER TIME?

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Abstract: Skiing has been declining in participation over the last decade. This study examines motivations pre-trip and post-trip to see if the motivations for participation in an international ski vacation change over time. Results revealed significant differences among: to view scenery, to rest and relax, to fulfill responsibilities to my family, to take it easy, to spend more time with my family, to meet new people and socialize, to be close to nature, to feel good after being physically active, and to meet interesting people. Two of the motivations were found to be significant at the .01 level. These motivations were: to socialize with others, and to engage in activities that require considerable skill.

Introduction

In 1994-95, approximately 16.8 million people participated in downhill skiing. According to the USDA Forest Service (Wellner, 1997), 4% of all pleasure trips in the U.S. in 1995 including skiing. "Eight percent of Americans aged 16 or older have been downhill skiing at least once in the past 12 months, making it the second most popular winter sport after sledding" (Wellner, 1997, p. 253).

Although skiing enjoys a substantial amount of participation, in recent years skiing has been experiencing decline. In fact, participation has declined from 11.0 million in 1989 o10 7.4 million in 1999 (National Sporting Goods Association, 2000). Several reasons have been suggested for this decline. One reason is that the industry competes with other vacation options, like Disney World and Europe (Wellner, 1997). Additionally, skiing is an expensive sport and the "cost is keeping people away" (Leocha, 1997). Finally, skiing has been suggested to be a high impact sport and with an "aging" population, perhaps skiing has already started to recognize the inevitable decline.

One area of the research, which may help to understand this decline in skiing participation, is the study of motivations. Tourism motivations have been studied since the early 1950s. In recent years, there has been criticism regarding some of the research involving motivations. Pearce (1993) has one of the main criticisms. He suggests that too much of the motivation's research provides only a snapshot in time and ignores the fact that motivations can be dynamic. The major problem with studies that do not include change is that the results are less meaningful and applicable.

One theory that addresses this concern is Parasuraman, Berry and Zeithaml's (1988) gap analysis. This theory suggests that people's motivations can be dynamic and change over time. The theory posits the importance of gaps between perceptions of motivations and expectations. The SERQUAL scale (Parssuraman, Berry & Zeithaml, 1994; Parasuraman, Zeithaml & Berry, 1988) does not represent either a new or innovative technique to analysis; however, its results may contribute to explanations of vacations behaviors and "subsequent assessments by tourists of their vacations" (Ryan & Glendon, 1998).

Research by Loundsbury and Hoopes (1988) is potentially important, for it was one of the first to examine the stability of motivations over time. Loundsbury and Hoopes (1988) used rankings of factors over a five-year period, including the factors taken from the Leisure Motivation Scale. They found that there was some "medium term consistency." Stability can be assessed in a number of ways, including, mean scores, rankings, and persistence of factor loadings. This study examined stability over time by assessing the mean scores and ranking of individual items over the two times. Factor loadings were not computed due to the low sample size.

Purpose of the Study

The purpose of this pilot study was to investigate the stability of motivations for skiing over time. The study focused solely on one trip organized by a Southern United States ski club.

Methods

This study used a convenience sample of members of a snow skiers club in the Southern United States traveling across to Europe on a ski vacation. A questionnaire was administered while in transit to the ski destination. One week after returning home, a follow-up questionnaire sent out. A total of 29 travelers filled out the initial survey out of a total of 42 people who were on the trip (2 of the travelers were the researchers and were excluded). One of the reasons for a lower response rate was that there were many couples on the trip and only one person per couple filled out the questionnaire rather than both parties. The follow-up study was completed by the entire 29 who filled out the original survey. Therefore, a 100% response rate was achieved for the post-trip questionnaire.

Motivations were derived from Manfredo, Driver and Tarrant's study (1996) "Measuring leisure motivation: a meta-analysis of the recreation experience scales. Twenty motivational statements were chosen representing six dimensions. Skiers were asked to indicate the level of importance of each motivation as a reason for participating. Each item was scored on a 5-point likert-scale, 1 meaning "not at all important" and 5 meaning "extremely important." The post-trip scale asked skiers to respond to

the level that each motivation was met. Each item was scored on a 5-point likert-scale, 1 meaning "strongly disagree" and 5 meaning "strongly disagree." Mean scores were computed for the motivation statements (Table 1).

Limitations

This study one major limitation, a relatively low sample size. Therefore, the results of this study cannot be considered representative of the entire ski club. Thus, it should be considered only as a pilot study that suggests hypotheses to be tested in future studies. One positive result was that the post-test was completed by 100% of the initial sample.

Findings

Differences in motivations were examined by looking at pre-trip versus post-trip responses (Table 2). The findings indicate that the top five motivations for Ski travelers pre-trip were: to view the scenic beauty (4.05), to view scenery (4.00), to do exciting things (3.95), to feel good after being physically active (3.91), and to engage in sports activities (3.82). When asked about ski trip motivations after the trip, the responses changed slightly. The top five motivations for the ski travelers post-trip were: to view the scenic beauty (4.40), to view scenery (4.40), to do exciting things (4.40), to feel exhilaration (4.30), and to feel good after being physically active (4.20). The least important motivations were to spend more time with my family, and to fulfill responsibilities to my family (pre-trip). Post-trip, the least important motivations were to be able to go out alone, and to bring my family closer together.

T-tests revealed that the changes in several motivations over time were significant at the .05 level. These motivations include: to view scenery, to rest and relax, to fulfill responsibilities to my family, to take it easy, to spend more time with my family, to meet new people and socialize, to be close to nature, to feel good after being physically active, and to meet interesting people. Two of the motivations were found to be significant at the .01 level. These motivations are: to socialize with others, and to engage in activities that require considerable skill.

Another motivation that changed over the time from pre-trip to post-trip was to feel exhilaration. The mean score for this attribute was 3.77 for the pre-trip responses, and 4.30 for the post-trip responses. Pre-trip, it was more important to feel good after being physically active and to engage in sports activities. Perhaps, after the trip, travelers label this 'feel good after being physically active' feeling as exhilaration.

Table 1. Comparison of Pre-trip Motivations and Post-trip Motivations

Attributes	Pre-trip [a] (N=29)		Post-trip [a] (n=29)	
	Mean	SD	Mean	SD
To view the scenic beauty	4.05	0.95	4.40	0.52
To view scenery	4.00	0.82	4.40	0.52
To do exciting things	3.95	0.90	4.40	0.70
To feel good after being physically active	3.91	0.87	4.20	0.42
To engage in sports activities	3.82	0.85	4.10	0.32
To participate in physical activities	3.77	0.81	3.90	0.57
To feel exhilaration	3.77	0.09	4.30	0.48
To get away from it all	3.68	1.13	4.20	0.79
To experience new challenges	3.68	0.89	3.90	0.57
To increase my knowledge of different cultures	3.64	1.09	4.10	0.32
To have trills	3.45	1.01	3.80	0.92
To seek intellectual enrichment	3.36	1.09	3.60	1.17
To engage in activities that require considerable skill	3.23	0.92	4.10	0.32
To travel where I feel safe	3.18	1.22	3.30	0.82
To be close to nature	3.14	0.99	3.80	0.63
To seek an educational experience	3.09	1.19	3.60	0.84
To meet new people and socialize	3.09	1.11	3.80	0.63
To meet interesting people	3.09	1.19	3.70	0.82
To rest and relax	3.05	1.53	3.70	0.95
To take it easy	3.00	1.45	3.40	1.35
To socialize with others	2.91	1.06	4.00	0.94
To feel safe and secure	2.73	1.28	3.20	0.92
To vacation with my family	2.05	1.33	2.20	1.48
To be able to go out alone	2.05	1.13	2.10	0.88
To bring my family closer together	2.05	1.21	2.00	1.15
To spend more time with my family	1.95	1.25	2.20	1.23
To fulfill responsibilities to my family	1.55	1.10	2.30	1.25

[a] Mean values based on a 5 point Likert-type scale, ranging from 1=not at all important and 5=very important.

Table 2. Paired Sample t-tests and Levels of Significance for Motivation Statements

Attributes	t-test	sig.
To view scenery	-2.6	.02*
To rest and relax	-2.4	.03*
To fulfill responsibilities to my family	-2.8	.02*
To do exciting things	-1.0	.33
To socialize with others	-4.7	.00**
To feel safe and secure	-1.0	.34
To seek an educational experience	-1.7	.10
To view the scenic beauty	-1.5	.17
To take it easy	-2.7	.02*
To spend more time with my family	-2.3	.04*
To have trills	-1.1	.28
To meet new people and socialize	-3.5	.01*
To travel where I feel safe	-0.8	.43
To be close to nature	-3.0	.01*
To feel good after being physically active	-2.3	.04*
To get away from it all	-1.7	.11
To vacation with my family	-1.7	.11
To increase my knowledge of different cultures	-0.9	.39
To engage in activities that require considerable skill	-4.7	.00**
To meet interesting people	-2.3	.04*
To be able to go out alone	-1.5	.16
To bring my family closer together	-1.4	.19
To experience new challenges	-.26	.79
To participate in physical activities	-1.0	.34
To seek intellectual enrichment	.00	1.00
To engage in sports activities	-.56	.59
To feel exhilaration	-.59	.59

* significant at the .05 level
** significant at the .01 level

This data analysis revealed five motivation factors that have emerged. These five factors are: Nature, Social, Family, Rest and relaxation, and Physical. Each of these factors was measured using 2 or 3 statements. These five factors encompass the broad motivations that seem to be most important to ski travelers.

Overall, the motivations for ski travelers on this particular trip seemed to remain stable over time. Despite slight variances, the motivations generally remained stable, and showed that the scenery and the physical activity itself were the greatest motivators.

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SOCIOCULTURAL PERSPECTIVES OF TRAPPING REVISITED: A COMPARATIVE ANALYSIS OF ACTIVITIES AND MOTIVES 1994 AND 2000

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Abstract: Vermont trappers are faced with multiple social, economic, and political factors that influence their harvest activities, the extent of their participation, and affect their motives for participating in trapping. The purpose of this study was to assess changes in participation and motives of Vermont trappers from 1994 to 2000. Data collected from 333 licensed Vermont trappers (63 % response rate) from a six state study of trappers in 1994 was compared to data obtained in a replicated study of 447 licensed Vermont trappers (69.8% response rate) in 2000. No differences were found between the two cohorts in participation in other types of natural resource harvesting activities other than trapping, age at which they began setting traps, general demographic data of the two cohorts, or in the income they received from trapping. A one way MANOVA used to examine the effect of year (2000 and 1994) on total days participating in trapping and total species of furbearers harvested indicated a significant effect (Lambda (2, 636) =21.031, $p < .000$). Follow-up univariate ANOVAs indicated total days trapping, were significantly effected by year (F (1,657) = 41.766, $p < .000$), with those responding in 2000 expending about twice as much effort in days participating than those responding in 1994. A Principle Components analysis with varimax rotation was used to reduce the 25 motivation variables from each of the 1994 and 2000 responses to linear combinations of variables representing underlying dimensions of the motivations. An ocular examination of each of the five components selected for each of the two years used to compare motivation variables and factor loadings across the two cohorts (1994 and 2000) showed considerable consistency. The five components (factors) related to self-reliance, outdoor lifestyle activity, affiliation, wildlife control, and wildlife orientation. Trapping remains a central life interest by which people organize themselves, interact with each other and the natural environment, derive utilitarian satisfaction from the environment, and maintain a sense of autonomy from year to year. The varied motivations of trappers indicate that policy makers and some wildlife managers must discontinue considering trappers as unithematic in why they trap, rather such policy makers must understand that implementation of policy initiatives may have varying effects on different groups of trappers. Future research needs to continue to monitor motivations and sociocultural aspects of trapping if it is to remain an effective wildlife management strategy and means to maintain lifestyle benefits for a specialized subgroup of society. Research also should address the effect of trapping on the development and maintenance of a sense of place.

Introduction

Over the past three decades, socioeconomic, demographic, and political changes have affected the traditional harvesting of furbearers. Changes in social values with regard to wildlife resources have spurred the animal rights movement, which in turn has resulted in a politicization that has been directed at, and sometimes successful at prohibiting various trapping devices used in the harvest of furbearers (Siemer, Batcheller, Glass, & Brown 1994) . Habitat modification and destruction for some species has resulted from forest fragmentation and development; and the spread of disease among some wildlife populations has resulted in decreased harvests and hesitancy to target some species. Pelt prices in the early part of the past decade declined partly because of market forces, changes in fashion design, and changes in currency valuation.

Furbearer policy changes (e.g., ballot initiatives) are often developed and implemented without regard for their impact on the trappers who participate for a variety of social, commercial, recreational, and cultural motives (Daigle, Muth, Zwick, & Glass 1999). While the sociocultural aspects and politicization of furbearer harvesting has received attention in recent years (Mason 1990; Glass, More, & Distefano 1992; 1992; Siemer et al.; 1994, Daigle et al. 1999), further empirical research efforts need to focus on changes that may have over time in the motives, meanings, and threats to trapping. This research is especially important in light of the initiatives and referendums restricting trapping in states such as Massachusetts and Washington, and attempts to limit trapping in several states including Oregon and Vermont by bills introduced in the legislature. Likewise, pelt prices may affect trapping participation, causing some trappers to "stop out," until prices rise far enough to cover utility costs.

The purpose of this study is to assess the changes in participation and motivations of Vermont licensed trappers in two time frames of, 1994 and 2000. Since 1994, pelt prices (in constant dollars) have increased slightly for many furbearer species, whereas there was a twenty percent increase in the number of licensed trappers. Moreover, in late 1997 and early 1998 there was an organized attempt by animal rights groups opposed to trapping to lobby for the legislative restriction of certain types of traps. Changes in the cohort and the political climate of trapping may have concomitant changes in participation and underlying motivations of the cohort.

Our objectives were:

- To examine the changes in trapping participation, effort expended (as measured by the number of days spent trapping, and the actual harvest of a given species). As a result of a limited but positive economic incentive (i.e., increase in pelt prices since 1994), and a decrease in disease among some furbearer populations, we hypothesized that there would be an increase in both effort and corollary harvest from 1994 to 2000.
- To identify any changes in underlying motivations or motivational dimensions as a result of the changes in the cohort, land development, and economic and political climate since 1994.

Methods

The 1994 data were based on a comprehensive six-state study, by state, of the sociocultural and economic aspects of trapping, which included 333 usable questionnaires (63 percent response rate) from Vermont (Daigle et al., 1999). Using the Total Design Method (Dillman, 1983), a replication of the 1994 questionnaire was mailed to a census sample of 682 licensed trappers in Vermont during the spring of 2000. A response rate of 69.8 percent (447 responses) was received from the 640 deliverable questionnaires after three waves of the survey. No sampling of non-respondents was undertaken because of the relatively high response rate.

The 18-page questionnaire booklet queried prospective respondents about their socialization into trapping, extent of participation, species targeted and harvested, trap types owned and used, economic aspects of trapping, use of other renewable resources, motivations for trapping and for possibly leaving trapping, and demographic information on trappers and their households. In addition, questions were included from a 1989 study (Glass et al., 1992) regarding estimates of opposition to trapping, and a series of questions about traps owned, used, modified, and employed for selected species.

Replicated data on the sample profile, extent of participation, and motivations from the 2000 study sample was compared to the data collected in 1994 to assess changes in the Vermont trapper cohort.

Results

Background literature suggests that people who trap are introduced to this activity at an early age, that family and friends act as the major agents of socialization, and that they are often involved in corollary natural resource harvesting activities (Muth, Zwick, Daigle, Glass, & Jonker, 1996). The mean age which Vermont trappers began setting traps was 15.9 in 1994 and 17.1 for those responding in 2000 ($t = 1.801$, $p = .072$). Friends or neighbors were the primary agent of socialization in both 1994 (53.8% were introduced to trapping by friends or neighbors) and 2000, sixty-four percent were introduced to trapping by friends or neighbors ($\chi^2 = .552$, $p = .006$). There was no significant difference in the percentage who participated in other harvesting activities (see Table 1).

Table 1. Wildlife Harvesting Activities in which Trappers Participated, Vermont 1994 and 2000

Activity	2000 % Participation	1994 % Participation
Hunt deer	95.7	95.4
Hunt other big game	60.1	56.6
Hunt small game	83.3	81.7
Hunt upland birds	86.2	85.5
Hunt waterfowl	29.9	34.5
Fresh water fish	92.6	94.5
Salt water fish	23.8	20.3

Trappers from both study years were primarily male, two-thirds had a high school education, and almost nine of ten trappers grew up in a rural area (see Table 2).

Table 2. Trapper Characteristics

Characteristic	2000	1994
Gender (Males)	95.7%	95.4%
Educational Achievement		
Completed high school	66.2%	63.6%
Received college degree	13.6%	14.6%
Grew up (community type)		
Rural area	89.5%	88.8%
Suburban area	7.5%	8.1%
Urban area	2.9%	3.1%

Over 90 percent of trappers from both 1994 and 2000, trapped seven days a week, did so primarily on private lands which were owned by others than themselves or relatives (90.7% of 2000 respondents and 86.5% of those responding in 1994). They differed by year in where they trapped only in terms of lands owned by relatives, 51.3% of those responding in 2000 reported trapping on land owned by relatives compared to 36.3% of those who responded in 1994 ($\chi^2_{df=1} = 15.220$, $p = .000$).

Trappers also reported trapping on State owned land (58.4% in 2000, 55.3% in 1994), Federal lands (29.4% in 2000 compared to 23.7% in 1994), and other lands (8.3% by 2000 respondents and 5.9% by 1994 respondents). (See Figure 1.) The increase in state and federal land holdings (e.g., there was the establishment of a 26,000 acre National Wildlife Refuge) may account for the increased percent of respondents trapping on these lands.

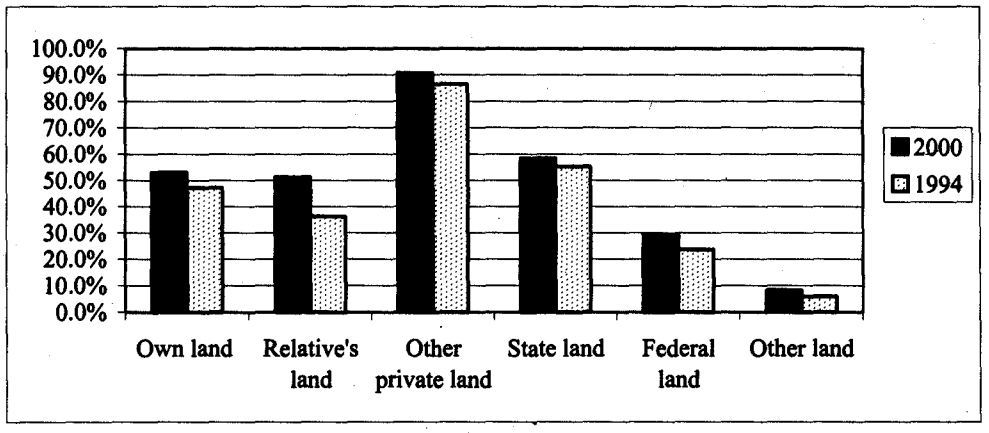

Figure 1. Ownership of Lands that Trappers Utilize

There was no significant difference between the two respondent groups in their mean income earned from trapping. In 1994 respondents earned an average of $234.01, respondents from 2000 averaged $271.15.

A modest increase in pelt prices since 1994, coupled with a resurgence of trappers purchasing licenses in Vermont suggested that trapping is increasing. We hypothesized that both the number of animals harvested and trapper's total effort (in days participating in trapping related activities) would vary by the year of harvest.

A one way MANOVA was calculated to examine the effect of year (2000 and 1994) on total days participating in trapping and total species of furbearers harvested (see Table 3). A significant effect was found (Lambda (2, 636) =21.031, $p < .000$). Follow-up univariate ANOVAs indicate that total animals harvested were not significantly effected by year trapping (F (1, 657) = 1.962, $p > .05$). Total days trapping, however, were significantly effected by year (F (1,657) = 41.766, $p < .000$).

One of the objectives of this study was to compare the sociocultural and economic motivations for trapping in 2000 with those of 1994 (Daigle et al., 1999). Motivations for trapping were assessed by 25 Likert type questions requesting that the respondent rate how important each item be to them as a reason for trapping. The items were scored from 1, "Not at all important," to 5, "Very important."

A Principle Components analysis with varimax rotation was used to reduce the 25 variables from each of the 1994 and 2000 responses to linear combinations of variables representing underlying dimensions of the motivations. The number of components was determined by eigenvalues > 1, an examination of a scree plot for each year, and interpretability of the components (factors). Factor loading greater than .500 were used to interpret the components. Cronbach's alpha was used to assess the reliability of the motivation variables used to interpret the components.

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

The first (or strongest) component of 1994 "loaded' on motivations related to self reliance and self sufficiency, this was similar to the third component of the 2000 sample. For example, in 1994, this component or factor was found to be related (or loaded) on the motivations of: "for the opportunity to be my own boss," "to maintain a sense of self reliance," to do something exciting or challenging," "to feel my independence," and "to demonstrate or test my

Table 3. Days Trapping and Species Harvested by Year (MANOVA Analysis)

Year	Mean	Std Dev.	F	Sig.
Total days trapping				
2000	64.05	56.66	41.766	.000
1994	39.20	37.36		
Total species harvested				
2000	81.72	187.45	1.962	.162
1994	64.93	93.14		

skills and abilities." For the sample of trappers from the year 2000, their third strongest component (or factor) was defined by three of these same motivations, but also included the motivation "to provide income for myself and my family." Subsequently this component was labeled as "Self Reliant," because of the commonality of motivations between the two years (Table 4).

The second component from 1994, and first (or strongest) component of 2000, were defined by motivations related to the fun and pleasure of trapping, lifestyle, and traditions associated with trapping. This component was labeled as a "Outdoor Lifestyle Activity," component (Table 5).

Affiliate motivations define the third component of 2000 and the second component of the 1994 samples. This third component that they have in common was labeled "Affiliation" (Table 6).

The fourth component was defined as a "Wildlife Control" motivation component. The motivations most strongly related to the factor were related to controlling vermin or predator populations, removing nuisance animals-which are often a service of wildlife control for other landowners such as farmers, and to keep diseases such as rabies and canine mange in check (see Table 7).

The fifth component for both 1994 and 2000 sample respondents "loaded" on two motivations typically related to non-consumptive aspects of wildlife related activity. The component was labeled as a "Wildlife Orientation" (Table 8).

The ocular examination revealed similar linear structure of motivation sub-dimensions for both 1994 and 2000, suggesting similarity in motivation structure between the two years, and the dimensions had similar scale reliability for each year. As many of the trappers from 1994 (about 80%) also were included in the 2000 sample the stability of motivations is not unexpected. Similar to other studies of recreation motivations this study seems to confirm the relative stability of motivations for participation.

Implications

- Throughout the recorded history of North America, trapping has been one of the major factors associated with the management and harvest of wildlife resources. Participation has traditionally fluctuated with the cycles in pelt prices, over-trapping of furbearers, available time, personal health, and access. These latter three factors appear to be affecting the current cohorts being examined in this study.
- Effort expended at trapping is a better indicator of the extent of trapping than just sheer numbers of trappers purchasing licenses. Effort (i.e., days trapping) increased by over 63 percent from 1994 to 2000, while trapper number increased by 20 percent.
- Trapping remains as a serious avocation for a group of participants who trap primarily as a valued component of an outdoor lifestyle, maintaining tradition and a utilitarian outdoor activity.
- The independence, challenge and self-reliance aspect of trapping, combined with its utility, may have few, if any, substitutes in terms of activities. Trappers spend an average of one fifth of their year engaged in trapping and related activities (e.g., scouting for animals, talking with land owners, tuning equipment), with a hardcore of five-percent reporting they spent over half their year in trapping activities. Trapping requires an intensity and commitment, ninety percent engage in the activity both weekends and weekdays as traps, by law, have to be checked every 24 hours. While many trappers hunt and fish, such activities appear to be a corollary activity bundle rather than a substitution, lacking the intensity participants associate with trapping.
- Socialization and affiliation are seen as a component of trapping for many, approximately 56 percent were members of trapper organizations in both 1994 and 2000. The motivations and a subsequent k-means cluster analysis indicate that a sizable number of trappers clearly are engaged in interacting with other trappers, maintaining relationships with landowners, sharing their experiences with family and friends, and sharing skills and knowledge with others. As this affiliative component may be important for establishing a community of meaning, policy implementation that eliminates or severely restricts this activity may result in undesirable effects on maintenance of social networks.
- Trappers see themselves as providing a valuable animal management function by proactively lowering animal population levels, and assisting in nuisance animal problems. They also are motivated by these animal control aspects, in some cases for self-reliance reasons and for others as a means for maintaining ties with landowners to assure access.
- This study indicates that trapping remains a central life interest by which people organize themselves, interact with each other, derive utilitarian satisfaction from the environment, and maintain a sense of autonomy from year to year; and that generally motivations have remained stable. Future research needs to continue to monitor these motivations and sociocultural aspects of trapping, examining the patterns in trapping participation in relation to cycles in pelt prices, substitutable activities, and perceived threats to trapping that may effect subgroups of trappers or the trapping community as a whole.
- The alternative to this utilitarian resource based system is a reactive nuisance animal approach which results in increased animal damage complaints and a loss of lifestyle benefits by this segment of the society who traps.

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Table 4. Self-reliant

Motivation	Component Loadings	
	1994	2000
Provide income for myself and family	.261	**.589**
Opportunity to be my own boss	**.700**	**.766**
Maintain a sense of self reliance	**.762**	**.672**
Do something exciting or challenging	**.625**	.320
Feel independence	**.800**	**.707**
Demonstrate skills and abilities	**.658**	.469
Cronbach's Alpha	.8366	.7576

Table 5. Outdoor Lifestyle Activity

Motivation	Component Loadings	
	1994	2000
Remain in touch with heritage of trapping	**.556**	**.643**
Feel like a part of nature	.484	**.507**
Maintain rural tradition	**.553**	**.602**
Continue important part of my lifestyle	**.729**	**.737**
Participate in a favorite outdoor activity	**.836**	**.784**
Experience fun and pleasure of trapping	**.745**	**.744**
Cronbach's Alpha	.8159	.8525

Table 6. Affiliation

Motivation	Component Loadings	
	1994	2000
Share experiences with friends	.744	**.726**
Share my skills and knowledge with others	**.794**	**.748**
Share experiences with my family	**.658**	**.733**
Interact with other trappers	**.727**	**.541**
Cronbach's Alpha	.7817	.7729

Table 7. Wildlife Control

Motivation	Component Loadings	
	1994	2000
Control predator or vermin populations	**.846**	**.814**
Remove nuisance or problem animals	**.771**	**.790**
Keep diseases from spreading	**.712**	**.743**
Provide a valuable service to landowners	**.651**	**.660**
Cronbach's Alpha	.7993	.8155

Table 8. Wildlife Orientation

Motivation	Component Loadings	
	1994	2000
Observe wildlife	**.728**	**.886**
Learn about wildlife	**.697**	**.889**
Cronbach's Alpha	.8572	.9414

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Resource Management & International Tourism Development

THE IMPACT OF POTENTIAL POLITICAL SECURITY LEVEL ON INTERNATIONAL TOURISM

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Abstract: The purpose of this study was to investigate the impact of potential political security in an effort to fill in two foregoing research gaps in international tourism. To investigate the relationship between political security and international tourism, a simple regression model was employed. Secondary data were collected from a variety of sources, such as international tourist arrivals (130 countries) from Statistical Yearbook of Tourism by World Tourism Organization and their political security index from Euromoney aggregated by polling risk analysts, risk brokers and bank credit officers. The result found that the regression coefficient of political security turned out to be statistically insignificant (p=0.23). Only 9 % of total variance in international tourist arrivals is explained by the political security. However, according to the scatter plot, the outlier clusters of 18 underestimated countries and 5 overestimated countries revealed important patterns explained in terms of the political security.

Introduction

The impact of political security on international tourism has been the concern of some researchers (Lea, 1996; Wall, 1996; Bar-On, 1996; Mansfeld, 1999). It is commonly assumed that international tourists consider their personal safety along with travel costs and availability of information when they choose an international destination. The studies indicated that a nation's political insecurity led to a decrease in the number of international tourist arrivals. Two limitations were observed in these studies. First is that only small number of countries was used for the studies. Secondly, the meaning of political security was applied in a sense of the extreme case expressed by terrorism and international wars. The purpose of this paper, therefore, is to close two research gaps: applying global distribution of international tourists, and investigating the impact of potential political security, which is defined as political instability and perceived threat to tourist safety on international tourism.

Data and Model

Data were obtained from two sources. International tourist arrivals were obtained from the Statistical Yearbook of Tourism published by World Tourism Organization. Data for political security were obtained from Euromoney distributed by Euromoney. A political security index was made by polling risk analysts, risk brokers and bank credit officers. They were asked to give each country a score between 10 and zero. A score of 10 indicated no risk of non-payment, meaning no political risk; zero indicated that there was no chance of payments being made, meaning heavy political risk (Euromoney, 1997). A total of 150 countries, which were successful in reporting both number of international tourists arrivals and political security index, was used for the analysis. To investigate the relationship between political security and international tourism, a simple regression model was employed as follows:

$$1)\ Y = \alpha + \beta X_1$$

Where Y is growth rate of international tourist arrivals (94 – 97)

X is change rate of political security index (94 –97)

α is a constant

β is X_1 regression coefficient

Result

The results found that firstly, potential political security had no impact on the flow of international tourist arrivals. The regression coefficient of the political security turned out statistically insignificant (p=0.23). Secondly, the political security only accounts for 9% of variance of international tourists arrivals (R-Square = 0.09). However, the scatter plot shows the patterns of the cluster of underestimated countries and overestimated countries, which decrease the goodness of fit in the regression line.

To identify the outliers countries, the standardized residual of the regression coefficients were transformed into Z scores. Upper 10 percentile, which represents underestimated countries, and lower 10 percentile, which represents overestimated countries, were extracted. With exclusion of 6 outliers countries, the model increased the explanatory power by 15% (R-Square 1.49). Also political security turned out to be a statistically significant variable in explaining the flow of international tourists.

International Tourist Arrivals = 0.212 + 0.503 (Political Security Index)
(t=4.79)

However, some need for explanation remains. Since data used for the study are actual numbers reported from each country, we could not easily set aside these countries as outliers. On the assumption that countries report accurate number of international tourist arrivals to the WTO, these countries should be considered as a unique set or cluster, which reveals the complexity for the nature of international tourists' response to political security, rather than statistical outliers.

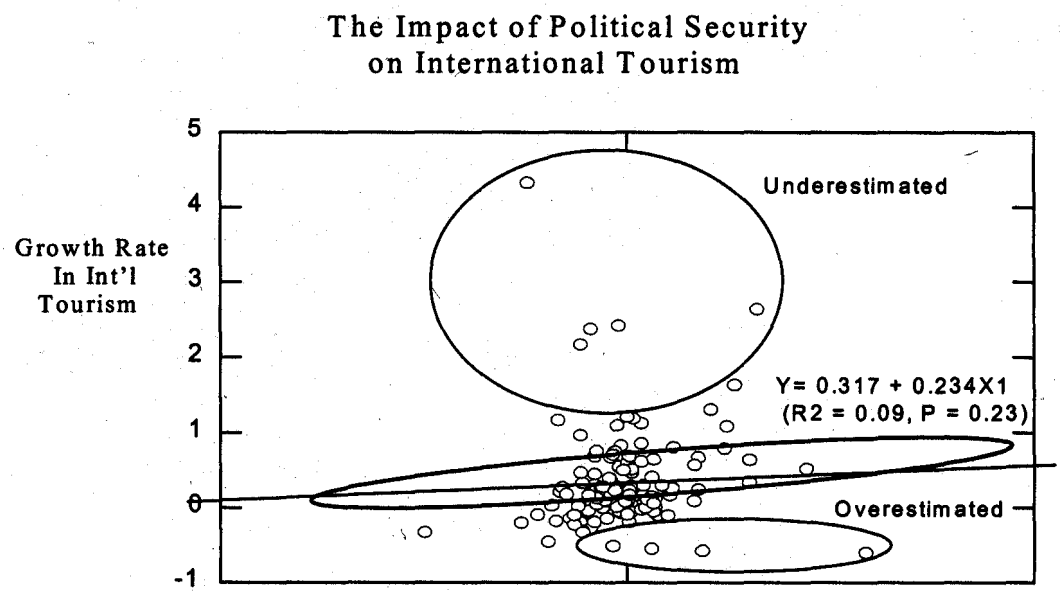

Figure 1. Change Rate in Political Security

Overestimated Countries	Underestimated Countries
Chad(-1.61), Sao Tome(-1.95),	Cuba (3.44), Mali(3.55), Nigeria(3.12), Sudan(6.75),

Note: Underestimated countries are those which have increases in the Number of International Tourist Arrivals in spite of decreases in Political Security Index. Overestimated countries are explained as countries which have decreases in the Number of International Tourist Arrivals but increase in Political Security Index.

Conclusion

Does political security really matter to international tourism? The potential political security of the countries has a positive function of international tourist arrivals among 144 countries, which were apparently significant number of the countries. However considering 6 countries are not properly estimated by political security, brought ambiguous response. Since the political security in the study refers to a degree of "potential political risk" existing in the countries, international tourists might have acceptable tolerance of political insecurity in a case where the attractiveness of the destination is greater than political insecurity. Second, the number of international tourist arrivals could have a different meaning in relation to the potential political risk. For example, pleasure travelers and business travelers would be different in their sensitivity to the political risk than business traveler does. Therefore, the specification of international tourist arrivals would help decrease the ambiguity. In spite of the partial interpretation, the discussion of Hall and O'Sullivan (1996) provides insight into this complicated phenomena: "The sheer scope of the implication of political violence for tourism requires a far more sophisticated understanding of the nature of the international traveler's response to political instability and perceived threats to tourist safety than has hitherto been the case" (Hall and O'Sullivan, 1996, p. 118). The potential political risk of the countries is not always a constraint of international tourists to overseas. It is well documented that the temporary impact of terrorism, international war, or civil war is significant factors that can dramatically decrease the number of international tourists (Lea, 1996; Ioannides, 1999; Wall, 1996; Bar-On, 1996; Mansfeld, 1999).

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FUTURE OF THE KOREA NATIONAL PARKS: A PRELIMINARY DELPHI STUDY OF KEY EXPERTS

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Abstract: A preliminary Delphi survey of a panel of key experts who are very knowledgeable of Korean national parks was conducted between February and March in 2001. Park professionals, environmental NGO directors, interested citizens, and retirees identified issues facing the Korean park system (Wave1). Findings from wave 1 of the survey provided the baseline for a series of Delphi waves in order to assess the future roles of the Korean national park system in protecting biodiversity and promoting tourism.

Introduction

Stated as preservation and use, the relationship between the threats to national parks and the potential resolutions of these threats are intertwined. Thus, identifying what are the threats to national parks and what can be done about them are critical questions (Machlis and Tichnell, 1985). Every national park system faces the dilemma of managing for long-term preservation of its assets and the short-term economic benefits of park use and tourism. Both the long- and short-term needs are vital for the nation; yet park systems are expected to resolve these national priorities with severely limited staffs and budgets.

This paper reports on the first part of a Delphi survey, which will suggest a model to help park professionals carry out the objectives of the Korean National Parks Authority (KNPA). More than three decades ago, Ruhle (1968) suggested a future Korean national park system should have clear master plans stating the significance of each area and listing its outstanding features. Such plans should specify the policy to be followed, the objectives to be pursued, and an outline for orderly development. Each potential national park area should be considered and plotted as an individual unit, thus avoiding a monotonous repetition, which might threaten Koreans' feelings of uniqueness. However, his most critical recommendation was that the national parks should be administered on a national level. For instance, if a forestry bureau were to be charged with the administration of such areas, it might include the desire to harvest timber, regardless of the degree of care and skill. Therefore, the care of the national parks should be vested in a ministerial or other high government rank that would have the greatest understanding and sympathy for park standards and goals. The agency should have the authority and means for sound administration (Ruhle, 1968).

Currently, there are 20 national parks in Korean national park system. As in all park systems, insufficient money and time for park management reflect the major current threats, along with over-development to the system. The status of KNPA is a trustee organization under the auspices of Ministry of Environment, thus employees of the KNPA are non-governmental. The system suffers from an inconsistency of relevant laws. Another unique attribute of Korean parks is their landownership (43% of total park lands are owned by private owners or Buddhist temples that are located in major park areas).

Methodology

In order to develop a likely array of future directions for Korean national parks over the next decade, a panel of knowledgeable experts on the system was asked for their forecasts based on current and past trends in park management, philosophy, legislation, public attitudes, and funding. The Delphi technique offers a way to systematically combine expert knowledge and opinion to reach an informed group consensus about the likely occurrence of future events (Moeller & Shafer, 1989). The assumption of this method is that although the future is uncertain, individuals able to make informed judgments about future contingencies can approximate probabilities of the future. The method is intended to provide a general perspective on the future rather than a sharp picture. It replaces direct open debate with an iterative series of questionnaires, with each subsequent series of questionnaires containing information gathered from those preceding it. Borrowing from Moeller' and Shafer's explanation, the steps of the method consist of (1) identifying the relevant event -- in this study, problems of park management in Korea, (2) preparing clear and precise statements, (3) selecting panelists from the area of expertise suggested by the problem, and (4) mailing questionnaires in at least two waves. Other rounds may be necessary until a consensus begins to emerge.

In this preliminary phase, a panel of 36 Korean park professionals, retirees, interested citizens, and environmental NGO directors was requested to identify current major problems the Korean parks face. The panel members were selected by two different procedures: first 27 members were chosen through a literature review, a list consisting of 90 park professionals provided by Korea National Parks Authority (KNPA), an expert's recommendation on the KNPA list and supplementary list, a Ministry of Environment's recommended list, and two NGO groups' supplementary lists. In addition, 9 more members were added to the panel after the first 27 members recommended them as panelists.

Preliminary Findings

In the wave one, 18 out of 36 members responded. The mean familiarity score of this group is 3.94, on the 5 point Likert scale, where 5 is "extremely familiar" with the Korean park system (Figure 1).

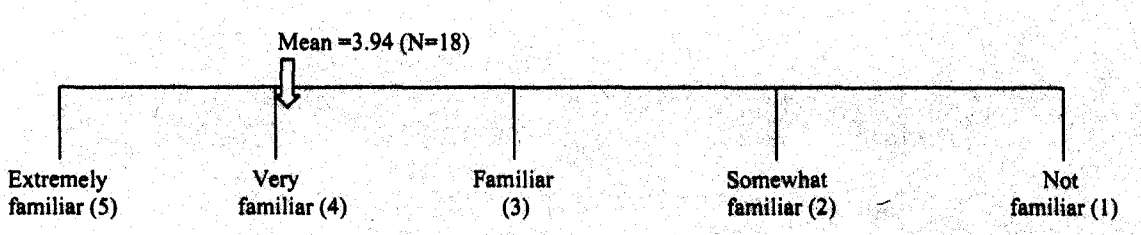

Figure 1. Respondents' Familiarity with the Korean Park System/Management/Policy

Table 1 shows the issues identified by the respondents. These 47 major issues are organized into 3 clusters: park philosophy/policy, park organization/management, and park visitation/visitor needs.

Further Study

In further waves, follow-ups on their converging and diverging opinions will be used in an attempt to develop consensus on what is likely to happen, what should happen, and what facilitating measures need to be taken to ensure a viable park system during the first decade of the new millennium. Finally, the panel's recommendations will be compared with the evolution of other national parks systems from selected nations in Asia and North and Central America.

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Table 1. Identified Issues by the Panel

PROBLEMS DESCRIBED
Park Philosophy/Policy
The Korea National Parks Authority and the central government's lack of national park idea
Conflict between preservation and use
Paradigm shift (need to consider national parks as preservation/educational places)
Land ownership (unlike the U.S. & Canadian park systems, 20% of Korean parks are private land)
Management control over parks (possibility of conflict between central and local governments)
In order to emphasize conservation, need of amending "natural parks law"
Inconsistent management system in KNPA (due to rapid turn-over of officials in Min. Of Environment)
Inconsistency/overwrap of relevant laws
Need to establish state-run "national park bureau"
Organizational inflexibility of KNPA
Need to reclassify national parks on the basis of preservation/ecosystem values involved
Lack of policy regarding cultural resources such as eco-villages and Buddhist temples
Development pressure/ attempts in park area
Attempt of building cable car system in park area
Lack of inventory (ecosystem, infrastructure, etc)
Increased degradation of resources in park area/visitor impacts on natural environment
Insufficient protection for ecosystem
Lack of central government active role on natural resources
Infringement on private property right in park area (which causes civil appeal)
Entrance fee including separate admission fee for cultural assets (buddhist temples)
Conflict with buddhist temples, which are located in major park areas
On-going construction/renovation in buddhist temples in park areas
Park Organization/Management
Under-budgeting
Lack of knpa control over its budget
Understaffing
Lack of expertise in knpa
Problem of political appointment of knpa chairman
Lack of standards in conservation
Inconsistent management of ecosystem
Knpa and central government's lack of understanding national park management
Lack of management direction/goals/objectives; lack of long-term view in management
Unlawful facilities in park area
Unplanned development and facility deterioration in "mass facility zone" in park area
Financial difficulty of business in "mass facility zone"
Problem of zoning
Poaching and illegal picking (due to lack of law enforcement)
Park Visitation/Visitor Needs
Lack of public relations/education on ecosystem
The general public's awareness/views of park purpose
Inappropriate/insufficient interpretation programs
General public's low awareness of national parks
Need to provide more environmental education programs
Lack of visitor management
Need to provide good quality of recreation experience
Need to guide visitors to non-disturbing behavior
Insufficient service/educational facilities for visitors
Lack of character distinction between parks
Lack of providing tourism opportunity (on-hand educational experiences in nature and culture)

User Satisfaction in Outdoor Recreation

A PRELIMINARY ANALYSIS OF FLORIDA STATE PARK SATISFACTION SURVEY DATA

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Abstract: This study is part of a five-year quality review process for Florida State Parks. It attempts to document the feelings visitors have about the parks they visit. The preliminary findings are very similar to results found in a similar study conducted in 1995 in which high levels of overall satisfaction were found. Despite high levels of overall satisfaction there were some significant differences found between some user groups.

Introduction

In 1994/95, the Florida Department of Environmental Protection, Division of Recreation and Parks undertook the first comprehensive study of visitors to Florida State Parks, State Recreation Areas and Special Feature Areas. The purpose of the project was to determine visitor satisfaction with Florida State Parks and evaluate the quality and effectiveness of the Florida State Park System. Research staff from the Leisure Services and Studies Program at Florida State University conducted the study.

In 2000, researchers from the University of Florida, Department of Recreation, Parks and Tourism, Center for Tourism Research and Development implemented a research project to continue the evaluation of visitor satisfaction at Florida State Park operations. This five-year review is part of an ongoing process to understand how users feel about the Florida State Parks. Modeled generally on the 1994/95 project, this study attempted to add a greater understanding of issues important to Florida State Park visitors and the Florida Park Service by adding questions to learn more about the visitation, dining and information gathering patterns of visitors to Florida State Parks. Questions were also asked to determine what roles visitors felt that parks should play as public resources.

In revisiting visitor satisfaction issues after five years, it is important to note a number of conditions that have changed:

1. The number of visitors and the number of facilities operated by the Division increased substantially.
2. Technology such as the World Wide Web emerged as a major method of communicating information.
3. The Division embarked on a major Eco-tourism initiative, as environmental tourism and heritage tourism became two of the fastest growing types of tourism worldwide.
4. The Division is developed new administrative rules to permit pets is some Florida State Park campgrounds.
5. Research models for visitor satisfaction are more sophisticated as issues of service quality, price/value and customer loyalty were further developed

Purpose

This study, modeled generally on the 1995 study, attempts to add a greater understanding of issues important to Florida State Park visitors and the Florida Park Service. Of particular interest are comparisons between the 1995 and 2000 study and comparisons of satisfaction scores between different user groups visiting the parks.

Methodology

In order to insure comparability with the previous study, the basic methods and survey instrument were the same. Twenty-five locations throughout the state were selected to take part in the study. A stratified random sample, stratified by type of operation (state park, state recreation area, and state special use area) and management regions was developed.

Selected parks were sampled 4 times during the year 2000 (January, April, July and October). The week prior to the beginning of each survey month, managers were shipped boxes containing 400 survey instruments (consisting of the questionnaire and a return envelope). Each park distributed a total of 1,600 questionnaires throughout the year with a total of 40,000 questionnaires distributed throughout the system during the yearlong period.

Park personnel were asked to distribute survey packets to visitors as they entered the park during each survey period. Staff members were asked to distribute a maximum of 40 studies per day from the initiation of the survey period until all survey forms were been distributed regardless of the number of days required.

Questionnaire

Similar to the previous study, the questionnaire was completed by the respondent and returned to the researchers using postage paid return envelopes. The questionnaire was developed with input from the Division of Recreation and Parks and was comparable to the previous study. Questions were also developed to learn more about the visitation, dining and information gathering patterns of visitors to Florida State Parks.

The questionnaires were printed on a computer scan able form. Questions were generally forced choice questions with respondents indicating their answers by darkening in ovals next to selected items. There were no open-ended questions on the survey though respondents were encouraged to add any additional comments on separate paper.

Results

Overall, 5,162 visitors to the Florida State Parks took time to return completed and usable surveys. This represents an estimated return rate of 12.9% if all questionnaires were actually disbursed. Under this methodology, no attempt was made to determine how many surveys each park actually passed out each quarter.

Respondents

As seen in Table 1, about 65% of the respondents were Florida residents though the largest group was from outside the county of the park. The most common age group reported was 45- 64 years of age with about reporting incomes between $30,000 and $60,000. Visitors were primarily Caucasian with only 6.1% of the respondents being minorities.

General Satisfaction Scores

Respondents were asked to rate their level of agreement with 12 general statements about their most recent visit to a Florida State Park. Response categories were: 1 = "Strongly Agree", 2 = "Agree", 3 = "Neutral", 4 = "Disagree", 5 = "Strongly Disagree". Thus, in this section, the lower the number, the more strongly respondents agree with the statement.

As seen in Table 2, the General satisfaction Scores indicate a high level of agreement with the statements made about the parks. In this table, responses have been sorted in ascending order so that the items most strongly supported are listed on the top of the table and the items least strongly supported are listed toward the bottom of the table. It should be noted that all items averaged 1.85 or less which indicates that, on average, all items were ranked between "Strongly Agree" and "Agree". When comparing the 1995 scores to the 2000 scores, slight improvements were noticed in all areas except one: "The park is adequately staffed." In this case, scores dropped from 1.67 to 1.85.

Respondents feel most strongly that the natural and cultural features of the park are worth protecting (1.15), and that they would like to visit the park again (1.40) and they are satisfied with their visit (1.43). They feel least strongly that "The park is adequately staffed" (1.85), "The cultural and historical features are managed appropriately" (1.76) and "Overall, the park fees are fair" (1.70).

Table 1. Description of Respondents

Residence	Count	%
Fl County w/ Park	1164	23.4
Fl County w/o Park	2089	42.0
Other US State	1497	30.1
Canada	115	2.3
Intl Not Canada	108	2.2
Total	4973	100.0
Age	**Count**	**%**
18 - 24	167	3.4
25 - 44	1595	32.2
45 - 64	2148	43.4
65 Plus	1043	21.1
Total	4953	100.0
Ethnicity/Race	**Count**	**%**
Caucasian	4306	93.9
Hispanic	106	2.3
African American	20	.4
Asian	27	.6
Other	129	2.8
Total	4588	100.0
Income	**Count**	**%**
Less than $15,000	168	3.8
$15,001 to $30,000	664	15.1
$30,001 to $45,000	973	22.2
$45,001 to $60,000	996	22.7
$60,001 to $75,000	570	13.0
More than $75,000	1015	23.1
Total	4386	100.0

Table 2. General Satisfaction Scores

Comment	1995 Report	2000 Report
Natural and cultural features of the park are worth protecting	1.16	1.15
I would like to visit this park again	1.45	1.40
Overall, I am satisfied with my visit	1.51	1.43
Staff was courteous & friendly	1.48	1.46
I feel safe in this park	1.67	1.49
Visit was well worth the money I spent	N/A	1.50
Staff members were prompt and helpful	1.55	1.51
Natural features of the park are appropriately managed	1.67	1.59
The weather was good during my visit	1.83	1.59
Overall, the park fees are fair	N/A	1.70
Cultural and historical features are managed appropriately	N/A	1.76
Park is adequately staffed	1.67	1.85

Comparisons between Groups

When comparisons were made between different user groups, several interesting findings were discovered. When comparing residents and non-residents, there were significant differences between groups on every variable. In each case, residents were more satisfied than non-residents.

When comparisons were made between satisfaction scores by race/ethnicity several differences were found (Table 3). "African Americans" and "Others" were least likely to feel that the natural and cultural features of the park were worth protecting. "African Americans" and "Others" were least likely to feel that the natural features were being appropriately managed while Asians were least likely to feel that the cultural/historic features were being appropriately managed.

"African Americans" and "Others" were also least likely to feel that the park fees were fair, the park was adequately staffed, and the visitor was worth the money. African Americans and Hispanics were least likely to feel that the staff was courteous and friendly.

Discussion

Overall, the General Satisfaction Scores for the Florida State Parks are very good. There were high levels of agreement with all the positive statements made about the parks. People felt most strongly that the natural and cultural features of the parks were worth preserving and that they would like to visit the park again. When comparing the scores from this study to those from 1995, the general evaluation scores improved in every case except one.

The findings that respondents are less satisfied with staffing levels in 2000 is important to Florida State Park administrators. During the Summer of 1999, under the direction of Governor Jeb Bush, state administrators were requested to develop plans to reduce the size of all state agencies by 25% over a 5 year period. This plan is to include all state parks. Administrators are faced with a dilemma – on one hand, public satisfaction with staffing levels was already dropping before the mandate – on the other hand, there is strong pressure from the governor to make additional cuts.

Though state park visitors seemed quite pleased with the parks, there were some variations depending upon user group This points out that the Florida State Parks are attractive to several constituencies and management plans should consider all groups. However, there are some potential challenges for park management in meeting the needs of minorities, particularly African Americans.

Reference

Beeler, C., Fletcher, D., & Fletcher, H. (1995). Florida State Parks Visitor Study: Final Report (Unpublished Tech. Rep.). Florida Department of Environmental Protection, Division of Recreation and Parks.

Table 3. Differences in Satisfaction Scores by Race/Ethnicity

Comment	Caucasian	Hispanic	Afr. Amer	Asian	Other
Natural and cultural features of the park are worth protecting	1.13	1.20	**1.35**	1.04	**1.37**
Natural features of the park are appropriately managed	1.58	1.48	**1.75**	1.37	**1.78**
Cultural/historical features are managed appropriately	1.75	1.80	1.75	**1.46**	2.07
Overall, the park fees are fair	1.69	1.65	**1.85**	1.26	**1.98**
The park is adequately staffed	1.84	1.87	**2.16**	1.62	**2.01**
Visit was well worth the money I spent	1.49	1.48	**1.80**	1.15	**1.67**
Staff was courteous & friendly	1.45	**1.56**	**1.75**	1.19	1.49

Note: All variables mentioned are significant at the .05 level or greater

RECREATIONISTS IN THE COLUMBIA RIVER GORGE NATIONAL SCENIC AREA: A SURVEY OF USER CHARACTERISTICS, BEHAVIORS, AND ATTITUDES

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Abstract: The U.S. Forest Service has begun a comprehensive recreation research effort designed to understand visitor use patterns, satisfaction levels, and economic expenditures of forest recreationists. This study examines four categories of variables (socio-demographic, recreation experience, economic expenditure, and customer satisfaction) across a set of five independent variables (type of site, stratum, survey period, state, and season) for the Columbia River Gorge National Scenic Area. The greatest differences were noted for the socio-demographic variables, place attachment variables, and motivations for visiting. Fewer differences were noted across the satisfaction, management preference, and economic expenditure variables.

Introduction

In 1999 the USDA Forest Service (USFS) initiated a national research effort designed to understand recreation use patterns in every national forest across the United States. The National Visitor Use Monitoring (NVUM) study will evaluate one-quarter of the national forests each year. The primary purpose of this study is to provide managers with the number of visitors using USFS facilities and lands. Initial indications are that the USFS will continue to rotate each of the forests through the NVUM study every four years, thus providing a longitudinal study that will facilitate managers' decision making abilities when integrated with new and existing management plans. The Columbia River Gorge National Scenic Area (CRGNSA) was one of the initial National Forest units to undergo the NVUM process. On-site sampling was conducted in the CRGNSA to examine recreational use patterns, satisfaction levels, economic expenditures, and visitors' perceptions of place attachment, motivations to visit, and management preferences.

Market segmentation as a method of managing different recreation users has been recommended by many recreation researchers (Graefe, 1981; Andereck & Caldwell, 1994). For example, users' gender and age have been shown to be valid predictors of perceived park safety (Westover, 1984). Absher and Lee (1981) noted that visitor characteristics and prior experience had an effect on perceptions of crowding in a National Park. Absher, Howat, Crilley, and Milne (1996) measured visitor use characteristics at sporting events and leisure centers in Australia and New Zealand, demonstrating that customer characteristics such as gender, age, and disability status impacted overall satisfaction levels of users. This study also revealed visit characteristics that showed specific market segments of visitors with significantly different levels of satisfaction.

Description of Study Site

The Columbia River Gorge National Scenic Area is located along the Columbia River, straddling the borders of Oregon and Washington. The CRGNSA encompasses an 80-mile length of land and water along the Columbia River, running from Reed Island, just east of Troutdale, Oregon and Washougal, Washington to Miller Island, near The Dalles, Oregon. The CRGNSA is made up of the natural gorge of the Columbia River, and is one of the Pacific Northwest's most unique outdoor recreation areas, with a plethora of outdoor recreation activities offered in many different settings. The CRGNSA is the only sea level east-west break in the Cascade Mountain Range, providing very strong winds that facilitate superb sail boarding opportunities. The CRGNSA is host to over 120 scenic waterfalls and hiking trails, and includes one of the nation's first scenic highways.

Survey and Analysis Methods

The survey instruments used in this study were designed by the USDA Forest Service's Southeast Research Station for nationwide application. Three different survey versions were used to query visitors about their visitor use patterns, demographics and trip characteristics, satisfaction levels, and economic expenditures. The three instruments included a *basic version* (visitor use patterns, demographics, and trip characteristics); *satisfaction version* (basic version plus importance/satisfaction and crowding indicators); and an *economic version* (basic version plus trip expenditure measures). A short on-site *experience addition* was added for the CRGNSA study. The experience version queried visitors about their sense of place, motivations for recreating in the CRGNSA, management preferences, and so forth.

Data collection followed the protocol for the national (NVUM) study. An onsite face-to-face interview was used to obtain feedback from a sample of recreationists in the CRGNSA. The onsite survey took approximately 5-10 minutes to complete, depending on the version of the instrument that was used in the interview. Approximately one-half of the visitors were interviewed with the basic version/experience addition, while one-quarter received the satisfaction version and one-quarter received the economic version. Sampling was conducted according to a random sampling plan developed by the NVUM national office, and included approximately 200 days of interviewing during the period January 1 to December 31, 2000. A total of 1282 onsite surveys were completed, resulting in a participation rate of 95.5%.

For the purposes of this paper, we compared socio-demographic information, satisfaction levels, economic

expenditures, and experience perceptions across several independent variables. These variables included the *type of survey site* (general forest area versus developed area), *use stratum* (high, medium, or low use as determined by area resource managers), *survey period* (morning or evening), *state* the respondent was interviewed in (Oregon or Washington), and *season* (data were broken down into the four established seasons).

Visitor Demographics and Trip Characteristics Results and Discussion

The majority of visitors interviewed for this study (60.4%) were married, and almost two-thirds (62.9%) were males. The mean age of study respondents was 43 years old, and almost half (47.1%) reported an income of between $40,000-70,000 for the 1999 tax year. This group of respondents was highly educated, with almost one-third (32.4%) reporting education beyond a bachelor's degree, and 35.5% reporting that they completed a bachelor's degree. Only 13.5% of the respondents indicated that they had a high school degree or less.

About half of the interviews (52.8%) took place during an 8:00 am--2:00 pm shift, with the remainder during the 2:00 pm--8:00 pm shift. Interestingly, the majority of the respondents reported that the Columbia River Gorge was their primary destination, and only 14.5% indicated that they were visiting the area for the first time. Columbia River Gorge National Scenic Area visitors were most likely to be interviewed in family groups (40.7%), in groups consisting of friends (25.8%), or family and friends (14.5%).

Numerous significant differences emerged when the socio-demographic and trip variables were compared across the five independent variables (Table 1). The season variable showed the greatest number of differences across the trip characteristics and socio-demographics, with seven of the 10 dependent variables showing significant differences. Five of the variables differed by state, and four differed by type of site at which the respondent was surveyed. No variables showed significant differences across all five independent variables; several variables varied by two or three of the independent variables.

Visitors who were contacted during the fall season were more likely than those in other seasons to be male and employed outside of their home. Fall respondents were also less likely to agree to participate in the interview. Winter visitors tended to be in smaller groups. Summer visitors were more likely to have children under 16 in their group and more likely to have graduate degrees. Females and retired individuals were more common during winter and spring.

The state in which users were surveyed showed some notable differences as well, with Oregon users much more likely to be married and somewhat older than Washington users. Additionally, Oregon respondents tended to have more people in their cars than Washington users. Washington visitors were more likely than those in Oregon to be white, single, and to hold a graduate degree.

Type of survey site also accounted for some differences between visitors. People interviewed in developed areas were generally younger and more diverse ethnically than those sampled at general forest areas. The developed area users also showed a higher proportion of females and individuals in the middle income brackets.

Some slight differences were noted across the two survey periods (morning or afternoon), with afternoon users being older and more likely to be employed outside the home than morning respondents. Lastly, only two differences were noted across the use level strata. People interviewed at high use sites tended to be more diverse ethnically and in larger groups than those at either high or low use sites.

Table 1. Summary of Significant Differences in Demographics and Trip Characteristics by Five Independent Variables (Chi square or F-values; non-significant values not shown)

Demographics and Trip Characteristics	Survey Period	State	Stratum	Season	Site Type
Willing to participate				44.6	
Number in car		26.6	6.2	2.7	
Number under 16				6.2	
Gender				19.0	6.8
Ethnicity		7.5	7.4		8.6
Education		9.8		22.7	
Employment	9.9			42.4	
Marital status		4.9			
Age	15.5	14.9			13.3
Income				36.9	14.9

Recreation Experience Version Results and Discussion

There were numerous significant differences across three categories of experiential variables (place attachment, motivations for recreating, and management preferences). The management preference items showed the fewest differences across the independent variables (Table 2). Of the nine motivation variables, use stratum accounted for the greatest number of differences (5 of 9 significant), while three of the nine motivations differed by state and season. The place attachment items showed the most significant differences when compared across states and use strata (Table 2).

A series of five statements queried visitors about their attachment to the place they were visiting. Differences were noted across three of the five independent variables, with survey period and user type showing no significant differences. Four of the five variables were significantly different across the state variable. Oregon visitors were much more likely to report that the main reason for their visit was "because it is the Columbia River Gorge," while Washington users were much more focused on the Gorge as a place to do their chosen activity. Those visitors interviewed in Washington generally were more attached to the place they visited within the Columbia River Gorge.

The stratum category showed differences in the place attachment items as well. Users interviewed at the low use sites were more likely to agree with the site-specific place attachment indicators. Recreationists at high use sites felt that companionship was more important, and tended to agree more closely with the statement indicating that the Columbia River Gorge itself was their main reason for visiting. One of the five place attachment items differed significantly across the four seasons. Winter users were more likely to agree that "this place means a lot to me."

Nine statements examined visitors' motivations for recreating in the Columbia River Gorge. The stratum variable showed the most differences in the motivation scales, with five of the motivations differing across use level strata. Three of the nine variables showed significant differences for both the state and season categories. No differences were noted with regards to the survey period, and only one difference was noted for the type of site visited.

Table 2. Summary of Significant Differences in Experience Variables by Five Independent Variables (F-values; non-significant values not shown)

Experience Variables	Survey Period	State	Stratum	Season	Site Type
Place attachment					
Most important reason for visiting (because it is the Gorge, activity, place, companions)		12.8	10.9		
This place means a lot to me				3.1	
I enjoy recreating at this place more than any other place		6.4	3.6		
I am very attached to this place		5.6	4.7		
I get more satisfaction out of visiting this place than from visiting any other place		6.9	4.9		
Motivations to visit					
To be outdoors			5.0		
For relaxation			3.5		3.3
To get away from the regular routine					
For the challenge or sport		5.2	6.9	3.0	
For family recreation		9.7		3.3	
For physical exercise		4.7	6.5		
To be with my friends				2.9	
To experience natural surroundings					
To develop my skills			8.6		
Management preferences					
More wildlife viewing areas or opportunities				4.9	
More picnic areas					
More parking spaces					
Better signs directing me to recreation areas				5.3	
More interpretive rangers at recreation areas	5.1	7.2		4.2	

With regards to use stratum, visitors interviewed at medium use sites generally attached more importance to the motivation items. Visitors at the medium use sites especially emphasized challenge and physical effort. Visitors at the high use sites showed the lowest level of importance associated with physical exercise and developing their skills.

Washington visitors attached more importance to challenge and physical exercise, while visitors sampled at Oregon sites gave higher scores for the importance of family recreation. The seasonality variable also accounted for three significant differences among the nine motivation variables. Winter users attached the most importance to being with friends, while spring visitors rated family recreation as more important. Spring visitors attached less importance to challenge than visitors during the other three seasons.

Three of the five management preference items showed significant differences across the four seasons, while few differences were noted for the other independent variables. Better signs directing visitors to recreation areas and additional rangers were generally supported across all seasons, but were most important for winter visitors. Additional parking was a less popular management option, with the exception of respondents interviewed during the winter. Winter visitors also showed more support for additional interpretive rangers at recreation areas compared to visitors during the other three seasons. Interest in more interpretive rangers also varied by state and survey period. Visitors interviewed at Oregon sites and during the morning survey period expressed stronger support for more interpretive rangers at recreation areas.

Customer Satisfaction Version Results and Discussion

Regarding customer satisfaction, fourteen specific satisfaction attributes were examined through the use of a five-point Likert scale (Table 3). Performance and importance were measured for each of the items. A 10-point overall satisfaction scale was used to measure the respondents' overall trip quality. In addition, visitors were asked to report the degree of crowding that they perceived at the recreation site on a 10-point scale.

Significant differences were noted across four of the five independent variables. The season variable showed the greatest differences, with 11 of the 16 satisfaction indicators differing significantly across seasons. There was a large drop-off of significant differences in the other independent variables. Differences were noted across four satisfaction indicators for the state variable, three for the stratum variable, and only one significant difference was noted for the type of survey variable. No significant differences were noted for the survey period. Interestingly, few patterns could be identified across the independent or dependent variables. With the exception of the crowding indicator, which showed significant differences across three of the independent variables (stratum, state, and season), no more than two differences were noted across the independent variables.

Considering differences between the two states, visitors in Oregon gave higher satisfaction scores than Washington visitors for three specific attributes (scenery, signage, attractiveness of forest landscape). However, there was no difference between Oregon and Washington visitors in overall satisfaction, and Oregon visitors rated the sites as more crowded than their counterparts in Washington.

Table 3. Summary of Significant Differences in Satisfaction Variables by Five Independent Variables (F-values; non-significant values not shown)

Satisfaction Attributes	Survey Period	State	Stratum	Season	Site Type
Scenery		5.0			
Parking availability				6.0	
Parking lot condition				6.8	
Restroom cleanliness				7.1	8.8
Condition of natural environment			11.6	8.9	
Condition of developed facilities			7.1	10.8	
Condition of forest roads					
Condition of forest trails					
Availability of recreation information				6.2	
Feeling of safety				2.6	
Adequacy of signage		4.8			
Employee helpfulness				3.9	
Attractiveness of forest landscape		13.5		4.8	
Value for fee paid					
Overall satisfaction				6.8	
Crowding		17.6	12.8	2.7	

Visitors sampled at low use sites rated the condition of both the natural environment and developed facilities lower than those interviewed at medium and high use sites. Not surprisingly, perceived crowding was higher at high use sites than at medium or low use sites.

A closer examination of the season variable showed no clear pattern of satisfaction scores across seasons. Recreationists interviewed during the winter season reported especially low levels of satisfaction for parking availability, parking lot condition, restroom cleanliness and availability of information. They also showed the lowest levels of overall satisfaction. Fall interviewees showed the highest satisfaction scores for availability of parking, availability of information, and feeling of safety. The fall group, however, showed the lowest satisfaction scores for condition of the natural environment, condition of developed facilities, and staff helpfulness. Summer users reported the highest satisfaction scores for parking lot condition, restroom cleanliness, and overall satisfaction. Spring users showed the highest satisfaction scores for condition of the environment and the forest landscape, but showed the lowest ratings for feelings about safety and crowding.

Economic Expenditure Version Results and Discussion

A series of questions focused on how much money respondents spent on recreation-related items and services. Very few differences were noted across the five independent variables for the economic expenditure variables (Table 4). Of particular note is the lack of differences between the two states and the four seasons, while these two variables accounted for many of the differences within the satisfaction and experience variables.

The type of site at which the respondent was interviewed showed significant differences for purchases of fuel and other transportation costs. Visitors interviewed at general forest areas spent significantly more money on gasoline and oil, while those interviewed at developed use sites spent more money on other types of transportation. Both of these findings were expected, since dispersed users may drive further or may have been driving larger, less fuel-efficient vehicles. Developed site users may have been part of a bus tour, or even on a day trip away from a cruise ship on the Columbia River. The only other significant differences associated with recreation economic expenditures were noted for season. Respondents who were interviewed during spring or summer spent significantly less money on private lodging, while fall visitors were most likely to have spent money for other transportation costs.

Conclusions and Implications

The preceding results show numerous differences across the independent variables examined. The socio-demographic and trip characteristics show us that these users are indeed different people when examined by other than ethnic make-up. Significant differences were noted in respondents' ages and party size for three of the five independent variables. Most differences, however, were noted across the four seasons during which this survey was conducted in 2000.

Few differences were noted across the economic expenditure variables, and no distinct patterns were noted for these variables. Perhaps this is attributable to the relatively close distances between the sites (most sites are located within minutes of a highway) and the relatively small size of the CRGNSA in comparison to most other National Forests. It was interesting to note that no expenditure differences were noted across the two states of Oregon and Washington, given the differences found between these two states in other areas.

The satisfaction indicators showed great differences across the four seasons. Although no distinct patterns emerged, it was clear that those visitors interviewed during the summer season were most satisfied, followed by spring users. Winter respondents were least satisfied, followed closely by those respondents who were contacted during the fall season. Statewide comparisons showed that satisfaction ratings were always higher for the Oregon side of the Columbia River. This coincides with more high-use areas, which in turn may receive more attention from maintenance

Table 4. Summary of Significant Differences in Economic Variables by Five Independent Variables (F-values; non-significant values not shown)

Economic Version	Survey Period	State	Stratum	Season	Site Type
Government lodging					
Private lodging				3.1	
Restaurants/bars					
Other food/drinks					
Fuel/oil, etc.					3.2
Other transportation costs				5.5	3.0
Recreation activities					
Entry/parking fees					
Souvenirs					
Other expenses					
Total spent annually					

personnel. It was interesting to note that Oregon users rated crowding as worse than Washington respondents. This may be a function of the type of activities that are offered in each state. Oregon offers more social-oriented opportunities (a scenic highway, waterfalls near the roadway, developed picnic areas, etc.), while Washington users tend to participate in activities that involve a degree of solitude, such as hiking, biking, flower viewing, etc.

The category that showed the most significant differences was the visitor experience variables. Oregon and Washington visitors are clearly different in their feelings of place attachment toward the CRGNSA. Washington respondents, while attached to the place where they do their outdoor recreation activity, are more focused on the activity itself. Conversely, Oregon respondents seem more likely to feel that the special designation of the Columbia River Gorge as a National Scenic Area is important to them. It is clear that the different strata attract people for different reasons. Visitors to the high use areas do tend to care that it is "the Gorge," and not just another place to participate in their chosen outdoor recreation activity. Respondents who were interviewed in the winter season placed the most agreement on one place attachment item, indicating that the place they visited means a lot to them.

Motivations to visit the recreation areas varied greatly across the stratum variable, once again demonstrating the different types of recreationists who visit the vast array of outdoor recreation sites that the CRGNSA has to offer. The recreation sites within the medium use category showed considerably higher degrees of importance for most of the motivation variables. An interesting finding is that few differences were noted across the types of survey sites (general forest versus developed sites). Seasonal differences were noted for motivations to visit as well, with winter respondents placing the highest levels of importance on being with friends. Spring users expressed the lowest importance for challenge and the highest importance for family recreation. A similar trend was noted across the two states, with Oregon visitors placing greater importance on social reasons, and Washington respondents more oriented toward physical activities.

Few differences were noted across the management preferences outlined in the instrument, and most of those were noted across the four seasons. Respondents who were interviewed in the winter season showed greater support for additional rangers at the recreation sites and for additional parking areas. Winter respondents also indicated no opposition to adding more directional signs to the recreation sites, while recreationists surveyed during the other seasons showed some opposition to additional signs.

This paper demonstrates the need to understand visitors' motivations, needs, satisfaction levels, and use patterns across several variables. The socio-demographic make-up of CRG visitors is diverse in many ways; however these variables accounted for relatively few differences among the satisfaction and economic expenditure variables. The differences observed were particularly strong for variables related to the experience of the recreationists. Recreation managers may wish to focus on the experience variables outlined in this paper in order to better meet visitors' needs in an increasingly diverse outdoor recreation setting. Future analysis of these data will focus specifically on the influence of the recreation site and the activity pursued on satisfaction, economic expenditures and the recreation experience.

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VISITOR SATISFACTIONS: BACKCOUNTRY AND WILDERNESS USERS IN THE WHITE MOUNTAIN NATIONAL FOREST

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Abstract: The opportunities and conditions sought by visitors in national forest backcountry and wilderness areas can affect the satisfaction they have with the experience. This study measured the recreation satisfaction ratings of hikers and backpackers during their trips to backcountry and wilderness areas in the White Mountain National Forest. Field interviews were conducted with 385 visitors to seven backcountry and wilderness areas during July 1, through September 4, 2000. An importance/satisfaction analysis compared satisfaction ratings with the important opportunities and conditions that were sought by visitors. Information about recreation resource management problems encountered by visitors was analyzed to provide comparisons with visitor satisfaction ratings. The study results indicate that: (1) hikers and backpackers rate similar opportunities and conditions as important across primitive and semi-primitive non-motorized Recreation Opportunity Spectrum areas; (2) hikers and backpackers achieve similar types and amounts of satisfaction across primitive and semi-primitive non-motorized Recreation Opportunity Spectrum areas; and (3) some differences in hiker and backpacker ratings of importance and satisfaction, plus problems perceived by users suggest the need for some additional indirect visitor management (e.g., information for visitors).

Introduction

Increasing recreational use in some backcountry and wilderness areas are a concern for managers, since crowding and more user-user encounters can negatively influence recreation visitor experiences and satisfactions. Furthermore, as a result of increased visitor use, some environmental and social conditions in backcountry and wilderness areas may be below the standards necessary to maintain Recreation Opportunity Spectrum (ROS) criteria for primitive and semi-primitive non-motorized classification.

The ROS was designed as a regional, recreation planning tool to help planners and managers to conduct inventories, design target management standards, decide among alternative management actions, and provide a larger framework and context for multiple use recreation resource planning (Brown et al., 1978; Driver & Brown, 1978; Clark & Stankey, 1979a; Driver et al., 1987). These developments in the ROS concept lead to the adoption of the ROS by the USFS and subsequent publication of the planning concept in U.S. Forest Service planning and management documents, such as the "ROS Users Guide." The use of the ROS planning approach can help planners and managers to design management standards, decide among alternative management actions, and provide a larger planning framework and context for developing a continuum of backcountry and wilderness-related outdoor recreation opportunities. However, some would argue that use of the ROS has been superficial due to lack of understanding about its interaction with management actions and visitor experiences.

While the ROS has gained some use as a recreation planning and management tool among federal land managing agencies, visitor information related to ROS classifications is very limited. For example, the impacts of recreation activities and the acceptability of those impacts within the ROS classified areas have been studied (Clark & Stankey, 1979b) as well as the interactions of the ROS setting attributes and recreational activities in relation to user experiences (Virden & Knopf, 1989). A few other studies have investigated how campers' experiences affected their preferences for different ROS classes (Yuan & McEwen, 1989) and visitor preferences for ROS setting components (Heywood, 1991). Wallace and Smith (1997) conducted a study that measured the motivations, setting preferences, and preferred management actions of visitors to protected areas in Costa Rica; the study included "primitive", "semi-primitive motorized", and "roaded natural" areas and offers some insight into measuring related to the present study.

The objectives of this study are to measure: (1) the opportunities and conditions sought by hikers and backpackers in national forest backcountry and wilderness areas; (2) the satisfaction ratings of hikers and backpackers during their trips to backcountry and wilderness areas; and (3) the recreation resource management problems as perceived by hikers and backpackers during their trips to backcountry and wilderness areas.

Research Methods

The study design relied upon brief, on-site interviews of hikers and backpackers during their trips in seven wilderness and non-motorized, backcountry areas of the White Mountain National Forest (WMNF) in New Hampshire and Maine. This data collection technique ensured that visitor responses to survey questions reflected their actual on-site recreation experience. A survey

instrument was designed to gather most of the data in this study during a 15-minute interview in the field by a trained interviewer.

The interview sites and sampling schedule for the summer months were stratified based on the level of recreational use within each of the seven backcountry and wilderness areas of the WMNF. Some of the most important criteria used in selecting the study areas were: (1) estimated summer recreation use levels; (2) location of hiking trails and trailheads for day use or overnight use; (3) existing ROS classes and WMNF management units; and (4) whether recreation conflicts or overuse were reported and where management actions may be most needed to mitigate or prevent such problems. Seven study areas were selected (see figure 1) and categorized based on ROS classifications for the area: (1) *Primitive* areas included the Pemigewasset Wilderness and Wild River Backcountry; (2) the mixed *Primitive* and *Semi-primitive non-motorized* areas included the Presidential Range-Dry River Wilderness, Kilkenny Backcountry, and Sandwich Range Wilderness; and (3) *Semi-primitive non-motorized* areas included the Great Gulf Wilderness and Caribou Speckled Mountain Wilderness.

A total of 51 interview sites was selected in the seven areas (see Figure 1) with the number in each area ranging from six to 12 depending on the size of the area, number of public access points, and estimated visitor use. Each site was visited systematically three times during the 10-week sampling time from July 1 to September 4, 2000. However, some interview sites were dropped from the study after the first sampling session because a variety of factors that seriously limited the amount of use at that site (e.g., road access or parking lot limitations) during those weeks of sampling. Subsequently the remaining sites were sampled up to four times each.

Each day interview sessions were held for three hours at three different sampling locations: (1) a morning session starting at about 9 a.m. and ending about 12 noon, (2) an afternoon session starting about 1-2 p.m and ending about 4-5 p.m., and (3) an evening session starting about 5-6 p.m. and ending about 8-9 p.m. The variability in starting and ending times related directly to the driving time necessary to move from one sampling location to the next between the three-hour interview blocks of time. Complete records were kept on the three-hour interview process to know the location, date, number of interviews, refusals to cooperate in the study, the number of visitors seen, and other factors during the three-hour period.

The on-site interview survey determined: (1) size and type of visitor group; (2) day or overnight type user; (3) recreation activities participated in by visitors while in that area during that trip; (4) visitor's perception of the importance of and satisfaction with 12 wilderness and back country recreation experience and setting attributes; (5) visitor preferences for 16 potential management actions that could be used in the WMNF to reduce recreation user impacts and/or conflicts; and (6) previous recreation experience in the WMNF by the visitor.

The survey instrument was based on previous research on the satisfactions of wilderness visitors (Dawson et al., 1998; Newman & Dawson, 1999; Dawson & Watson, 2001). The visitor's perception of the importance of and satisfaction with wilderness and back country recreation *opportunities* were measured with eight items:

1. Natural Environment -- enjoy the view from a mountain top; experience the scenic quality of nature; observe and hear wildlife; the tranquility & peacefulness of a remote area.
2. Physical Activity -- physical exercise and health; physical challenge.
3. Personal and Social Experiences -- get away from daily routines; develop a sense of self confidence; chance to think and solve problems; simplify daily needs.
4. Exploration and Remoteness -- an area free of man-made noises; remoteness from cities & people; an adventure & sense of discovery; feel like I was one of the first to experience this area.
5. Solitude -- a small, intimate group experience; isolated from other groups; privacy.
6. Connections with Nature -- get in touch with my true self; opportunity for self-discovery; develop a sense of oneness with nature.
7. Connection with Other Wilderness Users and Inspiration -- feel connected to a natural place that is important to me; celebrate wilderness as a symbol of naturalness; feel a sense of an earlier and rugged time in history.
8. Wilderness Skills -- improve wilderness travel skills; learn to travel to a remote destination and return successfully; a sense of self-sufficiency; recreation in a primitive environment.

The visitor's perception of the importance of and satisfaction with wilderness and back country recreation *conditions* were measured with four items:

1. No Litter and Waste -- amount of litter along the trails and at campsites; campfire rings.
2. Management Conditions -- condition of the trail system; publicized rules and regulations; the number of visible places where others have hiked and camped.
3. Information on Backcountry and Wilderness Area -- finding safe drinking water; information on where other users are likely to be; find an unoccupied campsite.
4. Numbers of users -- number of hikers you saw on trails; number of large groups you saw on trails; number of groups that camped near you.

Results

The 335 hours of interviewing resulted in 385 completed interviews (Table 1) with hikers and backpackers, and only 18 visitors refused to participate for a variety of reasons (e.g., too tired, rainy weather). Of the total, 228 interviews (59%) were held in the Primitive areas, 95 interviews (25%) were held in the mixed Primitive and Semi-primitive non-motorized areas, and 62 interviews (16%) were held in the Semi-primitive non-motorized areas (Table 1).

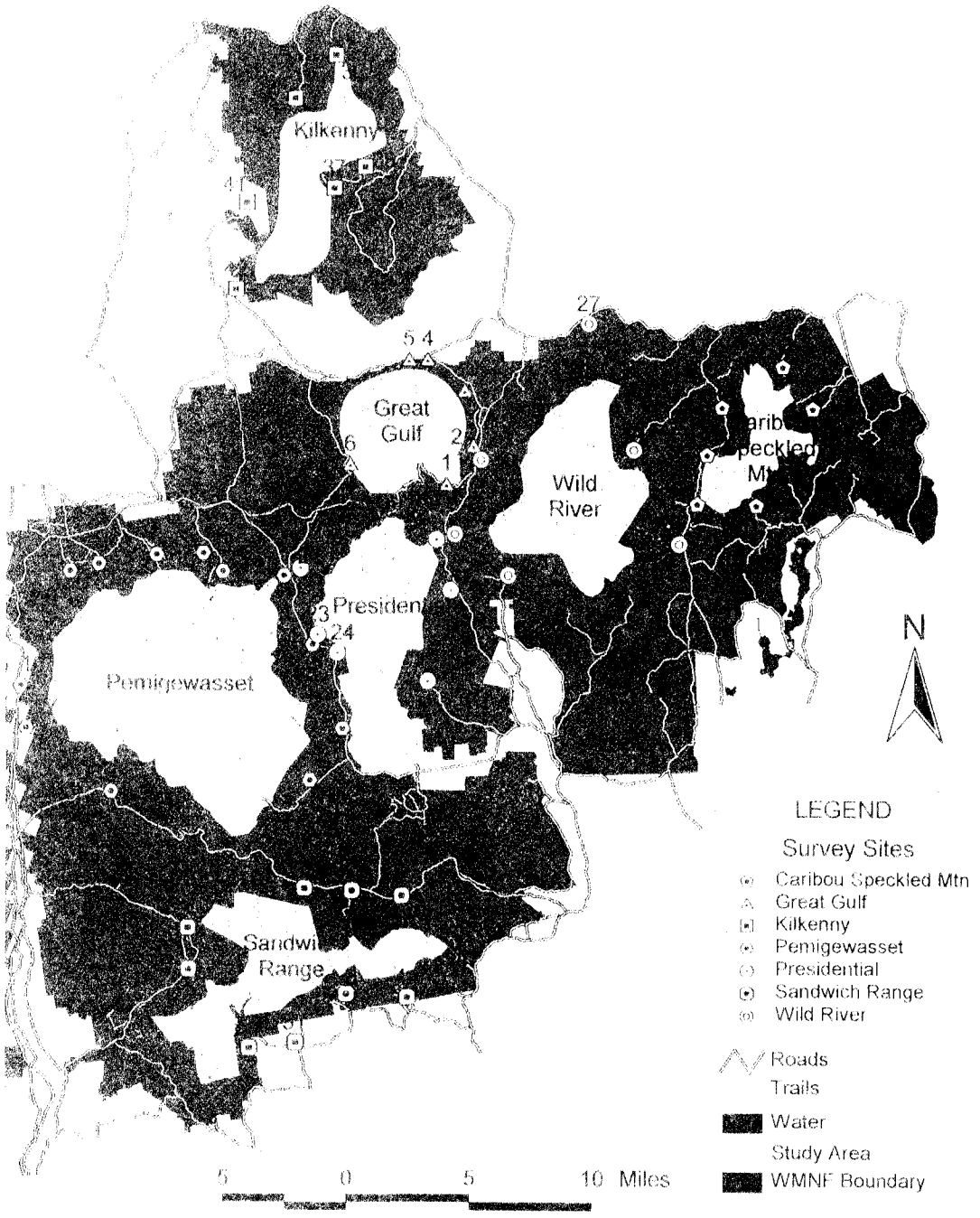


Figure 1. Location of Study Areas and Interview Sites in the White Mountain National Forest in the Summer of 2000

Table 1. White Mountain National Forest Backcountry and Wilderness Recreation Study Areas and Interviews in the Summer of 2000

ROS Category for Backcountry and Wilderness Areas	Number of Sampling Sites	Interview Hours	Number of Interviews	Number of Interview Refusals
Primitive areas				
Pemigewasset Wilderness	12	90	171	6
Wild River Backcountry	6	51.3	57	2
subtotal	18	141.3	228	8
Primitive and Semi-Primitive non-motorized areas				
Presidential Range-Dry River Wilderness	6	45.1	60	0
Kilkenny Backcountry	6	19.6	3	0
Sandwich Range Wilderness	9	49.3	32	3
subtotal	15	112	95	3
Semi-Primitive non-motorized areas				
Great Gulf Wilderness	6	46.7	42	7
Caribou Speckled Mt. Wilderness	6	33.6	20	0
subtotal	12	80.3	62	7
TOTAL	51	335.6	385	18

The backcountry and wilderness visitors were day hikers in 62% of the cases and overnight backpackers in 38% of the cases (Table 2); somewhat greater percent were day hikers in the semi-primitive non-motorized areas and overnight backpackers in the primitive areas. The average overnight stay was 2.1 nights for those who stayed out on a backpack trip. Groups were most often made up of friends (41%) and family (43%) and averaged 3.2 adults and 0.7 children per group (table 2). Only 14% of those interviewed were on their first trip to the WMNF; one-third had made 1-5 previous trips and 23% had made 21 or more trips to the WMNF (table 2). Day hikers were more somewhat experienced on average than backpackers (Chi-square=22.8, 4 df, p=0.001) with 56% of day hikers taking 6 or more previous trips compared to 41% of backpackers.

Backcountry and wilderness hikers and backpackers reported engaging in many other recreational activities while on their trip to the WMNF (Table 3). The top recreational activity was viewing scenery, an activity reported by 78% of those interviewed. Other common activities in the WMNF were: photography, backpack camping, Appalachian Trail hiking, and picnicking.

Table 2. Characteristics of Backcountry and Wilderness Recreation Users Interviewed in the Summer of 2000 on the White Mountain National Forest

	ROS Categories			
	Primitive	Primitive and Semi-primitive	Semi-primitive non-motorized	Total
Type of User	**Percent**			
Day user	55	68	76	62
Overnight user	45	32	24	38
	Average Nights			
Overnight length of stay	2.1	2.0	2.1	2.1
Group Type	**Percent**			
Friends	44	31	42	41
Family	41	51	39	43
Organization	13	11	10	12
Group Size	**Average Number**			
Adults	3.2	3.4	2.7	3.2
Children	0.9	0.3	0.5	0.7
Previous Experience in WMNF	**Percent**			
None	16	12	13	14
1-5 trips	33	42	32	35
6-10 trips	17	14	8	15
11-20 trips	12	10	15	12
21 or more trips	22	23	32	23

Table 3. Percent of Backcountry and Wilderness Users Interviewed by Reported Recreation Activity in the Summer of 2000 on the WMNF

	ROS Categories			
Typical Recreation Activities	**Primitive**	**Primitive and Semi-primitive**	**Semi-primitive non-motorized**	**Total**
Viewing scenery	80	79	66	78
Photography	50	41	31	45
Backpack camping	32	33	32	32
Appalachian Trial hiking	30	20	13	25
Picnicking	22	24	15	21
Swimming	17	21	23	19
Camping in a campground	18	19	11	17
Nature study	13	6	13	11
Fishing	1	4	2	2
Boating/canoeing	0	4	5	2
Other activity	7	8	8	8

The hikers and backpackers interviewed rated the eight wilderness and backcountry opportunities and four conditions according to how *important* an influence they were on the quality of their trip. The response categories for trip importance were: 0 = not important, 1 = slightly, 2 = somewhat, 3 = moderately, 4 = very, and 5 = extremely important. Three opportunities were highly important on trips: natural environment, physical activity, and personal and social experiences (Table 4). One condition was highly rated: lack of litter and waste. Overall, the average ratings for all 12 opportunities and conditions were above the moderate importance category. While five of the 12 opportunities and conditions ratings for importance had a statistically significant difference (ANOVA statistical test with $p=0.05$) between the three ROS categories, the actual difference between means was too small (e.g., 0.3) as to lack significance for differentiating management by the three ROS categories (i.e., these differences in mean scores do not necessarily warrant differences in management approaches).

When considered separately, overnight backpackers were statistically more likely than day hikers to report somewhat higher importance for exploration and remoteness, wilderness skills, natural environment, and information on the wilderness area (T-test statistic, $p<0.05$). The only significant difference in importance between visitors with higher levels of experience (more than 6 previous trips) and less experience was those with more experience more often reported that physical activity was important.

Table 4. The Importance Ratings of Backcountry and Wilderness Recreation Users Interviewed in the Summer of 2000 on the WMNF

	Importance Ratings [b] by ROS Categories			
Wilderness and backcountry opportunities and conditions	**Primitive**	**Primitive and Semi-primitive**	**Semi-primitive non-motorized**	**Total**
Opportunities				
Natural environment	4.6	4.3	4.5	4.5 [a]
Physical activity	4.2	4.1	4.5	4.2 [a]
Personal and social experiences	4.1	4.0	4.2	4.1
Exploration and remoteness	4.0	3.7	3.9	3.9
Solitude	3.7	3.4	4.0	3.7 [a]
Connections with nature	3.7	3.7	3.7	3.7
Connection with other wilderness users & inspiration	3.3	3.2	3.3	3.3
Wilderness skills	3.3	3.2	3.5	3.3
Conditions				
No litter and waste	4.3	4.5	4.6	4.4 [a]
Management conditions	3.6	3.5	3.7	3.6
Information on backcountry & wilderness areas	3.2	3.2	3.1	3.2
Numbers of users	3.3	2.9	3.2	3.2 [a]

[a] Statistically significant difference between ROS categories using ANOVA test with $p<0.05$.
[b] Importance rating: 0 = not important, 1 = slightly, 2 = somewhat, 3 = moderately, 4 = very 5 = extremely important.

The hikers and backpackers interviewed rated the eight wilderness and backcountry opportunities and four conditions according to how *dissatisfied or satisfied* they were with these on their trip. The response categories for trip dissatisfaction or satisfaction were: -2 = very dissatisfied, -1 = dissatisfied, 0 = neutral, 1 = satisfied, and 2 = very satisfied. Respondents indicated that they were very satisfied with three opportunities: physical activity, natural environment, and personal and social experiences (Table 5). One condition was rated as very satisfying: lack of litter and waste. Overall, the average ratings for 10 opportunities and conditions were above the satisfied category, only information on the wilderness and backcountry areas was rated less than an average score of satisfied (1.0). Only three items had 5% or more of those interviewed reporting either being dissatisfied or very dissatisfied: solitude (5%), exploration and remoteness (6%), and number of other users (7%). While five of the 12 opportunities and conditions ratings for satisfaction had a statistically significant difference (ANOVA statistical test with $p<0.05$) between the three ROS categories, the actual difference between means was so small (e.g., 0.2) as to lack significance for differentiating management by the three ROS categories (i.e., these differences in mean scores do not necessarily warrant differences in management approaches).

Comparisons of respondent satisfaction ratings by whether they were interviewed at a high, moderate, or low use trailhead (level of use estimated by WMNF staff) revealed only a few statistically significant differences (ANOVA statistical test with $p<0.05$). Respondents at low use trailheads more highly rated their satisfaction with solitude, available trail information, and opportunities to use wilderness skills than did those at moderate or high use trails. Respondents at low and moderate use trailheads more highly rated their satisfaction with number of other users than did those at high use trails.

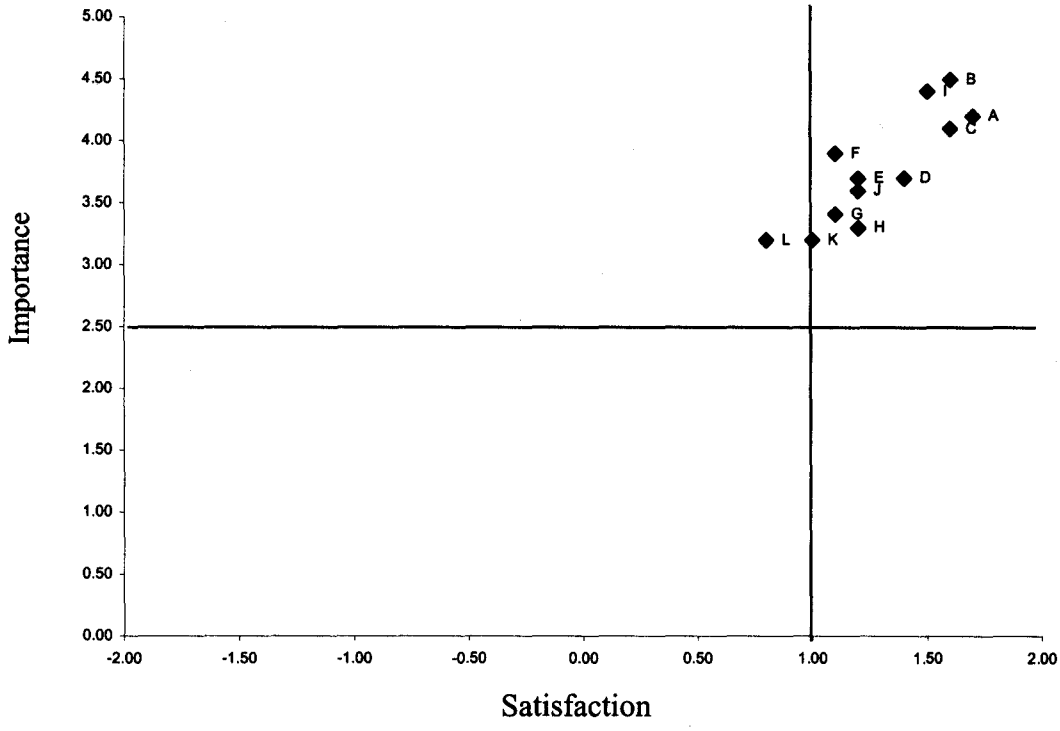
When considered separately, overnight backpackers were statistically more likely than day hikers to report somewhat higher satisfaction with information on the wilderness area (T-test statistic, $p<0.05$). No significant differences in satisfaction were found between visitors with higher levels of experience (more than 6 previous trips) than those with less experience.

The average importance and satisfaction scores were graphically displayed (Figure 2) to summarize the overall respondent differences and suggest the items that need management attention (these plots are similar to the importance-performance plots used in management evaluations). All 12 items were labeled as well above moderate importance and only two items were at or below the 1.0 average satisfaction level: number of users and information on wilderness and backcountry areas. Therefore, the ratings on the other ten items suggest that management is *generally* doing well from the perspective of the hikers and backpackers. However, some trailheads had lower satisfaction ratings, suggesting issues like crowding and litter needed management attention.

Table 5. The Satisfaction Ratings of Backcountry and Wilderness Recreation Users Interviewed in the Summer of 2000 on the WMNF

	Satisfaction Ratings [b] by ROS Categories			
Wilderness and backcountry opportunities and conditions	**Primitive**	**Primitive and Semi-primitive**	**Semi-primitive non-motorized**	**Total**
Opportunities				
Physical activity	1.6	1.7	1.9	1.7 [a]
Natural environment	1.6	1.6	1.7	1.6
Personal and social experiences	1.5	1.7	1.7	1.6 [a]
Connections with nature	1.4	1.4	1.4	1.4
Solitude	1.1	1.3	1.6	1.2 [a]
Exploration and remoteness	1.1	1.0	1.4	1.1 [a]
Connection with other wilderness users & inspiration	1.1	1.2	1.2	1.1
Wilderness skills	1.2	1.2	1.4	1.2
Conditions				
No litter and waste	1.5	1.5	1.6	1.5
Management conditions	1.2	1.2	1.2	1.2
Numbers of users	0.9	1.0	1.2	1.0 [a]
Information on backcountry & wilderness area	0.9	0.9	0.7	0.8

[a] Statistically significant difference between ROS categories using ANOVA test with $p<0.05$.
[b] Satisfaction rating: -2 = very dissatisfied, -1 = dissatisfied, 0 = neutral, 1 = satisfied, 2 = very satisfied.



Opportunities	Conditions
A. Physical activity	I. No litter and waste
B. Natural environment	J. Management conditions
C. Personal and social experiences	K. Information
D. Connections with nature	L. Numbers of users
E. Solitude	
F. Exploration and remoteness	
G. Connection/inspiration	
H. Wilderness skills	

Figure 2. Importance-Satisfaction Analysis for the White Mountain National Forest Survey of Backcountry and Wilderness Recreation Users in 2000

The hikers and backpackers interviewed were asked to indicate how much they perceived 16 conditions were problems for them during their wilderness or backcountry trip in the WMNF. The response categories for perceived problems were: 0 = not a problem, 1 = slight problem, 2 = somewhat of a problem, 3 = moderate problem, 4 = very much a problem, and 5 = extreme problem. All 16 items averaged less than the 1.0 slight problem category (Table 6). The top four listed problem items by those interviewed were related to the two lowest rated satisfaction items: number of users and information on wilderness and backcountry areas. While six of the 16 perceived problem ratings had a statistically significant difference (ANOVA statistical test with $p<0.05$) between the three ROS categories, the actual difference between means was so small (e.g., 0.2) as to lack significance for differentiating management by the three ROS categories (i.e., these differences in mean scores do not necessarily warrant differences in management approaches). The perceived problem items did not appear to be important; they were rated either "very much a problem" or an "extreme problem" by less than 5% of the respondents. The highest percentage in these two combined response categories were: too many people on the trails (4%), too many people at campsites and shelters (4%), and too many large groups of users (3%). Overall, the low problem ratings indicate support for the relatively high satisfaction ratings reported by those interviewed. While these low problem scores suggest that overall users perceive problems as slight, there are some trailheads were higher levels of concern were indicated for some problems (e.g., too many people on trails, too many large groups).

Table 6. The Perceived Problem Ratings of Wilderness and Backcountry Opportunities and Conditions by Backcountry and Wilderness Recreation Users Interviewed in the Summer of 2000 on the White Mountain National Forest

	Problem Ratings [b] by ROS Categories			
Possible problems.	**Primitive**	**Primitive and Semi-primitive**	**Semi-primitive non-motorized**	**Total**
Too many people on the trails	0.9	0.4	0.4	0.7 [a]
Trails poorly marked	0.5	0.6	0.5	0.5
Too many people at campsites and shelters	0.6	0.4	0.3	0.5
Too many large groups of users	0.6	0.2	0.3	0.5 [a]
Litter along trails or at campsites	0.3	0.5	0.2	0.4 [a]
Not enough information on amount of use	0.3	0.3	0.2	0.3
Not enough information on campsites	0.2	0.6	0.4	0.3 [a]
Too many heavily impacted campsites	0.4	0.3	0.2	0.3
Rowdy or loud people	0.5	0.2	>0.1	0.3 [a]
Too much evidence of human waste	0.3	0.2	0.1	0.3
Dogs not under control or on a leash	0.4	0.1	>0.1	0.3 [a]
Too many restrictions and regulations	0.3	0.4	0.2	0.3
Not enough information to plan a trip	0.2	0.2	0.1	0.2
Too many fire rings from campfires	0.2	0.3	0.2	0.2
Too many cell phones and other electronic equipment used by other visitors	0.3	0.3	0.1	0.2
Too much Forest Service presence	>0.1	>0.1	0.0	>0.1

[a] Statistically significant difference between ROS categories using ANOVA test with p=0.05.

[b] Problem rating: 0 = not a problem, 1 = slight problem, 2 = somewhat of a problem, 3 = moderate problem, 4 = very much a problem, 5 = extreme problem.

Comparisons of respondent problem ratings by whether they were interviewed at a high, moderate, or low use trailhead (level of use estimated by WMNF staff) revealed only two statistically significant differences (ANOVA statistical test with $p<0.05$). Respondents at high use trailheads more highly rated too many people on trails as a problem than did those at moderate or low use trails. Respondents at low use trailheads more highly rated dogs not on a leash as a problem than did those at moderate and high use trails.

When considered separately, overnight backpackers were statistically more likely than day hikers to report somewhat higher ratings of problems with not enough information on campsites, trails poorly marked, too many firerings from campfires, too many people at campsites and shelters, and too many restrictions and regulations (T-test statistic, $p<0.05$). No significant differences in reported problems were found between visitors with higher levels of experience (more than 6 previous trips) and those with less experience.

Implications and Discussion

The study results indicate that hikers and backpackers rate similar opportunities and conditions as relatively highly important across primitive and semi-primitive non-motorized Recreation Opportunity Spectrum areas of the WMNF. The relatively homogeneous importance ratings across these ROS areas, suggest that the respondents did not measurably differentiate their use of these areas based on the important conditions they seek in backcountry and wilderness areas and on their past experiences in the WMNF. Simply put, these areas may appear generally very similar to the visitors. Similarly, hikers and backpackers achieve nearly the same types and amounts of satisfaction across primitive and semi-primitive non-motorized Recreation Opportunity Spectrum areas in the WMNF. This study was designed to characterize user responses across the WMNF and the ROS classes, but not to evaluate management of the areas.

Some of the results in hiker and backpacker ratings of importance and satisfaction, plus user perceived problems, suggest additional indirect visitor management actions (e.g., information to visitors about trail conditions and solitude) should be considered. Information before and during their trips appears to be a central visitor concern. Similarly, better management of crowding or high levels of user-user encounters in some areas and at some trailheads could facilitate visitor satisfactions; however, beyond suggesting that some locations are reportedly crowded, the number of interviews at any one site is not adequate to evaluate each site were interviews were conducted. At this time, direct management (e.g., limit visitor use) does not appear to be generally necessary across the seven WMNF areas studied based on this user self-reported information. However, this information must be evaluated in combination with other recreation management information that is being measured and monitored on the WMNF (e.g., user counts on trails, environmental impacts from recreational use) and in the context of the ROS standards and goals for the social, environmental, and management conditions established for these areas.

Elsewhere in this proceedings, Johnson and Dawson (2002) express concerns about the relatively high satisfaction ratings by hikers and backpackers and how to monitor these psychological and social indicators in the future. High hiker and backpacker satisfaction levels may be possible even while social and environmental conditions are degrading because visitors may use various physical and cognitive coping behaviors (e.g., physical displacement, temporal displacement, product shift, and rationalization) to maintain high satisfaction levels. Therefore, the information presented here should be used in planning and management decision-making only with other monitored information on the social, environmental, and management conditions in the WMNF.

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PARTICIPANTS' PERCEPTIONS OF THE 1997-1998 MISSOURI STATE PARKS PASSPORT PROGRAM

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Abstract: Service quality is increasingly important to park mangers. Recreation and park evaluation measures the implementation and outcome of programs for decision-making. Decisions based on evaluations are often concerned with improving the quality of the program for participants. The purpose of the study was to evaluate the Missouri State Parks Passport Program (MSPPP) by measuring the program's success in achieving the objectives and by ascertaining participants' perceptions Based on the results, the researcher concluded that MSPPP partially achieved the objectives of the MSPPP. Most of the participants felt satisfied with the prizes of the program.

Missouri State Parks Passport Program (MSPPP)

Missouri state parks and historic sites are considered the masterpieces of the state by Missouri Department of Natural Resources Division of State Parks (MDNR DSP). To help people realize and appreciate the value of Missouri state parks and historic sites, the employees of MDNR DSP lead many activities, such as nature walks and nature education programs. The Missouri State Parks Passport Program (MSPPP) is one of these programs (Missouri Masterpieces, 1997). MDNR DSP designed the MSPPP to attract new visitors to the state parks system, promote off-peak visitation, and encourage repeat visitors to explore less known state parks and historic sites (MDNR DSP, 1995). The program includes 78 sites, 76 state parks and historic sites in Missouri and the National Frontier Trails Center in Independence and the Bruce R. Watkins Cultural Heritage Center in Kansas City which are owned by the MDNR and leased to those cities. MDNR DSP promotes the MSPPP by sending direct mail to people who completed the Camper Award Program, using statewide news releases, and distributing booklets at sport and trade shows.

Participants must visit all sites in the MSPPP and have their passport booklet stamped to verify that they completed the program. Each participant who completes this incentive program receives prizes (six theme patches, a passport banner, a $25 gift certificate, a passport T-shirt, and five free camping coupons) from MDNR DSP (MDNR DSP, 1997a).

The Need for Recreation Program Evaluation

From September 5, 1995 to December 31, 1996, 461 participants completed the 1995-1996 MSPPP (MDNR DSP, 1997b). From April 1, 1997 to April 30, 1998, 108 participants completed the 1997-1998 MSPPP (MDNR DSP, 1998). However, no evaluation exists for the program. The purpose of the study was to evaluate the MSPPP by measuring the program's success in achieving its objectives (to attract new visitors to the state parks system, promote off-peak visitation, and encourage repeat visitors to explore less known state parks and historic sites), by ascertaining participants' perceptions of the MSPPP and how participants learned about the MSPPP.

Evaluation is the key to make program planning successful (Farrell & Lundegren, 1991). The goal of evaluation is to determine the value of something so that good decisions can be made (Henderson, 1995). Researchers determined classifications of evaluation in leisure services organizations. Edginton and Hanson (1992) suggested that there are customer orientation, program orientation and organizational orientation to evaluate the recreation programs. Farrell and Lundegren (1991) indicated four classifications of evaluating programs that were administration, leadership or personnel, program and areas and facilities. Henderson (1995) described five classifications (5Ps) in evaluation: program, personnel, participant, place, and policy/administration. This study concentrated on program and participants evaluation.

Many possibilities exist for developing program evaluations (Henderson, 1995). Bennett (1982) suggested seven program evaluation levels: input (time, cost, staff), activities (type, delivery of program), people involvement (number of people, characteristics of people), reactions (satisfaction, like or dislike for activities), KASA (knowledge, attitudes, skill and aspirations) objectives and changes, practice change (application of knowledge, skill), and long-term impact on quality of life (social, economic). Henderson (1995) mentioned that trying to access everything usually results in poor conceptualizations. One of the challenges of program evaluation is to make sure that a researcher does not evaluate too many criteria at once. The seven levels identified provide a framework for making decisions about what aspects of a program may be most important to evaluate (Henderson, 1995). In the MSPPP evaluation, the researcher focused on people involvement to ascertain the participants' demographics. Additionally, the researcher focused on reactions of satisfactions to determine the participants' perception of the satisfactions.

In Rossman's (1989) survey, four models for conducting recreation program evaluation were determined. The researcher used Satisfaction-Based Evaluation to conducting in this study. Data about participants' satisfaction with program services can be used to determine the worth of program services. Participant-reported satisfaction with leisure participation is an well-accepted measure of leisure outcome (Beard & Ragheb, 1980).

Many possibilities exist for developing program evaluations (Henderson, 1995). Bennett (1982) suggested seven program evaluation levels: input, activities, people's involvement, reactions, KASA objectives and change, practice change and long-term impact on quality of life. In the MSPPP evaluation, the researcher focused on people involvement and reactions.

Effective program planning needs program promotion. Programs will succeed only if visitors are aware of what the organization is offering (Compton et al., 1980). Compton et al. (1980) mentioned there were many promotion techniques that could be used, such as newspapers, brochures, televisions and radios. Televisions and radios were increasingly important because of high accessibility. Brochures were one of the most broadly used and effective methods. In Tew et al.'s (1999) study, the recreation agencies heavily relied on printed promotional material, such as seasonal program brochures, posters, and newspapers. In addition, understanding participants' reasons for participation helps leisure service managers understand participants' needs. Moreover, successful programs not only consider participants' needs but also provide satisfying opportunities (Farrell & Lundegren, 1991). Beard and Ragheb (1980) identified variables influencing leisure satisfaction: gender, knowledge of leisure, leisure value, leisure attitude, income and age. There was a strong relationship between participants' perceptions and satisfaction. Ragheb (1980) indicated that satisfaction gained from leisure activities greatly increased participation in activities.

Demographic variables are helpful to profile visitors and affect leisure activity choice and participation (Bammel & Burrus-Bammel, 1996). In Busser et al.'s (1996) study, males were more active than females and participated in more outdoor activities.

Methodology

The researcher collected data by a mailing survey and following by two fellow-up letters. The survey contained four parts and four pages. The first part of the questionnaire included eight questions to determine how participants learned about the MSPPP, to measure the MSPPP's success in achieving the MSPPP objectives and to ascertain participants' perceptions of the MSPPP. The participants rated the reasons from 4 (very important) to 1 (not at all important). The participants' satisfaction with the program's prizes, services and overall satisfaction with the program were 5-point scale ranging from 5 (very satisfied) to 1 (very dissatisfied). The researcher used 3-point scale for the ease of completing the program ranging from 1 (too short) to 3 (too long).

The second part of the questionnaire included participants' demographic profile. The questions included participant's sex, age, educational level, marital status, employment status, race/ethnicity and annual household income. The third part of the questionnaire was open-ended for participants' comments about the MSPPP. Participants wrote their opinions and suggestions for the MSPPP. The fourth part of the questionnaire was to determine participants who were new visitors or repeat visitors to the state parks and historic sites.

The subjects were participants who completed the MSPPP between April 1, 1997 and April 30, 1998, and who were 18 years and older. The total valid population of the study was 98. The total number of valid questionnaires for data analysis was 90. The response rate was 91.84 %.

Results

The first part of the questionnaire includes the question of the respondents' sources of learning about the program. In Table 1, only one respondent (1.1%) learned about the program from radio and 2 respondents (2.2%) learned from news releases. The majority of the respondents (52.8%) learned about the program from other sources. In these sources, 16 respondents (34%) learned about the MSPPP from the information in state parks followed by the Missouri Resources magazine and friends.

According to the results, MDNR DSP partially achieved the objectives of the MSPPP. First, the MSPPP did not attract many new visitors to the State Parks, State Historic Sites and the other facilities. All of the participants were repeat visitors to the State Parks (Table 2). Secondly, MDNR DSP promotes off-peak visitation to the state parks.

Table 1. Frequency and Percent of Respondents' Sources of Learning about the Program

Sources of Learning about the Program	Frequency	Percent
Direct mail	11	12.4
Exhibit at a sport and trade show	11	12.4
Family	6	6.7
Flyer	8	9.0
Friends	16	18.0
Missouri Resources magazine	19	21.3
Newspaper news release	2	2.2
Poster	6	6.7
Radio	1	1.1
Other	47	52.8

In Table 3, the participants visited the sites mostly on weekends (94.4%) and weekdays (88.9%). The months with most visits were from April through August (Table 4). Third, MSPPP encouraged repeat visitors to explore less known State Parks and Historic Sites (Table 2). The participants did not visit some of the less known State Parks and Historic Sites before participating in the program. The 1997-1998 MSPPP provided opportunities for participants to visit 78 sites. The MSPPP not only encouraged the participants to revisit sites they had already visited but also encouraged them to visit new sites.

Table 2. Frequency of Respondents' Visitation

	New Visitors		Repeat Visitors		Total	
Sites	N	%	N	%	N	%
State Historic Sites	12	13.6	76	86.4	88	100
State Parks	0	0.0	88	100.0	88	100
Other Facilities	13	14.6	76	85.4	89	100

Table 3. Frequency and Percent of Respondents' Time of Visit

Respondents' Time of Visit	Frequency	Percent
Weekdays	80	88.9
Weekends	85	94.4
Holidays	41	45.6

Table 4. Frequency and Percentage of Participants' Visiting Months

Participants' Visiting Months	Frequency	Percent
January	13	14.4
February	24	26.7
March	31	34.4
April	59	65.6
May	62	68.9
June	72	80.0
July	63	70.0
August	66	73.3
September	63	70.0
October	46	51.1
November	21	23.3
December	12	13.3

In Table 5, most of the participants determined "discover new places and things" and "increase my knowledge of Missouri State Parks" were very important reasons for them to participate in the program. "Develop friendships" and "use my physical abilities or skills" were the least important reasons. Most of the participants felt satisfied with the prizes and services (Tables 6 & 7). The participants (76.4%) felt very satisfied with the overall satisfaction toward MSPPP (Table 8) and thought the ease of completing the program (87.8%) was about right (Table 9).

Ninety participants responded and returned useable questionnaires. Eighty-nine participants indicated their sex, 43 males and 46 female, The average age was 55.3 years old. The largest group of participants' age was between 50 and 59. About one third of the participants had college (27%) or high school (34.8%) degrees. Most of the participants were married (87.6%) and more than half (53.9%) of them were retired. Almost all (96.6%) of the participants were White American. The largest percentage of participants' annual household income was between $20,000-$29,999 (28.6%) (see Table 10).

Table 5. Frequency and Percent of Importance of Respondents' Reasons for Participation

Reason	Perceptions: very important F	%	moderately important F	%	slightly important F	%	not at all important F	%	Total F	%	M	SD
1) avoid the hustle and bustle of daily life	32	37.6	22	25.9	18	21.2	13	15.3	85	100	2.86	1.09
2) attracted by prizes	17	19.8	38	44.2	27	31.4	4	4.7	86	100	2.80	.81
3) challenge my abilities	23	27.4	26	31.0	19	22.6	16	19.0	84	100	2.67	1.08
4) develop friendships	12	14.6	27	32.9	28	34.1	15	18.3	82	100	2.44	.96
5) discover new places and things	75	83.3	12	13.3	3	3.3	0	0.0	90	100	3.80	.49
6) increase my knowledge of Missouri State Parks	65	72.2	21	23.3	3	3.3	1	1.1	90	100	3.67	.60
7) relax	51	59.3	25	29.1	9	10.5	1	1.2	86	100	3.47	.73
8) use my physical abilities/skills	10	12.0	33	39.8	25	30.1	15	18.1	83	100	2.46	.93

Table 6. Frequency and Percent of Respondents' Satisfaction with the MSPPP Prizes

Prize	Perceptions: very satisfied F	%	somewhat satisfied F	%	neither satisfied nor dissatisfied F	%	somewhat dissatisfied F	%	very dissatisfied F	%	Total F	%	m	SD
1) six theme patches	76	85.4	9	10.1	4	4.5	0	0.0	0	0.0	89	100	4.81	.50
2) passport banner	55	63.2	20	23.0	9	10.3	2	2.3	1	1.1	87	100	4.45	.86
3) passport T-shirt	70	77.8	17	18.9	0	0.0	1	1.1	2	2.2	90	100	4.69	.74
4) $25 gift certificate	81	90.0	8	8.9	1	1.1	0	0.0	0	0.0	90	100	4.89	.35
5) five free camping coupons	79	90.8	6	6.9	2	2.3	0	0.0	0	0.0	87	100	4.89	.39

Table 7. Frequency and Percent of Respondents' Satisfaction with the MSPPP Services

Service	Perceptions: very satisfied F	%	somewhat satisfied F	%	neither satisfied nor dissatisfied F	%	somewhat dissatisfied F	%	very dissatisfied F	%	Total F	%	m	SD
1) facilities' operation hours	25	8.7	43	49.4	4	4.6	14	16.1	1	1.1	87	100	3.89	1.04
2) employees' helpfulness at state parks and historic sites	66	4.2	20	22.5	0	0.0	2	2.2	1	1.1	89	100	4.66	.71
3) locations of facilities to obtain stamps	30	4.5	33	37.9	3	3.4	19	21.8	2	2.3	87	100	3.80	1.20
4) procedure for obtaining prizes	71	0.7	13	14.8	3	3.4	1	1.1	0	0.0	88	100	4.75	.57
5) procedure for obtaining stamps	32	6.4	29	33.0	6	6.8	20	22.7	1	1.1	88	100	3.81	1.19

Table 8. Frequency and Percent of Respondents' Overall Satisfaction with the MSPPP

Overall Satisfaction with the MSPPP	Frequency	Percent
Very satisfied	68	76.4
Somewhat satisfied	18	20.2
Neither satisfied nor dissatisfied	1	1.1
Somewhat dissatisfied	0	0.0
Very dissatisfied	2	2.2
Total	89	100.0

m=4.69, SD=.717

Table 9. Frequency and Percent of Respondents' Satisfaction with the Ease of Completing MSPPP

Satisfaction with the ease of completing MSPPP	Frequency	Percent
Too short	2	2.2
About right	79	87.8
Too long	9	10.0
Total	90	100.0

Table 10. Frequency and Percent of Respondents' Demographics

Demographics	Frequency	Percent	Demographics	Frequency	Percent
Sex			Employment status		
Male	43	48.3	Employed full-time	30	33.7
Female	46	51.7	Employed part-time	4	4.5
			Full-time homemaker	4	4.5
Age			Retired	48	53.9
21-29	4	4.7	Student	0	0
30-39	5	5.9	Unemployed	3	3.4
40-49	8	9.4			
50-59	30	35.3	Ethnicity		
60-69	28	32.9	African American	0	0
70-79	10	11.8	Asian	0	0
			Latino	0	0
Education			Native American	3	3.4
Less than 12th grade	8	9.0	White American	84	96.6
High school graduate or equivalent	31	34.8			
Some college	24	27.0	Household Income		
Associate degree	9	10.1	Less than $9,999	3	4.3
Bachelor's degree	7	7.9	$10,000-$19,999	10	14.3
Master's degree	7	7.9	$20,000-$29,999	20	28.6
Professional school degree	3	3.4	$30,000-$39,999	12	17.1
Doctoral degree	0	0	$40,000-$49,999	7	10.0
			$50,000-$59,999	5	7.1
Marital status			$60,000-$69,999	5	7.1
Single	11	12.4	$70,000-$79,999	5	7.1
Married	78	87.6	$80,000 or more	3	4.3

Discussion and Implications

More than half of the participants learned about the program from the information in parks. Other sources were not very effective. That might be the reason why MSPPP attracted more repeat visitors than new visitors. The researcher suggests that MDNR DSP establish different promotion strategies based on the differences of the areas, demographics, and motivations. The researcher recommends that MDNR DSP use more brochures to promote the MSPPP. Tew et al. (1999) suggested that seasonal program brochures were the most widely used for promoting programs and the remaining efforts were devoted to non-printed sources, such as word of mouth, television and radio. The researcher recommends that MDNR DSP promote the program on the MDNR DSP web page.

Second, based on the importance score of the reasons for participating in the MSPPP, the participants felt that "discover new places and things" and "increase my knowledge of Missouri State Parks" were the most important reasons for participating in the program. MDNR DSP needs to promote "discover new places and things" and "increase my knowledge of Missouri State Parks". This might encourage more people to participate in the program.

Third, based on the conclusions of the prizes satisfaction score, most of the participants felt satisfied with camping coupons, the $25 certificate and patches. MDNR DSP should keep and promote these prizes. However, compared to other prizes, "passport banner" and "passport T-shirt" had lower scores. MDNR DSP should consider eliminating these prizes.

Fourth, in the MSPPP services, the participants were very satisfied with the "procedures for obtaining prizes" and "employees' helpfulness at state parks and historic sites". However, "locations of facilities to obtain stamps", "procedure for obtaining stamps" and "facilities' operation hours" had lower satisfaction scores than other services. MDNR DSP needs to provide accurate directions and clearer signs to each site. Some of the sites on the list that MDNR DSP provided are not correct. Some participants needed to seek assistance to find some sites and passport stamps. The researcher suggests that MDNR DSP check the direction list and make sure the list is accurate. The participants can only obtain the stamps during the operation hours. The researcher suggests that MDNR DSP find a way for the participants who do not visit the sites in the operation hours to get stamps.

Fifth, demographic variables affect leisure activity choice and participation (Bammel & Burrus-Bammel, 1996). Therefore, making a passport-tracking list is important. If MDNR DSP leaves the name, age, gender, whom did they participate with and address of the intended participants who requested the passport booklet, it would be more efficient for future researchers to study the program. It is also a benefit to MDNR DSP to track who completed the MSPPP and who did not complete the program. It is important to know the reasons why people did not complete the program.

Sixth, MSPPP attracted more White Americans, married, and less educated participants. There were very few minorities, single, younger, above some college degree, and higher income participants. Moreover, there were no students who completed the program. MDNR DSP should target these people for marketing.

Seventh, MDNR DSP may evaluate Missouri parks system by the participants who completed the program. All of the participants visited all the sites in Missouri. Their suggestions may be valuable to MDNR DSP for improving park facilities or settings. If MDNR DSP plans to continue MSPPP, the participants should evaluate the program annually.

Eighth, most of the participants felt satisfied with MSPPP. The participants described the program as a wonderful, educational, enjoyable, and fun program. Some participants also mentioned that it is also a good family activity and provides chances to know some nice parks they haven't known. They will bring family and friends to participant in the program in the future. The researcher and participants suggest that MDNR DSP should continue the program.

Based on the participants' comments, the participants suggested some recommendations for MSPPP. First, many participants mentioned that many stamp ink pads were dry or missing. Some of the participants also had problems getting the stamps after operation hours. The researcher suggests that MDNR DSP checks the ink pads and stamps often and also mentions to the participants where to get the stamps after operation hours.

Second, the passport signs were not very clear. Some participants had a hard time finding the MSPPP signs. The researcher suggests that MDNR DSP make the signs at each site clear.
Third, some participants preferred more free night stays in the parks. The researcher suggests that MDNR DSP give more free camping coupons to participants.

Based on the results of the study and the literature, the researcher made the recommendations for the future studies and future researchers. First, constraints are the factors that are perceived by individuals to inhibit or prohibit participation and enjoyment in leisure (Jackson, 1993). Constraints to leisure participation have captured leisure researchers' attention for several decades because of the role constraints play in leisure decision making. Crawford and Godbey (1987) initially termed leisure as factors that could deter leisure participation and create difficulties to realize the beneficial effects of this participation (Crawford & Godbey, 1987). Future studies about constraints may determine the reasons why people do not participant in the program.

Farrell and Lundegren (1991) indicated four classifications of evaluating programs (administration, leadership or personnel, program and areas and facilities). Henderson (1995) described five classifications (5Ps) in evaluation: program, personnel, participant, place, and policy/administration. Henderson (1995) mentioned that trying to access everything usually results in poor

conceptualizations. This study only concentrated on program and participants evaluation. Future researchers should evaluate the program in the other classifications.

Martilla and James (1979) and Guadagnolo (1985) stated that Importance-Performance Analysis (I-P) is a useful technique for measuring the desirability of product attributes. This I-P is based on research findings indicating that participants' satisfaction is a function of participants' expectations about attributes of a program they consider important and participants' judgments about agency performance on these attributes (Rossman, 1989). In I-P, participants are given a pretest before participating in a program to determine which program attributes are important to them. After participation, the participants are given a posttest with the same items. The process is to determine how well the agency performed in delivering the program attributes (Rossman, 1989). The results of the pre and post measurements are plotted on a two-dimensional matrix. The researcher recommends that I-P would be another evaluative model for evaluating the program. The model determines which item needs the most improvement based on how important the item is and how satisfied the participants feel. The results would help MDNR DSP in its decision-making.

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Environmental Knowledge, Concern, Behavior & Education

AN EVALUATION OF APPALACHIAN TRAIL HIKERS' KNOWLEDGE OF MINIMUM IMPACT SKILLS AND PRACTICES

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Abstract: As the number of visitors to national parks and related areas continues to rise and the types of visitors and activities continue to diversify, educating visitors in minimum skills can help to protect parks and related areas. Educating visitors in these skills can be a challenge, especially on the Appalachian Trail (AT) that travels through state, federal, municipal and private lands. This paper examines overall minimum impact knowledge of AT hikers. Study findings will help managers to understand how much visitors know about minimum impact skills and how they can be most effective in educating hikers about minimum impact skills. Study data are drawn from a survey of nearly 2000 AT hikers in the summer and fall of 1999.

Introduction

As the number of visitors to parks and related areas continues to rise, there is increasing concern over the resource and social impacts of outdoor recreation. Research suggests that recreation visitors can significantly impact park resources through compaction and erosion of soils, trampling of vegetation, disturbance of wildlife, and pollution of streams and lakes (Hammitt & Cole, 1998). Moreover, increasing recreation use can also degrade the quality of the recreation experience through crowding and conflicting uses and through aesthetic consequences of the resource impacts noted above (Manning, 1999). Recreation managers are challenged to minimize the resource and social impacts of increasing recreation use.

The outdoor recreation literature suggests that there are a number of practices that might be used to help manage the impacts of recreation use. A conventional system of classifying recreation management practices defines such practices as direct and indirect (Gilbert et al., 1972; Peterson & Lime, 1979). Direct management practices regulate visitor behavior. As such, they limit visitors' freedom of choice in order to accomplish a desired management objective. For example, designated campsites require visitors to camp at specified locations to limit the ecological impacts associated with camping. Indirect management practices attempt to influence visitor behavior without regulating it. As such, they attempt to maintain as much visitor freedom as possible. For example, information can used to educate visitors about how to minimize the impacts of camping.

Both direct and indirect management practices have potential advantages and disadvantages. However, indirect management practices are generally preferred when they can be shown to be effective (Roggenbuck, 1992). From a theoretical standpoint, indirect management practices can be effective in addressing impacts resulting from several types of visitor behavior, including uninformed actions, careless or thoughtless behavior, and unskilled actions (Hendee, 1990). But how effective are visitor information and education programs? More specifically, how knowledgeable are visitors regarding minimum impact skills and practices? This study sought to answer this and related questions as they apply to the hikers on the Appalachian Trail.

Several studies have addressed this issue in a variety of park and related areas (Fazio, 1979; Feldman, 1978; Kernan & Drogan, 1995; Cole et al., 1997; Dowell & McCool, 1986; Jones & McAvoy, 1988; Sieg et al., 1988; Roggenbuck et al., 1992; Echelberger et al., 1978; Burde et al., 1988; Dwyer et al., 1989; Manfredo & Bright, 1991; Stewart et al., 2000; Harding et al., 2000; Cole, 1998; Christensen & Cole, 2000). For example, in a survey of visitors to the Allegheny National Forest, respondents received an average score of 48% on a 12-item true-false minimum impact quiz (Confer et al., 2000). Visitors to the Selway Bitterroot National Forest received an average score of 33% on similar quiz. However, the quizzes developed for these studies did not contain the same items nor did they use the same format.

Study Methods

Study Area

The Appalachian National Scenic Trail (AT) is a unit of the national park system. Established as the first National Scenic Trail by Congress with passage of the National Trails System Act in 1968, the AT is a continuous marked footpath extending approximately 2,160 miles across the Appalachian Mountains from the summit of Springer Mountain in Georgia to the summit of Mount Katahdin in Maine. The AT forms a greenway that connects public land areas in 14 states. These public lands include 8 national forests, 6 units of the national park system, and more than 60 state parks, forests and wildlife areas. The length and complexity of the AT suggest that visitor information and education programs are challenging.

Visitor Survey

The primary study method consisted of a survey of a representative sample of hikers along the AT. The survey addressed a wide-ranging set of issues, but for the purposes of this paper we are interested in matters regarding visitor

knowledge of minimum impact skills and practices. Several study questions were designed to address this and related issues. First, a 10-item "true or false" quiz was designed to test visitor knowledge of minimum impact skills and practices. Items included in this quiz were based on the Leave No Trace program, a formal organization and effort designed to educate outdoor recreation visitors in minimum impact skills and practices. These items were quite similar to the items used in Confer et al. (2000) described earlier. Second, respondents were asked the minimum distance that 1) human wastes should be disposed of from a stream or water source, and 2) campsites should be located from an established trail. Third, respondents were asked where they would seek information on minimum impact skills and practices. Finally, a number of visitor characteristics were measured to assess knowledge levels of selected types of visitors.

A detailed sampling plan was designed based on geographic divisions of the trail. For purposes of management, the AT is divided into four geographic regions – New England, Mid-Atlantic, Southwest Virginia, and the Deep South. To facilitate a more detailed sampling plan, the trail was further divided into twenty-two relatively homogeneous geographic segments based on physical features, park and wilderness boundaries, and volunteer hiking club jurisdictions. The regional divisions used in the sampling plan are shown in Table 1.

Table 1. Geographic/Administrative Divisions of the Appalachian Trail Study

New England	Mid- Atlantic	Southwest VA	Deep South
1. Baxter St. Park	10. New York	15. Blue Ridge Parkway	19. North of Smokies-Pisgah / Cherokee NF
2. 100 Mile Wilderness	11. New Jersey	16. Outing Club of VA Tech	20. Smoky Mtns.
3. Western Maine	12. Pennsylvania	17. Catawba	21. NC-Nantahala NF
4. NH-Mahoosucs	13. Maryland	18. Mount Rogers	22. Georgia
5. NH-White Mtns.	14. Shenandoah		
6. NH-South			
7. Vermont			
8. Massachusetts			
9. Connecticut			

Sampling was conducted by a combination of employees, volunteers of local trail-maintaining clubs and the ATC, and staff hired specifically for this study. Sampling consisted of approaching randomly selected AT visitors, briefly explaining the study, and asking if visitors would be willing to participate in the study by providing their name and address and completing a mail-back questionnaire at the completion of their visit. Sampling was designed to yield approximately 100 completed questionnaires for each of the twenty-two trail segments. In addition, thru hikers (visitors hiking the entire trail in one calendar year) were purposively sampled in Baxter State Park, Maine to insure that a large enough sample of this type of hiker was obtained for analysis purposes. The sampling plan was implemented in the summer and fall of 1999. A total of 2,847 AT visitors agreed to participate in the study and were mailed a questionnaire, cover letter, and postage-paid, self-addressed return envelope shortly after their visit. One week after the initial mailing, visitors were mailed a postcard thanking them for their participation and reminding them to complete and return the questionnaire. Visitors who did not return a completed questionnaire within three weeks of the initial mailing were mailed a second questionnaire, cover letter, and postage-paid, self-addressed return envelope. Finally, at the completion of the sampling period, all non-respondents were mailed a final copy of the questionnaire, cover letter, and postage-paid, self-addressed return envelope.

This sampling procedure yielded 1,879 completed questionnaires representing a 66 percent response rate. The majority of completed questionnaires (84 percent) were obtained from summer visitors, while the remaining questionnaires (16 percent) were obtained from fall visitors.

Study Findings

Knowledge of Minimum Impact Skills and Practices

Study findings for the 10-item quiz of minimum impact skills and practices are shown in Table 2. Correct answers were coded as a 10 and incorrect answers were coded as a 0, and overall mean scores are reported on a percentage basis that ranges from a possible high of 100% to a possible low of 0%. The overall mean score of all AT hikers was 82%. This varied from a high of 86% for thru-hikers to a low of 78% for day hikers.

Scores varied substantially on individual items. Over 90% of respondents knew that 1) use should be concentrated in obviously impacted areas, 2) all terrain vehicles are not allowed on the AT, 3) mountain bikes are not allowed on the AT, 4) it is best to travel on existing trails and walk singe file, and 5) hikers should not collect plants and rocks along the AT. Between 73% and 83% of respondents knew that 1) the same rules do not apply to the entire AT, 2) when encountering a horse party, you should wait until the horses have come to stop and then move quickly past them, and 3) building temporary fire rings by moving rocks and logs at your campsite in not an accepted low impact behavior. Only 66% of respondents knew that one should not camp next to a stream. And only 48% of respondents knew that when hiking in a lightly used location, it is best to camp on a site with no evidence of previous use.

Table 2. Percentage of Visitors Who Answered Questions Correctly

Minimum Impact quiz questions and answers			Day Hikers	Overnight Hikers	Section Hikers	Thru Hikers	All Hikers
True	**False**	When selecting a campsite in obviously impacted areas you should spread activities to places that have not been disturbed.	91	90	87	90	90
True	**False**	The same rules and regulations apply to the entire Appalachian Trail.	67	71	75	87	73
True	**False**	When hiking and encountering a horse party you should wait until the horses have come to a stop and then move quickly past them.	69	76	73	74	73
True	False	I cannot ride my mountain bike on the Appalachian Trail, because it is not allowed.	86	87	95	97	90
True	False	While backpacking, you should never camp next to a stream.	64	73	64	60	66
True	**False**	If I wanted to ride my All Terrain Vehicle on the A.T. I could do so as long as I stay on the trail.	100	99	100	99	100
True	False	When hiking in remote, lightly used locations it is best to camp on a site with no evidence of previous use to minimize your impact on the wilderness environment.	37	47	49	73	48
True	**False**	Building temporary fire rings by moving rocks and logs at your campsite is an accepted low-impact behavior.	73	87	90	92	83
True	False	When traveling on existing trails it is best to walk single file and stay on the main path to minimize impact.	99	99	99	99	99
True	False	Hikers should not collect plants and rocks along the Appalachian Trail.	97	98	99	97	97
Mean			**78**	**83**	**83**	**86**	**82**

Respondent scores on the minimum distances questions also varied (Table 3). Knowledge was quite high (mean score of 87%) on the question concerning the minimum distance that human wastes should be disposed of from streams and water sources. However, knowledge was considerably lower (mean score of 63%) on the question concerning the minimum distance campsites should be located from established trails.

Table 3. Overall Percentage of Visitors Who Answered Distance Questions Correctly

		% Reporting > 100 feet				
Correct Answer	**According to accepted minimum impact practices for the AT:**	**Day Hikers**	**Overnight Hikers**	**Section Hikers**	**Thru Hikers**	**All Hikers**
>100 feet	a. How far from a stream or water source (in feet) should you dispose of human wastes?	76	91	92	97	87
>100 feet	b. How far from an established trail (in feet) should you camp?	49	69	71	74	63

Sources of Minimum Impact Information

The survey also asked visitors where they would seek information on minimum impact or LNT skills and practices. Findings from this question might help managers more effectively disseminate information on minimum impact skills and practices to AT hikers. Findings are shown in Table 4. Books and magazines (43%), trail clubs/organizations (23%), and visitor centers/ranger stations (22%) were the most frequently reported sources. Rangers/volunteers (16%) and the internet (15%) constituted a second tier of sources.

Table 4. Percentage of Visitors Who Reported That They Would Obtain Information on Low-impact Backpacking from the Sources Listed

Information Source	% of hikers who would obtain information from source
Sporting Goods Stores	7
Newspapers	2
Books and Magazines	43
Brochures	12
Trailhead and Signs	9
Ranger or Volunteer	16
Visitor Center/ Ranger Station	22
The Internet	15
Audio or Video	1
Trail Clubs/ Organizations	23

Certain information sources were more popular for some groups than others. For example, day and overnight hikers reported that they would seek information on minimum impact skills and practices from books and magazines more often than would section and thru hikers.

Who Are the Most Knowledgeable Hikers?

The survey also collected information on a variety of hiker characteristics, including gender, race, education level, income, occupation, and residence (urban, rural). As noted above, hikers were classified by type (day, overnight, section, and thru) and by trail region. Statistical tests were conducted to test for differences in knowledge of minimum impact skills and practices by these hiker characteristics. Very few statistically significant differences were found, with most differences related to hiker type and region of the trail. For example, 68% of respondents from the northern regions of the trail knew that they should camp at least 100 feet from an established trail compared to less than 50% of respondents from the southern regions of the trail. Respondents from the southern regions also scored lower (72%) than respondents from the northern regions (87%) on the questions concerning construction of temporary fire rings.

Conclusions

Information and education represent attractive management practices that can potentially reduce the ecological and social impacts of recreation while maintaining visitor freedom of choice. However, effective dissemination of information and education can be challenging, especially on the AT where visitors are widely distributed across more than 2000 miles of trail and among multiple management agencies and organizations. However, our study indicates that most hikers on the AT are relatively well-informed about a variety of minimum impact skills and practices, especially when compared to visitors in other similar studies. The average score on the 10-item quiz administered to a representative sample of hikers along the trail was 82%. This is substantially higher than similar studies administered elsewhere (e.g., Confer et al., 2000; Cole et al., 1997). This may suggest that hiker information and education programs are becoming more effective.

Despite the generally high knowledge levels of AT hikers, study findings may suggest several strategies that can continue to enhance the effectiveness of information and education programs. For example, additional emphasis might be placed on the need to disperse camping in lightly used areas and the need to camp at least 100 feet from an established trail. Books and magazines, visitor centers and ranger stations, and trail clubs may be the most effective sources of information on minimum impact skills and practices. Day use hikers and hikers in the southern regions of the AT may be especially important targets for additional information and education on minimum impact skills and practices.

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WHO CARES AND WHO ACTS? DIFFERENT TYPES OF OUTDOOR RECREATIONISTS EXHIBIT DIFFERENT LEVELS OF ENVIRONMENTAL CONCERN AND BEHAVIOR[1]

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Abstract: The relationship between a person's level of environmental concern and behavior, and their participation in different types of outdoor recreational activities has been a matter of study for approximately 25 years. However, most of the research occurred in the mid- to late seventies and, until recently, there has been relatively little research performed since then. A recent study notes that the weak associations found in earlier studies between environmental concern/behavior, and outdoor recreation participation may explain the drop in research effort. We revisit the issue because it has important policy dimensions. The results generally support the idea that participation in outdoor recreation can have a significant positive impact on the level of environmental concern and behavior. In addition, the level of environmental concern and behavior depends upon the type of recreational activity. The general trend is that appreciative activities, such as wildlife watching and nature photography, are consistently associated with higher levels of environmental concern and behavior. However, the relative effects of the different recreation activities differ across our measures of environmental concern and behavior. Thus, the idea that the direction of the effects is consistent across alternative measures is not supported.

Introduction

The relationship between a person's level of environmental concern and behavior, and their participation in different types of outdoor recreational activities, has been a matter of study for approximately 25 years. The studies have primarily examined the following two hypotheses elicited by Dunlap and Heffernan. First, there exists a positive association between participation in outdoor recreation activities and environmental concern, and second, that the strength of this association is different across types of outdoor recreation. A major difference between the various studies is how different recreational activities are grouped.

Most of the research occurred in the mid- to late-seventies with relatively little research performed since then. A recent study notes that the weak associations found in earlier studies between environmental concern and behavior, and outdoor recreation participation may explain the drop in research effort. We revisit the issue because it has important policy dimensions; if environmental concern and behavior is significantly impacted by participating in various outdoor recreational activities, then policies and programs promoting these activities may be effective in furthering environmental agendas.

Notably, the relatively weak associations found in previous work may depend critically upon the method in which recreational activities were grouped. We examine the statistical relationship between pro-environmental behavior or attitudes and participation in different types of outdoor recreation. Further, we do not group activities so that we can test if the relationships are significantly different across recreation type.

Relevant Literature

Dunlap and Heffernan (DH, hereafter) (1975) classified recreation activities into two categories: 'consumptive' defined as those activities (such as hunting and fishing) which involve "taking something from the environment and thus reflect a 'utilitarian' orientation toward it" (p. 19) and "appreciative" defined as those activities (e.g., hiking, camping and nature photography) which involve "attempts to enjoy the natural environment without altering it...thus compatible with the 'preservationist' orientation which attempts to maintain the environment in its natural state" (pp. 19-20). Using this grouping scheme DH found that the first hypothesis received only weak support and that the second received substantial support. They discovered that the association between various indicators of environmental concern was always stronger with appreciative activities than with consumptive activities.

Geisler et al. (1977) altered the original DH approach by including a third category of outdoor recreation activities, "abusive." Recreation activities such as ATV riding, snowmobiling, and mountain biking are classified as "abusive" by DH, although not specifically examined in their study, and defined in their paper as activities which produce "severe environmental degradation" (p. 27). Using their approach, Geisler et al. found significant support for the first hypothesis albeit the effects measured were relatively small. They also found some statistical support for the assertion that participation in appreciative activities has a stronger positive association with environmental concern than participation in consumptive activities. However, the results were decidedly mixed when considering abusive activities; the effect of abusive activities was similar to the effect of appreciative activities and similar to or greater than the effect of consumptive activities.

Van Liere and Noe (1981) also examined the DH hypotheses but their study differed by using different measures of participation intensity. They did not find strong support for the first DH hypothesis; only about 40 percent of the associations between environmental concern and recreational participation were significant and positive.

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In addition, about 15 percent were significant and negative. The results did provide support for the second hypothesis; all of the significant positive associations were with respect to appreciative activities.

Theodori et al. (1998) also examined the second DH hypothesis with an even more significant alteration to the grouping of outdoor recreation activities. They identified a limitation of prior studies' classification of recreational activities; some activities (such as camping or hiking) may transcend two or more categories. While some of these activities had been historically categorized as "appreciative", these activities were also impact intensive and could therefore fall into the "consumptive" definition. They re-classified the various outdoor recreation activities into 2 categories: "Appreciative-Slight Resource Utilization" characterized by participation in activities such as hiking/backpacking, picnicking, and bird watching and "Moderate-Intensive Resource Utilization" identified as participation in such activities as fishing, hunting, and ATV riding. The study found considerable support for the first Dunlap-Heffernan hypothesis and showed mixed results for the second hypothesis.

In summary, the various studies examining the DH hypotheses show varied results possibly due to the somewhat arbitrary classification of outdoor recreation activities. Rather than arbitrarily classify the various outdoor recreation activities into delineated categories based on the so-called environmental impact of these activities, the recreation activities should be examined individually to ascertain the connection between them and environmental concern and behavior.

Model

We are interested in estimating the relationship between an individual's level of environmental interest, opinions and behavior with their participation in different forest recreational activities. In turn we estimated four different equations, each with similar sets of independent variables but with different dependent measures of environmental interest, opinions or behavior. More specifically, the equations estimate the relationship between participation in forest-based recreation and 1) the individual's level of interest in how forests are managed, 2) the individual's opinion as to what percent of U.S. forests are managed in an 'environmentally friendly' manner, 3) the individual's level of membership or support of environmental groups, and 4) the individual's likelihood to purchase an environmentally certified and labeled wood product.

The general form of the equations is:

$$DEP = (\Sigma\alpha_{INT}INT) + (\Sigma\beta_{ACT}ACT) + (\Sigma\delta_{SOC}SOC) + (\Sigma\phi_{REG}REG) + (\Sigma\gamma_{RTREAT}TREAT) + e$$

where the dependent variable differs across equations (explained in more detail below) and the INT denotes the equation intercept(s).[2] ACT denotes a set of variables that denote whether the individual did or did not participate in forest-based recreation (NOREC) and if they did, what specific forest-based recreational activity (HIKE, FISH, XSKI, WATCH, ATV, CAMP, HUNT, SNOW, PHOTO, BOAT) they participated in (hiking, fishing, cross-country skiing, wildlife watching, riding all-terrain vehicles, camping, hunting, snowmobiling, nature photography or boating/canoeing, respectively). When the individual did not participate in any forest-based recreational activities then NOREC was coded 1; 0 otherwise. All other ACT variables were coded 1 if the individuals participated in the specific activity; 0 otherwise. SOC denotes a vector of variables (GEN, RACE, AGE, ED, INC, ACRES) that denote the individual's socioeconomic characteristics (gender, race, age, education, household income, and acres of forestland owned, respectively). GEN is coded 1 if the individual is male; 0 otherwise and RACE is coded 1 if the individual is white; 0 otherwise. ED and INC are categorical variables that have been recoded to measure the individual's level of education (in years) and income (in dollars), respectively. AGE and ACRES are continuous variables that measure the individual's age (in years) and ownership of forestland (in acres). REG denotes a vector of variables that denote where the individual lives. TREAT denotes a vector of variables (used only in equation four) that are used to control for any experimental treatments used within the survey design. More specifically, the information presented on the environmentally labeled wood product differed across individuals; in total there were 16 different information treatments.[3]

The equations differed in terms of the dependent variables (and corresponding treatment of intercept terms). In the first equation we estimate the relationship between the individual's level of interest in how forests are managed and the independent variables. For this equation the dependent variable is based upon responses made on a rating (Likert-type) scale where 1 denoted that the individual was 'not at all interested', 3 denoted that the individuals was 'somewhat interested' and 5 denoted that they were 'very interested'. In the second equation we estimate the relationship between the individual's opinion as to what percent of U.S. forests are managed in an 'environmentally friendly' manner. Here, the dependent variable is based upon responses made on a rating scale with five-points: 0, 25, 50, 75 and 100 percent. In the third equation we estimate the relationship between the individual's level of membership or support of environmental groups and the independent variables mentioned above. For this equation the dependent variable is coded 1 if the individual stated that they donated money to, or belonged to, any environmental groups; 0 otherwise. In the final equation we estimate the relationship between an individual's likelihood to purchase an environmentally certified wood product. The dependent variable here is based upon responses made on a rating scale where 1 denoted that the individual was 'highly unlikely' to buy the product, 3 denoted the individual had 'no opinion either

[2] The number of intercepts is different across equations and is dependent upon the form of the dependent variable.

[3] For brevity we will not fully discuss the experimental design for equation four (which is the subject of an entirely different analysis). Interested reader can contact the first author for more information.

way' and 5 denoted they were 'very likely' to buy the product.

Given the dependent variable in the third equation is binary we estimate this equation using binary logit regression. The dependent variables in the remaining equations are ordered and thus we use ordered logit techniques. Typically, binary logit models have one intercept while ordered logit models have one less intercept than the total number of ordered categories in the dependent variable. Thus, the first equation would have one intercept and the other three equations would have four intercepts. However, the vector of region variables creates singularity problems if the full complement of intercepts is allowed. As a result, one intercept is dropped from each of the four equations.

The estimated equation parameters with appropriate variable coding can be used to provide estimates of the various dependent variables for different types of forest recreation participants while holding all other modeled variation constant. That is, we use the equations to estimate how participation in different types of forest-based recreation affects the individual's level of environmental concern and behavior while controlling for other individual (e.g., socioeconomic and residence) and experimental variation. Furthermore, we test the equivalence of individual pairs of parameters (e.g., $\beta_{FISH} = \beta_{HUNT}$), to determine if the effects of recreational activities are significantly different from each other.

Data

We obtained a sample of 3,290 U.S. adult residents from International Communications Research of Media, Pennsylvania. They conducted a telephone screening survey, using random-digit dialing (RDD), during the spring of 2000 to identify potential mail survey respondents. The sample design consisted of a nationally representative group of adults with an additional over-sample of New England and Maine residents. Except for the over-sampling, the randomness of the dialing process should produce a sample similar to one drawn through the use of probability sampling if there is no telephone non-coverage bias in the area under study and there is no non-response bias.[4]

During the summer of 2000 we conducted a mail survey of the pre-recruited respondents. The survey was administered in three waves; a five-dollar incentive (paid when individuals returned their survey) was provided to increase response. In total 1,948 individuals responded to the mail survey and 36 were returned as undeliverable for a response rate of 60 percent (1,948/3,290-36).[5]

[4] All analysis is weighted to correct for the over-sampling.

[5] The surveys were mailed under a nonprofit organization permit and thus we were not supposed to receive undeliverable returns (unlike a first class mailing). As a result, the count of 36 undeliverables is likely to be an underestimate of the actual number of undeliverables.

Results

The presentation of the results is divided into two sections. The first section presents a descriptive overview of the data used in the regressions. The second section presents results derived from the regression equations

Descriptive Overview

In general our resulting sample of survey respondents is relatively representative of the characteristics of the U.S. adult population (Table 1). Our sample is slightly older, more likely to be white and have slightly more education on average.

Table 1. Socio-economic Characteristics of Survey Respondents and of U.S. Adult Population

	Survey respondents	U.S. adults
Gender (percent male)	48	48
Average age	46	44
Race (percent white)	84	80
Average education	14.2 years	12.9 years
Average household income	$54,400	$54,800
Average number of acres of owned forestland	5.0	-.-

Almost all of the respondents were somewhat to very interested in how forests are managed and almost three-quarters of the respondents indicated that they thought that at most half of the forests in the U.S. are managed in an environmentally friendly manner (Table 2). However, less than a quarter of the respondents indicated that they donate money, or belong to, an environmental organization. Most respondents stated that they were likely to consider buying an environmentally certified wood product assuming that the product quality and price are equal to products not environmentally certified.

Regression Results

The presentation of the results will follow in five subsections; the first four subsections will present specific findings relevant to each of the four equations. The last section will then present general findings cuttings across all of the equations. Given the number of parameters involved and the difficulty in interpreting individual parameter estimates we will not present a fully detailed presentation of each equation. Instead, we use the estimated regression equations, with appropriate variable coding, to provide estimates of the probability that a particular value will occur for the dependent variable (e.g., to predict the probability that the dependent variable for the first equation is 1, 2, 3, 4 or 5). The coding for the recreation variables vary across each of the recreational activities, however, the variable coding is constant for all other variables, generally being set at the mean values. Once the probabilities for each of the dependent values are calculated across recreation activities then we use these probabilities, along with the associated values of the dependent variables, to calculate the expected value for the dependent variables for each recreation type.

Table 2. Characteristics of the Measures of Environmental Concern and Behavior

Level of interest in forest management	(percent stating)
1 = Not at all interested	2
2	6
3 = Somewhat interested	36
4	26
5 = Very interested	30
Opinions regarding the percent of U.S. forests managed in an environmentally friendly manner	(percent stating)
0 = None	1
25 = Some	37
50 = Half	38
75 = Most	22
100 = All	2
Percent donating money or belonging to an environmental organization	23
Likelihood of purchasing an environmentally labeled wood product	(percent stating)
1 = Highly unlikely	4
2	6
3 = No opinion either way	28
4	26
5 = Very likely	36

Before continuing to the results, it is important to understand that the above procedure provides the expected value of the dependent variables across recreational activities while *holding all other variation constant.* Income, age etc. does not vary across recreation types. In addition, one must be careful to understand that the results of the analysis assume that a participant in a particular recreation activity does not participate in any of the other activities. Differences in the expected values across recreation activities are solely driven by changes in the type of recreation. Thus, it is incorrect to take the result for any recreation type and interpret this result as being indicative of participants in that activity because they have the ability to participate in multiple activities. For example, one should not take the result for 'hunting' and interpret this result as being indicative of hunters; hunters may also fish, camp or hike. Further, it is incorrect to interpret differences across recreation types as being indicative of differences between participants in those activities; the reason is that the average participant for each of the activities may be quite different in terms of other individual characteristics. For example, one should not interpret differences between 'hunting' and 'wildlife watching' results as being indicative of differences between the average hunter or wildlife watcher because hunters and wildlife watchers differ significantly in terms of gender (74 percent of hunters and 48 percent of wildlife watchers are male). The strength of the analysis here is this ability to hold other variation constant; it allows the identification and measurement of the marginal effect of participating in each recreational activity on the level of environmental interest and behavior.

Effect on the interest in forest management - Wildlife watching, nature photography, snowmobiling and hunting are the activities that have the strongest effect on increasing an individual's interest in how forests are managed (Figure 1). In addition to the above, participating in hiking, fishing and camping also increases an individual's interest in how forests are managed relative to not participating in any forest-based recreation. The interest in forest management associated with the other activities (ATV riding, boating and cross-country skiing) is no different than the interest level of an individual who does not participate in any forest recreation. Wildlife watching and nature photography are activities associated with significantly higher interest levels than fishing, camping, ATV riding and boating. In addition, the effect of wildlife watching is also significantly higher than that of hiking.

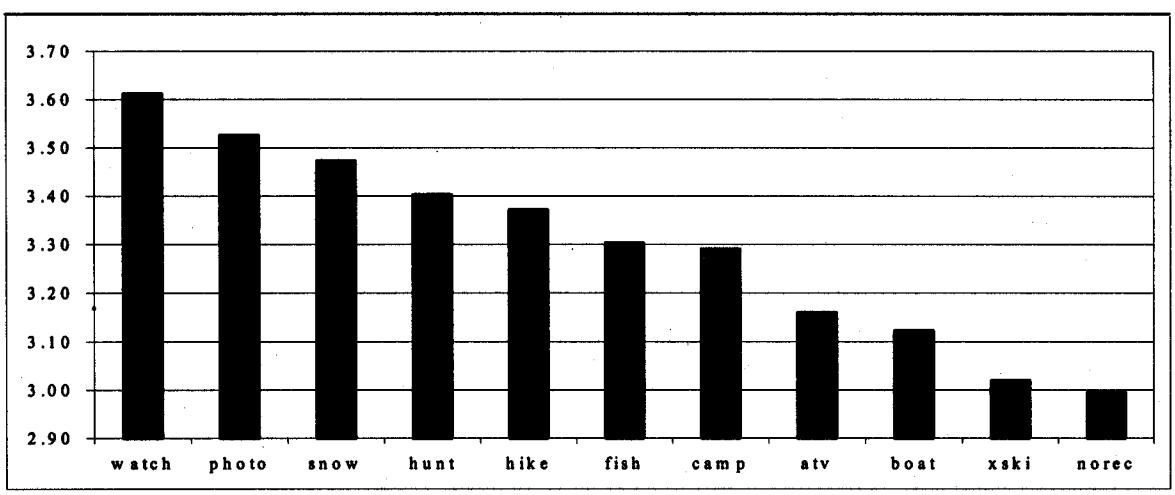

Figure 1. Level of Interest in Forest Management across Forest-based Recreational Activities
5 = Very interested, 3 = Somewhat interested, 1 = Not at all interested

With respect to previous work, we find that activities that have been traditionally classified as appreciative (wildlife watching and nature photography) have a greater positive impact on the interest level for the ways forests are managed. However, the effects of snowmobiling, an 'abusive' activity and hunting, a 'consumptive' activity, are not significantly different than the two appreciative activities.[6] Further, we find that camping and hiking, sometimes classified as appreciative, are significantly different than wildlife watching and/or nature photography.

Effect on respondent opinions regarding management of U.S. forests - Snowmobiling and fishing are activities associated with increasing respondent opinions that a greater percentage of U.S. forests are managed in an environmentally friendly manner, all else equal (Figure 2). Wildlife watching, cross-country skiing, camping, nature photography and hiking are associated with individuals thinking that a lower percentage of U.S. forests managed in an environmentally friendly manner. However, only hiking is associated with an effect that is significantly different than not participating an any forest-based recreation.

Effect on the likelihood to participate in an environmental organization - Again, wildlife watching is the activity that has the strongest effect on increasing the individual's likelihood to donate money to, or belong to, an environmental organization (Figure 3). In fact, except for snowmobiling, participating in any forest-based recreation is significantly associated with increasing the individual's likelihood to donate money to, or belong to, an environmental organization. In addition, wildlife watching, cross-country skiing, hunting, nature photography, hiking and boating are all significantly different than fishing and snowmobiling in increasing the likelihood that an individual donates money to, or belongs to, an environmental organization. In addition, the effect of wildlife watching is significantly greater than the effect of ATV riding, camping, boating and hiking.

Again we find that activities that have been traditionally classified as appreciative (wildlife watching and nature photography) have a strong positive impact on environmental behavior or concern. However, the effect of hunting, a 'consumptive' activity, is not significantly different than the two appreciative activities. Further, we find that camping and hiking, sometimes classified as appreciative, are significantly different than wildlife watching. Finally, hunting is found to be significantly different than fishing, another consumptive activity.

[6] Of course the reason that these four activities increase interest levels may not be the same across the activities. For example, the positive effect of hunting and wildlife watching may both be due to concerns about forest management's effect on animal populations, however, the object of interest may be quite different. The positive effect of snowmobiling may be due to concerns about land access.

Effect on the likelihood to purchase an environmental product - Wildlife watching is the activity that has the strongest effect on increasing the individual's likelihood to purchase an environmentally labeled wood product (Figure 4). Further, wildlife watching is significantly different than camping, fishing, ATV riding, hunting, and snowmobiling. However, boating, hiking and nature photography all have significant impacts relative to not participating in any forest-based recreational activity, and are also different than hunting and snowmobiling. Camping and fishing are also significantly different than hunting and snowmobiling. Again we find that hunting is found to be significantly different than fishing, another consumptive activity.

General results - Several results can be obtained when comparing the results across each of the four equations. First, the results generally support DH's first hypothesis; participation in outdoor recreation can have a significant positive impact on both the level of environmental concern and on the level of environmental behavior. In all four equations, there were several forest-based recreational activities that had effects significantly different than that of the no recreation case. Second, the level of environmental concern and behavior depends upon the type of recreational activity. For example, the effect of wildlife watching was significantly different than that of fishing in all four equations. Third, the relative effects of different recreation activities differ across our measures of environmental concern and behavior. For example, we find that hunting is associated with a greater level of environmental behavior relative to fishing when the measure is the likelihood of donating money or belonging to an environmental group. However, the opposite is true when the measure is the likelihood of purchasing an environmentally labeled wood product.

Thus, the second DH hypothesis is only partially supported. That is, the idea that different recreational activities have different effects on the level of environmental concern and behavior is supported. Further, the general trend is that appreciative activities such as wildlife watching and nature photography are consistently associated with higher levels of environmental concern and behavior. However, the idea that the direction of the effects is consistent across alternative measures is not supported.

Finally, the effects of the second and third points above imply that the traditional approach of aggregating activities may be of concern. For example, in previous studies hunting and fishing were combined together as 'consumptive activities'. However, here we find that for two of our four measures the effects of hunting and fishing are significantly different from each other. This suggests that specific recreation activities should be analyzed individually so as to accurately determine how different recreational activities effect the level of environmental concern and pro-environmental behavior.

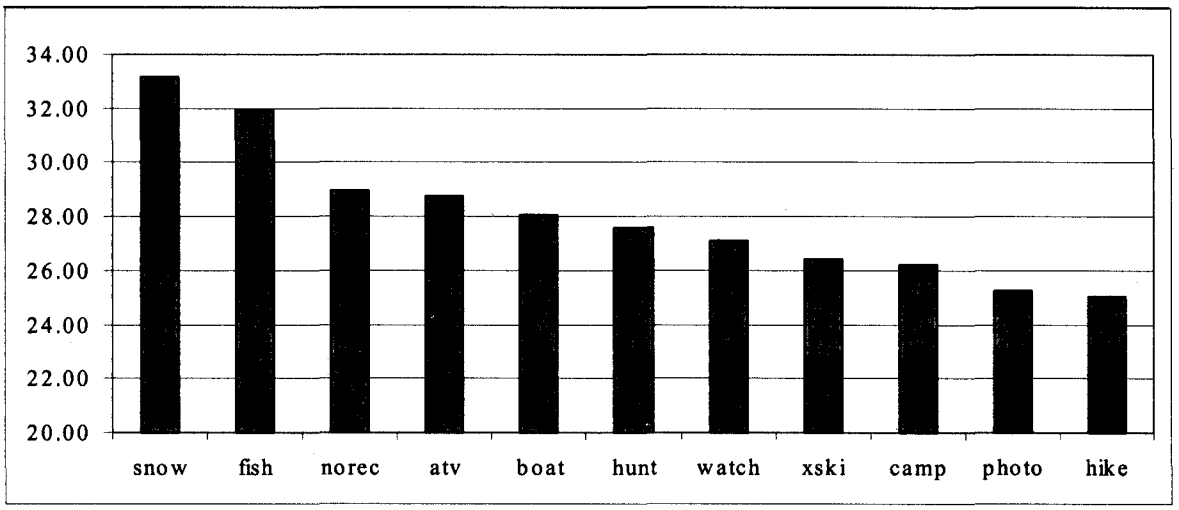

Figure 2. Respondent Opinion Regarding the Percent of U.S. Forests Managed in an Environmentally Friendly Manner across Forest-based Recreational Activities

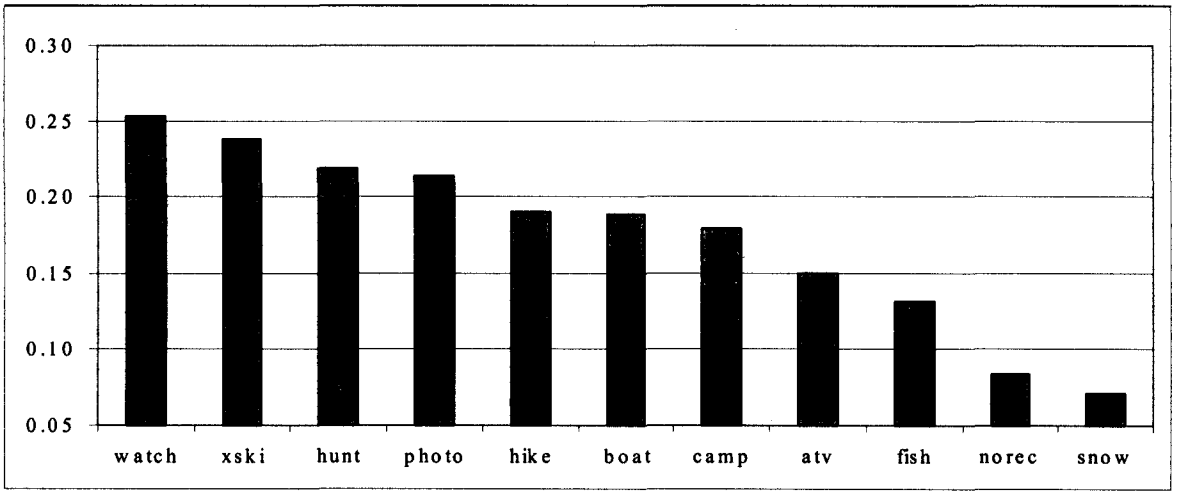

Figure 3. Percent of Respondents Indicating They Belong to, or Donate Money to, Environmental Organizations across Forest-based Recreational Activities

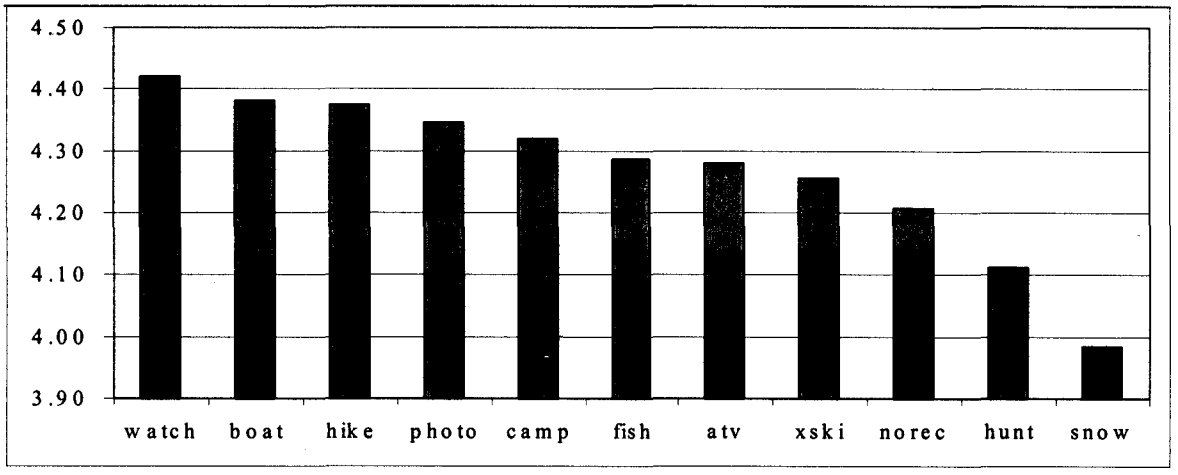

Figure 4. Likelihood of Purchasing an Environmentally Labeled Wood Product across Forest-based Recreational Activities (5 = Very likely, 3 = No opinion either way, 1 = Highly unlikely)

Conclusions

The results are contingent upon our measures of environmental behavior/concern, as well as our measures of participation in recreational activities. Specifically, we asked individuals if they had participated in specific recreational activities during the past year. Although our measures are probably correlated with the intensity of participation, we did not collect data specifically measuring participation intensity. The relative effects of the different recreational activities may be strengthened or weakened if we had accounted for the intensity of participation.

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VISITOR BEHAVIOR AND RESOURCE IMPACTS AT CADILLAC MOUNTAIN, ACADIA NATIONAL PARK

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Abstract: The summit of Cadillac Mt., located in Maine's Acadia National Park, can be reached via three hiking trails and a scenic auto road. This site attracts over an estimated two million visitors per year. Most of this visitation is concentrated from Memorial Day to Labor Day. The sensitive sub-alpine nature of the site, coupled with high visitation rates, has created a scenario where significant vegetation and soil damage occurs. Additionally, Acadia National Park has experienced chronic problems at this site stemming from visitors altering, destroying, or constructing cairns (piles of rocks built by trail crews to mark trails and guide hikers).

In an attempt to describe visitor behaviors and the context in which those behaviors occur, an unobtrusive, observational study was conducted on the summit of Cadillac from June 19, 2000, through October 4, 2000. Field observation periods totaled 219 hours and were performed on 31 weekdays and 9 weekend days. The primary observer's researcher role was concealed by appearing to look like a hiker, nature enthusiast, reader, or tourist. Observations of visitors' actions and comments, recorded during stationary and roving observation periods, were subtlety recorded in a small, inconspicuous journal.

To analyze the data, field note entries were organized into general categories. Individual entries were coded for specific themes or patterns identified by constantly comparing and analyzing the entries. Emerging theories/hypotheses, which were borne out of (or grounded in) recorded data, are discussed in relation to potential management approaches.

Most impacts to the site occur in a positive social atmosphere. Damaging behaviors such as cairn building and trampling did not appear to show malicious or even rebellious intent. Cairn building was most attributable to families with preadolescent children. Findings identified numerous factors influencing off-trail travel (e.g. personal space, photography, picnicking, etc.). Furthermore, insight was gained regarding how visitors react to low-impact messages (on signs) and to physical barriers erected to protect damaged areas.

Future research and management considerations are put forth based on the results of this study. Particular emphasis is given to persuasive communication. The influence of high visitation rates on several potential management strategies is discussed.

Introduction

The attractiveness of Acadia National Park, located primarily on Maine's Mount Dessert Island, has led to an extremely high level of visitation. Acadia National Park is within a day's drive of roughly twenty-five percent of the United State's population. In 1999, Acadia National Park received 2,602,227 recreation visits, the 8th highest visitation level of all National Parks in the U.S. (NPS, 2001). According to the 1998 Visitor Services Project (NPS, 1998a), 76% of visitors to Acadia National Park visited the summit of Cadillac Mountain. Cadillac Mountain, the location of this study, is the highest point along the eastern coastline of North America. At 1530 feet high, it is claimed by some to be the first point in the United States hit by the rising sun. Cadillac, with its dome-like granite form, glacial history, shrub vegetation, magnificent views, and open summit, draws millions of visitors per year. Furthermore, the bulk of these visits come during the 100 days from Memorial Day to Labor Day.

In looking at visitation to Cadillac's summit, it is important to understand the access routes leading to the summit. An extremely popular scenic auto road accessing the summit is open to the public for approximately six months a year. Also, there are three hiking trails leading to the summit. The North Ridge Trail is a 2.2-mile (one-way) hiking trail. The South Ridge Trail, approaching the summit from the opposite direction, is 3.7 miles (one-way). Finally, the Gorge Path Trail approaches the summit from the north, with the final approach being a steep climb out of the Gorge between Cadillac Mountain and Dorr Mountain.

There is a day-use parking area atop Cadillac. This lot, connected to the summit auto road, has space for approximately 70 cars. There are also designated spaces for visiting tour buses and commercial tour companies. A gift shop is located on Cadillac's summit. This shop, run by the non-profit Eastern National Corporation, houses a set of public restrooms.

The Cadillac Summit Trail is a 2118-foot long paved trail that loops around the immediate summit of Cadillac. There are four interpretive panels and two paved viewing pads located along the trail. None of the current panels discuss vegetation impacts to the summit area.

The dominant vegetation type, in relation to the developed/semi-developed summit area, is "Blueberry Bald-Summit Shrubland Complex." One of the characteristics of areas falling into this community category is openness. On the summit of Cadillac, areas within this community boundary are open, with patches of low or shrubby vegetation amongst areas of exposed granite bedrock (that are frequently covered with crustose lichen). Sub-alpine plant communities such as this are considered rare by the Maine Natural Heritage Program and are state critical areas (NPS, 1998b). On Cadillac's summit, there is

a profusion of areas where vegetation has been worn away by foot traffic and only soil remains. The soil resembles grape-nuts cereal; it is composed of tiny granite pebbles and grains of sand. The sand and pebble soil patches, in some cases, are underlain by peat-based soil.

Resource impacts to Cadillac's summit have not gone unnoticed by park managers. The Resource Management Plan for Acadia National Park (1998) makes the following statements about visitor use and resource impacts:

> Increasing visitor use in the Park is impacting vegetation. Plants in sub-alpine habitats on mountain summits and offshore islands and Park bogs and wetlands are particularly sensitive to trampling. Soil compaction and/or erosion, destruction of vegetation, and development of social trails have all been observed in these fragile habitats. Habitat restoration, long term monitoring and visitor management is needed to protect these areas.
>
> Concentrated visitor use in the front country is also having a negative impact on vegetation. Trampling of soils and plants is occurring along roadside and parking areas due to crowded overflow conditions in summer. Social trails have also developed at many heavily visited sites. Habitat restoration and visitor management is critically needed to repair degraded conditions.

The summit of Cadillac is especially impacted due to the fact that it is both a sensitive sub-alpine area and a heavily visited front country site. The Resource Management Plan specifically cites Cadillac's summit as a site where social trails have caused erosion. However, due to the limited size of the summit area and the high number of visitors, visitors to Cadillac's summit are not asked to stay on trail. Instead, visitors are encouraged to use low-impact off-trail skills (i.e., walk only on rocks) if they choose to venture off-trail.

Cairns, pyramid shaped piles of rocks built by trail crew to mark trails and guide hikers, are another resource concern at Cadillac. Park managers have continually had to deal with cairns at Cadillac being altered by visitors. Specifically, some cairns would be destroyed, others would have rocks added to them, and visitors would inappropriately construct others. As a result of visitors inappropriately interacting with cairns, it is, in places, difficult to follow the actual trails. This in turn leads to trampling impacts and safety concerns (e.g., visitors potentially getting off-trail and lost, especially in fog). Inappropriate cairn building can "clutter" scenic vistas. Additionally, removing stones from the soil to build or add to cairns can lead to soil erosion and loss of plant "micro-habitat" (Hampton & Cole, 1995).

Resource protection efforts on Cadillac during the 2000 season consisted of ranger-led interpretive walks and area closures defined by "exclosures," wooden fence-like structures encircling three areas. The exclosures, erected in early August, were complimented by generic (i.e., not site specific) revegetation signs. Later, in September, new signs specifically designed for Cadillac were placed on site. In a few locations, the barriers, which cumulatively made up exclosures, were used individually. These barriers, that looked somewhat like saw horses, were placed in locations where visitors frequently ventured off-trail. Exclosure designs varied slightly. One exclosure had relatively large "gaps" between the individual barriers that made up the exclosure. The other two exclosures were created in such a way that the barriers were either contiguous or closely spaced.

The interpretive programs were not specifically centered on low-impact education, though visitors were made aware of impacts and were asked not to step on vegetation and bare soil. It should also be noted that the park promoted park-wide low-impact behavior by communicating the principles of the Leave No Trace program in some trailhead signs and in the Beaver Log, the Park newspaper. The signs placed on site in September also used Leave No Trace messages (e.g., walk on rocks) and logos.

The objective of this research is to increase understanding of visitor impacts on summit area resources using observational research methods. Two initial concerns, visitor manipulation of cairns and trampling of vegetation and bare soil, guided observations. Research findings were intended to help park managers better understand visitor use and how damaging visitor behaviors might be managed.

Methods

This study used unobtrusive observation as a tool for gathering qualitative (non-metric) data. An observer, whose identity was concealed by appearing to look like a tourist or hiker, recorded visitor behaviors. The observer did not purposefully interact with visitors. Observation periods ranged in length from 2 hours to ten hours (with periodic breaks). Total observation hours, logged during 31 weekdays and 9 weekend days from June 19, 2000, to October 4, 2000, equaled 219 hours.

Field notes were recorded in a small sketchbook. Note taking occurred during stationary observation periods. Observations collected while roving around the site were recorded later, either during stationary observation periods or in a vehicle shortly after a day's observations. At the close of each day, a summary sheet was filled out. Summary sheets helped organize data for retrieval during later periods of data analysis.

The primary sampling approach used was purposive sampling. Purposive sampling is explained by Erlandson et al. (1993) in the following excerpt:

> Central to naturalistic research is purposive sampling. Random or representative sampling is not preferred because the researcher's major concern is not to generalize the findings of the study to a broad population or universe but to maximize discovery of the heterogeneous patterns and problems that occur in the particular

context under study. Purposive and directed sampling through human instrumentation increases the range of data exposed and maximizes the researcher's ability to identify emerging themes that take adequate account of contextual conditions and cultural norms.

The observer chose to record behaviors and overheard comments based on the problems initiating the research. As More (1984) writes, "What you observe is spelled out in the definition of the problem." Kellehear (1993) uses the term ad libitum sampling to describe sampling that is "impressionistic and non-systematic" where "the observer simply records what is of interest." This research employed ad libitum sampling.

Data Analysis

The data analysis approach used in this study was based on the principles of grounded theory. Grounded theory requires that researchers discover concepts and hypotheses through an inductive process involving constantly comparing exhaustive categories that explain the data (Frey et al., 2000; Glesne, 1993). As part of this process, notes were "openly" coded. Coding is the task of discovering or discerning themes and giving those themes names (Kellehear, 1993). Coding can take two forms; closed coding creates predetermined categories before data gathering while open coding creates categories during or after data gathering (Frey et al., 2000). In keeping with this study's exploratory, grounded theory approach, open coding was used. Once the data was organized by topical categories and a hard copy was printed, the hard copy was analyzed by reading and rereading groups of entries. Numerous notes and markings were made in the margins of the hard copy print out. New codes were created to represent emerging themes, patterns, and ideas. Entries had evolved from being organized by topic (e.g., photography, cairn comments) to theme (e.g., "disconnect"-entries that displayed a disconnect between a visitor's comments and actions). These new thematically organized entries were compared to entries within their category and to entries placed in other thematic categories. With data organized first around topics and then around themes, the data was examined and interpreted findings that were of importance to park management were pulled out.

Results

Patterns emerged from the data and were constantly evaluated. Downing and Clark (1985) claim that naturalistic, grounded methods are capable of rapidly developing and refining hypotheses that are likely to survive the rigors of verification. This capability stems from grounded hypotheses being borne from analysis of new data. With this in mind, the following list of summarized findings is put forth. These bulleted items are working hypotheses generated and evaluated through data collection and analysis. They are the stronger findings relating to the problems that initiated this research.

Cairns

- Young children (pre-adolescents) are the predominant group responsible for building and destroying cairns.
- Family members support children who engage in cairn building. Cairn building occurs in a positive family context.
- Children are NOT the only group observed adding stones to cairns; adults also add stones to cairns.
- The effects of visitors building and/or destroying cairns leads to some other visitors being confused and/or having trail experiences diminished.
- Understanding the role cairns play decreases the likelihood of cairn modification (adding stones was the activity that data from this study identified, though it is plausible that understanding also influences the likelihood of cairn building and destroying as well).
- Cairns are intrinsically attractive in that they have an allure to those who are seeing them for the first time (irrespective of who built them).
- By building cairns atop Cadillac and not explaining their purpose *on-site*, park managers actually instigate additional cairn building by visitors.

Trampling and Off-trail Travel

- Trampling acts off-trail far outweigh low-impact off-trail acts (walking only on rocks), even after signs are placed on site.
- Reasons for visitors going off-trail include: gaining personal space, visiting attractions such as interpretive panels and rock formations, returning to their vehicles via the shortest path, taking photographs, picking blueberries, generally exploring.
- Some visitors prefer to be off-trail, regardless of how much space is available on the Summit Trail (including the paved viewing pads).
- A number of visitors do not understand the layout of the site. In particular, many visitors do not recognize that the Summit Trail is a loop. This lack of understanding may influence their decision-making process about going off-trail.

Impact Perceptions

- Visitors do not often recognize that patches of barren soil are the result of foot traffic.
- Visitors occasionally refer to social trails as "paths" or "trails", apparently identifying social trails as sanctioned.

Physical Barriers

- Lone barriers are ineffective in protecting significant areas of vegetation, even when signed.
- "Tightly" designed exclosures are very effective in reducing impacts *within* their perimeters.

- Exclosures push impacts around their perimeters.
- Visitor experiences at the summit do not appear to be diminished by the exclosures.
- Many visitors "narrowly" conceptualize the purpose of exclosures. These visitors perceive that the exclosures were placed on site to protect the specific areas within their perimeter, and that other areas do not merit concern.
- Many visitors either do not read the signs on the exclosures at all, or they only briefly glance at the sign.
- Some visitors ascribe meaning to the exclosures without reading the sign.

Low-impact Skills and Knowledge

- Some visitors do not recognize the difference between gravelly soil and true rock surfaces, thereby misunderstanding the "walk on rocks" message.
- Many visitors have a threshold for low-impact techniques; they will follow low-impact guidelines up to a point at which they abandon the techniques in favor of personal needs or wants.
- Some visitors are physically unable to follow the "walk on rocks" guideline.

Creativity and Play

- Playful, tactile interactions with the physical resources on site are a significant component of youths' experiences at the summit.

Discussion

The findings of this study provide valuable insight for persuasive communication efforts on Cadillac. One major pattern to emerge from the data is that willfully depreciative behaviors, those actions that visitors engage in knowing full well that they are causing significant damage, were rarely seen. Therefore, most damaging behaviors are not malicious or flagrant but rather unskilled, uninformed, careless, or unavoidable. Hendee et al. (1990) assert that unskilled actions and uniformed actions are (correspondingly) highly and very highly receptive to change through persuasion. Many problem behaviors seen at Cadillac's summit fit into one of these two categories. Thus, in August and again in September, when the park established signs on-site detailing the need for low-impact behaviors, observations of positive behaviors should have gone up. However, they did not. Comments about, for example, "walking on rocks if off-trail" did become more frequent, but the actual behaviors were not seen more than before the signs went up (or much at all for that matter). Furthermore, the exclosures seemed to influence some visitors to think that only specific areas were impacted and in need of delicate treatment (in fact, all of the summit, except paved surfaces and exposed bedrock, is delicate, vulnerable, and impacted).

One possible reason why low-impact messages on signs were not extremely successful relates to the atmosphere at the summit. The summit is a busy place with a lot of visitors, natural attractions, and non-natural "curiosities" (e.g., visitors with unique cars, marriage ceremonies, a gift shop, etc.). And placed within this atmosphere were signs that required visitors to read them, digest the information, accept the sign's ethical appeal, and start following the sign's low-impact guidelines. The signs, then, used a central route to persuasion. The central route to persuasion requires the receiver of the message to attentively receive the message, elaborate on its content, and integrate the message into his or her belief system (Roggenbuck, 1992). The signs themselves, especially the signs used after September 7, were not poorly designed. However, they use a conceptual route to persuasion that requires significant personal attention in a location that is often extremely distracting.

It could be recommended that park managers employ more communication efforts that use the peripheral route to persuasion, a conceptual route that focuses on the message source, not its content (Roggenbuck, 1992). This route is based on the notion that in many situations people make quick decisions by spontaneously responding to a cue. That cue may take the form of an environmental prompt, the characteristic of a message (instead of its content), the source of a message, or the communication channel (Roggenbuck, 1992). While utilizing the peripheral route, perhaps through images such as international signage, could help reduce visitor impacts, a broader remedy may be needed.

The extremely high visitation rate at Cadillac Mountain likely confounds resource protection efforts, including efforts to educate visitors about low-impact ethics and techniques. Some site management alternatives, such as locating use on resistant sites, site hardening and shielding, and site rehabilitation are made next to impossible by current visitation rates. Similarly, visitor management alternatives such as dispersal or concentration of use are also difficult to use with visitation being so high. Reducing visitation rates may be only way to effectively protect and restore the summit vegetation on Cadillac. By limiting visitation, the site would most likely become more manageable. Visitor and site management alternatives would become more practical and effective. Education messages could be delivered in a less distracting atmosphere. Finally, with current visitation levels, even a statistically dramatic drop in damaging behaviors would leave a high level of impact. If 99 percent of visitors stayed off sensitive vegetation, then approximately 20,000 visitors would trample sensitive sub-alpine vegetation on this relatively small summit.

It would be beneficial if future research and management efforts examined potential management scenarios in a process investigating both resource protection and visitors' experiences. Management scenarios, such as closing the auto road to private vehicles (not including tour vehicles), should be examined to see how well they could protect the summit's natural resources, as well as how they would restrict and/or enhance specific visitor experiences.

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Leisure Constraints of Outdoor Recreationists

THE EFFECTS OF PERCEIVED LEISURE CONSTRAINTS AMONG KOREAN UNIVERSITY STUDENTS

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Abstract: This study is based on Crawford, Jackson, and Godbey's model of leisure constraints (1991), and examines the relationships between the influences of perceived constraints, frequency of participation, and health status in the context of leisure-time outdoor activities. The study was based on a sample of 234 Korean university students. This study provides further support for this model of leisure constraints: intrapersonal, interpersonal, and structural. The results indicated that the higher interpersonal constraints, the lower the frequency of activity participation. Moreover, the results demonstrated that highly interpersonally constrained participants tended to rate themselves lower with respect to mental heath. In addition, respondents who participated more frequently in these activities tended to give higher self-reports concerning their mental health.

Introduction

It is generally agreed that the popularity of outdoor recreational activities has dramatically increased over the last three decades. One example of the many indicators that suggest the increased popularity of outdoor activities is that, as early as 1975, over 200 colleges and universities offered courses or degrees in outdoor adventure pursuits (Hale, 1978). Since then, many factors, governmental, social, and economic, have combined to create more opportunities for outdoor recreational pursuits (McLellan, 1986). Nevertheless, many outdoor activities demand a certain level of outdoor and/or technical skill in the recreational setting. Requirements may include equipment or material as well as a geographically acceptable setting. These requirements often serve to limit or even prohibit new or continuing participation in outdoor activities (Meier, 1977; White, 1978).

Since the mid-1980s, a growing body of research has been developed to investigate what factors influence the extent of an individual's interest and participation in leisure activities. Many researchers have contributed to our understanding of the influence of constraints on leisure activity participation (Crawford & Godbey, 1987; Crawford et al., 1991; Henderson, 1991; Henderson, Stalnaker & Taylor, 1988; Samdahl & Jekubovich, 1997; Kay & Jackson, 1991; Jackson & Rucks, 1995; Jackson, Crawford, & Godbey, 1993) and they have developed a variety of conceptual and methodological approaches that serve to explicate how constraints on leisure activity might operate. Crawford and Godbey (1987) categorized constraints into three categories according to the way that they influence participation: intrapersonal, interpersonal, and structural constraints. Intrapersonal constrains involve "individual psychological states and attributes" (p. 122), interpersonal constraints are "the result of interpersonal interaction or the relationship between individuals' characteristics" (p. 123), and structural constraints are "intervening factors between leisure preference and participation" (p. 124). Crawford and Godbey were critical of traditional understandings of constraint which were assumed to play an intervening role in the leisure preference-participation relationship, as "only one of the ways in which barriers may be associated with preferences and participation" (p. 119). They also noted that these constraints may be interrelated. They suggested that an individual may experience constraint on any one of the three constraints levels. According to Crawford et al. (1991), intrapersonal constraints are the most powerful of the three types of constraints and structural constraints are the least powerful.

The benefits of participation in outdoor activities can be divided into the categories of, for example, psychological, sociological, educational, and physical, factors, and can be evaluated in this way on an individual or case-by-case basis. Such benefits as a general improvement in motor skills, strength, coordination, exercise, and balance may result from outdoor participation (Cullingford, 1979). One area of potential benefits that tends to be overlooked is the improvement in psychological fitness of the participant, in addition to physical fitness. Here, it is assumed that the factors that limit or prohibit engagement in leisure participation have a direct impact on an individual's heath, both physical and psychological.

The primary purpose of this study, therefore, has been to examine relationships between the categories of influence of perceived constraints in outdoor recreational activities among a sample of Korean university students. The following research questions have guided this study: (a) What is the factor structure of perceived constraints among this sample? (b) Does the level of perceived constraint influence frequency of participation in outdoor recreational activities? (c) Do perceived constraint factors influence self-reported health status? (d) Does frequency of participation in outdoor recreational activities influence self-reported health status?

Methodology

Selection of Respondents

Questionnaires were initially given to 1,014 individuals of all ages. For the purposes of this study, 234 university students were selected, from freshman to seniors, who had visited two national parks located in Seoul, Republic of Korea. Data collection took place during June 2000. Just over half (57.7%, N=120) of the participants were male and

just under half (41.8%, N=87) were female. The sample ranged in age from 18 to 50 years, with a mean age of 21. Approximately one third of the sample (37%, N=77) reported that they were freshmen, followed by sophomores 28.8% (N=60), seniors 20.7% (N=43), and juniors 13.5% (N=28). The household income of the sample was also diverse, with 20% (N=40) of the sample earning $20,001-$30,000, 17.3% (N=36), $30,001-$50,000, 14.4% (N=30) $10,001-$20,000, 11.5% (N=24) less than $10,000, and 4.8% (N=10) making more than $50,001 (all $ denominations in this study indicate $US).

Procedure

An on-site questionnaire was developed by the researchers and divided into four sections designed to measure perceived leisure constraint, leisure participation, and health status. The first section collected information regarding *constraints* in outdoor recreational activities. A five point Likert rating scale measuring leisure constraints, ranging from 1=has not influenced me at all to 5=has influenced completely, was used to assess the influence of each of thirty statements, as limiting or prohibiting leisure activity. The items used to measure level of constraint follow Oh and Caldwell's work (1999), based on Crawford et al.'s research (1991), that described three discrete types of constraints (intrapersonal, interpersonal, and structural constraints). In the second section, participants were asked to report their frequency of activity participation in outdoor recreational activities (e.g., hunting, fishing, camping, golf, skiing, canoeing/kayaking, etc) in a typical week. For the third section, participants were asked to report their perceived physical and mental health. These variables are adopted from the sub-scales of the Rand Medical Outcomes Study Health Survey (MOS SG-20, McDowell & Newell, 1996). In regard to physical health, respondents were asked to evaluate each of six statements with respect to *how long (if at all) their health limited their activities* using a three point Likert scale where 1=limited for more than 3 months; 3=not limited at all. For mental health, participants responded to five hypothetical questions such as: "How much of the time over the past few months have you been a very nervous person?" responding on a six point Likert scale where 1=all of the time, 6=none of the time. In the last section, individuals were asked to provide socio-demographic variables regarding their gender, age, household income, and school year.

Measures

Descriptive statistics were used to profile the sample. A principle component factor analysis with a varimax rotation was adopted to determine if there were distinct constraint dimensions among the thirty constraint factors revealed by Korean university students. Thirty constraint items in outdoor recreational activities were initially used to represent three types of constraints: intrapersonal, interpersonal, and structural. Since these three dimensions were expected to be of approximately equal importance, a varimax rotation was used to minimize the number of variables that had a high loading on a factor and to enhance the interpretability of the results. Items with an Eigenvalue greater than one and a factor loading of at least .50, were selected for each factor. The reliability of the factor dimensions was computed through the reliability procedure in SPSS for windows. A path coefficient analysis using multiple regression analyses was conducted to examine (a) whether perceived constraints and frequency of activity participation influenced physical and/or mental health; (b) whether perceived constraints influenced the frequency of activity participation.

Results

The six factors were defined as follows, "psychological" (Alpha = .85, seven items), "accessibility" (Alpha = .90, five items), "time" (Alpha = .87, five items), "partner" (Alpha = .84, five items), "facility" (Alpha = .81, two items), and "safety" (Alpha = .83, two items). Four items had a low reliability coefficient and were, therefore, deleted. The factors "psychological" and "safety" were categorized as intrapersonal constraints. The factors "accessibility," "time," and "facility" were defined as structural constraints. The factor "partner" is considered to be an interpersonal constraint. The findings verified the importance of all three distinct constraint dimensions from Crawford and Godbey's (1987) study, intrapersonal, interpersonal, and structural. For testing further research questions, we have used these three factors of perceived leisure constraint.

Next, Pearson correlation coefficients were obtained to examine multicollinearity among the variables. Since multiple factors influence health, it was anticipated that some of the independent variables would be significantly correlated. A correlation matrix, including all independent variables and dependent variables, indicates significant correlations, ranging from .060 to .627 (Table 2).

A path coefficient analysis using multiple regression analyses was conducted to further test the significance of the research questions; it included perceived leisure constraint, frequency of participation in outdoor recreational activities, and perceived health status, as well as demographic variables. Each variable was regressed on the variables upon which it was assumed to depend. The standardized beta weights are determined by the path coefficients, presented in Figure 1, taken from an analysis of the full model.

As Figure 1 illustrates, the findings indicate that frequency of participation in outdoor recreational activities was significantly influenced by income ($\beta = .234$, $p = .006$) and interpersonal factors ($\beta = -.242$, $p = .019$). In this regression model, the independent variables accounted for 23% (Adj. $R^2 = .23$) of the variance in the dependent variable frequency of activity participation. Thus, as people have more income, their frequency of participation in outdoor recreational activities tends to increase. Conversely, if one experiences higher interpersonal constraints, his/her leisure participation tends to decrease. This study found no significant relationship between age, gender, school year, intrapersonal, and structural constraints, on the one hand, and frequency of activity participation, on the other.

Table 1. Constraint Dimensions as a Result of Factor Analysis

Factors/Items	Factor 1 Psychological	Factor 2 Accessibility	Factor 3 Time	Factor 4 Partner	Factor 5 Facility	Factor 6 Safety
Lack of energy	.784					
No physical strength or capability	.756					
Not feeling fit enough	.734					
Not interested	.683					
Not confident	.635					
Did not enjoy before	.629					
Health-related problem	.536					
Transportation takes time		.786				
No opportunity near home		.775				
No money		.767				
Expensive fee		.756				
Cost of equipment		.665				
Busy life			.823			
Work/study to do			.789			
No time			.764			
Social commitment			.662			
Family commitment			.657			
No one teach me				.765		
Not necessary skills				.760		
No one to participate with				.695		
Don't know where to participate				.612		
Friends don't have time				.592		
Inadequate facilities					.764	
Inconvenient facilities					.737	
Afraid of getting hurt						.847
Safety						.757
Eigenvalue	4.019	3.755	3.438	2.899	1.922	1.867
Variance Explained	15.456	14.441	13.222	11.152	7.392	7.180
Cumulative Variance	15.456	29.898	43.120	54.272	61.663	68.844
Alpha	.85	.90	.87	.84	.81	.83
Scale Mean Score	2.04	2.88	2.67	2.34	2.52	2.04

Table 2. Pearson Correlation Coefficients for Perceived Leisure Constraints, Frequency of Activity Participation, Perceived Physical Health, and Perceived Mental Health

	Age	Income	School year	Intrapersonal	Interpersonal	Structural	LP	PH	MH
Gender	-.054	***.187**	.091	-.002	.093	.060	-.041	-.018	***-.170**
Age		-.002	*****.464**	-.109	-.083	-.027	***.136**	***-.182**	.079
Income			-.165	.088	-.033	***-.140**	****.219**	-.041	.011
School year				-.049	.049	***.140**	-.057	.034	.057
Intrapersonal					*****.477**	*****.556**	***-.155**	-.125	****-.208**
Interpersonal						*****.627**	****-.250**	-.048	*****-.274**
Structural							***-.147**	-.038	***-.190**
Participation								.046	***.184**

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

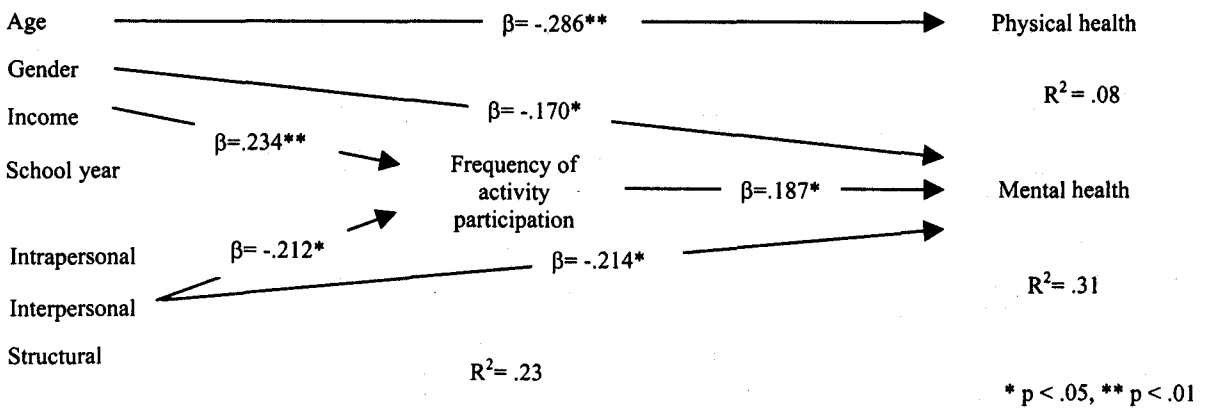

Figure 1. Results of a Path Analysis of the Leisure Constraints Model

Demographic variables, three constraint factors, and the frequency of activity participation were used to predict physical and mental health. The findings indicated that only age, among the socio-demographic variables, has a significant negative relationship with physical health (β = -.286, p = .003, Adj. R^2 = .08). As individuals age, they tend to rate themselves lower on physical health. No statistically significant relationship was found, however, for the relationship between perceived leisure constraints and physical health. Moreover, the results indicated that females tend to rank themselves lower on mental health scores (β = -.170, p = .041). No other socio-demographic variable influenced mental health. Examination of the beta weights indicated a positive relationship between frequency of activity participation and mental health status (β = .187, p = .018). Individuals with more frequency of activity participation also rated the highest on perceived mental health. There is a negative relationship between interpersonal constraints and mental health status (β =-.214, p = .045). If individuals perceived higher interpersonal constraints, they tended to rate themselves lower on mental health. With respect to mental health, the overall regression model explained 31.3% of the variance in the dependent variable.

Discussion

The initial results of this study suggested that there are indeed distinct factors that influence the structure of constraint domains. Psychological, accessibility, time, partner, facility, and safety factors can all serve as significant constraints on participation in outdoor recreational activities. Iso-Ahola and Mannell (1985) note that certain constraints may be stable throughout an individual's life span, over time, and in a variety of settings. The findings presented in this study suggest that some constraints have a negative influence on the levels of change of participation in leisure activities. According to Shaw and her colleagues (1991), however, higher levels of perceived constraints do not necessarily result in less leisure activity participation. Individual behavioral change is not easily determined by simple lack of availability in leisure activity. Furthermore, of the three types of leisure constraints examined, only interpersonal constraints have been found to effect participation levels. We assume that there may be some latent variable that moderates leisure participation. This may be a reflection of what is referred to in the literature about leisure constraint as a "negotiation strategy." We suggest, therefore, that future research should investigate what the moderating factors are that have a direct influence on the relationship between leisure constraints and leisure participation.

The results suggest that there are similarities between the perception of constraints among this Korean sample and those of participants in previous North American investigations, despite cultural differences with respect to activity type and recreational provision. Our study is important only with respect to the results of three constraints factors on outdoor recreational activity types. However, at least some of this may be due to the fact that many outdoor recreational activities are also luxurious leisure activities. The outdoor, recreational, activities used in this study, such as golf, skiing, hunting, windsurfing/water skiing are more likely to be money consuming activities. These activities may also be seasonal activities, to a greater or lesser extent. It might be difficult, for example, for university students to find people who have similar recreational interests and can afford to play and enjoy their leisure activity together. Further empirical research is recommended to expand this analysis, by including specific activity types according to a classification of leisure constraint categories.

As anticipated, the findings empirically support the perception that gender, interpersonal constraints, and frequency of activity participation were significant determinants of perceived mental health status. The findings also help to clarify how activity participation is influenced by peer absence. It was expected that university students would be less likely to participate in outdoor recreational activities in their leisure time, due to lack of money, support, and/or the availability of friends. Interpersonal constraints for Korean university students are considered to be major impediments to the perceived freedom to participate in new or continuing outdoor recreational activity.

Although the leisure constraints model followed in this study is based on theoretical assumptions, it has some empirical support; nevertheless, the results should be interpreted in light of the methodological limitations of the study. We used overall, outdoor recreational types to predict outdoor recreational activity participation. A more specific categorization of leisure activity types might have yielded different results. Future research on leisure constraints may need to take into consideration the key elements of a network of factors related to leisure constraints in leisure activity participation, which often involves constraint negotiation.

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EXPLORATION OF THE INFLUENCE OF SELF-EFFICACY ON RECREATION PARTICIPATION LEVELS OF INDIVIDUALS WITH VISUAL IMPAIRMENTS WHO USE DOG GUIDES

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Abstract: Self-efficacy and its relationship to outdoor recreation is only recently being explored. This paper is an attempt to identify the specific domain of leisure self-efficacy and to explore how it might be related to participation levels in outdoor recreation activities of individuals with visual impairments.

Introduction

Persons with disabilities have often been acknowledged as generally having lower participation rates in recreation activities. Part of the reason for this is the number of physical barriers one must overcome in order to participate. For example, a person in a wheelchair must negotiate curbs, poorly surfaced trails and narrow entrance gates. The Americans with Disabilities Act was developed to address many of these external challenges and, with its enforcement, is providing progress in breaking down visible barriers to leisure participation. However, there are still internal challenges that must be addressed if a person with a disability wishes to participate in recreation.

Internal challenges identified include lack of motivation, a perceived loss of control over one's environment and the perceived inability to participate. These barriers, because they are not visible to others, are often difficult to measure or modify, and, thus, are often difficult to address in the recreation profession in order to increase leisure participation levels of persons with disabilities. One of these internal components that may be strongly connected to participation is self-efficacy.

Self-efficacy is generally described as the belief of one's ability to accomplish something (Bandura, 1997; Zimmerman, Bandura & Martinez-Pons, 1992). The theory suggests that self-efficacy levels can "...influence behavioral choices, performance, and persistence" (Betz & Hackett, 1998, p. 1). Sherer and Maddux (1982) contend that "...expectations of self-efficacy are the most powerful determinants of behavioral change because self-efficacy expectancies determine the initial decision to perform a behavior, the effort expended, and persistence in the face of adversity."

There are three levels of specificity typically measured in self-efficacy: global efficacy; domain specific efficacy; and, task specific efficacy (Bandura, 1997). Research suggests that the best prediction of behavior occurs when the level of specificity used in measuring efficacy is matched with the level of behavior it is anticipated to predict. For example, high academic efficacy, a global level of efficacy, tends to predict more involvement in academic activities and higher levels of academic achievement (Pajares, 1996). In addition, it would be expected that high math efficacy, a domain specific efficacy, would predict high success in math related classes, which is a domain specific behavior, but not necessarily high success in specific math tasks such as multiplication which would be classified as task specific behaviors.

Current self-efficacy research is largely centered on the domains of academics, work, and, more recently, sports (Pajares, 2000). However, little research is available regarding self-efficacy in leisure and no specific scale has yet been developed to measure leisure self-efficacy. Examining self-efficacy in leisure could provide additional information regarding why individuals choose to participate or not to participate in leisure programs. In addition, a leisure self-efficacy scale could be used as a tool for predicting the success or failure of leisure programs relative to specific populations.

The purpose of this study was to examine how leisure self-efficacy relates to levels of recreation participation, in particular, for people with visual impairments. People who used dog guides were chosen specifically as it was anticipated they would be more likely to participate in activities (Hart, Hart & Bergin, 1987; Steffens & Bergler, 1998).

The questions posed for research in this study were:

R.Q. 1: What is the factor structure of the proposed leisure self-efficacy scale?

R.Q. 2: How strongly does a general leisure self-efficacy scale relate to participation in specific leisure activities?

Methods

Leader Dogs for the Blind (LDFB) in Rochester, Michigan was contacted and agreed to distribute a self-administered survey to their active graduates. These individuals are at least 18 years old, have visual impairments and use dogs as guides. LDFB indicated that the response rate for this population is typically 20-30%, therefore, rather than select a sample, the survey was sent to all individuals in the population. In addition, because LDFB required their respondents have complete anonymity, reminder postcards could not be sent to improve the response rate. So, in order to attempt to increase response rate, we decided to implement three additional methods of responding to our written survey. First, participants were given a toll-free phone number to call if they preferred to have the survey read to them via telephone. In addition, respondents could

call the toll-free number to request the questionnaire in Braille. Finally, we printed the survey in 14-point type to facilitate completion by individuals with low vision. Three respondents contacted us to have the survey read over the phone, however, there were no requests for the survey in Braille.

All individuals (N=234) who were active graduates of the Leader Dogs for the Blind School were sent an introductory letter, self-administered survey and self-addressed stamped envelopes. The response rate of 26% (n=65), although within the expected response range, raises concerns about non-response bias.

Data were collected regarding levels of global self-efficacy using items from Bandura's (1997) General Self-Efficacy Scale. Leisure self-efficacy was measured using items from Bandura's scale modified with the phrase 'free-time'. Respondents were asked to indicate to what extent they agreed with each statement on a five-point scale from strongly agree to strongly disagree. In addition, they were asked to indicate at what level they participated in 31 activities on a five-point Likert-type scale with 1=not at all and 5=very often. The activities were grouped into the following five categories: physical activities; arts & entertainment activities; hobbies; social activities; and, home-based entertainment activities.

Results

General demographics of the population indicate this is a highly educated group with 80% having at least some college or more. It is comprised of 60% females with 52% of all respondents falling between 40 and 59 years of age. In addition, 51% of respondents are Braille users. This relatively high number of Braille users suggests a sample that is highly educated relative to the population of persons with visual impairments in the United States (Kinder, 1999).

Before examining how self-efficacy in leisure related to activity participation, the factor structure of the leisure self-efficacy subscale was established. First, a reliability analysis was conducted on the leisure efficacy items as posited. Results indicated a moderate reliability of alpha=.77. In addition, inter-item correlations were between .2 and .4, which suggested a relationship between the items without duplication of information.

However, because this was an exploratory study, we also ran a principle axis factor analysis to examine the interrelationship of all of the items including those used to measure global efficacy. Results revealed several items that were posited to measure efficacy at a global level actually loaded heavily on the domain of leisure. The reliability of the scale increased to alpha = .80.

Upon review of the questionnaire, it appears the loading of the global self-efficacy items with the leisure self-efficacy items may be a result of priming. Participants had already answered two pages of leisure participation related questions before beginning to answer the self-efficacy related questions. Therefore, they may have considered their answers within the framework of leisure. However, because there is not a clear understanding of these unexpected results, and because of the relatively small change in reliability, the originally posited scale was used in further analysis.

Table 1. Factor Analysis Results of Global and Leisure Self-efficacy Subscale Items

Survey Item	Factor Loading from Principle Axis Factor Analysis with Varimax Rotation
When I have something unpleasant to do, I stick to it until I finish it.	.747
If I can't do a job the first time, I keep trying until I can.	.636
I give up on projects or activities in my free time before completing them.[1,3]	.636
When unexpected problems occur during my free time, I don't handle them well.[1,3]	.630
When I make plans regarding the use of my free time, I am certain I can make them work.[3]	.605
When I decide to do something during my free time, I do it right away.[3]	.583
In deciding how to use my free time, I avoid facing difficulties.[1,3]	.541
I am a self-reliant person.	.538
Failure just makes me try harder.	.526
When I set important goals for myself regarding the use of my free time I rarely achieve them.[1,3]	[2]
If a leisure or recreation activity looks too complicated, I will not even bother to try it.[1,3]	[2]
When trying to learn a new leisure or recreation activity, I soon give up if I am not initially successful.[1,3]	[2]
I feel insecure about my ability to do leisure or recreation activities in my free time.[1,3]	[2]

[1]Items were reverse coded in the final analysis.
[2]Item loaded at less than a .4 level in the Principle Axis Factor Analysis.
[3] Items were originally posited to comprise the leisure self-efficacy subscale and were used in the correlation analyses.

The leisure efficacy subscale was then examined for the potential to predict participation in leisure activities. Leisure activity participation was measured using two different indices of participation. Recreation Activity Index 1 (RAI 1) was developed by calculating the mean of the participation frequency for each participant in each group of activities. Recreation Activity Index 2 (RAI 2) was developed by dummy coding each recreation activity with 1=participated and 0=did not participate. The mean of the number of activities in which they participated was then used as the index value. Each participation index was then correlated with the leisure self-efficacy subscale.

The results of the correlation analyses indicated the leisure scale had a minimal relationship with both of the indices used to measure leisure participation. When the RAI 1 was correlated with the leisure efficacy index, results indicated a significant relationship at the .05 level with the physical activity index of Pearson Correlation Coefficient = .266 and the arts & entertainment index Pearson Correlation Coefficient = .337. Correlation of the RAI 2 with the leisure self-efficacy subscale revealed significant correlations with the same two groups at similar levels. There were no other significant correlations. Outdoor recreation, in particular, was not significantly correlated to the leisure self-efficacy subscale regardless of index used.

Discussion

Efficacy is generally divided into three levels: global, contextual or domain specific, and situational or activity specific. Motivational literature suggests, "...the consequences are of the same level of generality as the level of generality of the motivation that engendered them" (Vallerand, 1997, p. 276). Self-efficacy literature also suggests that the level of efficacy measured should be at the same level as the activity that is measured. Bandura (1997) notes "...the 'one measure fits all' approach usually has limited explanatory and predictive value because most of the items in an all-purpose test may have little or no relevance to the domain of functioning that is being studied" (p. 1). In other words, academic efficacy, which is domain specific, has a stronger relationship to success and participation in academics, in general, whereas math efficacy, which is task or item specific, is a better predictor of success and participation in math rather than of success and participation in other academic areas.

In this study, leisure efficacy was hypothesized to predict levels of leisure participation. It may appear that this study does not support the theory that increased levels of efficacy can predict levels of participation within domain specific activity. However, further examination of the questions used to determine self-efficacy suggests that, perhaps, leisure self-efficacy as a sub-domain was not measured adequately. Using an existing global self-efficacy scale modified through the addition of one phrase, i.e., free time, may not be an adequate measure of free time efficacy. Although this method has been successful in previous research (Sherer & Maddux, 1982) it may be a more accurate measure if we completely deconstruct and rewrite the statements intended to measure leisure self-efficacy.

In addition, it may be that the leisure self-efficacy subscale is not a good predictor of participation in specific activities. The specific activity questions may be measuring leisure participation at a situational level whereas the leisure self-efficacy scale may be measuring self-efficacy at a contextual level.

The most important component of this study may be its exploratory nature of the use of domain specific self-efficacy scales and their reliability and validity. As self-efficacy theory suggests, once a reliable and valid scale is established, it should also be a predictor of levels of achievement within domains. A leisure self-efficacy scale, as well as a recreation participation efficacy scale, may be a valuable tool to use in predicting the effectiveness of leisure or recreation programs. Future research in this area would be likely to focus on leisure and/or recreation efficacy scale development. From that scale development, further studies could then focus on the ability of the scale to predict leisure and/or recreation participation.

Finally, results from this study are subject to several limitations. Clearly, response rate bias is relatively high due to the low response rate. In addition, the population studied in this paper is unique. Individuals with visual impairments who use dog guides in Michigan account for less than 0.5% of the entire population of persons with visual impairments in the United States. The fact that these individuals use dogs and have a disability may result in attribution of a different meaning to self-efficacy and to leisure. Certainly, some constraints to leisure participation are unique due to the fact that these participants lack vision. Because of these limitations, it is important to use caution in interpretation and generalization of these study results.

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Urban Recreation & Development Issues

AN INTEGRATIVE CONCEPT FOR VISITOR MONITORING IN A HEAVILY USED CONSERVATION AREA IN THE VICINITY OF A LARGE CITY: THE DANUBE FLOODPLAINS .NATIONAL PARK, VIENNA

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Abstract: The Danube Floodplains National Park, Vienna, Austria is used predominantly by the Viennese population for daily recreation purposes. Different methods were applied for the monitoring of visitor activities in the National Park (long-term video monitoring, short-term visitor observation, interviews and route registration). The results show that only a combination of monitoring and survey data obtained by various methods allows a thorough analysis of visitor activities as a basis for the ecologically and economically sustainable management of recreation and conservation areas.

Introduction

Wildland recreation areas in close proximity to large conurbations present managers and researchers with a variety of challenging problems, due to the high number of visitors and the multifaceted visitor structure. 'Often times the activities and behaviors engaged in by urban visitors do not fit traditional conceptions of wildland recreation' (Heywood, 1993). Therefore, successful management requires an extensive recording of the uses visitors make of these areas.

The Danube Floodplains National Park has a rather unique position among the National Parks of Europe. The Park is situated in the east of Vienna, the capital city of Austria, with a population of 1.7 million. A large percentage of the national park's area, the so-called Lobau, actually lies within the city boundaries of Vienna (XXIIth district) and within the boundaries of Groß-Enzersdorf, a small municipality in Lower Austria. Settlements and areas of intensive agriculture surround the park (Figure 1).

For decades, the Lobau with an area of 24 km^2 (9.3 square miles) has been mainly used by the Viennese and the residents of Groß-Enzersdorf as a regional recreation area,

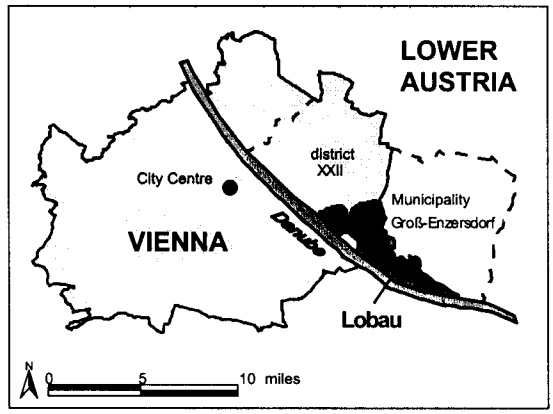

Figure 1. Study area: Lobau, the Viennese Part of the Danube Floodplains National Park (Hinterberger, 2000, modified)

as it serves as a residential environment. In 1996, the Danube Floodplains were declared a National Park, and in 1997 they received international recognition, IUCN category II. Therefore, the protection of the floodplains gained in importance compared to the use as recreation area, which for decades had been the major focus.

Park management now has the task to fulfil both the demands posed by intensive daily recreational use and by the need to protect the floodplains' forested landscape. To deal effectively with the high number of visitors, management requires more detailed information about user behavior. The visitor monitoring project of the Institute for Landscape Architecture and Landscape Management at the University of Agricultural Sciences, Vienna (Arnberger et al., 2000a) contributes significantly to this knowledge gap. This study was commissioned by the Department of Forestry of the City Council of Vienna.

Methods

As illustrated in Figure 2, the following methods for visitor monitoring were used:

- *Permanent time-lapse video recording:*
  Video-cameras were installed at several entrance points to monitor recreational activities (see Leatherberry & Lime, 1981) year round, from dawn to dusk. For the analysis, only 15 minutes of observations per hour were taken into account, but this had no negative impact upon the significance of the results (Brandenburg, Muhar & Zemann, 1996; Muhar, Zemann & Lengauer, 1995). Given the type of video system installed, it is not possible to identify individual persons, so anonymity can be guaranteed.

- *Interviews and personal observation:*
  At the 12 main entrance points into the park visitors were counted and interviewed about their motives, activities, expectations etc. on four days; the counting and the interviews took place on a Thursday and the

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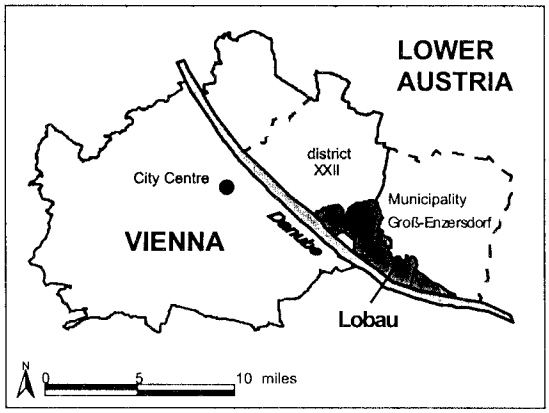

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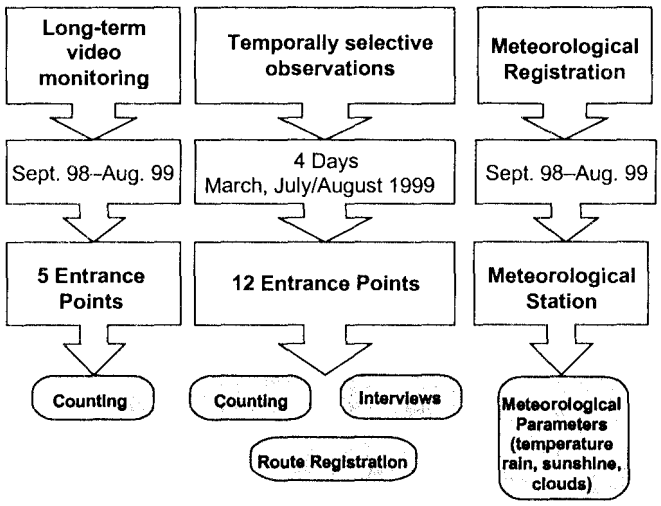

Figure 2. Methods of Data Gathering

immediately following Sunday, once in spring and once in summer. The survey was conducted on days of fine weather, to be able to collect as many data as possible. The total sample size for this study was 780. This temporally selective counting can be combined with video data for extrapolating to the total number of visitors per year.

- *Analysis of the routes taken on the basis of the results of the survey (frequency maps):*
  As part of the survey, visitors were asked to mark the route through the Lobau which they took or planned to take in a simple map. By linking the data from the interviews with the help of an Access database, an analysis by topic was possible and the respective routes could be made visible via GIS (ArcView) (see Hinterberger, 2000; Arnberger et al., 2000b).

Interviews

More than 90 percent of the visitors interviewed reside in Vienna. A high frequency of visits could be observed; more than 60 percent of interviewees visit the Lobau at least once a week. The Lobau can therefore be called the "green living room" for a large number of Vienna's inhabitants. An analysis of the visitor surveys lead to the differentiation between three types of visitors, characterized primarily by their residential address, the frequency of their visits and their motivation for visiting the Lobau.

The visitor types are:

- Regular recreational visitors from a residential environment: home less than two kilometers away from entry point, very high frequency of visits (at least once a week), short length of stay in the park (up to 2 hours); the motive for the visit is the proximity to the Lobau and the opportunities offered for sporting and recreational activities (e.g. jogging).
- Occasional recreational visitors from other parts of the city and Lower Austria: home more than two kilometers away from entry point, go there frequently (at least once a month), but stay for more than 2 hours and are motivated to visit the landscape.
- National park visitors: home further away from the Lobau, low frequency of visits, the motive for the visit is the wish to see the National Park. This type accounts only for 2 percent of the total number of visitors.

Analysis of routes

The frequency maps developed on the basis of the survey present the distribution of visitors within the observed area by type of user, catchment area, park entrances, length of stay, frequency of visits, days of the week, seasons etc. as basis for further interpretation. In addition, the path length could be compared by kind of use, season and other variables. Given the information provided in the interviews about the home of the visitors, it was possible to divide the catchment area into three zones (Figure 3). When one compares the routes chosen by visitors from the three zones, it becomes obvious that people coming from the residential area adjacent to the Lobau (zone 1, up to about 2 kilometers away from the Lobau) tended to stay in those parts of the Lobau close to the residential area.

Counting

Long-term video monitoring lead to the following information:

- Chronological distribution of the visitors: number of visitors over the entire year, by month or by season; daily visits, daily visits by season, peak days, minimum and average number of visitors per day, total number of hours visitors spend in the park.

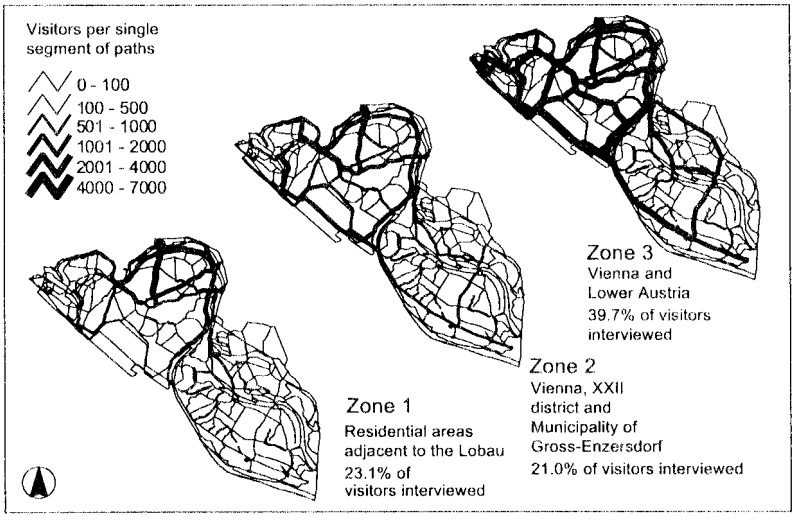

Figure 3. Routes Depending on Catchment Area (Hinterberger, 2000, modified)

- Spatial distribution of visitors: number of visitors at various entrance points, choice of direction at the intersection of paths etc.
- Linking of chronological and spatial data: number of visitors at a certain entrance point at a certain time, average duration of visits.
- Quantification of user groups: cyclists and their distribution in space and time etc.
- Recording and quantification of behavior not wanted by the management: dogs not kept on leash etc.
- Correlation of visitor numbers with meteorological data, such as temperature or rain.
- Prognostic models: the data provide a basis for the development of prognostic models to predict visitor loads.

The Lobau is used by about 600,000 people per year. The main users of the Lobau enjoy biking and hiking, while a minority is jogging (3%) and swimming (1%). The main period of visitation is between March and October with highest frequencies being observed in May and on Sunday afternoons, when all types of visitors can be found in the Lobau (Figure 4).

The main visiting period for bikers is the summer, for pedestrians it is spring (Figure 5). Joggers do not peak as drastically during the summer, but larger number of visits on their part can be observed during the shoulder seasons (March, April and September, October).

The pattern of visitation on working days differs considerably from the situation on weekends (Figure 6). On working days, the overall number of visitors is obviously lower, and grows steadily to a small peak in the early afternoon, while over the weekend and on public holidays a significant peak can be observed in the afternoon. On average, at 2 p.m. on weekends, four times as many visitors can be observed per hour than at the same time on a working day. The number of visitors leaving the

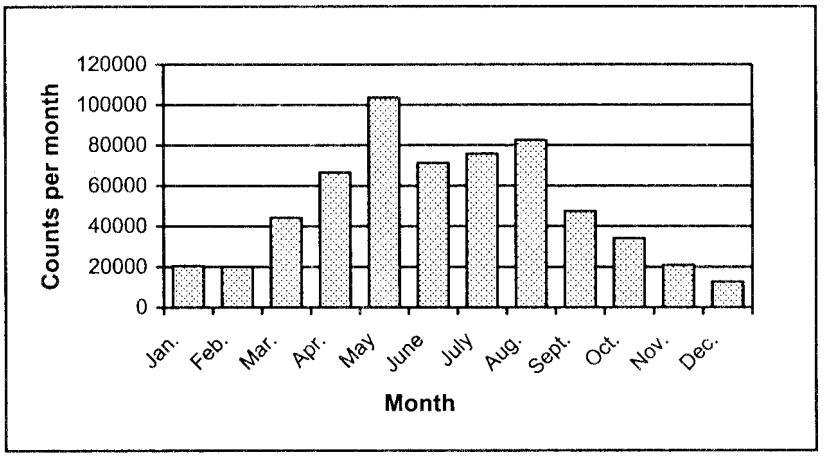

Figure 4. Visits per Month over the Year

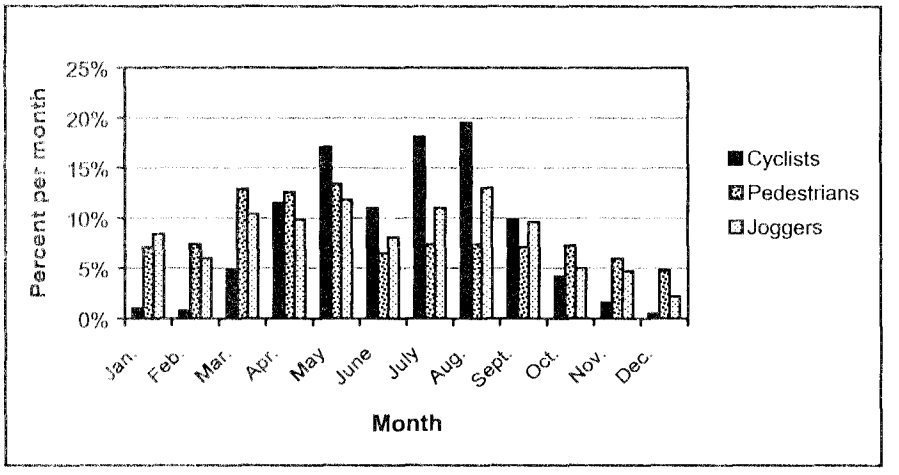

Figure 5. Relative Seasonal Distribution of User Groups

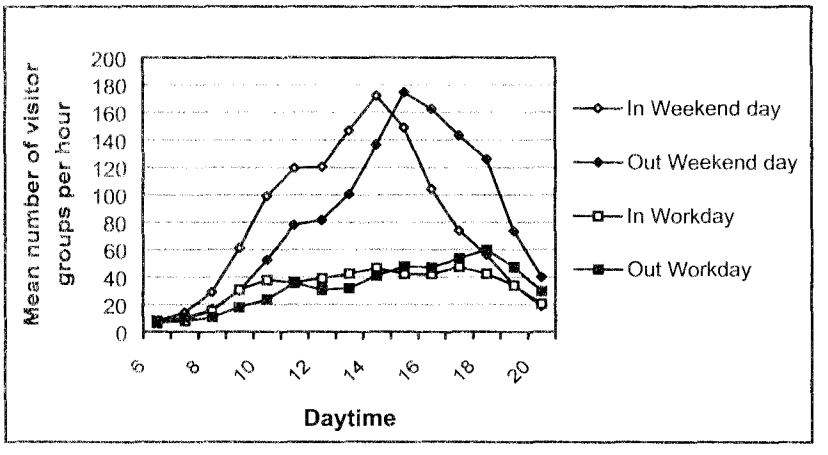

Figure 6. Hourly Visitor Rates Depending on Day of the Week over the Year

Lobau is roughly the same as the number of people entering the Lobau, but there is a time delay by about one to two hours. On working days, a comparatively high number of people enter the Lobau late in the afternoon or early in the evening, while over the weekend the number of visitors entering the Lobau already starts to decrease significantly from 2 p.m. onward.

Model to Predict Visitor Loads

The second focus of this project was the investigation and modelling of relationships between the number of visitors and external factors such as weather, season and day of the week (Brandenburg, 2001). Reliable models can be calibrated for the total number of visitors per day as well as for specific user groups with high numbers (i.e. pedestrians and cyclists). A Univariate Analysis of Variance was used. The model allows the prediction of visitor loads for a specific day (Figure 7).

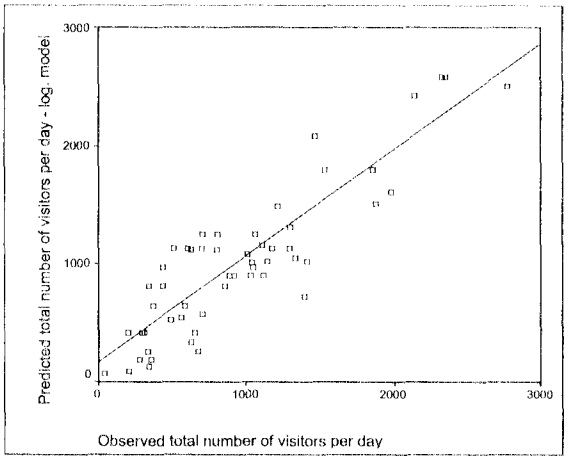

Figure 7. Model for the total number of visitors per day (adjusted $R^2 = .834$)

The day of the week has the greatest influence upon the total number of visitors as well as for user groups (Table 1). Temperature as a meteorological feature appears in the models indirectly through the scale indices of thermal comfort and the development of the temperature during the day. The Physiological Equivalent Temperature (PET) has a major impact upon the number of visitors per day, in particular on cyclists and pedestrians. 'PET is defined as the air temperature at which in a typical indoor setting (without wind and solar radiation) the heat budget of the human body is balanced with the same core and skin temperature as under the complex outdoor conditions to be assessed' (Höppe, 1999). The usage patterns of joggers and dog owners were more complex to model, as they apparently are less dependent on weather related factors. The development of the weather is integrated into the model via the development of the temperature and cloud cover in the preceding seven days. However, the overall effect of these factors is small.

Use of the Visitor Analysis Data for the Management of the Park

The results of the visitor analysis can be used for the planning and management in and around the national park (Table 2). For example:

- Areas of origin, particularly the residential areas close to the national park: improvements to residential areas.
- Wildland/urban interface: design and sizing of park entrances.
- National park: ecological and visitor management in the national park.

Conclusions and Outlook

The quality of data collected in short-term monitoring campaigns is heavily affected by statistical variations. Thus, long-term monitoring can be a very important complement to short-term in-depth visitor observation and interviews. (See Figure 8.) Due to the density and structure

Table 1. Explanatory Value of the Total Number of Visitors per Day and the User Groups Cyclists, Pedestrians, Joggers and Dog Owners (Brandenburg, 2001)

Extent of interference	Total number of visitors	Cyclists	Pedestrians	Joggers	Dog owners
Workday, Weekend and holiday	high	high	high	small	moderate
Rain	moderate	moderate	small	extant	extant
PET	high	high	moderate		extant
Clouds	moderate	moderate	small		small
Interaction between weekday and PET	moderate		small		extant
Cloud coverage of the last 7 days			very small	extant	extant
Temperature of the last 7 days		moderate	very small		
Value of model	adj. R^2=.834	adj. R^2=.844	adj. R^2=.744	adj. R^2=.291	adj. R^2=.440

Table 2. Application of Visitor Analysis Data

Areas of origin, particularly residential areas close to the national park	Wildland/urban interface (park entrances)	National park
• Improvements in the residential areas close to the Lobau (green connections, parks) • Better co-ordination of time tables of public transport to the National park Connection to other foot paths and cycle lanes • Contribution to development plans for the area close to the National park • Contribution to marketing strategies to promote the National parks • Signposting of the paths in the National park on the basis of the interview results	• Location, dimension and design of new entrance and information points (size of visitor rooms, number of parking spaces, management of the parking lot, architectural design) • Schedules for the personnel at information points (when, where, for how long) • Type of information required and best way to convey it depending on the kind of visitors at various entrance points	• Refined distribution of zones: marking of rest or recreational areas in connection with a certain guidance of visitors in time and space • Kind of facilities needed in recreational areas • Paths: making some more attractive and giving up others, path design (for example, choice of surface) depending on kind of use • Schedules for the personnel of the park who look after visitors, organize walks etc. (in time and space) and the management of resources • Targeted measures to address observed, undesirable behavior (for example, dogs not kept on leashes) • Basic data for further research projects

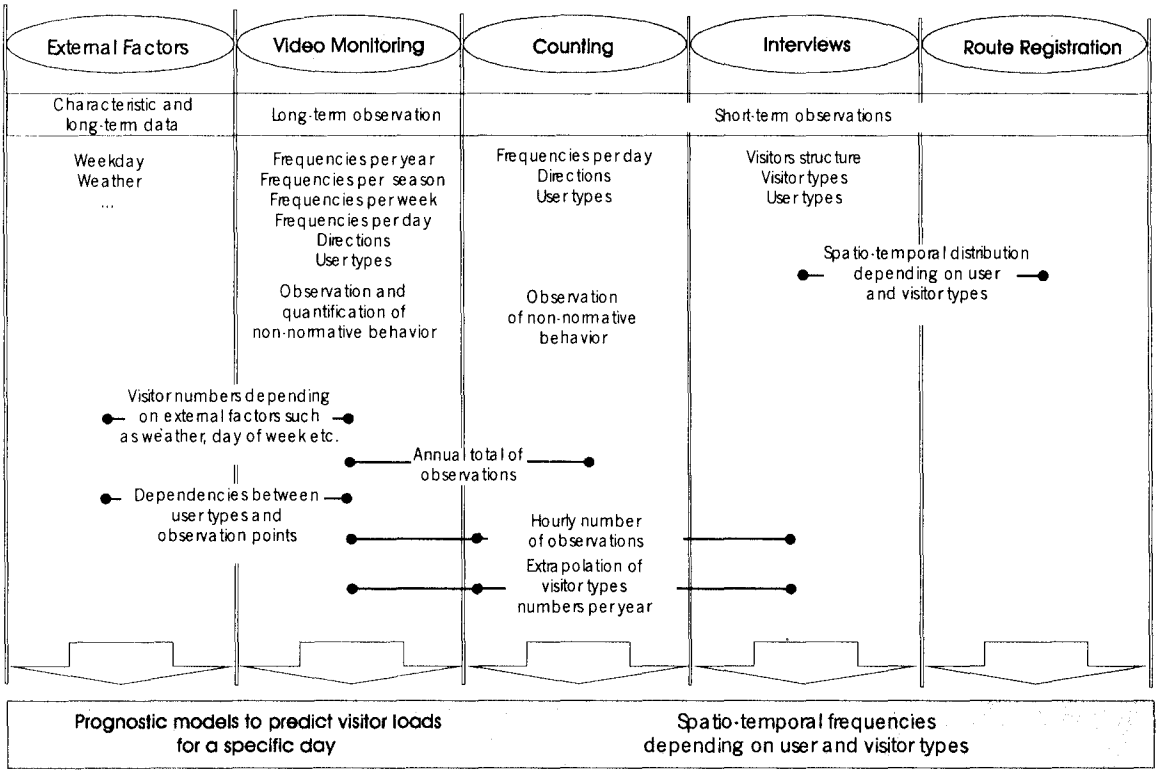

Figure 8: Methods for an Integrative Concept for Visitor Monitoring – Overview (Brandenburg, 2001, modified)

of the data collected, long-term monitoring offers remarkable advantages for a more in-depth evaluation. However, the overall expenses are rather high. However, when considering the proportional costs per registration day and monitoring point, long-term video monitoring fares very well because of the relatively low installation costs for each unit.

Consequently, this research project lead to the result that only the combination of monitoring and survey data gained by different methods allows a thorough analysis of visitor activities as a basis for the ecologically and economically sustainable management of recreation and conservation areas. Only on this basis, a precise description of the use people make of a particular recreation area can be provided.

Planned are an improvement of computer simulation modelling and research on the social carrying capacity as well as on crowding issues (Shelby & Heberlein, 1986; Manning, 1999) based on types of visitors and in combination with long-term video data.

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LINKAGES IN THE USE OF RECREATION ENVIRONMENTS ACROSS THE URBAN TO EX-URBAN SPECTRUM BY URBAN RESIDENTS

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Abstract: A study of recreation behavior of residents of Cook County, Illinois was conducted in early 1999. Respondents were contacted via telephone and surveyed about their awareness and use of outdoor recreation sites in and around Chicago and as far away as the Shawnee National Forest in Southern Illinois. The sample was selected using random digit dialing and a quota for each of three specific groups: Non-Hispanic White Americans (n=618), African Americans (n=647), and Hispanic Americans (n=346). Responses to questions about visitation to 20 recreation sites within the last 12 months were factor analyzed revealing 5 site factors. The factors varied in the type of experiences provided, level of naturalness, and proximity to Chicago. In other analyses we examined awareness and use of recreation sites by race/ethnicity, place of residence, and other demographic variables. Results not only elucidate participation patterns but also have important implications for site managers who may want to coordinate their outreach efforts with other sites to encourage greater awareness of recreation opportunities, higher levels of use, and greater interaction with natural resource management and use.

Introduction

Urban residents are playing an increasingly significant role in the development of management programs and policies for natural resources. This is prompting those who develop policies and programs for natural resources to work to increase the interactions that urban residents have with natural resources and their management and use. Many natural resource planners and managers believe that nature based recreation experiences in urban areas pave the way for urban residents to learn about, care about, and even become an advocate for nature in urban and ex-urban areas. In light of the purported synergism, regional resource stewardship initiatives, such as Chicago Wilderness (Ross, 1997), have worked to link the programs of land management, outdoor recreation, education, and research in building support for regional biodiversity. In this way, they can repeat a consistent message across venues thus reinforcing knowledge and strengthening support for nature and natural places. The success of these efforts depends in part on understanding what sets of sites are used by the same people. Knowing this will help in honing consistent messages across sites. One day, recreation site managers may be able to employ the tools of niche marketing used by companies such as Amazon.com, the internet bookseller, where recommendations for new books are made based on knowledge of past book purchases.

Cook County, in northeastern Illinois, is an ideal place to examine recreation site linkages and group preferences for site types because it is racially/ethnically diverse and offers a wide variety of recreation opportunities. Cook County occupies the inner core of the 13 - county Chicago Metropolitan area, and with a population of 5.5 million people, is home to almost 60% of the metro area residents. Recreation sites available in Cook County include city parks, county forest preserves, state and federal parks, zoos, museums, arboreta, a botanic garden, and conservatories. A national forest, the Shawnee, is located in southern Illinois. For this study the Chicago-area sites were chosen as representative of the diverse range of natural resource - related opportunities available in and beyond the Chicago area that might be considered for "urban outreach" efforts. The Shawnee National Forest was included because it is the only national forest in the state.

Our objectives were to identify the patterns of use across the twenty recreation sites and assess how site use varied by racial/ethnic group, place of residence, and a variety of other demographic characteristics. Results of this study can help improve outreach to urban residents as well as guide policies aimed at providing information about outdoor recreation, environmental education, and resource management at urban sites.

The Sample

We sampled Non-Hispanic Whites, African Americans, and Hispanic Americans from the population of Cook County, Illinois using random digit dialing and a quota for each group. Our sample targets were 600 Non-Hispanic Whites, 600 African Americans, and 300 Hispanic Americans. Our final sample included 618 Non-Hispanic Whites, 647 African Americans, and 346 Hispanic Americans. Only heads of households were interviewed, alternating between males and females. Spanish speaking interviewers were on hand, if needed, to conduct interviews with Hispanic respondents.

The Survey Instrument

The survey instrument was patterned closely after the Illinois SCORP (Statewide Comprehensive Outdoor Recreation Participation) Survey that is conducted every few years by the Illinois Department of Natural Resources. The survey included questions about participation in different activities, preferences for site attributes, preferences for levels of naturalness, and visits to recreation areas outside Illinois (Dwyer & Barro, 2001). The analysis described in this paper is based primarily on responses to questions about visits to 20 different recreation sites (19 located in or near the Chicago Metropolitan area and the Shawnee National Forest in Southern Illinois) (Figure 1). Basic demographic information gathered included race/ethnicity, zip code, age, gender, income level, and number of people in the household.

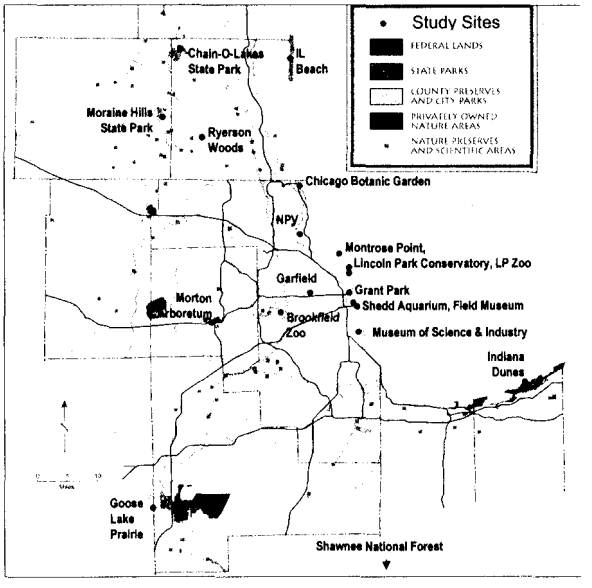

Figure 1. Chicago Area Study Sites

Analysis

We looked at visitation (visited or not visited in the previous 12 months) to twenty recreation sites to begin to examine recreation site use patterns of Cook County residents. While we over-sampled African Americans and Hispanic Americans in the data collection, the analyses presented here are based on observations that were weighted to reflect the population of Cook County, Illinois. We used factor analysis with varimax rotation to identify what sites showed similar use patterns. In other analyses, we examined use of site types by racial/ethnic group, place of residence, gender, age, income, and education.

Results of Factor Analysis

Five factors, explaining 48 percent of the variance, emerged from the analysis of visitation data when the entire sample was analyzed (Table 1). The pattern of site clustering revealed the following: (1) sites in close proximity to each other tended to load on the same factor (e.g., groupings of urban sites, suburban sites, and ex-urban

Table 1. Factor Analysis of Visitation to Sites During the Past 12 Months, Entire Study Sample

	Factors				
Factor label: Sites	I.	II.	III.	IV.	V.
Downtown Sites					
Museum of Science and Industry	**.782**	.128	.073	-.021	-.052
Field Museum of Natural History	**.762**	.159	.059	.024	.026
Shedd Aquarium	**.714**	.146	.082	.006	.090
Brookfield Zoo	**.650**	.049	.135	.096	.026
Indiana Dunes National Lakeshore	**.468**	.080	.356	.157	-.152
Grant Park	**.458**	.390	.012	.023	.031
Near-North Side					
Lincoln Park Conservatory	.247	**.724**	.039	-.062	.034
Montrose Point (Lincoln Park)	.022	**.594**	.089	.049	.058
Lincoln Park Zoo	.413	**.577**	-.042	-.035	-.100
North Park Village Nature Center	-.086	**.517**	.217	.202	-.024
Garfield Park Conservatory	.252	**.448**	.018	.045	-.013
Far-North Sites					
Ryerson woods	-.021	.176	**.691**	-.160	.075
Illinois Beach State Park	.213	.117	**.632**	.109	-.078
Chain-O-Lakes State Park	.157	-.036	**.579**	.144	.191
Moraine Hills State Park	.035	.035	**.525**	.405	-.147
Ex-Urban Areas					
Shawnee National Forest	.070	-.037	.057	**.730**	.100
Goose Lake Prairie	.034	.179	.088	**.726**	-.031
Arboretum/Botanic Garden Sites					
Morton Arboretum	.162	.195	.184	.167	**.672**
Chicago Botanic Garden	.319	.370	.241	.109	**.403**
Midewin National Tallgrass Prairie	.112	.210	.174	.139	**-.579**
Eigenvalue	4.52	1.75	1.29	1.06	1.01
Percent variance	22.6	8.7	6.4	5.3	5.1

sites), and (2) sites that provided similar experiences (e.g., an arboretum and a botanic garden) or had similar levels of naturalness loaded on the same factor. The five factors were subsequently labeled: I. Downtown Sites, II. Near-North Sites, III. Far North Sites, IV. Ex-Urban Sites, and V. Arboretum/Botanic Garden Sites and are described below.

Downtown Sites (I) -- This factor explained the largest portion of the variance. Six sites loaded strongly on this factor. Three of the six sites were museum-type sites located in downtown Chicago: The Museum of Science and Industry, the Field Museum of Natural History, and the Shedd Aquarium. Grant Park is a large lakefront park immediately adjacent to the Field Museum. It is also the site of many festivals. Brookfield Zoo, located 15 miles west of downtown Chicago, fits with the museum-type attractions (i.e., a museum with live animals) that make up a significant portion of the factor. However, Lincoln Park Zoo, which is located closer to downtown than Brookfield Zoo, loaded more strongly on the second factor (Near-North Sites). Indiana Dunes National Lakeshore, located approximately 47 miles southeast of downtown Chicago was the final site to load on this factor.

Near-North Sites (II) -- This factor was composed of five sites including three in Chicago's Lincoln Park: Lincoln Park Zoo and Lincoln Park Conservatory (located just north of downtown Chicago), plus Montrose Point which is located just north of the zoo and conservatory on Lake Michigan. Also included in this factor is North Park Village Nature Center, which is located 12 miles northwest of the city center, and Garfield Park Conservatory, which is west of downtown Chicago and is similar to the Lincoln Park Conservatory.

Far-North Sites (III) -- This factor includes a county forest preserve site (Ryerson Woods), and three Illinois state parks (Illinois Beach State Park, Chain-O-Lakes State Park, and Moraine Hills State Park) -- all located north or northwest of Chicago. Ryerson Woods is in suburban Lake County, while the state parks are in predominately rural areas of Lake and McHenry Counties.

Ex-Urban Areas (IV) -- This factor includes the Shawnee National Forest and Goose Lake Prairie State Park. The Shawnee is located 342 miles south of Chicago and the Goose Lake Prairie 57 miles southwest of Chicago. While the Shawnee is far more extensive than Goose Lake Prairie State Park, both offer natural environments and substantial opportunities to observe wildlife and to fish and hunt.

Arboretum/Botanic Garden Sites (V) – This factor is composed of two sites: The Chicago Botanic Garden and The Morton Arboretum, both of which offer unique opportunities to experience a wide variety of native and non-native plants as individuals and in landscapes. The Chicago Botanic Garden is 22 miles north of the center of Chicago and Morton Arboretum some 27 miles southwest. Midewin National Tallgrass Prairie had a strong negative loading on this factor that was not easily explained. Given low participation data for that site (Table 2), it was dropped from the analysis.

Table 2. Percent of Respondents in Each Racial/Ethnic Group Who Reported Visiting Study Sites in the Previous 12 Months

Sites	Anglo American	African American	Hispanic American
Downtown Sites			
*Museum of Science and Industry	52	59	45
Field Museum of Natural History	48	51	46
Shedd Aquarium	45	51	50
Brookfield Zoo	51	52	50
Indiana Dunes National Lakeshore	26	24	21
*Grant Park	62	72	59
Near-North Side			
Lincoln Park Conservatory	24	25	30
Montrose Point (Lincoln Park)	19	14	20
*Lincoln Park Zoo	44	53	59
North Park Village Nature Center	6	5	5
*Garfield Park Conservatory	10	33	10
Far-North Sites			
Ryerson woods	4	3	1
Illinois Beach State Park	45	22	18
*Chain-O-Lakes State Park	24	5	6
Moraine Hills State Park	5	3	3
Ex-Urban Areas			
Shawnee National Forest	6	4	3
Goose Lake Prairie	4	3	3
Arboretum/Botanic Garden Sites			
*Morton Arboretum	22	6	8
Chicago Botanic Garden	30	24	25
Midewin National Tallgrass Prairie	2	4	3

*Chi-square test indicated significant differences (P<.05)

Who visits the sites?

We looked at visitation in several ways to determine if there were patterns of visitation to site types by different groups. First, we looked at visitation by race/ethnicity with the three groups in the study, i.e., Non-Hispanic Whites, African Americans, and Hispanic Americans (Table 2). Second, we looked at visitation to sites by place of residence. Residence locations were determined by zip code and five groups were distinguished – Northern Suburbs, North Chicago, Central Chicago, South Chicago, and Southern Suburbs (Table 3). Finally, we looked at visitation by demographic categories (age, gender...).

Downtown Sites -- All of the sites that loaded on this factor are well known and draw users from wide-ranging areas of Chicago. Brookfield Zoo and Indiana Dunes National Lakeshore tend to draw more heavily from the south suburban areas than the other sites in the cluster. Sites that loaded on this factor had relatively high use rates for people under 40 years old and particularly high use rates for African Americans and Hispanic Americans.

Near North Sites --The three Lincoln Park sites that loaded on this factor draw a substantial portion of their visitors from north and central Chicago and the Chicago suburbs, and have a relatively high visitation rate by African Americans and Hispanic Americans. North Park Village, a relatively new and fairly small site, draws primarily from the northern part of Chicago, while Garfield Park Conservatory draws from across Cook County; but particularly its southern areas.

Far North Sites -- All sites that loaded on this factor tend to draw visitors heavily from the northern suburbs. In addition, these sites had higher visitation rates for Non-Hispanic Whites than African Americans or Hispanic Americans.

Ex-Urban Areas -- The Shawnee National Forest tended to draw most of its visitors from the south suburbs, as did the Goose Lake Prairie. Both sites had relatively high visitation rates by Non-Hispanic Whites and males.

Arboretum/ Botanic Garden -- Both sites tend to draw visitors with special interests concerning plants who may be willing to travel substantial distances to visit them. Residents of the northern suburbs are drawn to both sites, while residents of the southern suburbs tended to visit Morton Arboretum. Both sites tend to draw a high proportion of older respondents, and those with high levels of education. The Chicago Botanic Garden has relatively high participation rates for African American and Hispanic American respondents as compared to the Morton Arboretum.

The site groupings that resulted from the factor analysis are supported, in part, by previous research by Lin et al. (1988) who grouped Chicago-area sites based on perceived attributes. They produced three groups that included; (1) Morton Arboretum and Chicago Botanic Garden; (2) Lincoln Park Conservatory and Garfield Park Conservatory; and (3) seventeen Forest Preserve sites from across the Chicago area. These groupings proved useful in their efforts to develop a nested site choice model for those sites.

Table 3. Residence of Respondents Who Reported Visiting Study Sites in the Previous 12 Months, by Area of Residence (Percent of Respondents)

	Areas				
Sites	Northern Suburbs	North Chicago	Central Chicago	South Chicago	Southern Suburbs
Downtown Sites					
Museum of Science and Industry	23	20	16	18	24
Field Museum of Natural History	24	21	15	17	24
Shedd Aquarium	23	19	17	17	23
*Brookfield Zoo	23	17	16	16	28
*Indiana Dunes National Lakeshore	18	18	13	17	34
*Grant Park	21	22	16	19	22
Near-North Side					
*Lincoln Park Conservatory	20	31	17	14	17
*Montrose Point (Lincoln Park)	17	37	18	11	18
*Lincoln Park Zoo	20	27	18	16	19
*North Park Village Nature Center	20	48	13	8	11
*Garfield Park Conservatory	14	17	21	22	26
Far-North Sites					
Ryerson woods	36	12	19	12	21
Illinois Beach State Park	29	21	10	16	25
*Chain-O-Lakes State Park	42	20	7	8	23
*Moraine Hills State Park	38	16	8	11	27
Ex-Urban Areas					
*Shawnee National Forest	10	21	14	12	43
Goose Lake Prairie	10	26	12	16	35
Arboretum/Botanic Garden Sites					
*Morton Arboretum	32	18	11	11	28
*Chicago Botanic Garden	32	23	15	12	17
Midewin National Tallgrass Prairie	21	21	19	14	24

*Chi-square test indicated significant differences ($p<.05$)

Although it was not observable in the factor analysis, accessibility appears to be a third characteristic (in addition to proximity and similarity of experiences) that defines visitation patterns. For example, sites in downtown Chicago tended to draw diverse customers that are characteristic of the city population. This pattern may be due, in part, to the accessibility of these sites by Chicago's public transportation system. A previous study of choices among Chicago-area recreation sites found that travel distance to a site was a significant factor in explaining the demand for sites (Darragh et al., 1983; Dwyer et al., 1983; Lin et al., 1988; Peterson et al., 1983).

Interpreting the Factor Patterns

There appear to be a number of interrelated variables that affect participation at each of the 20 sites, and these variables combine to generate complex patterns of participation across the sites, confounding interpretation of the site clusters. First, individual respondents tended to use a fairly small number of the 20 study sites in a 12-month period, with a mean of 5 sites visited (Table 4). One respondent had visited all 20 sites, while 13 percent of respondents had not visited any of the sites.

"Sites visited in the previous 12 months" was used as a variable in the initial factor analysis to focus on those sites where an individual would be exposed to materials/messages/displays over a year--perhaps as part of an integrated information and education program. However, individuals may visit additional sites; but on a less frequent basis. When asked what sites they had "ever visited," the mean number of sites almost doubled (Table 4). This suggests that over a longer period of time, individuals are exposed to a larger number of sites -- perhaps twice as many as reported for the previous 12 months.

When we expand the analysis to "places that people have *heard of*," the average number of sites increases by another 30 percent to a mean of 13 (Table 4). Extending the scope of the investigation to "sites ever visited" or "sites heard of" means there may be more opportunities for developing and linking outreach programs than was originally believed. However, awareness and use of sites varies significantly across the population. The proportion of Hispanic Americans and African Americans that were "aware of" and "had ever visited" the sites was lower than observed for Non-Hispanic Whites. In addition, those with lower levels of education and income, and females, were less aware of or less likely to have ever visited sites than other sample segments. Older respondents tended to have visited fewer sites in the last 12 months, but reported more visits when they were asked about sites they had "ever visited" or "heard of" – most likely an expression of life-long experiences.

Overall about 40 percent of respondents reported that they do not go outside Illinois on trips to public outdoor recreation areas. When broken down by racial/ethnic group this included 33 percent of Non-Hispanic Whites, 52 percent of African Americans, and 59 percent of Hispanic Americans. Even those who did make out-of-state trips to public recreation areas were not inclined to take a large number of these trips. Of those who took out-of-state trips to public outdoor recreation areas, Non-Hispanic Whites on average took the most trips while Hispanic Americans took the fewest (Table 5). Older respondents, those that live in south suburban and central Chicago, those with lower levels of education and income, and females, took fewer trips out-of-state to public outdoor recreation areas than other groups. Individuals who stay in Illinois for most or all of their outdoor recreation are likely to be dependent on local resources for outdoor recreation, for experiencing natural resources, and for learning about the management of natural resources.

Implications for Reaching Urban Residents

Our results indicate that a large proportion of Cook County residents (40%) did not travel outside of Illinois to public outdoor recreation areas and those who did took few trips. A larger proportion of county residents had visited or at least heard of some of the 20 sites in Illinois that we asked about in this study. These two findings combined indicate that Cook County residents are highly dependent on local resources for recreation, environmental education, and experiencing a natural environment.

Patterns of individual use across the 20 sites are complex but our results hinted that individuals tend to visit sites that are in close proximity to each other, that provide similar experiences, and that are close to where the respondent lives. Study results suggest that to provide a broad

Table 4. Awareness and Use of Study Sites by Race/Ethnicity

	Mean Number of Sites		
	Anglo American	African American	Hispanic American
Visited in Last 12 Months	5	5	5
*Ever Visited	10	8	7
*Ever Heard Of	14	12	10

*ANOVA test indicated significant differences (P<.05).

Table 5. Percent of Respondents Who Traveled out of State to Visit Public Recreation Areas, by Race/Ethnicity

	Anglo American	African American	Hispanic American
*Traveled out of state (percent)	67	48	41
**Mean trips[1] (number)	10	5	5

[1] Mean trips by those who took out-of-state trips

spectrum of urban residents with opportunities for outdoor recreation, as well as experiences and information on the management and use of natural resources, is likely to take an effort that focuses on a fairly wide range of urban sites.

For Chicago and Cook County organizations seeking to develop synergistic messages across sites, it may be useful to start with sites within one of the factors identified in this study. For example, the sites that clustered on the downtown Chicago factor may provide a good starting place for such a program, given the strength of this factor and the wide range of environments and emphasis areas (i.e., an aquarium, a museum of natural history, a museum of science and industry, a zoo, and two parks) in which a natural resource message can be delivered. These sites also reach large numbers of diverse urban residents, including racial/ethnic minorities, inner-city residents, and low-income individuals who are particularly dependent on urban experiences for exposure to natural resources. The sites are also relatively well served by public transportation.

Significant questions remain about how to best design and operate an outreach effort across a number of urban sites. Important questions include (1) the effectiveness of the various diverse sites in providing key messages to visitors, (2) how the various messages at each site can be coordinated in an effective matter to achieve synergism, and (3) how to best encourage individuals to visit a larger range of sites. It would seem that an organization with a regional philosophy, logo, and information and education program – such as Chicago Wilderness (Ross 1997) -- might be effective here in developing coordinated messages, providing continuity for those messages through a common name or logo, and expanding the network of sites.

Conclusions

A survey of residents of Cook County, Illinois (including Chicago) indicates that they only take a few trips out of state each year to public outdoor recreation areas – trips that would expose them to a wider range of natural resources and resource management. In fact, significant proportions of respondents do not make out-of-state trips at all. Their knowledge of major local and regional sites is somewhat limited as well. Analysis of use over the 20 sites suggests complex patterns that include clusters of sites according to location and similar experiences provided. Particular sites tend to have unique market areas and customer profiles.

Effective strategies for reaching urban residents at urban sites are not simple or straightforward. Efforts to provide urban residents with information through urban sites should take careful note of the patterns of use across urban sites, and develop outreach strategies accordingly. It is a particularly difficult challenge to develop strategies for synergistic messages across sites; but this may be what is needed to provide a complex understanding of natural resources and their management to urban residents. Additional questions about a strategy for reaching urban residents at urban sites remain: (1) How can programs at different kinds of urban sites influence how urban residents perceive, use, and become involved in the management of other urban and ex-urban sites; and (2) How can urban residents be encouraged to visit additional sites?

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THE ROLE, USE AND BENEFITS OF NATURAL RECREATION AREAS WITHIN AND NEAR RESIDENTIAL SUBDIVISIONS

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Abstract: This paper presents results from a recent study about the role of natural resources in residential development. Data were collected using focus groups and a home owner questionnaire in selected subdivisions in two rapidly growing counties located at the urban/rural fringe of the Detroit Metropolitan area. Developers of the selected subdivisions planned for and created recreation opportunities such as trails, nature observation decks, beach and marina areas, and sledding hills for the residents. Recent home buyers considered the natural features of a lot and the neighborhood when shopping for a home, however many other factors such as highway access, schools, and financial factors were also very important. Based on questionnaire data, the most important factor in buying a house was a relaxed and comfortable environment followed closely by the natural features of the neighborhood. A majority of the residents did not visit a state or regional park in their own county and a majority did not buy an annual entrance pass for either state parks or regional parks. Finally, residents reported a wide range of social, economic, psychological, environmental and physical benefits from having natural areas beyond their own yard. Implications for public land managers, local governments, developers and residents are discussed.

Introduction

As urban areas continue to increase and expand into rural areas, the role and health of natural resources such as rivers and lakes, forested areas, and wetlands is subject to change with development and increased recreation use. Some households move into these fast developing fringe metropolitan areas to leave the urban environment, while other households move to fringe areas because of the draw of the rural area and natural resource amenities. Studies done in the 1970s (e.g., Duncan & Newman, 1976; Michelson, 1977) show home buyers seek new housing to be closer to work, for more living space, a desire to live with compatible neighbors, and leave urban ills such as noise and pollution. Studies of home buying in outlying rural areas show people are attracted to the outdoors, trees, and the natural settings (Marans & Wellman, 1978; Stewart & Stynes, 1994). More recent studies on home decision making (Davis, Nelson & Dueker, 1994; Feitelman, 1993; Nelson, 1992) have begun to document the draw of living in tranquil environments and near preserved land and parks. As development continues into rural areas with natural resources, local and regional governments, developers, real estate firms and both long-time and newer residents will need a better understanding of the role, uses, and benefits of natural resources. Today, limited information exists about the role of natural resources in the decision processes of residential developers, homebuilders, and residents who have purchased homes in resource areas.

The purpose of our larger study is to understand how natural resources, including recreational opportunities, are considered by both developers in buying land and consumers in buying homes relative to other factors. This information can assist with conservation planning and programs undertaken by government, developers or citizens.

This presentation and paper focused on findings about recreation opportunities within and nearby newly developed subdivisions. Specifically the following research questions are addressed: (1) what natural recreation amenities do developers create in their subdivisions, (2) what role do recreation opportunities play in home and neighborhood selection, (3) to what extent do residents recreate in their neighborhood (besides their own yard), (4) to what extent do resident visit nearby large natural resource areas (i.e., state recreation areas, regional county parks), and (5) what benefits do residents derive from natural resources in their neighborhood.

Methods

Two counties outside the metro Detroit area were selected as the study area. Specifically, Livingston and Washtenaw Counties were studied because of their recent rapid population growth and residential development, which has occurred in significant natural resource areas. The two counties both contain a major river corridor (the Huron River), several regional parks, several state recreation areas, and significant acres of forested private land. Importantly, these two counties are located along the urban/rural interface and are currently experiencing many of the signs of urban sprawl.

Over a 12 month period, data were gathered from a convenience sample of local government officials and planners (n=9), residential developers (n=4), environmental groups (n=5), and residents (n=85) living in newer subdivisions which satisfied five selection criteria. The criteria applied to subdivision selection included: (1) location within one of the two counties studied, (2) availability of natural resources within or near the subdivision, (3) developments no older than eight to ten years old, (4) subdivisions of at least 25 houses, and (5) a variety of housing prices represented so that approximately half of the subdivisions studied represented housing under $250,000 and the other half $250,000 or more. Residents were queried as part of focus groups held at a home in the subdivision, while government officials, developers and environmental group officials were interviewed

individually. Interview or focus group scripts were used, sessions were taped, and comments were transcribed and analyzed. Residents also completed a five-page questionnaire during the focus group which provided limited quantitative data. This paper reports primarily results from the resident portion of the study.

Findings

Research question one asks "what natural recreation amenities do developers create in their subdivisions." Developers have many options in developing recreation amenities and preserving natural resources with subdivisions. Two of the twelve subdivisions studied included eighteen hole golf courses, in addition to other forms of un-buildable land or open space that was preserved. Seven other subdivisions which were labeled "forested open space neighborhoods" included natural resources such as forested areas, trails, lakes or ponds, wetlands, and limited playground or sport areas. These resources were owned by all of the residents of the subdivision. Three subdivisions which were labeled "limited open space neighborhoods" included no or few natural areas held in shared ownership. A summary of recreation and natural resources within, adjacent to, and nearby the subdivisions studied is found in Table 1.

Research question two asks "what role do recreation opportunities play in home and neighborhood selection." Many residents mentioned the importance of having a neighborhood where children could play safely, being able to exercise in the out-of-doors close to home, and being able to golf out their backyard, to just name a few comments made during focus group sessions. Using a likert-scale question, subdivision residents were also asked to think back to their home buying process and rate a list of 16 factors on the importance that each factor had when buying their current home. As shown in Table 2, the top two factors were a relaxed and comfortable environment and the natural features in the neighborhood. Three additional factors scoring four or more on the five point scale were the design of the neighborhood, location of the community, and the natural features of a specific lot. Several factors scored differently across the three types of subdivisions (i.e., forested, golf, limited). For example, home buyers in forested subdivisions rated natural features as more important than home buyers in limited open space subdivisions.

Research question three asks "to what extent do residents recreate in their neighborhood (besides their own yard)." A wide variety of outdoor recreation facilities and activities could be found across the twelve subdivisions studied. This list came from comments made during the focus groups sessions and from site visits. The most common recreation facility was wood chip trails, generally one mile or longer and located in the shared open space. Other outdoor facilities included paved trails not along the streets; fields for soccer, football or baseball; sledding hills; picnic areas; beaches and swimming areas; marines for boating, sailing and canoeing; fishing docks; gazebos or decks overlooking wetlands for wildlife viewing; golf courses; and neighborhood outdoor parties or sport games. In addition, some subdivisions included more traditional recreation features such as basketball courts, playgrounds, and volleyball courts.

Research question four asks " to what extent do residents visit nearby large natural resource areas (i.e., state recreation areas, regional county parks)." While the researchers believed that nearby recreation facilities would be important to these home buyers, this feature was rated the least important in their home buying decision (see Table 2). The low consideration score is also reflected in the low park visitation levels. Table 3 provides data on the purchase of recreation annual passes for home owners in both counties. The most common purchase pattern across both counties was that neither a state park pass or regional park pass was purchased. Livingston County home owners studied were slightly more likely than the Washtenaw home owners to have purchased a state park annual pass. A greater portion of Washtenaw County home owners were likely to purchase both state and regional park passes. Livingston County home owners studied were very or fairly close to four parks and were asked how frequently they visit each park. Table 4 shows that a small percentage used the parks on a weekly basis. Kensington Metropark was the most popular regional park. Home owners typically had not visited the other three parks in the area.

The last research question asks "what benefits do residents derive from natural resources in their neighborhood." Answers for this question come from responses made during the focus group sessions and satisfaction ratings on the same factors scored for their importance when purchasing a home. Benefits were organized around benefit categories developed by Driver et al. (1991). These included social, economic, psychologic, environmental and physical benefits. More specifically, social benefits included a sense of community and stewardship that comes along with residents getting together and taking care of the open space and natural resources, and the convenience of being able to recreation and exercise very near to home. The economic benefits of having natural resources and open in a neighborhood centered around home appreciation. Many home owners had experienced or believe their homes would appreciate faster because these subdivisions were very desirable to live in. Psychologic benefits included the tranquility of being surrounded by nature which was relaxing, therapeutic, less stressful and calming; and the feeling of being on vacation every day in a vacation-like setting. Environmental benefits included habitat watching, the opportunity to teach children about the environment, and nature appreciation. Finally, the physical benefits referred to natural resources (i.e., trees) acting as a buffer between homes and other nearby land uses. Trees also provided privacy and a sense of distance from other houses. Satisfaction ratings were generally high (four or higher on a five point scale) across the nine items tested (reduced from the importance list to only measure natural resource or recreation factors). Home owners in the seven forested open space subdivisions studied were more satisfied with natural features, in general, compared to residents of the golf or limited subdivisions. For satisfaction scores see Table 5.

Table 1. Recreation Amenities and Natural Resources in Residential Developments

Name of Development	Township	County	Natural Resources/ open space within	Natural resources/ open space adjacent to	Natural resources nearby (within five miles or fifteen minutes)
Golf Course					
Oak Pointe	Genoa	Livingston	Golf course, lake, beach, marina, tennis courts, nature preserve	Brighton State Recreation Area (State of Michigan), Burroughs Recreation Park	Mt. Brighton Ski Area (Private)
Stonebridge	Pittsfield	Washtenaw	Golf course, pond	none	none
Forested					
Cobblestone Creek	Hamburg	Livingston	Trails, forests	none	Several small lakes within two miles. Public access is not known. Lakeland Rail-Trail
Hunters Pointe	Hamburg	Livingston	Trails, forests, gazebo	Shared open space resources(wetland and trail) with another open space community built by same developers	Huron Meadows Metropark, Brighton State Recreation Area, Island Lake State Recreation Area
Lakeshore Pointe	Oceola	Livingston	Lake, forests, trails	Thompson Lake	City of Howell parks
Solitude Pointe	Hamburg	Livingston	Baseball/ soccer fields, trails, forest	Private camp and recreation club	Huron Meadows Metropark, Brighton State Recreation Area, Hamburg Township parks
Brass Creek	Webster	Washtenaw	Playground, wooded lot, pond	Huron River	Hudson Mills Metropark
Matthaei Farms	Ann Arbor	Washtenaw	Ponds, wetlands, rolling terrain, prairie, forest, trails	Sheep farm, botanical gardens, golf course (University of Michigan)	Gallup Park (City of Ann Arbor)
Wildwood	City of Saline	Washtenaw	Wetlands, trails	none	City of Saline parks on the other side of town
Limited					
Lakewood Knoll	Genoa	Livingston	Wetlands	none	Lake Chemung
Bates Farms	Scio	Washtenaw	Forest on perimeter	none	Lima Township park, Hudson Mills Metropark
Ford Lake Heights	Ypsilanti	Washtenaw	none	Ford Lake, forests and trails (Ypsilanti Township)	Ypsilanti Township parks, township forest preserve and trails

Table 2. Factors Considered When Buying Current Home by Focus Group Participants

	Types of Open Space Neighborhoods			
Characteristics:	Forested (n=50)	Golf (n=14)	Limited Resource (n=21)	Composite Mean (n=85)
Characteristics rated differently by residents				
Natural features in neighborhood	4.5[a]	4.0	4.0	4.3
Design of neighborhood	4.4	3.8	3.6	4.1
Natural features of lot	4.1	4.0	3.6	4.0
Lot sizes in neighborhood	4.0	3.3	3.8	3.8
Open space and shared recreation areas in neighborhood	4.0	3.3	3.1	3.7
School district	4.2	3.2	3.0	3.7
Characteristics rated similarly by residents				
Relaxed and comfortable environment	4.4	4.3	4.3	4.4
Location of community	3.9	4.0	4.2	4.1
Rural atmosphere	3.7	3.9	3.8	3.8
Sense of community	3.7	3.8	3.8	3.8
Access to highways and interstate	3.7	3.5	3.7	3.7
Size of houses in neighborhood	3.6	3.2	3.4	3.5
Like-minded people in neighborhood	3.2	3.5	3.3	3.3
Proximity to job	3.3	2.8	3.2	3.2
Proximity to retail	3.2	2.6	2.6	2.9
Proximity to state recreation areas, Metroparks, lakes, and Huron River	2.9	2.4	2.8	2.8

a. Scale where "1" equals not at all important to "5" equals extremely important.

Table 3. Purchase of Recreation Entry Passes

	Livingston (n=50)	Washtenaw (n=35)
Michigan State Parks annual pass	18%	9%
Huron Clinton Metroparks annual pass	18	19
Both annual passes	10	22
No annual passes purchased	54	50
Total	100.0%	100.0%

Table 4. Usage of Selected Livingston County Parks by Livingston County Focus Group Participants (n=50)

Selected Livingston County Parks	Never	Few times a year	Once a month	Couple times a month	Weekly
Huron Meadows Metropark (Brighton)	54%	29	6	6	4
Kensington Metropark (Brighton/Milford)	28	52	6	10	4
Brighton Recreation Area (Brighton/Howell)	49	37	6	6	2
Island Lake Recreation Area (Brighton/South Lyon)	67	22	2	8	0

Table 5. Satisfaction with Factors Considered At Purchase Time by Focus Group Participants

	Types of Open Space Neighborhoods			
Characteristics:	**Forested (n=50)**	**Golf (n=14)**	**Limited Resource (n=21)**	**Composite Mean (n=85)**
Characteristics rated differently by residents				
Natural features in neighborhood	4.6[a]	3.2	3.7	4.3
Relaxed and comfortable environment	4.5	4.2	4.0	4.3
Design of neighborhood	4.3	4.0	3.6	4.1
Natural features of lot	4.3	4.1	3.5	4.1
Sense of community	4.3	3.8	3.8	4.1
Lot sizes in neighborhood	4.2	3.9	3.8	4.1
Open space and shared recreation areas in neighborhood	4.3	3.9	3.1	3.9
Characteristics rated similarly by residents				
Proximity to state recreation areas, Metroparks, lakes, and Huron River	4.2	3.9	4.1	4.1
Rural atmosphere	3.9	3.9	3.4	3.8

a. Scale where "1" equals extremely dissatisfied and "5" equals extremely satisfied.

Conclusions and Implications

Our results show evidence that recreation and natural resources beyond a yard, but still within a subdivision, are important to home buyers. Moreover, high levels of satisfaction results from being surrounded by a natural environment. While our results were gleaned from adults, many references were made about children's lives being enhanced by nature and outdoor recreation activities. The households studied appear to have a stronger desire for natural environments and recreation opportunities in their neighborhoods rather than at nearby local, regional, or state parks or natural areas.

The idea of a subdivision built within or nearby major metropolitan areas is not new. What appeared to be different about the subdivisions we studied were that they all incorporated some form of open space. With the exception of one subdivision in the limited open space category, which happened to be the oldest one we studied, some type of resource (mostly forested land) was jointly shared amongst the residents. This shared resource, in most cases, created a wide variety of recreation opportunities within a neighborhood which the resident's felt brought satisfaction and benefits. These open space areas and recreation facilities that developers created during the building process also required care and maintenance by the residents.

In conclusion, five themes evolved from our research on natural recreation areas in subdivisions. The first theme is the "cocooning effect." For the residents we studied, they appear to be looking for an inclusive environment, including natural beauty, resources, and recreation. A second theme is "limited access." Of the subdivisions we studied few had proximity or access to other neighborhoods or community amenities such as schools, other trails, or nearby parks. Residents also showed concern for outsiders using their private open space land and recreation areas. A third theme, "involvement", described that these nature-based subdivisions appear to attract and encourage individuals to participate in conservation efforts who might otherwise not be involved. The fourth theme is "caring and stewardship." The shared resources require some level of caring which ranges from paying low association fees and performing volunteer work to paying high fees and hiring outside landscaping services. The last theme of our research findings is "assistance." While we found stewardship efforts in each of the subdivisions, there is a need to help these residents understand the resources in their neighborhood and how to best sustain them, possibly through County Extension agents, or a city or county forester or recreation maintenance specialist.

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Economic Impacts & Non-economic Benefits of Tourism

NEW YORK STATE'S 1999 AGRITOURISM BUSINESS STUDY

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Abstract: Agritourism businesses (i.e., farm-based businesses that are open to visitors for recreational purposes) are becoming an important component of New York's tourism industry today. In order to estimate the economic impacts of these businesses on New York State and identify cost-effective management and marketing strategies for business owners, New York Sea Grant and Cornell University conducted a study of New York State agritourism businesses and their customers. With the assistance of six agritourism business owners, 299 customer surveys were completed in 1999. In addition, a sample of 2000 business owners were surveyed by mail in 2000, with a return rate of 38.8% or 645 completed surveys from the qualified sample. An estimated 2,087 agritourism businesses existed in New York State in 1999, yielding a total estimated net profit of nearly $25.8 million. A breakdown of the types of agritourism businesses existing in New York State was generated from the results. Business owner concerns were identified, as well as the management and marketing strategies found to be most effective for attracting and managing visitors. This presentation will focus on the results of this study as well as its management and marketing implications for agritourism businesses.

Introduction

Many farm businesses in New York State today are opening their doors to visitors. Farm stands, wineries, maple syrup and honey producers, greenhouses and plant nurseries, and Christmas tree farms are just a few of the many types of farm-based businesses that are open to, and attract, visitors for recreational purposes (Kuehn & Hilchey, 2001). In order to identify the viability of agritourism businesses in New York State, estimate the economic impact of agritourism on New York State, and identify cost-effective management and marketing strategies for agritourism businesses, NY Sea Grant and Cornell University's Farming Alternatives Program, in conjunction with the Cornell University Statewide Committee on Community and Economic Vitality Tourism Work Group, conducted a two-part study of agritourism business owners and their customers in New York State in 1999 and 2000. Funding for this research was provided by the United States Department of Agriculture through Cornell University's Research and Extension Integration Grants Program.

Methods

The 1999 New York State agritourism business study consisted of two components: a customer survey and a business owner survey. The customer survey was conducted in 1999 with the assistance of six agritourism business owners in New York State. Business owners were requested to ask their customers to complete a short survey. A total of 299 customer surveys were completed and analyzed (Kuehn & Hilchey, 2001).

In 2000, a survey of agritourism business owners was conducted using a modified total design method (Dilman, 1978). A mailing list of 2,416 agriculture-related businesses open to the public was generated with assistance from agriculture and tourism agencies and organizations across New York State. The size of this initial mailing list is likely conservative since businesses not included in agency mailing lists may have been excluded. A systematic random sample of 2,000 businesses was generated from this initial mailing list. Farm business owners in this sample were sent surveys by mail and asked to report on their business activities for the calendar year 1999. A reminder postcard and follow-up survey were mailed to non-respondents. After businesses with undeliverable addresses and businesses not classified as agritourism businesses by their owners were removed from this sample, a qualified sample of 1,661 businesses remained. From this qualified sample, 9.7% of the surveys were returned by owners who did not wish to participate in the study, 51.5% were not returned, and 38.8% (645 surveys) were completed and used in this study (Kuehn & Hilchey, 2001).

Results

Data from the customer and business owner surveys were analyzed for New York State as a whole, and according to type of agritourism business (i.e., farm stand, Christmas tree farm, etc.) and New York State Department of Economic Development tourism region (Figure 1). In addition, results were broken down into the following subject categories: business income and net profit, promotional strategies, customer markets, management and operations, business owner concerns, and future plans of business owners.

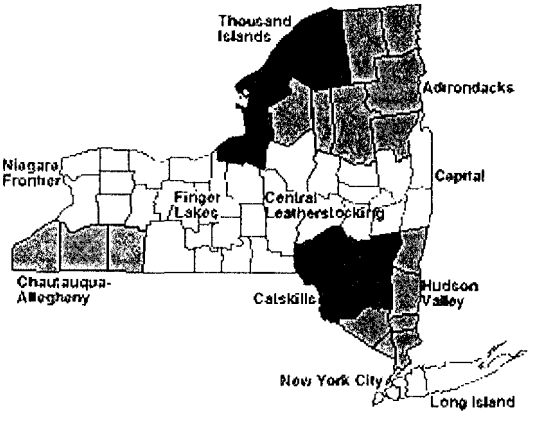

Figure 1. New York State Department of Economic Development Tourism Regions

Statewide Results

In New York State in 1999, farm stands made up the largest percentage of agritourism businesses (37.4%), followed by Christmas tree farms and u-pick operations. The largest percentages of agritourism businesses were located in the Finger Lakes region (27%) and Central Leatherstocking region (11.3%). Tables 1 and 2, respectively, list the percentages of respondents by agritourism business type and New York State tourism region in which businesses are located.

Table 1. The Percentages of Respondents by Agritourism Business Type in New York (n = 645)

Business types	Percent of respondents
Farm stands	37.4%
Christmas tree farms	11.9
U-pick operations	9.6
Maple producers	9.3
Greenhouses and nurseries	9.2
Other*	9.1
Wineries	6.2
Livestock breeders	4.5
Farm-based B&Bs	2.8
TOTAL	**100.0%**

*"Other" includes miscellaneous business types such as herb and perennial farms, petting zoos, community supported agriculture farms, farm-related museums, farm tour operators, and horse riding stables.

Table 2. The Percentages of Respondents by New York State Department of Economic Development Tourism Region (n = 645)

Tourism region	Percent of respondents
Finger Lakes	27.0%
Central Leatherstocking	11.3
Capital	9.9
Niagara Frontier	9.8
Hudson Valley	9.6
Adirondacks	7.9
Catskills	7.3
Chautauqua-Allegheny	6.5
Thousand Islands	5.6
Long Island	5.0
New York City	0.1
TOTAL	**100.0%**

Business Income and Net Profit

Statewide estimates reveal that an estimated 2,087 agritourism businesses within New York State received a total estimated gross income of $210.87 million in 1999 from their agritourism business components (e.g., products and services such as educational programs, tours, hayrides, exhibits, crafts, and food tastings; n = 399). Due to high costs associated with operating agritourism businesses, the total net profit of these businesses was estimated to be $25.77 million, with the average agritourism business receiving an estimated net profit of $12,347.

While the average agritourism business did make a profit in 1999, 25% of agritourism businesses either had expenses that equaled their income (i.e., they broke even) or had expenses that exceeded their income (i.e., they lost money). The most profitable types of agritourism businesses were greenhouses and plant nurseries, farm stands, and u-pick operations. The least profitable type was livestock breeding farms. Christmas tree farms, maple producers, farm-based bed and breakfasts, and wineries were all moderately profitable.

Promotional Strategies

Responding business owners used a diversity of promotional strategies to attract visitors to their businesses. Direct mailings, business signs, and brochures were the most cost-effective strategies used because, according to business owners, of their high effectiveness at attracting customers and their moderate cost. The use of newsletters was also found to be highly effective but had a higher cost associated with it. Television advertisements, newspaper advertisements, and radio advertisements were found to be moderately effective at attracting visitors but at a high cost.

Customer Markets

Knowing where customers of agritourism businesses are coming from and what their interests are is essential for implementing effective marketing strategies. According to responding business owners, most customers (57.6%) come from the same county in which the business is located; 30.6% come from other counties in New York State, 9.0% come from other states outside of New York, 1.7% come from Canada, and 1.1% come from other countries (n = 569). International visitors primarily came from England, Germany, Japan, and Ireland.

Customers are looking for businesses with friendly staff (71% of customers indicated that this is important to them), activities at the business (58%), businesses with farm animals (33%), and businesses with barns and historic buildings (32%; n = 267). Customers indicated that they would be most interested in sampling local foods and produce (47.2% of customers indicated this activity), sampling wines (44.2%), and picking fruits and vegetables (43.4%) at agritourism businesses in the future (n = 267). The top five activities that responding business owners indicated that their customers participate in are visiting parks, attending festivals, camping, visiting historic sites, and fishing.

Management and Operations

Responding business owners utilized many different management strategies for their businesses. Diversification of products and services was commonly used, with businesses offering farm tours and educational programs,

selling homemade foods and crafts, hayrides and sleigh rides, u-pick vegetables and fruits, and other business components as well. While only 4% of business owners indicated that they charge a general admission fee, many owners do charge a fee for specific activities on their farm such as educational programs and hayrides. The majority of agritourism businesses were open during specific seasons only in 1999, with 78% open during the fall, 76% during the summer, 60% in the spring, and 43% in the winter. Only 30% of all responding businesses were open year-round in 1999. Most agritourism businesses are family-operated, with an average of three family members as employees. In addition, the average business has six employees who are not family members.

Business Owner Concerns

The top five concerns of agritourism business owners were liability and liability insurance; marketing, promotion, and advertising; labor costs and issues; government regulations, and taxes. Eighty-four percent of respondents indicated that liability is a concern and 90% have purchased liability insurance to protect themselves from it (n=614). In addition, 71% of business owners regularly make any needed repairs to their business and 41% have added safety precautions (Kuehn & Hilchey, 2001). Conducting a risk analysis of their business, incorporating, having visitors signs a disclaimer, managing potentially dangerous visitor behaviors, and not charging admission (to reduce the status of the visitor from invitee to licensee) are used as well by some respondents.

Future Plans of Business Owners

When asked what their future plans for their business are, 64% of respondents indicated that they plan on expanding their business within the next five years (n = 581). In addition, 34% of respondents plan on investing more funding in their business, 21% on hiring more employees, and 8% in incorporating their business. These plans indicate that agritourism business in New York State will be expanding in general over the next five years. Seven percent of businesses plan on going out of business in the next five years, either due to the lack of business profitability or retirement of the business owners.

Conclusion

Agritourism appears to be an expanding component of New York State's tourism industry with many businesses planning on expanding and hiring more employees during the next five years. In addition, 75% of businesses did make a profit in 1999 from the agritourism components of their farm business. This indicates that agritourism components are viable components of New York's farm-based businesses. However, while the average agritourism business in New York did make a profit in 1999, 25% of businesses did not, an indication that some agritourism businesses may need to utilize careful business planning procedures to increase their success.

The economic impact data compiled from this study indicate that agritourism contributes an estimated $210.87 million in gross income to farm businesses across New York. Much of this revenue is in turn used by business owners to pay for farm operation and management costs such as employee wages and production costs, thus benefiting New York's economy as a whole.

This study was also useful for identifying cost-effective management and marketing strategies for agritourism business owners. Strategies such as reducing costs by buying insurance from agritourism associations at group rates and developing partnerships with other local businesses and attractions for promotional purposes could make businesses more profitable. Business owners also need to identify what makes their business unique and expand on this uniqueness to attract more customers.

In conclusion, agritourism offer tremendous potential to increase the profitability of farm-based businesses in New York State. Agritourism also benefits New York's tourism industry by diversifying the recreational opportunities offered to visitors and increasing the state's economy. However, because agritourism is a fairly new sector of tourism in New York, business owners may need management and marketing assistance from government agencies and organizations to achieve their potential in the future.

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RAIL-TRAILS AND SPECIAL EVENTS: COMMUNITY AND ECONOMIC BENEFITS

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Abstract: This paper discusses community and economic benefits associated with two recreational bicycle special events held on the Pere Marquette Rail-Trail (PMRT) in Midland County Michigan during the summer of 1999. One event was an annual ride to fundraise for the Rails to Trails Conservancy of Michigan. Approximately 1,800 participants rode in the event which included two days of riding on the Pere Marquette Rail-Trail. Overall the event produced $207,000 of direct spending by travel parties in Michigan. The second event was the Midwest Tandem Bike Rally, an annual event staged in a different location each year over a weekend. In 1999, Midland was selected as the site and attracted 550 tandem bicycle teams. Overall the event produced $260,000 of direct spending by travel parties in Michigan. The two events brought visitation to Midland that otherwise would not have occurred and for 25% of both events' participants, the Pere Marquette Rail-Trail was the primary draw to ride participation. The communities along the trail benefited from the exposure as over three-quarters of the participants were riding the trail for the first time. Further, the majority from both events indicated they were likely to return to the Pere Marquette Rail-Trail and county on a future trip. Discussion and implications of this research includes: (1) ways of maximizing economic impact through fee structure and overnight accommodation arrangements, (2) the importance of Rail-trail facilities to draw visitors to an area, and (3) how residential trail use displacement can be minimized during recreational bicycle events.

Introduction

Typically, research on trails developed from abandoned rail road right of ways, herein referred to as rail-trails, has focused on the use and benefits by local residents (Moore, Scott & Graefe, 1998; Mowen, Graefe & Williams, 1998). However, such facilities also attract visitors from beyond the local area, thereby contributing to local economies. For instance, Schutt (1998) showed that the use of the Bruce Trail in Ontario Canada was primarily by tourists (67%) and that many stayed overnight near the trail during the course of their trail use. Special trail-related events are also instrumental in attracting tourists. These events may be held using existing trail facilities and the tourism infrastructure (i.e., restaurants, hotels, bike-related retail, other retail).

The purpose of this paper is to report on and discuss community and economic impacts of two recreational bicycling events to a local economy in Michigan. These impacts will be reviewed according to community and economic variables and explained across both short-term and longer-term effects.

Description of Research Study, Rail-Trail and Two Special Events

A group of faculty from the Department of Park, Recreation and Tourism Resources at Michigan State University is conducting a two-year study of a single rail-trail in Michigan. The goal is to document some of the economic, social and community benefits such facilities provide. The Michigan Department of Transportation and Michigan Agricultural Experiment Station are the primary financial supporters of the research project. The project includes a group of advisory partners with representatives from the National Park Service's River and Trails Assistance Program, Michigan office of the Rail-to-Trails Conservancy, Michigan Department of Natural Resources, Michigan Department of Transportation, and the Midland and Isabella County Park and Recreation departments. These partners contribute in-kind and financial assistance and meet on a quarterly basis to suggest research direction and discuss applications of results. The focus of this research is the segment of the Pere Marquette Rail-Trail (PMRT) located in Midland County, Michigan. Midland County's population is approximately 80,000 people and is world headquarters to Dow Chemical Corporation. Initially developed in 1993, the 22 paved miles of the PMRT in Midland County connect three communities, including several public park and recreation facilities. A six-mile extension into the adjacent county is under construction, and due to open in the summer of 2001.

In general, the park and recreation departments of Midland County and the city of Midland allow limited use of the PMRT for special events. They view the trail as a public facility that should be open to all. Hence, events such as a bike race, that might otherwise displace normal use of the trail or endanger users, are generally not permitted. Two bicycling events that fit the special event use criteria were studied. The first is an annual event called the Michigander, organized by the Michigan Office of the Rails-to-Trails

Conservancy to promote recreational cycling and to raise money. The second is the Midwest Tandem Bike Rally, which is staged at a different Midwest location each year and promotes tandem cycling and raises funds. Both events used the PMRT during the summer of 1999.

Methods

A mail survey was used to collect data regarding the two special events. The Michigander was held in July 1999 and attracted 1,800 participants. Half of the participants rode the two-day event which primarily took place in Midland County, one-third rode six days and the remainder rode the full seven days, the longer time segments traversed the central part of Michigan. From the registration list (excluding individuals under the age of 18 years old), 600 participants were randomly selected. After a Dillman modified survey procedure including a reminder postcard and a second mailing, a 71 percent response rate (n=424) was achieved. The Midwest Tandem Rally was held over the Labor Day holiday in 1999 and attracted 1,100 participants or 550 tandem teams. Six hundred individuals from the registration list were randomly selected to receive the survey. Using the same mailing procedure as described above, a 75 percent response rate (n=452) was achieved.

The mail questionnaire consisted of four pages and included 27 questions. Questions focused on measuring experience levels with the event and the PMRT; whether the event was the primary reason for the trip; the nature of the travel party (i.e., friends) and spending party (i.e., family); spending before, during and after the event; intention to return to the Pere Marquette Rail-Trail and area; and demographics. Economic benefits are illustrated by calculating event spending, measuring the amount of tourism or out-of-county visitation the event yielded, and the potential for future visitation by the participants. Community benefits are illustrated by measuring the proportion of participants who were introduced to the bicycling event or rail-trail through these two special events.

Results

A demographic profile of the respondents to the two day event is found in Table 1. While a minority (26%) of Tandem Rally participants were from Michigan, a strong majority (95%) of Michigander participants were (Table 1). In both groups, about half of the participants earned $80,000 or more in 1998 annual household income and the majority were employed on a full-time basis. A minority of Michigander and Tandem participants had children in their household.

Michigander participants were less likely than Midwest Tandem Rally participants to be members of a bicycling organization (Table 2). Of those who were members of an organization, Michigander participants were most likely to be members of the Rail-to-Trails Conservancy while Tandem Rally participants were most likely to belong to a local bicycling organization, followed by the League of American Bicyclists and the Rail-to-Trails Conservancy. The financial commitment of participants in both events to cycling is significant, with Michigander participants averaging almost $750 and Tandem participants averaging almost $2,500 per year in cycling related expenditures during 1998. The largest proportion of expenses for both groups was equipment, followed by events/membership fees and repair costs.

When asked about the purpose of their trip that included event participation, almost all participants in both events cited the event as the main purpose for the trip (Table 3). This suggests that the visit to the Midland area would not have occurred if there was no event. Furthermore, 27% of Michigander participants and 23% of the Tandem participants indicated that the Pere Marquette Rail-Trail "highly or moderately influenced" their participation in the event.

Table 1. Demographic Profile of 1999 Michigander and Midwest Tandem Rally Participants

	Michigander (n=424)	Midwest Tandem Rally (n=452)
Residency		
Michigan resident	95%	26%
Nearby states/providences (IN, OH, IL, WI, Ontario)	3%	48%
Other states/providences	2%	26%
1998 Household income levels		
Under $40,000	10%	9%
$40,000 to $80,000	44%	40%
Over $80,000	46%	51%
Household composition		
With children	40%	26%
Without children	60%	74%
Employment status		
Full-time/self employed	76%	72%
Retired	9%	17%
Other	15%	11%

Table 2. Bicycling Profile of 1999 Michigander and Midwest Tandem Rally Participants

	Michigander (n=424)	Midwest Tandem Rally (n=452)
Membership in bicycling organizations:		
Local group	10%	66%
League of American Bicyclists	5%	30%
Rails-to-Trails Conservancy	29%	25%
League of Michigan Bicyclists	5%	12%
Average annual spending on bicycling		
Equipment purchases	$478	$1,860
Repairs	$80	$230
Events/membership fees	$190	$356
Average total spending on bicycling	$748	$2,446

Table 3. Purpose of Trip for 1999 Michigander and Midwest Tandem Rally Participants

	Michigander (n=424)	Midwest Tandem Rally (n=452)
Primarily purpose of trip related to event	99%	99%
Pere Marquette venue influence		
Not much	52%	61%
Some	21%	16%
Moderate	14%	14%
High	13%	9%

On a per person and overall basis, Tandem Rally participants spent more than Michigander participants (Table 4). Excluding the registration fee, Michigander participants and their travel parties spent $207,000 in conjunction with the event or $233 per travel party. This amounts to $100 per person over the course of the event. Of the $207,000 total spending, half was spent before or after the event and half during the event. Six-day participants were responsible for 50% of the overall spending. The $81,700 in Michigander registration fees paid to the Michigan Office of the Rails-to-Trails Conservancy provided some funds for the organization's fund raising efforts and for services and supplies to support the ride. Michigander sponsors also arranged camping at locations such as schools, fairgrounds, etc., so many participants did not stay overnight in paid accommodations. In total, Michigander participants booked an estimated 510 hotel room nights, including 150 room nights during the event.

As for the Midwest Tandem Rally participants, they paid fees for each aspect of their experience (i.e., fee per day of riding, banquet, box lunches, etc.). Since the researchers were not provided the registration fee data paid per participant by the sponsors, we asked this of respondents. Overnight accommodations were arranged separately. Over three-quarters (82%) of the Tandem Rally participants stayed overnight in a hotel, with a small segment camping or staying with friends or family. In total, 1,100 hotel room nights were estimated. Including the registration fee, participants and their travel parties spent $260,000 in conjunction with the

Table 4. Spending Profile of 1999 Michigander and Midwest Tandem Rally Participants

	Michigander (n=424)	Midwest Tandem Rally (n=452)
Total spending	$207,000	$260,000
Proportion of spending		
Before and after trip	50%	15%
During trip	50%	85%
Average spending per party	$233	$566
Average party size	2.3	2.5
Total hotel room nights	510	1,100

event or $566 per travel party (average 2.5 persons). Of this $218,000 was spent during the event (mostly likely in the Midland area) and $42,000 was spent in Michigan getting to and from the event. With multiplier effects, the total impact on the state economy is $390,000 in sales, $140,000 in personal income, $222,000 in value added, supporting about eight jobs, mostly in Midland County. These figures assume all of the spending would not otherwise occur in Michigan, as 74% of the participants were out-of-state residents.

The economic impact of these events may extend into the future as 79 percent of the Michigander participants and 54 percent of the Midwest Tandem Rally participants said they are extremely or quite likely to ride the rail-trail again (Table 5). Ninety-four percent of the Michigander participants rated the Pere Marquette Rail-Trail "very good" or "good." The event experience was rated "very good" by 54 percent of the participants and "good" by 36 percent. An even greater proportion of Tandem Rally participants were positive about the rail-trail. Ninety percent rated it "very good" and eight percent rated it "good." The Tandem Rally event was also rated higher than the Michigander, with 71 percent rating it "very good" and 27 percent rating it "good."

Community benefits were measured by the proportion of participants who were introduced to these annual bicycling events or the PMRT through these two 1999 events. The assumption is being made that encouraging participation in outdoor recreation activities like bicycling enhances quality of life. Furthermore, the higher the first-time event participation and Pere Marquette Rail-Trail users show growth in the activity and trail use. Of the participants in the Michigander event, 42 percent were first-time event riders compared to 27 percent of the Tandem Rally participants. Eighty-three percent of the Michigander participants were riding the PMRT for the first time and 91 percent of the Tandem Rally participants were first-time PMRT users.

Conclusions and Implications

This research illustrates a rail-trail offering a compatible, sustainable tourism resource for events that produce positive economic impact to a local economy, while simultaneously serving the needs of local residents. Combined these two recreational bicycling events generated close to $500,000 of direct spending in the areas where participants rode and stayed overnight. Moreover, our findings suggest many of the participants indicated they would return to visit the area and/or ride the rail-trail, bringing future economic benefits. The results also demonstrate events introduce new people to activities, facilities and communities. Higher levels of trail and community awareness can lead to increased future usage and economic impact.

The results of this study also demonstrate how different events can lead to different levels of economic impact. The Michigander was primarily marketed to and attended by Michigan residents. Therefore, the economic impact was more a redistribution of money rather than new money to the state. The Michigander also generated fewer overnight rooms and local bed taxes than the Tandem Rally as most participants camped in the group camps set up by Michigander organizers. Also, most of the meals were provided by the Michigander sponsor or donated by local groups, so spending on food and restaurants was limited. The Midwest Tandem Rally was shorter in length but more highly concentrated in the City of Midland and Midland County. More hotel room nights, bed taxes and restaurant purchases were generated, as the Rally did not have prearranged group camping and meal options. The Tandem Rally attracted many more out-of-state participants to Michigan, which represents "new" money. Another factor in calculating economic impact is to consider how the registration fee is being spent. While the Michigander had a higher registration cost it appears that a greater percentage of the budget was spent out of the Midland County area on bulk event supplies and assisting the Conservancy in their programs.

Table 5. Likelihood of Returning to Area and Satisfaction with Event and PMRT for 1999 Michigander and Midwest Tandem Rally Participants

	Michigander (n=424)		Midwest Tandem Rally (n=452)	
Likelihood of return visit	PMRT	Midland County	PMRT	Midland County
Quite likely	50%	54%	15%	12%
Extremely likely	29%	23%	39%	39%
Quite unlikely	17%	19%	36%	37%
Extremely unlikely	4%	4%	10%	12%
Satisfaction level	Trail condition	Experience	Trail condition	Experience
Very good	82%	54%	90%	71%
Good	12%	36%	8%	27%
OK	4%	8%	1%	2%
Poor	1%	2%	0.5%	0%
Very Poor	1%	0%	0.5%	0%

Local entities incurred some costs to host these events. Local bicycle groups and the local convention and visitors bureau had expenditures in planning and marketing the events. It is not known if this resulted in additional memberships for the bicycle organizations. The convention and visitors bureau fulfilled their mandate to increase hotel occupancy using bed tax money for event marketing. The City of Midland and Midland County Parks and Recreation Departments coordinated (and paid for) police and park maintenance to service both events. Again, the image of Midland as a quality destination to visit or place to live is an intangible value that may more than compensate for these expenditures.

A final note is that these events often require a park administration to draft and pass rules that suggest how events can use the facilities. These rules should be focused on maintaining the facility and allowing continued public use during the event. This can promote positive interaction among visitors and locals and safeguard the resource for future local use and major events. We learned of no problems or conflicts that would suggest these two events caused harm to the community. On the contrary, this study provided quantitative evidence that special events held on rail-trails produce positive economic and community benefits.

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PRIVATE BUSINESS PERCEPTIONS OF TRANSPORTATION ISSUES AND THE ISLAND EXPLORER BUS SYSTEM AT ACADIA NATIONAL PARK, MAINE

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Abstract: National Parks and communities that surround them often must work together to create the best possible experience for the visitors to the area. In the case of Acadia National Park in Maine, the surrounding communities and the park have worked together to face the issue of congestion in the area caused by too many automobiles. The Island Explorer Bus alternative transportation system was integrated in 1999 to begin dealing with this problem. This exploratory study was designed to assess the perceptions of private businesses on transportation issues in and around Acadia National Park and the Island Explorer Bus alternative transportation system. In-person interviews were conducted with managers or owners. The businesses included hotels, motels, campgrounds, bed and breakfasts, and in town stores. The results from the interviews will be used to assist in the planning of Intelligent Transportation System information to be integrated with the Island Explorer Bus alternative transportation system in late Summer, 2001. Also, the results will help with the design process of an in-depth mail survey of businesses on Mount Desert Island, to evaluate transportation and the Intelligent Transportation Systems technologies associated with the Island Explorer Bus system in late Summer, 2002.

Introduction

In 1999, over 280 million people visited the United States National Parks from all over the world to experience their historic and natural beauty, and the numbers are ever increasing (National Park Service, 2001). Yet, there is more to the experience than simply visiting these parks. While traveling to and from these gems of America, visitors encounter the numerous communities that surround the National Parks. As Lucas (1992) discusses, the National Park Service (NPS) must work cooperatively with these surrounding communities to create a positive overall experience for their many visitors. To ensure success of many park programs, the NPS must work closely with the surrounding communities during the planning stages. The communities and their available amenities hold the power to attract visitors and promote the parks, as they have a great deal of contact with the visitors to the National Parks.

Part of the experience of visiting Acadia National Park, Maine, is the experience of visiting the numerous small coastal villages that are next to the park. Acadia National Park shares its main 32,000 acres with these multiple small villages on Mount Desert Island (National Park Service, 1992). The layout of Acadia is such that some of these surrounding small coastal villages share property lines and roads with the park. Because of this closeness, the National Park Service and their associated management actions must be mindful of these communities. Members of the surrounding communities and Acadia National Park Service representatives work together to satisfy the needs of each other and their many visitors. To further illustrate this, in 1998, the National Park Service conducted a general survey of Acadia National Park visitors (Littlejohn, 1999). One of the top reasons visitors reported for visiting Acadia was to also visit the surrounding villages, mainly for shopping and dining purposes (Littlejohn, 1999).

Each year almost 3 million visitors arrive at Acadia National Park (Daigle & Lee, 2000), and almost 4 million people visit the small surrounding community of Bar Harbor, Maine (McMahon & Propst, 1998). The small area of the park and the many visitors it receives each year makes Acadia among the most densely populated National Parks. In the Acadia National Park General Management Plan (1992), congestion of people and automobiles are discussed as areas that need to be addressed if the experience of the area is to be maintained. The management plan also notes that with the numerous cars parked on the sides of the roads, a safety issue is also of concern (National Park Service, 1992). Alternative methods of entering the park and working with the surrounding communities to begin solving the congestion problem were also stressed (National Park Service, 1992). Further supporting idea of congestion within Acadia National Park, in 1998 a general survey of Acadia visitors reported responses to open-ended questions regarding what visitors liked most and liked least about their trip to the park. The top four things that the visitors liked most about their trip to Acadia National Park were Beauty and Scenery, Scenic Views, Hiking Trails, and the Carriage Roads. The top four things that visitors liked least were Crowds, Traffic, Nothing, and congested parking. (Littlejohn, 1999). Again, the traffic, congestion, and crowding issues are still of concern to the park planners as they try to maintain the positive overall experience for their visitors.

In 1999, Acadia National Park, with the help of several other state and federal government agencies, the Friends of Acadia, and the surrounding communities on Mount Desert Island, introduced the Island Explorer Bus alternative transportation system into the park and onto the island as a means to address the congestion caused by too many automobiles on the roads (Daigle & Lee, 2000). The bus system began service with 9 buses along 6 routes, and

attracted 142,260 passengers (Daigle & Lee, 2000). In Summer 2000, the Island Explorer Bus ran 17 buses along 7 routes, and carried 193,057 passengers throughout Acadia National Park and the island (Crikelair, 2000). The bus runs each day during the summer months, from the last week in June until Labor Day in September. The idea behind Island Explorer Bus system is to change the travel behavior of visitors to Mount Desert Island, from a private vehicle based behavior to an alternative transportation behavior, such as using private or public buses, which are both available options on the island. The Island Explorer is primarily designed to allow visitors to leave their personal vehicles at their lodging facility, yet still have the ability to move freely about the island. While working alongside the many private transportation providers, the Island Explorer Bus system can keep Acadia National Park and Mount Desert Island accessible.

The Island Explorer is a voluntary use, free shuttle supported by donations from the local communities and organizations, local private businesses, and the federal government and Acadia National Park. Once again, the relationship between the National Park and the surrounding community must be strong to support this program. According to the responses on the 1998 general visitor survey, 74% of the respondents that spent their nights on Mount Desert Island stayed in the local villages, at hotels, motels, bed and breakfasts and campgrounds (Littlejohn, 1999). These visitors may not have contact with a park employee each day of their stay, but they will have contact with these lodging facilities. The continued success of the Island Explorer Bus system relies on the satisfaction of these local businesses, lodging facilities and villages, as they have the power to promote using the bus system and make donations to keep it cost free to its users.

The Island Explorer Bus system found increasing success over its first two years of service; yet, the planners recognized a need to make the system more attractive and effortless for the visitors. The integration of Intelligent Transportation Systems was determined to be the best way to do both. Intelligent Transportation Systems are technological innovations that will allow the distribution of Island Explorer information to the visitors, such as bus location and driver communication, to be more efficient (Batelle, 2000). The most important of these new technologies, for the visitors, are the Traveler Information Services. Traveler Information Services will allow area visitors and Island Explorer users to access information regarding the bus schedule, arrival times of each individual bus, and parking availability status in certain areas within the National Park. The components of the Traveler Information Services include electronic display boards for the bus arrival times and the parking availability information, interactive video display screens that will monitor certain Acadia National Park parking lots and track the Island Explorer buses, a web link from the Acadia National Park homepage, and a telephone accessible menu of all of these information options (Batelle, 2000).

To ensure the Island Explorer Bus alternative transportation system is continuing to meet the needs of Acadia National Park, the surrounding communities, and the visitors, several studies are being conducted regarding the Island Explorer service. This exploratory study was designed to assess the perceptions of private businesses, which surround Acadia National Park, regarding transportation issues and the Island Explorer Bus system. In-person interviews were conducted in Fall, 2000, and the results will assist the planning for the new Traveler Information Services, to be incorporated late Summer, 2001, and to develop a more extensive survey of the businesses on Mount Desert Island in late Summer, 2002, and future assessments of the Island Explorer Bus service.

Methods

The purpose of this study was to determine the overall perceptions of the local businesses regarding the benefits of alternative transportation to the business environment, the benefits to their customers, and the traveler information needs of their customers on Mount Desert Island. In order to identify the issues and concerns of these businesses, in-person interviews were chosen as the method of data collection.

The interview schedule was developed at the University of Maine, Parks Recreation, and Tourism program, and was then reviewed and revised by Batelle, an independent research firm, and an advisory planning committee, which included local town planners, park staff, and a local consultant. There were four topic areas included in the interview schedule. The first topic area included the background information of the businesses, such as how long the person had been in the business and whether the business operated on seasonally vs. year-round, the size and location of the establishment, and characteristics of the customers, such as the types of customer groups. The next topics addressed were the awareness and use of the Island Explorer, such as how the customers or business found out about the Island Explore or if they actually used the bus. The third topic area included benefits to the businesses and their associated customers. The final topic area included what traveler information the participants thought would be important to the businesses or their customers. The questions for these topic areas were asked in an open-ended format. This allowed the respondents to discuss their feelings and perceptions of the problems and issues addressed in the interview. "Yes" or "No" answers could not always be avoided in response to the questions, and probing questions were used to help guide the conversations. The goal here was to collect information that would eventually be used to inform the visitors of the area and change the transportation behavior of customers to fewer automobile drivers and more bus riders.

Purposeful sampling was used to select the businesses using the AltaVista™ Internet search engine "yellow pages" directory. Businesses were first selected based on type of establishment, campground, hotel, motel, bed and breakfasts, or in-town shop. The second criterion for selecting a business was its location on Mount Desert Island, attempting to get a range across the island. Twenty-five businesses were initially selected and contacted by

phone. Of those, thirteen answered and were invited to participate in the study. Of the thirteen businesses contacted, one declined due to a busy schedule. The interviewees included the owner or manager of the establishments, which, in some cases was the same person.

Most businesses, especially lodging establishments, are at their full capacity until after Labor Day. Therefore the in-person interviews took place in late September and early October, after the busy summer season but before most businesses close for the winter months. The times of the interviews were scheduled around the businesses to make the interviews as convenient as possible; they lasted between 25 and 30 minutes.

Permission to record was granted by the interviewees at the beginning of each interview, than a tape recorder was used to record the interview. Tape recording the interviews along with brief note taking was used, rather than only note taking, to allow all of the interviews to be captured at a steady pace. Each business was given a code to protect their identities and ensure their confidentiality. The interviews were then transcribed using a transcribing machine, by the interviewer. The transcription process provided the opportunity to do an initial analysis of the interviews before they were analyzed for specific themes, which found additional themes than initially sought by the interviewer. The interviews were then examined for the specific recurring themes in the responses to the sets of questions, such as the idea that there is a transportation problem on Mount Desert Island and in Acadia National Park, and if there is a difference in the types of customer depending on the month of the tourist season.

Results and Discussion

Characteristics of the Business and Their Customers

The general characteristics of the businesses varied between type of establishment, size of establishment, and location. Type and sizes of businesses were one, 200+ room hotel; three, 50+ room motels; three, 6-8 room bed and breakfasts; three, 100+ site campgrounds; a small locally owned gift shop and a larger chain store. The majority of the businesses were located on the eastern side of Mount Desert Island, and several were located on the northern and southern parts of the island as well. Two of the businesses operated year-round and the seasonal businesses lasted from around mid-May until the mid to end of October. Almost all of the businesses reported full capacity in July and August and about 75% capacity in June, September, and October.

The participants reported a difference in the customer base depending on the time of the season. They determined in May and June, their customers were primarily local residents or in the area to attend a conference or wedding. During the busiest part of the season, from mid-June until Labor Day in September, their customers were mostly families. And, after Labor Day, the customer base consisted of local residents along with touring customers that were primarily older and possibly retired. When asked what they thought about the different types of customers, one participant responded:

> Yeah, it's usually July and August, but June is turning [busy], with weddings and seminars, and this year September is looking real good as well, I think that when repeat people come to the island, 'cause they know July and August is such a zoo here, [they] start coming in September. So, we're finding that from Labor Day to Columbus Day, and fall foliage, we're pretty much set at capacity.

Another responded:

> Sure, they [September and October Customers] are touring customers, you know, retired, sightseeing, as opposed to July and August, which are family, June is definitely conference.

One implication of this changing customer base is that there may need to be different types of alternative transportation available for the diverse customers. Currently, the Island Explorer Bus system is the only public transportation system, and as one participant noted, "...you have to take your own car. Or, if not, you have to use your legs, or feet, or use a bike; there really isn't much as far as public transportation." The Island Explorer Bus also only runs during the busy season of families, in July and August. The other customers of June, September, and October, must find alternative transportation from private providers, such as commercial tours of the park, or they have to use their personal automobile, which is what the Island Explorer Bus system is trying to discourage. A possible extension of the season with different types of service was mentioned by several businesses and may be needed to promote use among all of the visitors to the Acadia National Park area.

Customer Awareness and Use of the Island Explorer Bus System

This topic area began with a brief discussion of the Island Explorer Bus system, which all of the businesses knew of and some had actually used the bus. During this discussion, the participants were asked if they thought there were any transportation issues, such as problems caused by too many automobiles, on Mount Desert Island. Only one motel participant did not think there was a transportation problem on Mount Desert Island, however, the participant indicated it was his first summer on the island. One bed and breakfast was aware of a traffic congestion and parking availability problem in the adjacent village, but did not think there was a transportation problem within Acadia National Park, as she had never heard of one. However, the rest of the businesses felt that there was a definite problem of too many automobiles on Mount Desert Island, including within Acadia National Park. The majority of responses were as follows:

> I think the traffic is going to be here no matter what.

> Oh, I think it's a big problem. I think that the roads weren't made for this traffic, I mean, certainly, there are no lights, you don't see one for crossing! I mean, someone must get run over...
>
> ...if someone was to stay here, and left their car, there is still another car to take its place. It's like water, always going into a space.

There was an agreement by all of the businesses that if the customers hadn't used the Island Explorer Bus the previous year or were new visitors, they were probably unaware of the bus prior to contacting the establishment. All of the participants reported their businesses advocated using the Island Explorer Bus by handing out schedules or helping their customers plan visits to Acadia National Park using the bus. There was some concern however, that the businesses were doing most of the advertising for the bus system and the Island Explorer planning committee needs to do, "A little more publicizing."

> ...for the first people just coming in, we always gave them the information when they were registering. Most of them, nine out of ten didn't know anything about the service, it was new.
>
> I doubt they know before they get here.
>
> They come in and ask us where they should go to hike. We tell them about great one-way hikes to do using the bus. It's good for bikes too.

Every business reported that not many of their customers used the Island Explorer Bus. A couple stated that it was hard to convince their customers to use it because they had already planned on using their private vehicles.

> ...maybe a couple, as far as I know. Not too many of them left their cars here.
>
> I'd say 1 or 2% use the Island Explorer, a lot of them have rented cars...and their out for a few days, so they've already had their vehicle, and the traffic is the traffic that they thought.
>
> Certainly I notice a difference in the number of cars left in the yard...in the fall, the yard is empty during the day. In the summer, when the bus is running, maybe a third, a half, or more are here. They leave the cars and ride the bus.

Although not many visitors seemed to be aware of the Island Explorer Bus system prior to their arrival on Mount Desert Island or at the business, the small percentage of people using the buses can make a difference. As the years progress, and more businesses speak to their customers about the Island Explorer Bus and more repeat customers return to use the bus, the numbers of Island Explorer Bus users will inevitably increase. The few businesses that were unaware of transportation congestion problems on certain parts of Mount Desert Island and in Acadia National Park may be indicative of many more. Outreach efforts by Acadia National Park representatives may help to inform the local businesses of these transportation issues, which can then be passed along to the customers and promote using the Island Explorer Bus to avoid these transportation congestion problems. Along with additional outreach to the local businesses, the Island Explorer planning committee may indulge in increased marketing to the visitors to the area to increase the public awareness of the Island Explorer Bus system and the need to use it.

Benefits to Businesses, Customers, and the Environment

Multiple benefits of the Island Explorer Bus system were identified by the businesses. Several of these benefits were synonymous with benefits identified in the Daigle and Lee (1999) survey of Island Explorer Bus users. Participants in the interviews identified a benefit to the customers, such as not having to drive their own vehicles and find parking. The 1999 Island Explorer user survey respondents identified "Less worry about driving and parking" as the number one desired and attained benefit of the Island Explorer Bus and "Rest from driving own vehicle" as the fourth (Daigle & Lee, 2000).

> But even people who have cars like to ride the shuttle. Its just so, its an easy way to see the area.
>
> ...that they don't have to move their motor home. It's very convenient, very simple, they can use it to put their bicycles on, go around the park...
>
> As far as transportation for our customers, downtown is always a problem with parking.

Other benefits identified in these in-person interviews were benefits to the customers of not drinking and driving if they have a cocktail or wine while in town or at dinner, as one motel phrased it,

> We feel that, people if they want to go downtown to have a couple of beers or a glass of wine or something, they don't have to drive.

Benefits to the environment, such as taking some cars off the road and the cleaner fuel burned in the buses were also identified by the businesses as a very important benefit. Some of the participants had very strong feelings about the numbers of cars on Mount Desert Island and in Acadia National Park. Some of the resounding responses were:

> You know, less traffic, less pollution, I just think that they shouldn't let so many cars into the park.
>
> Just what it does for the environment, by reducing the amount of cars and traffic. Also just making the island more accessible.
>
> Over the years, I've seen the pollution increase. I've seen the cloud gray over the island. It just gets worse and worse every year. And if this is

> someway, anyway to control it, I would like to see the integrity of the air here better.

Few if any benefits that directly impacted the businesses could be identified. The businesses that had an Island Explorer Bus stop on their premises felt that the bus was an additional attraction to their customers, such as this campground owner,

> I can tell the public in my web page, or on my flyer, we are a shuttle stop, we are a bus stop. It really helps... It hasn't effected how much business I get, because I am still, we are still full, even though business was up this year, I was still quite full. It just made it easier for people here to get around the island.

Finally, a benefit identified for all three, the customers, environment, and the businesses, was the possibility of attracting more carless visitors to Mount Desert Island.

> Yeah, people that come over on the ferry. Motorcycle people, but mostly people that would be hikers, people that come across on the ferry, that are here for a few days, and looking for transportation.

> A lot of people that arrive just in their motor homes, those are usually the ones that really appreciate the shuttle service.

The Island Explorer Bus system provides many overall positive benefits to the business customers. Although the bus system may not increase the numbers of customers that the businesses attract, it has the potential to diversify the customer base, such as attracting more carless visitors. The idea that there would be fewer cars on the road due to the increased use of the Island Explorer Bus is a benefit to Mount Desert Island residents and Acadia National Park users, such as less traffic congestion and increased parking availability if a personal vehicle is required. The benefit to the environment, like less air pollution, benefits the business environment and the customers by allowing for a better quality of life; if the quality of life is ruined by air pollution, businesses may choose to locate elsewhere.

Ideas about Traveler Information Services

The topic area dealing with important traveler information was especially important because it will help to plan for the new Traveler Information Services that will be initiated in late Summer, 2001. Most of the businesses had never really given much thought to the possibility of using technologies, such as video or electronic display signs, or a telephone information system, to relate information to the visitors during their stay. The businesses agreed that important information to include in the Traveler Information Services would be parking availability at certain busy areas in Acadia National Park and Island Explorer Bus arrival times.

> You know, I never thought about that. It's kind of a good idea really.

> Any bit of information we can get them is better.

Some of the businesses were skeptical that the Traveler Information Services would be used by their customers, and would probably not help to change the transportation behaviors of their customers. Many of the businesses felt that their customers were going to go where they wanted to go, on Mount Desert Island and in Acadia National Park, regardless of traffic congestion and parking availability.

> They got there anyway.

> They may, but as I say, my clients have a plan.

Providing this information to the patrons of these establishments did not seem to be a high priority for the respondents, they did not think that it would have much of an impact on their businesses. However, some businesses agreed there was a possibility that additional information on alternative travel routes using the bus could convince the visitors to leave their personal vehicles at their lodging facility. A few of the businesses felt that providing information on the arrival times of the buses could make the service more efficient and attract their customers to use the Island Explorer Bus system. Still, the businesses seemed to think that information on Acadia National Park was the most important.

Conclusion

As the interviews progressed, there seemed to be differences in the perceptions of the interviewees based on the type and size of business, how long the interviewee had been involved with the business, and the location of the business. The smaller businesses, the longer established businesses, and the businesses located on the northern and southern parts of Mount Desert Island seemed to think there was a bigger overall congestion problem, of people and automobiles. They tended to send their visitors to the less populated and congested areas in Acadia National Park. The larger businesses and the ones on the eastern side of Mount Desert Island, seemed to have more customers using the Island Explorer Bus and sent their customers to more populated areas in Acadia. Overall, the businesses thought that the Island Explorer was a positive addition to Mount Desert Island and Acadia National Park. They felt that there were definite benefits to their customers and the environment, and even a few to their businesses. Each participant had their own idea about what the new Traveler Information Services would be like. Traveler Information Services could complement the parking availability information with alternative travel plans into Acadia National Park using the Island Explorer Bus. They all felt that it would be an interesting addition to the Island Explorer Bus alternative transportation system, and were eager to see it in action the coming summer season.

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Management Decision-making & Planning for Outdoor Recreation

INTEGRATING RESOURCE, SOCIAL AND MANAGERIAL INDICATORS OF QUALITY INTO CARRYING CAPACITY DECISION MAKING

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Abstract: As use in national parks and related areas continues to rise and visitors and types of activities continue to diversify, we are challenged to balance use and preservation in parks, wilderness and related areas. Faced with these challenges, integrative approaches to defining, monitoring and managing ecological, social and managerial setting attributes is crucial. This research outlined in this paper has two objectives. The first objective is to inventory and map selected ecological, social and managerial setting attributes that define wilderness quality in Yosemite National Park. Using GIS technology, overlay maps of these setting attributes will assist in determining the types and distribution of wilderness experiences, associated ecological impacts and concomitant opportunity zones for the wilderness portion of the park. The second objective is to evaluate relative tradeoffs among wilderness setting attributes. Evaluations of these tradeoffs will be analyzed and will allow management to decide how to best mitigate recreational impacts while not hindering, to an unacceptable degree, the freedoms and other qualities often associated with wilderness experiences.

Problem Statement

As use in national parks and related areas continues to rise and visitors and types of activities continue to diversify, we are challenged to balance use and preservation in parks, wilderness and related areas. This challenge forces managers and researchers to address both ecological and social issues when making management decisions. In park and wilderness management, integrating social and resource indicators is essential to meet park mandates that require the protection of both experiential and resource conditions. This paper will address the challenges we face in integrating social and resource data and outline a study in progress in Yosemite National Park. This study will develop and apply a management model that integrates resource, social and managerial indicators of quality into carrying capacity decision-making.

Historical Background

Yosemite National Park is in the Sierra Nevada mountain range of California. The Park is approximately 1200 square miles and is known for the sheer cliffs of Yosemite Valley, its rugged snowy mountain peaks and its high mountain meadows. Inspired by the writing of John Muir, the painting of Albert Bierstadt and the photographs of Ansel Adams, visitation to the park has been on the rise since its inception. In Yosemite National Park wilderness use peaked in the early 1970s at approximately 200,000 visitor nights per year. Use quotas established in the mid-1970s helped to reduce that number to approximately 120,000 visitor nights through the 1980s and into the 1990s (van Wagtendonk, 1979; Boyers, 1999). However, use is currently on the rise again (Cole, 1996; Boyers, 1999). Along with increasing use trends come associated ecological and social impacts. Management decisions must now be made about the number of visitors and associated impacts that can ultimately be accommodated within Yosemite National Park wilderness.

Conceptual Background

When facing these management challenges we look to frameworks to help organize our thoughts and set management objectives. Two prominent management frameworks in the recreation management literature are the Recreation Opportunity Spectrum (ROS) and carrying capacity.

ROS is a land classification framework developed during the late 1970s (Clark & Stankey, 1979; Brown, Driver, & McConnell, 1978; Brown, Driver, Burns, & McConnell, 1979). ROS is comprised of land classification categories that describe an array of recreation opportunities ranging from primitive to developed (Clark & Stankey, 1979). Within the ROS framework, recreation opportunities are defined by three characteristics: the resource setting, the social setting, and the managerial setting.

ROS can be a powerful allocation and planning tool that facilitates the inventory of diverse recreation opportunities. It is assumes that linear relationships exist between each of its three setting attributes: resource, social and managerial. Alternative combinations of these setting attributes define recreation opportunities that range from primitive to urban. For example, primitive recreation opportunities are defined by natural resource conditions low density social conditions, and undeveloped managerial conditions (Figure 1). ROS has been adopted by federal land management agencies and is used in the planning and management of wilderness and related outdoor recreation (Buist & Hoots, 1982).

Traditional concern over the impacts of increasing recreation use has given rise to the concept of carrying capacity. In its most generic form, carrying capacity refers to the amount and type of recreation use that can be sustained in a park, wilderness or related area (Stankey & Manning, 1986; Shelby & Heberlein, 1986; Graefe et al., 1984; Manning, 1997). The literature on carrying capacity – like ROS – suggests that recreation experiences be considered within a three-fold framework of concerns: resource, social, and managerial. For example, the number of visitors that an area can accommodate is dependent on the resistance and resilience of the resource, the type of recreation activity taking place and the intensity with by which an area is managed.

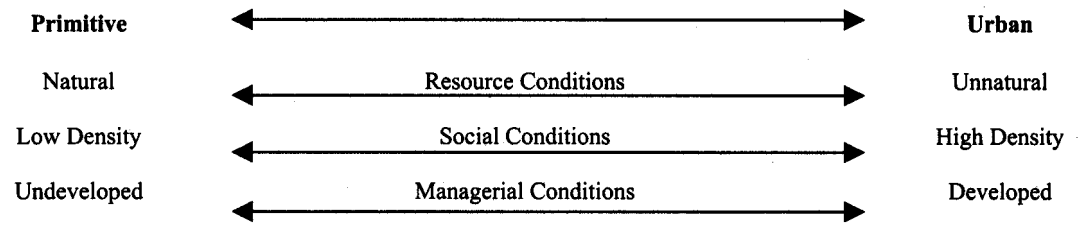

Figure 1. Linear Relationships between the Environmental, Social and Managerial Conditions as Suggested by the ROS (Manning 1985)

Research and management experience suggests that carrying capacity can be determined only when management objectives are defined, and that management objectives should be formulated and expressed in terms of indicators and standards of quality (Frissell & Stankey, 1972; Manning et al., 1996; Manning, 1998; Manning, 1999). Indicators of quality are measurable, manageable variables that define the quality of resource conditions and the visitor experience (Manning, 1999, Merigliano, 1990). Standards of quality define the minimum acceptable condition of indicator variables, or what is often termed the "limits of acceptable change."

The above frameworks provide a conceptual foundation for research to support an integrative approach to wilderness planning and management in Yosemite National Park. They suggest that planning and management of wilderness recreation must consider resource, social and managerial attributes, and that indicators and standards of quality should be developed for these attributes.

Analytical Integrative Models

Several models have emerged from the resource management literature that might help to make wilderness management and research more integrative in nature. For example, environmental impact statements (EIS) are used to assess the potential impact a management action may. An EIS mandated through the National Environmental Policy Act (NEPA 1968) combines social and ecological analyses, and findings are displayed within one report. Although this approach is integrative in nature, it is more multi-disciplinary than inter-disciplinary. An EIS model lacks the analytical power needed to fully address the relationships between social and ecological conditions.

Spatial analysis conducted using geographic information systems (GIS) gives us a tool in which we can begin to consider relationships between biophysical characteristics of a resource and a variety of social information. Traditionally, only resource data have been geo-referenced within GIS systems. However, GIS has the capability to incorporate social data as well, thereby facilitating a more integrative analysis.

Tradeoff analysis is another approach to integration. It is likely that most visitors want as unimpeded access to the wilderness as possible, but also want such areas protected from excessive resource impacts, want to avoid undesirable levels of crowding and congestion, and want minimal management restrictions. However, these conditions often conflict, and tradeoffs must be made among these conditions. Such tradeoffs can be explored through a number of empirical approaches, such as stated choice models. Stated choice models allows us to understand the relative importance of resource, social and managerial condition/ attributes from the standpoint of the visitor. Stated choice models have been developed in marketing research to measure consumer preferences and tradeoffs among such preferences (Louviere, 1988; Green et al., 1988), and have recently been extended to applications in non-market and environmental policy contexts (Opaluch et al., 1993; Dennis, 1998). A trade-off analysis is an integrative approach that focuses on the cognitive relationships among resource, social, and management conditions.

GIS and stated choice analysis will be used as integrative frameworks in this study. Stated choice analysis will be used to determine preferred tradeoffs among resource, social and managerial attributes of the wilderness experience and these and other study data will be analyzed and reported using a GIS framework.

Study Objectives

The purpose of this research is to develop and apply a management model that integrates resource, social and managerial indicators of quality. More specifically, the study has two objectives. First selected ecological, social, and managerial setting attributes that define the quality of wilderness experiences in Yosemite National Park will be inventoried and mapped. Using GIS technology, overlay maps of these setting attributes will assist in determining the types and distribution of wilderness experiences and concomitant opportunity zones for the wilderness portion of the park. Second, relative tradeoffs among wilderness setting attributes will be evaluated. Optimum levels of ecological, social, and managerial setting attributes may not be able to be achieved simultaneously. In such cases, tradeoffs must be made among these attributes. Visitor-based evaluations of these tradeoffs will be analyzed and will inform wilderness planning and management decisions.

Study Methods

This study will be conducted in the wilderness portion of Yosemite National Park. A principal research method will be a survey of wilderness users. Sampling for the visitor survey portion of this study will be conducted in and around the wilderness permit stations in Yosemite Valley, Tuolumne, Wawona and Hodgdon Meadows. The sampling universe will include all persons receiving a wilderness permit during the summer use season of 2001. A stratified random sample will be selected from the sampling universe. The sampling season will begin on June 26, 2001, and end on Labor Day weekend 2001.

The research will be conducted in two phases corresponding to the two study objectives described above. The first phase of research will inventory and map selected setting attributes of wilderness experiences in Yosemite National Park using GIS. Setting attributes will be defined in terms of indicators and standards of quality, and will address ecological, social, and managerial components of wilderness experiences. Examples of indicators and standards of quality to be included in the study are shown in Table 1.

The indicators were chosen using a modified delphi design (Sackman, 1975). Workshops were held in Yosemite National Park during the fall 2000 with researchers and over a dozen park managers and rangers. Over 30 potential indicators were discussed covering resource, social and managerial dimensions and managers were asked to vote for the indicators they believed were the most pertinent and feasible. Based on a literature review and continued discussion with management in Yosemite National Park, six indicators were chosen to represent the social, resource and managerial conditions of Yosemite wilderness (Table 1).

Table 1. Indicators to Be Utilized in the Study

Component of Wilderness Experience	Indicator of Quality
Ecological	1. Signs of human use at campsite (e.g, size of barren core, root exposure). 2. Signs of stock or stock use (e.g., trail impacts, tree scars, manure).
Social	3. Trail encounters. 4. Camp encounters.
Managerial	5. Availability of permits. 6. Camping regulation (e.g., designated campsites to freedom to camp anywhere).

Data on these indicators will be obtained through a visitor survey. This survey will be conducted as a "diary" where respondents will be asked to trace their daily route of travel and report and evaluate aspects of their wilderness trip as it is experienced on site. In this way, resulting data will be spatially referenced. Respondents will be asked to judge the existing quality or standards of selected indicator variables and to report the desired standard of quality as well. Resulting data will be coded into a GIS database that will allow development of coverages displaying the current and desired condition of all indicator variables.

The second phase of research will address visitor evaluations of tradeoffs among competing setting attributes or indicators and standards of quality. These tradeoffs will be explored through a visitor survey and application of stated choice models. The questionnaire will contain batteries of questions designed to enable the application of the statistical procedure of stated choice analysis. A standard research design involves assigning a range of performance levels to selected product or service attributes, then developing alternative scenarios that represent permutations of such attribute levels. Respondents then rate their preferences among scenarios and resulting data indicate which attributes are most important. In the context of wilderness recreation, indicators and standards of quality can be substituted for performance levels of product or service attributes as shown in Table 2. In this example, a range of three standards of quality have been specified for each of six indicators of quality representing the resource, social, and managerial components of wilderness recreation experiences. Respondents will be asked to rate the desirability of a subset of scenarios representing the full universe of possible permutations, and resulting data, through application of stated choice analysis, will be used to estimate the relative importance of each indicator and standard of quality. Study findings can inform management decisions concerning appropriate tradeoffs among the setting attributes of wilderness experiences.

Integrating Study Findings

Several conceptual and analytical frameworks will be used to integrate the resource and social data collected in this study. Importance-performance analysis is a framework that can be used to help formulate indicators and standards of quality (Martilla & James, 1977; Hollenhorst & Gardner, 1994). The framework is illustrated in Figure 2.

Table 2. Yosemite Wilderness Setting Attributes and Levels

Resource conditions
Signs of human use at camping sites:
Photograph 1 (low impact)
Photograph 3 (medium impact)
Photograph 5 (high impact)
Encountering stock or signs of stock use:
Never encounter stock groups or signs of stock use.
Encounter stock groups or signs of a minority of days.
Encounter stock group or signs of stock a majority of days.
Social conditions
Number of other groups encountered per day while hiking:
Encounter fewer than 5 other groups a day while hiking.
Encounter 5 –15 other groups a day while hiking.
Encounter more than 15 other groups a day while hiking.
Opportunity to camp out of sight and sound of other groups:
Able to camp out of sight and sound of other groups all nights
Able to camp out of sight and sound of other groups most nights
Able to camp out of sight and sound of other groups a minority of nights
Management conditions
Regulation of camping:
Allowed to camp anywhere.
Allowed to camp anywhere in a specified zone.
Required to camp in an assigned site in a specified zone.
Chance of receiving an overnight back-country permit:
Most visitors are able to get a permit for their preferred trip.
Most visitors are able to get a permit for at least there second choice trip.
Only a minority of visitors are able to get a back-country permit.

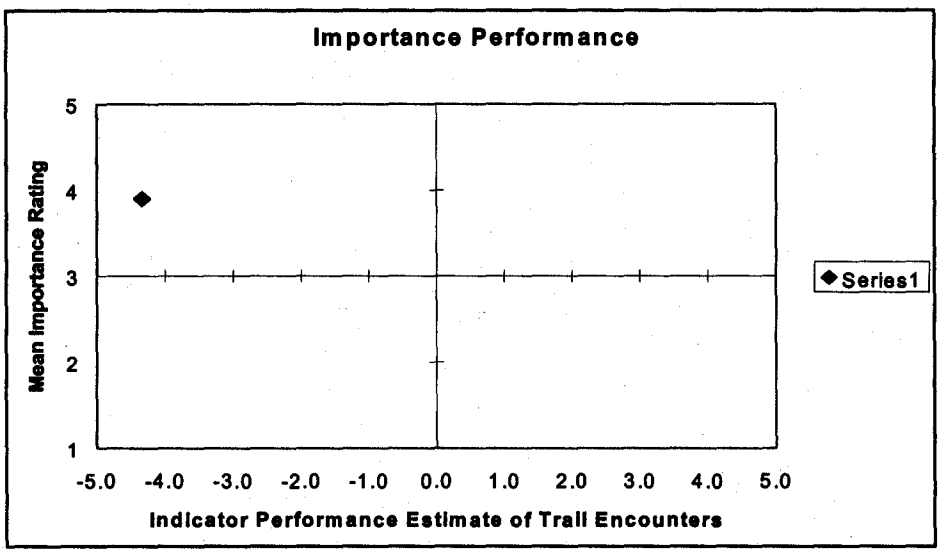

Figure 2. Example of Importance-Performance Framework

The vertical axis plots the importance that visitors place on resource, social and managerial indicators of quality and the horizontal axis plots the perceived or preferred condition of each indicator relative to its current condition. The resulting data provide a graphic representation of the relationships between importance and performance of indicator variables, and where management action is needed. Study data derived from the stated choice model will be used as the measure of the importance of indicator variables and study data derived from the visitor diary will provide data on the preferred condition or standard of quality for the indicator variables. The algorithm shown in Figure 3 will then be used to integrate importance-performance measures for all resource, social and managerial indicators of quality.

$$\sum I_{1\,IPE}(w) + I_{2\,IPE}(w) + I_{3\,IPE}(w) + I_{n\,IPE}(w)$$

W= importance weight from stated choice model.
Indicator Performance Estimate (IPE) = Actual – Preferred/ Standard Deviation of Preferred

Figure 3. Algorithm Used to Estimate the Overall Condition on an Area Using Social and Resource Indicators

This algorithm will generate an overall condition score for any geographic area within the wilderness portion of the park, and these data can be analyzed and reported within a GIS framework. Study data and the GIS framework will 1) allow for the creation of a map of priority areas in need of resource and/or social mitigation, 2) provide an informed basis for formulation of indicators and standards of quality for all wilderness zones, 3) inform selection of wilderness management prescriptions of highest utility to wilderness visitors, and 4) provide a tool for monitoring resource, social and managerial indicators of quality.

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REDEFINING ROLES OF SCIENCE IN PLANNING AND MANAGEMENT: ECOLOGY AS A PLANNING AND MANAGEMENT TOOL

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Abstract: Science as a way of knowing has great value to decision-making but there is need to consider all its attributes and assess how science ought to be informing decision-making. Consideration of the critiques of science can make science stronger and more useful to decision-making in an environmental and ecological context. Scientists, planners, and managers need to consider the critiques of science and ecology, and examine how science can adapt and incorporate these critiques into the application of science and decision-making. This paper outlines many of the challenges facing the use of science (specifically ecology) in decision-making and shows possible areas for overcoming these challenges.

Critiques have questioned the following assumptions of science: 1) whether it is value-free, 2) concepts of order and predictability and 3) modern science's claim to being the key way of 'knowing'. Challenges have also been issued to the application of science such as: 1) the simplistic causal mechanisms used and 2) the lack of consideration for complex interactions and multi-scale issues. Science can be seen as a process of understanding rather than as a collection of facts. As a process, knowledge is changeable and adaptive, precautionary approaches become vital.

Ecology is a science that is beginning to recognize the need for value identification, the need for a multi-scale and multi-perspective approach. Ecology itself requires a multi-disciplinary systems approach. Solutions provided by ecology should stress relative merits instead of absolute answers. Rather than being viewed as a 'weak' science may be the most useful science and tool for dealing with environmental problems that are complex, multi-scale, and cannot necessarily be solved by reductionist measures alone. Ecology and the philosophy of science can be shown to advocate an adaptive precautionary approach given the complexity of social and bio-physical interactions.

Introduction

Questions abound regarding the roles of science in planning and management decision-making. These roles are debated at many levels and generate diverse responses. Two examples of these responses have stemmed partially from post-normal science and post-modernist critiques. Post-normal analysis evaluates assumptions of linear causality in a quest for unerring predictability and control of nature; the implications of these assumptions are also examined. Post-modernists indicate that science is relative and, as such, the predominant use of science as a key mode of "knowing" may be fundamentally misguided when it is applied to decision-making. These insights, among others, are helping to redefine a role for science that appears to coincide with a new era of planning that includes a civics model, precautionary principles, and an ecosystem approach.

Despite emergent models of the use and definition of science, current management and planning may not be able to easily incorporate redefined concepts, nor experience the ideals represented by those models. In short the adaptability of institutions to these concepts remains questionable (Holling, 1995; Kay et al., 1999). The conceptual jumps required may be too great for current practices to deal with, as often, theoretical ideas lack the means for pragmatic implementation. Finding a middle ground for the role of science that can allow adaptation of these new concepts may be required. Despite numerous arguments from scientists, planners, managers, and academics that planning and management should be more science-based, these new models advocate a defined role for science set within a well established construction of social values and objectives to guide both the planning and management process.

Ecology, a key science in environmental decision making, provides an opportunity for scientists, planners, managers, politicians, and all of society to reshape interactions with the natural world. Many use ecology as a scientific tool to support desired decisions and as a means of understanding human impacts on the environment. Ecology is also used in attempts to transform ecological concepts into ethical, prescriptive stances (Callicott, 1986). While I agree with many of these attempts, and understand the need to adopt an ecological perspective, there is an equal need to consider what ecology, and specifically what ecology as a science, actually has to offer society. This process starts with an understanding of what is meant by science, followed by descriptions of what shapes ecology.

Critiques of science suggest that science, as a way of knowing, may be seriously misguided when it is applied to decision-making in an environmental and ecological context (Funtowicz & Ravetz, 1994; Schneider & Kay, 1994a). Scientists, planners and managers need to appreciate the critiques of science and ecology, and examine if, and how, science can adapt to incorporate such critiques into the application of science in decision-making. These critiques may be particularly salient for recreation research as many of the models for recreation planning and management are based in assumptions of scientific method.

Poor use of science includes simplification of diverse social contexts for planning and management as reflected in such models as Limits of Acceptable Change, Recreation Opportunity Spectrum and others. Secondly, biophysical impact assessments, monitoring, and carry capacity

considerations make simplistic assumptions (linear, mechanistic causality) about the bio-physical world (Schneider & Kay, 1994a). These models often do not, and possibly cannot, grasp the complexity of social and ecological systems in order to provide for effective, beneficial, and long-term decisions. A brief look at some of the characteristics of environmental and ecological problems helps explain the difficulty of planning and managing in social and ecological domains.

The Nature of Ecological Problems

Ecology, in its most general form, is the study of changing interrelationships between organisms and their biotic and abiotic environments (Loeb et al., 1998; Schneider & Kay, 1994a). Studies of ecology occur at multiple levels of interaction but no matter what the level, it is important to remember that each level is influenced by, and in its own turn influences, interactions and processes at other levels (Loeb et al., 1998). The diversity of interactions in ecology has created such concepts as emergent complexity (Schneider & Kay, 1994b), multiple scales and non-linear dynamics (Holling, 1992) that require approaches beyond the mechanistic, reductionist methods often used in a Newtonian-portrayed, modern science (Slocombe, 1998; Schneider & Kay, 1994a). Because of inherent uncertainty and movement away from traditional approaches, ecology is often seen as being a weak science, as intractable, messy, and unpredictive (Slobodkin, 1988; Peters, 1991).

Much of the reason for the "messiness" and conflict with ecology has emerged because of the following: the types of problems that it has been asked to solve (Slobodkin, 1988); the types of questions that ecology, in turn, is forced to ask (Grumbine, 1992; Schneider & Kay, 1994a); and the nature of the social settings in which these problems are being asked (Walters & Holling, 1990; Holling, 1995). On the environmental movement front, concern over ecological problems were motivated by analogies between the dynamics and complexities of ecological systems and human societies and a concern to plan and manage human societies within their ecological context and constraints (Slocombe, 1998).

Similarly, ecology was being asked to address problems in various resource industries (forestry, fisheries, etc.) where the scientific concepts traditionally used were not providing accurate predictions and resulting ecological disturbances were causing considerable economic problems (Gunderson, Holling, & Light, 1995). Global population growth and resource crises shaped ecological problems primarily as problems of scale. Decisions made at one particular scale created problems at multiple scales and often hidden at the scale of the initial implemented decision. Reactions to the new problems often focus, again, at only one scale (Norton, 1995) rather than attempting to view a complete scaled system.

Additionally, an ecological problem could depend largely on popular perception (Slobodkin, 1988). People will care for what they see and not necessarily think about what they definitely know. The popularity of cute, furry species or majestic landscapes as symbols for environmental groups illustrates this dynamic and these symbols often become the focus of concern rather than root ecological problems and knowledge. Recognizing this, Slobodkin (1988) is quick to point out that solutions to environmental problems depend as much on the power of poetry and arts, as on economics, while the techniques of carrying out the resolution hinge on ecology. That is to say that environmental problems and perceptions of environmental problems have at least two aspects to them: value statements of what is desired and ecological understanding, explanation, and definition of what might be possible.

Ecological problems manifest themselves as multi-scale problems, require multiple types of perspectives (nutrients, populations, landscapes, etc.) and do not appear to be adequately solved using traditional linear, mechanistic approaches to scientific understanding. As well, a complex social dynamic merges with this bio-physical reality such that ecological planning and management of environmental and ecological issues requires acknowledgement of social values. Defining socially desired goals for an ecosystem is quickly becoming an important aspect of planning and management. In this form, ecology is a science that challenges much of the core modernist approaches to science.

What is Science?

Science is first and foremost a philosophy of understanding and learning. As a philosophy it shapes the process by which we go about learning and understanding the world around us. Its strength lies in its search to acquire knowledge that has the greatest likelihood of being true (Goldsmith, 1993). Science, as a philosophy and in practice is also subject to critique from diverse arenas of society. One notable critique portrays science as manifesting perceptions of today's world as normal, simplistic and unchanging (Goldsmith, 1993). Others suggest that science's claim to neutrality (or being value-free) is impossible and that the introduction of values to science invalidates scientist's work. A brief explanation of the philosophy of science helps to explain how some of these critiques are not necessarily critiques of the philosophy of science but rather of the practice of modernist science.

Biggins (1978) suggests that science is about our views on the possibilities for using nature, the constraints on our using nature, and our relationship to nature or, in short, it is about understanding the human-environment interaction. Science is a form of logical investigation about the how things work. Popper (1994a) would argue that science is about rational criticism; through discussion of ideas, knowledge and understanding can be furthered. This is an important distinction as society, decision-makers, and indeed many scientists and researchers, have established science as a static and concrete collection of facts and predictive tools rather than as a process of learning.

For Popper (1994a) and other scientific philosophers (Peters, 1991; Callicott, 1986), science is defined by the

following: investigating the world by creating conjectures or hypotheses (problem creation); testing the hypotheses and developing evidence (hypothesis testing); and presenting the train of thought (or theory) to critical examination by both the proprietor of the theory and by others who wish to examine and test the theory (critique).

Problem creation is arguably the least understood component of the scientific process but remains a crucial component of the scientific endeavour. In theory, researchers examine the literature about other theories and weigh out the relative merits of different methodologies, theories, and ideas, in an attempt to establish some new theory or direction for research. In practice however, it has been shown that researchers often turn a blind eye to the diversity of theories, instead focusing a smaller set, in attempts to provide evidence to strengthen their own theories or "pet" ideas (McIntosh, 1980). At a basic level, problems are tensions between knowledge and ignorance; they are imperative for the progress of knowledge (Popper, 1994a). The hypothesis creation phase develops the questions or discovers the problem to be researched and then creates ideas (conjectures) about the possible reasons for the existence of the problem. Problems may arise when we look at the world and perceive differences between observation and perception. That is to say, that the art of creating hypotheses may be a largely internalized process in which we mix our ideas of how things work with previously discovered phenomenon, other research, and our observations (Peters, 1991). As such, a hypothesis is formed which makes formalized statements about how the world might work, in preparation for a formalized testing of these statements.

From problem creation, the next phase is to test hypotheses. Hypothesis testing is perhaps what scientists do best. There are well established procedures and protocols for the multitude of tests that need to be done. They range from statistical sampling protocols to established tools and measurement techniques, most developed in attempts to reduce researcher bias. Testing is done by comparing deduction to observation (Peters, 1991). The original theory is tested by whatever means of observation are available and relevant. A positive test of a hypothesis proves only that in the context of the test, the theory is correct. It does not prove that the theory will be correct in all cases. Indeed, Popper (1994b) suggests that even the most rigorously tested theories will always be conjectures and hypotheses. This means that a new hypothesis can and should be created which can be further assessed against others. Popper (1994b) argues that we regard one hypothesis as better than another if, when testing is complete, it fulfils three requirements:

1) the new hypothesis must explain all the things that the old hypothesis successfully explained;
2) it must avoid at least some of the errors of the old hypothesis;
3) it should, where possible, explain things that could not be explained or predicted by the old hypothesis.

This amounts to the basis of the scientific critique and is how scientific understanding constantly evolves (Funtowicz & Ravetz, 1993).

Critical examination of theories follows this process and provides further problems for examination. Popper's form of critical discussion is in actual fact the explaining of a new theory, in light of, and better than an old theory. We have already seen this in his explanation of the three parameters by which an old hypothesis is rejected for a new one. But what is necessary is to know if a new theory would be considered acceptable. For Lee (1993), "an experiment is a systematic way of answering a question. Whether the results constitute a valid answer is a test of the competence of the experimenter."

In order for results to constitute a valid answer, internal and external validity must be made (Lee, 1993). Internal validity might be described as correct inferences: those considerations and decisions made in the course of developing and testing a hypothesis. According to Lee (1993), internal effects to experimental validity occur due to: the following factors: historical events, events that would have occurred anyway, flukes, effects caused by the experimenter, results that occurred because of measurement tools, and decisions of sampling. These factors consist of all things that would effect and bias the answers due to the experiment itself.

External validity constitutes whether the results can and are correctly applied to other situations (Lee, 1993). Threats to external validity generally take the form of changes to the subject matter, because of measurement, such that replication is not possible. Some examples include: multiple interventions causing non-linear changes, and complex interventions which are not repeatable due to failures or impossibilities in including those components actually responsible for the effects (Lee, 1993). Lee realizes that the approach offered may prove too idealistic but suggests that insisting on an idealistic approach to science does not entail refusing to do science unless it is invulnerable to criticism. Rather, it entails approaching a problem scientifically. For Lee (1993), evaluating internal and external validity provide an orderly framework in which to make assessments about the objectivity of an experiment and hence of a theory.

Schrader-Frechette and McCoy (1993) make an argument for what constitutes the objectivity of ecology that applies equally well to science in general. Ecology can be objective, not because it is empirically confirmable, but rather if it is not obviously biased or subjective. They define the objective result as being obtained through survival of intelligent debate and criticism, and if it appears to have more explanatory power and internal and external validity than alternative theories. They argue that objectivity is not tied to value-free confirmability but tied (as Lee [1993] also suggests) to the practices and procedures of intelligent criticism of the scientific community as well as to the practices and procedures of the methods used. Popper (1994a) would concur with these statements adding that, "to attain objectivity we cannot rely

on the empty mind." Objectivity rests on criticism, on critical discussion, and on the critical examination of experiments. A right and wrong method of critical discussion emerges. A wrong one would start with the question: How can we establish or justify our theory? This leads, Popper argues, to dogmatism. By contrast, the right method of critical discussion starts with: What are the consequences of our thesis or our theory? Are they all acceptable to us?

Because science is a process of learning, knowledge should be seen as changeable. Current theories and predictions may change dramatically with new knowledge and may not be appropriate to address future problems. The philosophy of science may necessitate an adaptive approach with a cautionary use of knowledge. This becomes even more important when we consider uncertainty, complexity, surprise, and social conflict in ecological problems.

Post-Modernism and Post-Normal and How Ecology and Science Can Respond

Many ecologists and decision-makers demand a more rigorous science, with greater predictability and understanding (Peters, 1991; Szaro et al., 1998). Such simplistic demands are seen, by Kay and Schneider (1994a), as the classical Newtonian cause and effect, modern scientific approach. The post-modernist critique challenges the fact-value dichotomy portrayed by modern science, the concept of order and predictability from a reductionist perspective, and the notion that science is the only way of knowing.

The knowledge and understanding that science is not value-free is not new; objectivity in science is perhaps questionable. Post-modernists insist that science like other intellectual disciplines is influenced by the social and political context within which they are embedded (Tauber, 1999; Howarth, 1995). Benson and Licht (1997) suggest that the experimental method of science often portrays results as supporting or refuting a hypothesis instead of focussing on the possibility that the methods used might be mistaken or lead to errors. This is a valid concern and scientists should be prepared to analyse and critique the methods used, assumptions made, and thus the relevance and objectivity of the outcome.

Despite these efforts by scientists, it is still argued that the very methods, models, and theories used, presuppose a set of values (Howarth, 1995). These values are often depicted as the modernist values of mechanistic control and domination of nature. Questioning this, Masters (1993) questions the importance of the critique that science might be value-laden. Tauber (1999) suggests that considerations of neutrality versus objectivity help to break this argument down. Objectivity can be maintained through the philosophy of science and its methods (as described earlier), whereas the scientist or the science may not be neutral. Tauber suggests that neutrality of science "depends on regarding nature as holding no value". Neutral science would not take a stand, while objective science has claims to reliability. As such, objectivity is an ideal to be attained through a process.

If, however, the argument still rests on whether science can indeed be objective, it may be useful to think of objectivity and subjectivity on a continuum with the two at opposite ends. Knowledge shifts along this continuum. Perceptions of environmental problems consist of varying degrees of factual concepts, desired ends and varying degrees of objective information. Lee (1993) suggests that perceptions of individuals and collective human populations can be disconnected from reality under certain circumstances. These may be seen as "optical illusions" or situations in which the ideas and inferences people create are systematically mistaken. Often, these perceptions could be so strong as to have problems wished into reality; a more subjective rendition of knowing. Norton (1995) points also to individual perception as geared toward short-term changes rather than long-term perspectives demanded for parts of ecological understanding. Perceptions have considerable importance for decision-making. They influence allocation of funding and political and societal focus, possibly moving focus away from what is really at stake in the broader ecosystem. The role that ecology has in these situations is to create more objective ideas of what is needed for greater sustainability. Modern science should not posit that it is value free and completely objective. Rather, science has the capacity to be neutral, and more objective than not.

A second post-modern critique is that ecology in the modern scientific paradigm portrays nature to be ordered and structured and this leads to decisions that in longer timelines elicit greater surprise and uncertainty. Benson and Licht (1997) argue that under a post-modernist world-view, order and predictability are no longer possible, nor are they desirable. Schneider and Kay (1994) similarly argue that the Newtonian perspective of order and predictability cannot be used when studying ecosystems because of inherent complexity created through the number, and specificity of interactions. Despite these thoughts, this perspective does not preclude a modernist scientific approach to understanding the solution. Modernists are not necessarily stuck within the "universe is ordered and predictable" paradigm and the world-view of ecology is shifting away from such simplistic assumptions (Norton, 1995; Holling, 1986, 1995; Schneider & Kay, 1994a).

A further line of thought is that reductionist science cannot possibly explain ecosystems, however, modernist science is inherently reductionist, even in its attempts at holistic understanding (Trepl, 1994; Goldsmith, 1993). Goldsmith, (1993) rejects the ecologist who would attempt to reduce things in models of understanding, arguing instead that nature can only be understood holistically. While I agree that making models to encompass all of the complexity of natural systems may not be possible, holistic research methods and ways of knowing are not abundant and can be cumbersome and time-consuming to implement. As 'parts', a reductionist approach will always be incomplete, but necessary. Taken in stride with the philosophy of

science which forces contextual understanding, the proprietor of the model should no doubt understand the implications and short-comings of the model and seek a more holistic understanding of the context of their work; both holistic and reductionist methods are needed. Arguably, many scientists do not seek to merge the two.

The final post-modernist critique to be addressed here is regarding science's claim as the only way of knowing and further that knowing is impossible because knowledge is dependant upon the individual, their culture, their environment, etc. Certainly there has been a tendency for policy and decision makers to seek out scientific information and to diminish other types of information. This is understandable in a world which searches for and demands confident answers to problems. Jasanoff (1993) relates one post-modern position, that suggests that in a world where policy outcomes are largely determined by social relations, scientific knowledge serves only to underpin particular group or class interests, lending them the appearance of objectivity. This coincides well with a view that most citizens claim science has become an obstacle to the expression of concerns (Irwin, 1995).

Science as knowledge, is often used in conflicts to gain power. Science is portrayed as the only valid way of knowing and as such, alternatives lose credibility and standing in decision making. Popper (1994a) refutes this, arguing that ideas should be put forward as much as possible and should be able to operate freely against the narrowness of a 'scientists' perspective. Popper argues directly that science is only one way of knowing and operates within a certain finite realm. But, be prepared to defend other ways of knowing against critical discussion. The solution to 'science as power' is more difficult but lies in social uses of science and also in the critical discussion of the merits of each groups' particular scientific "facts". The application of post-normal science is perhaps one method for broaching the issue of multiple valid ways of knowing.

On the surface, there may be little that separates a post-normal critique from a post-modern critique. In fact it might be argued that post-normal critiques are a subset of post-modernist perspectives. Perhaps the two largest differences are that post-normal is mainly a critique of 'normal' science, and that post-normalists would not disallow a dominant use of science but rather frame the use of science more appropriately. More basically, I would argue that post-normal critics create a more explicit understanding of what science ought to be about and how science ought to influence decision-making. To that extent, post-normal science critiques are as follows: Funtowicz and Ravetz (1993) suggest that this emerging science attempts to manage uncertainty rather than eliminate it; make values more explicit; and creates scientific argument through interactive dialogues rather than formalized deduction. Further, they suggest that temporal and spatial characteristics are very important for discussing explanations and that historical perspectives and reflection of humanities past and future are relevant and necessary.

Normal science is claimed to be a science that in the modernist perspective has oversimplified the understanding of nature. What is often forgotten is that theories and scientific models are merely representations of reality and as such are inherently flawed. In this perspective any action taken will have errors and any actions that were based on previously accepted simple models, will have more errors and if adopted, create greater surprise (Holling, 1986). Ecology as depicted by Kay et al. (1999) requires understanding of complex systems, emergent properties, self-organization, spatial and scalar interactions, and self-organization (to name a few concepts) demanding a different paradigm than that of Newtonian objective and detached science (Norton, 1995).

Funtowicz and Ravetz, (1994) suggest that an appreciation of the diversity of knowledge systems can lead to a new practice of science in emergent complex systems. They suggest that as uncertainty increases and/or as decision stakes become higher, science, as it is traditionally practiced, loses some of its applicability and validity. There is no set boundary to indicate when science is appropriate or not, but rather the boundaries shift given different types of problems available knowledge, and conflicting interests among interest groups. In this form, post-normal science does not preclude the use of traditional science but rather places boundaries on it. Post-normal science does not appear to really be questioning how science is done (as does post-modernism) but rather questions the role that science plays in diminishing uncertainty, and gaining control over a given problem. Post-normal critiques address how science is used in the decision making process; a warning that scientific information can easily be taken out of its context and applied in ways that it was either not intended for, or applied where the information does not grasp the full complexity of a situation.

Post-normal science also speaks to the use of caution in high stake/uncertain situations. This is similar to the cautionary stance portrayed by the philosophy in science that knowledge is temporary, and will be replaced with new and hopefully better knowledge, from which actions may change. Decisions regarding ecological problems should be seen as relative merits or tradeoffs rather than based on solutions determining right and wrong. Thus, the role of ecology, according to Schneider and Kay (1994) should be about demonstrating the relative merits of different possible actions; ecology should provide explanations about tradeoffs.

The goals of ecology are frequently questioned. Many critics argue that the goal is to seek control over nature. Others claim that the goal of ecology is to gather information in an objective a manner as possible. Funtowicz and Ravetz (1993) suggest that science should have a more explicit goal in aiding decision-making and that definition of this goal should be discussed openly. The difficulty with complex systems and with deciding between tradeoffs is that it requires definition of values and thus the goal for the system. Schrader-Frechette and McCoy (1993) suggest that ecology has no clear norms for when a

community is normal or healthy and, as a consequence positing a goal for ecological practice is quite difficult. There is considerable debate about whether an objectively defined state can be determined by science that can be used as the goal for ecological systems. This debate perhaps provides the greatest distinction between the modernist scientist and the post-normal scientist. Modernists would claim that such an objective goal could be determined from science whereas the post-normal scientist would suggest that describing a state where an ecosystem 'ought' to be is a value based question, one which requires discussion among groups interested in that particular ecosystem.

Summary

Schrader-Frechette and McCoy (1994) suggest that, if it can be established that protection from serious harm is more basic than providing or enhancing welfare, then the goal of ecology is one of precaution. Various historians and ecologists perceive that some parts of the ecological viewpoint are at odds with the modern scientific conceptualization of nature, so that ecology might well provide a framework which could override and require fundamental revision of some existing patterns of scientific thought. Thus their writings suggest that the emergence of ecology might herald the emergence of a "new science" (Biggins, 1978). If modern science is defined purely as Newtonian science (simplistic linear prediction) then ecology as a science moves us away from modern science. If modern science is defined as providing purely objective and unerring predictive capacities (in the empirical sense), then ecology creates an understanding that this view of modern science is not possible.

However, given the philosophy of modern science outlined briefly in this paper, ecology attempts to be and mostly is, a type of modern science. That is, ecology in many respects, represents the ideals of modern science philosophy, and yet challenges those ideals. Mirroring the philosophy of science, ecology has the capability to develop ideas (theories) about how the world functions. In ecology, that world often includes humans and multiple spatial and temporal scales of understanding. These theories need to include a conceptualization of the complexity of the natural world and provide predictive statements (narratives) about likely outcomes and limits or constraints of application of the theory under question (Kay & Schneider, 1994; Norton, 1995; Holling, 1986). These theories are held up for critical debate. Indeed, there is considerable debate regarding ecological theory and its application (Peters, 1993; Schneider & Kay, 1994, 1993; Bocking, 1978; Holling, 1986; Gunderson, Holling, & Light, 1995).

In addition to critiques, any number of environmental problems could be viewed as testing grounds for ecological theory (diversity-stability debate, genetically modified organisms, sustainability, global climate change, etc.). A science that recognizes that knowledge is changeable is a science of caution. Any actions that result from use of science should recognize that new and complex situations will likewise require cautious application of science. Concepts underlying adaptive management frameworks seek to institutionalize this debate allowing for action as opposed to the paralysis that is often felt in a purely political debate of uncertainty. And, it allows for alteration of theory when theories prove not to provide accurate explanations of ecological understanding. Last, ecology may be viewed as moving beyond the traditional modernist perspective as it evolves to include explicit definitions of values in order to help the science develop various narratives of policy outcomes.

When critiques of modern science are offered, there is a need to understand all that is being critiqued. Too often, a theory is used to critique practice, rather than another theory. The practice of science by scientists and its use by decision makers may have faults. Reasons for this are not merely a result of the science, but also representative of a societal evolution. Science has considerable sway in a society that looks to science for answers. This is both a phenomenon of science and of society. The theory of science may also be faulty but in its limitations it provides a more objective means of understanding the natural world than many other approaches to gathering information. It is not the only knowledge set that should be consulted but its predominant use in decision-making and policy creation suggests the need to improve the science that is influencing these domains.

Ecology is a science that recognizes the need for value identification, the need for a multi-scale and multi-perspective approach, and requires a multi-disciplinary systems approach. Solutions provided by ecology could stress relative merits instead of absolute answers. Rather than being viewed as a 'weak' science, ecology may be the most useful for dealing with environmental problems that are complex, multi-scale, and cannot necessarily be solved by reductionist measures alone. Ecology and the philosophy of science necessitates an adaptive precautionary approach given the complexity of social and bio-physical interactions. To continually improve our use of tools such as science, we need to consider its critiques, explore their validity, and incorporate them into application. Ecology as a key science and perspective in decision-making is well placed for this endeavour.

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Impacts of Wildlife Viewing

ELK VIEWING IN PENNSYLVANIA: AN EVOLVING ECO-TOURISM SYSTEM

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Abstract: In 1997, the Pennsylvania Game Commission established an Elk Viewing Area within Pennsylvania's elk range. The viewing area has become the focus for a developing eco-tourism system. During the four years of operation, a research team from Penn State has measured the number of visitors, their expenditure patterns, and other parameters of their visit. The trends observed during this period provide a useful insight into an evolving eco-tourism system.

Introduction

Elk, *Cervus elaphus canadensis*, were indigenous to Pennsylvania before the late 1800s. However, the original herds were extirpated by 1877 (Shoemaker, 1939), largely because of unregulated hunting pressures and the wide-scale harvest of the state's forests.

The resurgence of second growth hardwoods throughout much of the state during the early 1900's gave cause for the re-introduction of elk to the new forest system. From 1913 to 1926, 177 Rocky Mountain elk (*C. e. nelsoni*) were introduced to northcentral Pennsylvania (Bryant & Maser, 1982; Gerstell, 1936; Latham, 1954). A hunting season was established in 1923 and continued until 1932, when declining elk numbers caused it to be suspended. The remaining herd settled into Elk and Cameron Counties of northwestern Pennsylvania. Through a concerted management effort, led by the Pennsylvania Game Commission, the herd increased to nearly 300 animals by 1996. In its 2001 survey, the Commission identifies over 600 elk (Cogan et al., 2001).

The current success of these unique animals has not gone unnoticed by the public. In 1997, an elk viewing area was established on Winslow Hill, near the town of Benezette. Elk are a source of continued interest and pride among residents and visitors to their range (Strauss et al., 1999; Lord et al., 2000a). However with the expanded herd size, has come a call for reestablishing an elk hunting season. The Pennsylvania Game Commissions released its Elk Hunt Advisory Committee's report in April of 2000. That report supports the establishment of an elk hunting season (Cogan, 2000).

Prior to the announcement of the hunting season, Lord et al. (2000b) examined the opinions of visitors about an elk hunt. They found opinions split, with certain subgroups of the audience strongly for or against the concept.

Procedures

A series of random on-site interviews were obtained over the four-year study along the main road and observation site. Over 1,400 interviews were obtained during 155 survey days, providing information on visitor origins, travel plans, party sizes, expenditures, allied recreational interests and expectations.

Total attendance was developed from an allied system of vehicle counts taken along the main viewing road and observation areas. Vehicle counts were expanded to visitor days using passenger load and travel data obtained from the interviews. Two attendance models were developed, one which depicted daily use patterns and a second that analyzed seasonal trends, with the latter organized as triangular distributions (Strauss et al., 1999). These efforts provided annual estimates of total attendance on a weekly and monthly basis.

Expenditures were identified on a visitor day basis (one person's visit during some portion a day), classified by resident and non resident visitors, and further stratified as to the types, amounts, and locations of purchase. Total expenditures were developed from attendance estimates and were entered to an input-output model for the two-county region. The IMPLAN model provided the economic structure of the two-county region (MIG Inc., 1996). Non resident visitor expenditures were traced by the model in terms of their direct and secondary (indirect and induced) impacts within the region and were measured by total sales, value added, salaries and wages, and employment.

Results

Visitation

Daily visitation patterns show a pronounced seasonal variation in elk viewing. The prime viewing opportunities occur in the fall (September - November), during the elk rut, as the bulls are assembling their harems (Figure 1). The first two falls after the viewing area was established had peak usage of over 3000 people on some weekend days. At this level, both the viewing area and the associated road system were overwhelmed. By the third fall, these extremes were no longer observed, as visitation spread to the late summer (Table 1).

Table 1. Seasonal Attendances at the Elk Viewing Area

	Year 1	Year 2	Year 3	Year 4
Fall	35,781	49,461	38,094	42,820
Winter	3,225	5,506	3,715	3,331
Spring	6,993	5,621	4,672	
Summer	5,926	12,162	12,221	
Total	51,925	72,749	58,702	63,624

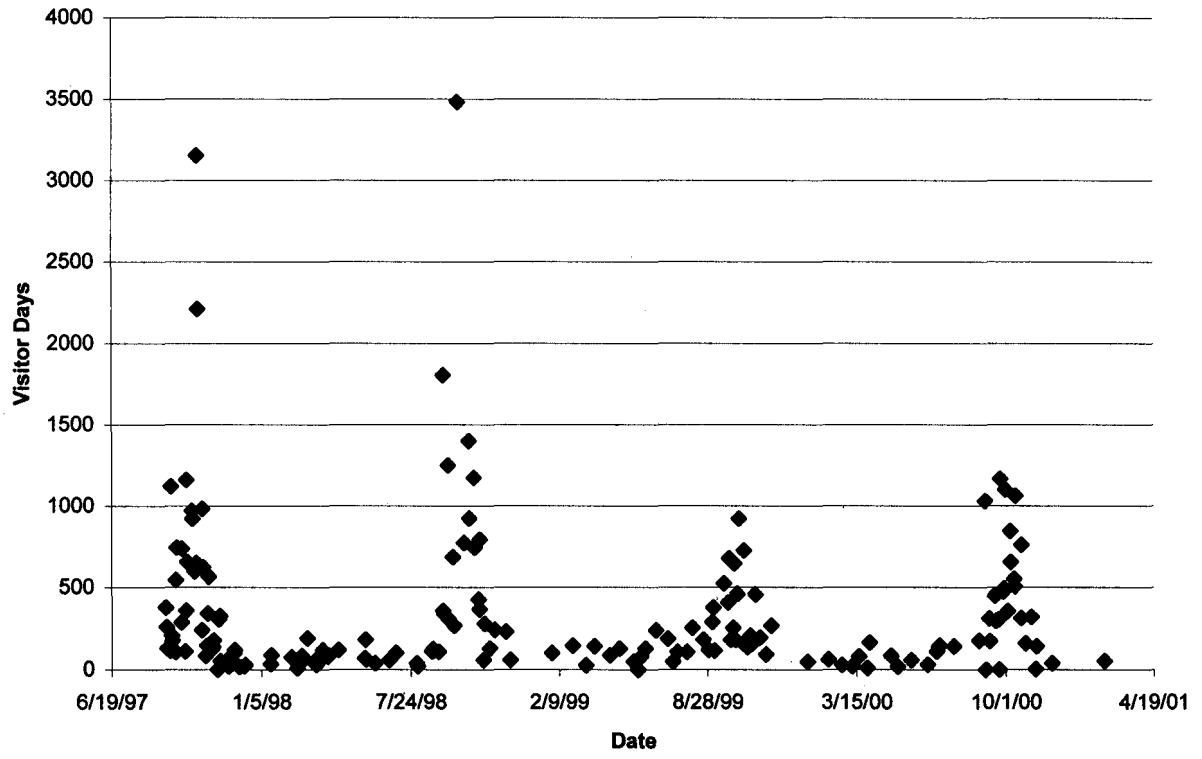

Figure 1. Daily Visitation Observed at the Elk Viewing Area

Overall attendance for the first year was just under 52 thousand visitor days. The second year saw significant increases in both the fall and the following summer seasons, for an annual total of over 72 thousand visitor days. In the third year, the fall attendance dropped back to the level observed in the first fall. Winter, spring and summer remained at about the same levels, with the third summer still significantly higher than the first summer. The fourth fall showed an increase from the third fall, though not as high as had been observed in the second fall. Total visitation for year four was estimated at 64 thousand visitor days. The spring and summer estimates were based upon patterns observed in previous years, rather than actual observations.

Resident visitation showed a definite peak in the second year with over 9 thousand local visitor days (Table 2). This was over triple any other year's resident visitation. Non resident visitation also peaked that year. Since the second year, resident visitation dropped steadily, while non resident visitation declined in the third year, but increased in the fourth.

Table 2. Trends in Resident and Non resident Visitation

	Year 1	Year 2	Year 3	Year 4
Resident	3,042	9,294	3,040	2,390
Non resident	48,883	63,455	55,662	61,235

Prior Experience

Starting with the second year, respondents were asked about the number of years that they had been viewing elk in the area. Overall, the average was 4.4 years, with a third of the visitors being first time elk watchers (Table 3). One year later, the average had increased by exactly one year (5.4 years), with one third still identified as first time visitors. The fourth year was differed significantly from the first two, with the average dropping to 3.8 years and over half of the people listed as first time visitors to the elk viewing area.

Non resident Expenditures and Economic Impact

During the first year that the viewing area was open, non resident visitors spent almost $20 per visitor day (Table 4). Food ($7.94/visitor day), transportation ($5.27/visitor day), and lodging ($4.03/visitor day) were the largest expenditure

Table 3. Prior Experience in Viewing Pennsylvania's Elk Herd

Study Year	Previous Visits (yrs.)	First Time Visitor
1998-1999	4.4	34%
1999-2000	5.4	32%
2000-2001	3.8	52%

categories. The next year, average expenditures dropped precipitously to $8.66 per visitor day. Food ($2.96/visitor day), transportation ($2.89/visitor day) and lodging ($1.96/visitor day) still lead expenditure categories, albeit at much lower levels. Expenditures increase in the third year ($14.33/visitor day) and fourth ($26.45/visitor day). Notable increases in year three were food ($5.53/visitor day) and lodging ($5.03/visitor day). In year four, food ($9.20/visitor day) and lodging ($8.90/visitor day) rose to new highs. Meanwhile, transportation expenditures ($5.23/visitor day) also increased to the levels seen in year one.

The economic impacts follow directly from the expenditure levels and the number of non resident visitors. Total expenditures in year one were $0.9 million (Table 5). In year two, even with increased attendance, only $0.6 million was spent in the region. By year three, total expenditures increased to $0.8 million, and in year four, it doubled to $1.7 million. Total sales impacts followed the same pattern, $1.2 million in year one, $0.9 million in year two, $1.1 million in year three and $2.3 million in year four. Employment impacts in the two-county region showed similar trends over the four years (30 jobs, 21 jobs, 27 jobs, and then 54 jobs).

Hunting Opinion

When visitors were asked their opinions about a "limited hunt outside of the major viewing areas", a majority expressed approval. In the first three years, just over half approved (56%, 53% and 55% respectively) (Table 6). In the spring of the third year the Game Commission announced the details of a proposed elk hunting season. Hunting approval in the following fall rose to 67%.

Table 4. Non resident Expenditures for Elk Viewing

Season	Trans.	Food	Lodg.	Photo	Other	Tour	Total
'97-'98	$5.27	$7.94	$4.03	$0.20	$1.58	$0.40	$19.43
'98-'99	2.89	2.96	1.96	0.32	0.49	0.03	8.66
'99-'00	2.79	5.53	5.03	0.06	0.89	0.04	14.33
'00-'01	5.23	9.20	8.90	0.36	2.76	0.00	26.45

Table 5. Economic Impact of Elk Viewing by Non residents

Category	Year 1	Year 2	Year 3	Year 4
Non resident visitor-days	48,883	63,455	55,662	61,235
Expenditures per visitor-day	$20.23	$9.38	$15.00	$27.17
Total expenditures	$909 K	$595 K	$835 K	$1,663 K
Total Impacts	$1,235 K	$873 K	$1,134 K	$2,259 K
Job Impacts	29.8	20.9	27.3	54.4

Analysis of Trends

Visitation

The establishment of a formal elk viewing area attracted large number of visitors to the region. Much of this usage was centered around the fall elk rut. Extreme crowding was observed on several weekends during the peak of the first two seasons. As the third year approached, a significant increase in summer visitation was evident, along with some reduction in the attendance on peak viewing days. Severe cases of congestion were no longer apparent. In year four, total visitations increased, though without extreme crowding. Prior to the fourth season, improvements had been made to the road system, including increased parking at key locations around the viewing area. It seems that after the second fall season, the visitors had learned of earlier congestion and spread their usage to both the early rut season and to weekday periods. Combined with improvements in the road system, overall visitation had increased without detracting from the visitor experience.

Expenditures and Economic Impacts

There are few opportunities to spend money in this rural area. Both food and lodging are limited in the immediate region of the elk viewing area. This was further aggravated in the second year when the town's only gas station temporarily shut down its pumps. As a result, regional gasoline expenditures declined and did not recover until one year after their return to service.

New businesses have appeared, including an "Elk Country Store," a wood carving shop, and a helicopter tour operator. The increase in miscellaneous spending reported in year four may be related to the increased opportunities. However, note that none of the viewers interviewed reported that they had taken a helicopter tour. Apparently, this latter service is either infrequently used or their clients don't mix with the more plebeian crowd on the ground.

Non resident expenditures dropped during year two followed by a steady increase in the next two years. In terms of economic impact, the low expenditures in year two were somewhat offset by the large number of non resident visitors. Increase impacts were observed in the subsequent years as attendance ebbed and then bounced back and average expenditures increased.

Table 6. Portion of Visitors Approving of a Limited Elk Hunt

Season	Percent Approving.
1997-1998	55.5%
1998-1999	53.4%
1999-2000	55.1%
2000-2001	67.3%

Hunting

During the first three years, opinions about and elk hunt were split, with just over half of the visitors approving of the concept. During the spring and summer prior to the fourth year, the details of a proposed elk hunt were announced by the Pennsylvania Game Commission. Following this, approval increased significantly with two out of three visitors approving. Earlier analysis found that perceptions of a small herd size and animals habituated to humans were the main reasons for disapproving of a hunt. The details of a formal elk hunting proposal seems to have alleviated some of these concerns.

Experience

Prior experience was tested to see if it was a significant predictor of expenditure levels and of opinions about an elk hunting season. A negative correlation was found when non resident expenditures were regressed against the number of years of elk viewing experience (Table 7). Visitors were found to spend $0.33 less per visitor day for each year they had visited the region. Note that many of the people with a history of prior experience had hunting cabins in the area and consequently may have had fewer needs to make purchases during their trip. Visitors with more experience were more likely to disapprove of a hunt (Table 8).

Table 7. Relationship between Prior Experience and Expenditure Levels

Effect	Coefficient	Std Error	T	P (2 Tail)
Constant	20.452	1.747	11.706	0.000
Previous	-0.328	0.175	-1.873	0.062

Table 8. Relationship between Prior Experience and Opinions about an Elk Hunting Season

Parameter	Estimate	S.E.	T-ratio	P-value
Constant	0.582	0.106	5.497	0.000
Previous	-0.017	0.010	-1.674	0.094

Conclusions

The eco-tourism system tie to the region's elk viewing area is evolving as visitors become familiar with the opportunities offered. There also appears to be an adjustment in the usage patterns. Visitors are learning about the best viewing opportunities and how to avoid crowding. Simultaneously, local services are providing additional opportunities for these visitors. No doubt there will be successes and failures along the way, but the region appears to be developing a stronger tourism infrastructure. There are problems, including a continued lack of lodging places and visitor encroachments on private land. Perhaps the biggest limitation is the concentration of visitors in the relatively short eight-week season centered around the elk rut.

The increase in new visitors suggests that local planners will have to attend to this growth. Furthermore, new visitors may have different desires and expectations than the more traditional elk viewer. They bring in new money and offer new opportunities. They also may have different opinions about the resource. Continued monitoring of the visitors and their needs is recommended as the system continues to evolve.

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COMPETING VALUES: A CASE STUDY OF PENNSYLVANIA'S ELK HERD AS A TOURISM ATTRACTION

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Abstract: This paper qualitatively investigates the Pennsylvania Game Commission's (PGC) "Elk Trap and Transfer Project" as a tourism development initiative. Beginning in 1998, a three-year trap and transfer project was initiated by the PGC to relocate 33 elk from Elk County to Clinton County. The ecological goals of this project included re-establishing an elk population that could once again support limited hunting opportunities and to address plausible negative repercussions of the significant annual growth the herd experienced in the 1990s in Elk County. The project has also led to an increase in the numbers of visitors to Western Clinton County interested in "elk viewing" experiences, and is reported to have stimulated local economies. The general consensus from recent research examining the economic impacts attributable to "elk viewing" in Elk and Cameron counties in Pennsylvania suggests that an escalated interest in Pennsylvania's elk herd has directly led to increased non-resident tourism in these two counties. These findings have supported the view that rural tourism development in northcentral Pennsylvania should be encouraged and expanded.

Amid an extensive body of literature related to rural tourism development, Middleton and Hawkins (1998) have advised that the management of local tourism destinations needs to be "proactive", focused towards identifying and addressing issues that could potentially become areas of conflict between different individuals and/or groups impacted by tourism development. One manner of being proactive and minimizing such conflict is to actively participate in "positioning" a given tourism development initiative in stakeholders' minds (cf. Crompton, 1999). A preliminary assessment of the current situation in northcentral Pennsylvania seems to suggest that the PGC's project to relocate and reintroduce elk into other parts of the state may have sparked some local discord or conflicts of interest. This paper attempts to investigate this dissonance from a case study methodology, paying particular attention to the relevance of the "positioning" concept to this dissonance.

Introduction

The management of the elk herd in Pennsylvania throughout the 20th century and into the 21st century has, at times, been negatively impacted by competing values of local landowners and the Pennsylvania Game Commission (PGC). Documentation of this ongoing struggle can be found as far back as 1914, when the Millheim Journal (a local newspaper in central Pennsylvania) ran an article informing the public about a proposition to relocate elk for the purposes of reducing and minimizing the crop damage they caused and to improve tourism. It has been said that history repeats itself; perhaps this is why one can read about the same elk management proposition in a local paper some 80 years later. In September of 1996, the PGC announced that it had developed an Elk Trap and Transfer Project to address those very same issues mentioned in the 1914 newspaper article. For the last couple of years, local farmers and residents in northcentral Pennsylvania have been driving off or shooting elk, various groups have been supporting or condemning these locals, and the PGC has found itself in the midst of it all. The PGC's most recent three-year Elk Trap and Transfer Project appears to have ignited some local adversarial fires that, in turn, have spawned a significant amount of negative publicity for the PGC. The purpose of this paper is to summarize an investigation of this negative publicity from a rural tourism development case study perspective. More specially, the researchers have attempted to examine the importance of Crompton's (1999) *positioning* concept within the context of rural tourism development based on Pennsylvania's elk herd.

History of Elk Herd Management in Pennsylvania

Over 30 years ago, local farmers and residents in central Pennsylvania began demanding that the Pennsylvania Game Commission (PGC) do something with the "rogue", free-roaming elk herd in their part of state. In 1970, local citizens who were experiencing crop and/or property damage attributed to elk demanded that the situation be remedied. In support of the farmers and landowners, the Pennsylvania Federation of Sportsmen's Clubs and the Elk County Federation of Sportsmen's Clubs proposed that the PGC consider planting food plots in nearby fallow and deserted croplands to attract elk away from active farms in production. Almost simultaneously, the Cameron County Soil and Water Conservation District and the North Central Pennsylvania Economic Development Corporation suggested the establishment of a 10,000-acre elk management area in Elk and Cameron Counties primarily for tourism development initiatives and economic growth. In addition, the Northcentral Division Supervisor of the PGC at that time suggested that if the elk herd continued to grow an elk hunt might be in order. A direct outgrowth of these conditions was the "modern era of elk management" for the state of Pennsylvania.

It appears that little has changed with regard to the elk herd management over the last 30 years in northcentral Pennsylvania. It is once again "center stage" in newspapers, as citizens debate *the best practices* for managing the herd. The current situation precipitated directly from the PGC's three-year Elk Trap and Transfer Project, an important component of its current elk management plan to re-establish an elk herd that could once again sustain limited

hunting opportunities and provide "wildlife viewing" experiences. More specially, the goal of the PGC's 1996 Management Plan for Elk in Pennsylvania is,

> ...to recognize elk as a valuable wildlife resources, to perpetuate free-roaming elk, within suitable habitat for viewing and unique hunting opportunities, and to maintain elk population numbers that affected landowners will accept. (http://sites.state.pa.us/PA_Exec.PGC/elkhunt/02_hunt/eh20_01.htm, March 15, 2001, p.1)

To this end, 33 elk were released in western Clinton County (located in northcentral Pennsylvania) in February of 1998 in an effort to re-establish an elk population that could once again support limited hunting opportunities and to mitigate negative repercussions associated with a significant annual growth in the elk herd in Elk County during the 1990s. Prior to this date, the herd had already begun to migrate or drift out of its traditional range in Elk and Cameron counties in a southern direction and the PGC's plan simply hastened or augmented this migration to an area comprised a vast tracts of public lands (Clinton County). Thus, the PGC proposed that the "established" elk range in central Pennsylvania be expanded from an area where about one-third of the land is publicly owned and two-thirds privately owned to an area where just the opposite occurs-two thirds public and one-third privately owned land. In 1998, in conjunction with the Rocky Mountain Elk Foundation (RMEF), the PGC began its three-year Elk Trap and Transfer Project designed to trap elk in Elk and Cameron counties and transfer them to Sproul State Forest in Clinton County.

Although this project might have begun solely as a PGC resource management practice, it was highly touted as an opportunity to further develop and promote tourism experiences that could (should) eventually have positive impacts on the economies of several rural communities in northcentral Pennsylvania. In fact, recent research, conducted to examine the economic impacts attributable to "elk viewing" in Elk and Cameron counties in Pennsylvania, suggested that an burgeoning interest in Pennsylvania's elk herd has directly led to increased tourism in these two counties (cf. Lord, Strauss, & Tzilkowski, 1998; 1999). In addition, Lord, Strauss, and Tzilkowski (1999) found that, 92% of the visits associated with elk viewing were by individuals residing outside Elk and Cameron counties. It has also been estimated that in 1998, elk viewing contributed a value added component of $912 thousand and created 42 additional opportunities for local employment. Preliminary results of an ongoing study by Penn State University have estimated that the elk range draws up to 75,000 visitors annually (93% of whom are Pennsylvanians), who collectively spend an estimated $1.7 million in the region for transportation, food and lodging (http://sites.state.pa.us/PA_Exec/PGC/elk/index.htm). These economic statistics suggest that the elk of Pennsylvania may have the potential to significantly impact those rural communities seeking to stimulate and stabilize their respective economies through tourism development.

Tourism Development

The call for local and public participation in the process and planning of tourism development has become quite commonplace in tourism literature, essentially because of the advantages attributed to its inclusion in tourism planning. For example, Murphy (1985) has pointed out that local participation can serve as an integral component in the assessment of impacts of tourism development, provide a balance to short-term objectives in tourism planning, be a most effective tool in dealing with local tourism-related issues, and should be incorporated because the local level is where the "action takes place". This "public participation" should theoretically include all stakeholders, but at a minimum include both experts and those affected by development of tourism (Murphy, 1985). Murphy also explicitly points out that public participation should be included in the tourism planning process early, "...before commitments are made and battle lines are drawn" (p. 171). Inskeep (1991) claimed that local participation leads to both economic and social diversification, which he believes is a precursor to a more integrated form of tourism development, and ultimately to the establishment of a sustainable tourism development framework. From his perspective, a diversified, integrated approach to tourism development can "...minimize the impacts [of tourism] on local development patterns and local society" (p. 30). Edgall (1999) explained that local residents could impact the diversification of tourism development by affecting the levels of novelty, excitement, comfort, and security that visitors experience at the tourism destination. Gartner's (1996) statement that, "all impacts associated with tourism development occur first and with the greatest intensity at the community level" (p. 300), certainly implies that it is only *fair and just* that the local residents have a voice in tourism initiatives and development. Beliefs such as these appear to have been seminal to the development of tourism planning models over the past few years, especially those involved with rural tourism planning (cf. Lewis, 1998; Sem, Clements, & Bloomquist, 1996; Walsh, Jamrozy, & Burr, 2001; Weaver & Wishard-Lambert, 1996).

Rural Tourism Planning

Almost by definition, rural communities are have been described as being more vulnerable to poor tourism development than other communities. These rural communities and their economies are more isolated, have fewer resources, and probably fewer options. In such communities, tourism can be very disruptive. Rothman (1998) contends that tourism development often results in "irrevocable change" for both the tourism destination and its residents. He believes that the loss of the very characteristics that make a place unique results from the fact that,

> When tourism creates sufficient wealth, it becomes too important to be left to the locals. Power moves away from local decision makers, even those who psychically and socially invest in the new system that tourism creates, and towards outside capital and its local representatives. (p. 11)

Additionally, Rothman believes that tourism often "frays" community bonds, as it pits local special interest groups and individuals against one another, while they attempt to capture the economic benefits of tourism development. This is precisely why Middleton and Hawkins (1998) have advised that the management of local tourism destinations needs to be "proactive", focused towards identifying and addressing issues that could potentially become areas of conflict between different individuals and/or groups impacted by tourism development.

While recognizing such a possibility, Burr (1996) believes that rural tourism can also provide an opportunity for greater community development, and he developed a conceptual model for facilitating rural tourism planning that he believes promotes such development (see Figure 1). Emphasizing the importance of establishing a supportive infrastructure for rural tourism development, Burr's five-step process provides local stakeholders with a network of social interactions, essentially creating communication patterns between groups and individuals that connect local input and feedback with the tourism promotion organizations prior to implementation of tourism initiatives.

While acknowledging that these individuals, communication patterns, and interactions will vary according to the specifics of the local area and the magnitude of the tourism scheme, Burr (1996) advocated involving a diverse set of participants in the process of rural tourism planning and development. His findings led him to conclude that private citizens, local leaders, business owners, elected officials, governmental agencies, special interest groups, and tourism planners and marketers all play key roles in the process of successful rural tourism development. The resulting social networks encouraged interactions at the local level, while at the same time, creating valuable ties to resources outside the local community. Connections to the "outside world" afforded

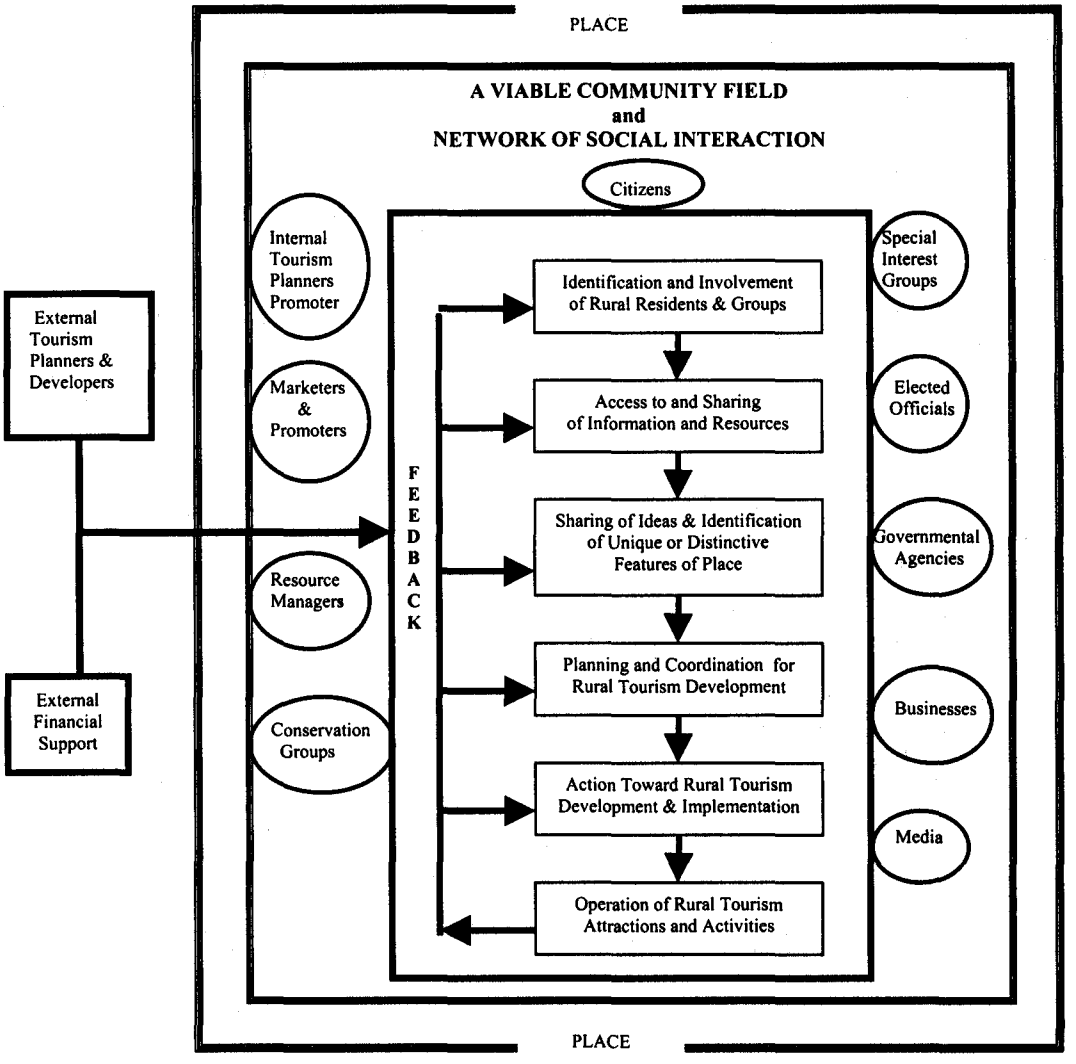

Figure 1. Burr's Conceptual Process for Facilitating Rural Tourism Development

local communities' access to essential human resources, planning expertise, and financial support they might not otherwise have had, and can make significant contribution to a community's ability to become more agentic in its development strategies.

Of course, incorporating the perspectives of such a diverse set of stakeholders in rural tourism planning is no simple matter and is sure to result in the promotion and advocacy of a multitude of disparate personal and organizational agendas. Often times, the final product of such a process is dependent upon the success with which individuals, groups, and/or organizations ***position*** themselves and their respective goals in the minds of other stakeholders involved in the planning process (cf. Eyre & Jamal, 1998).

Positioning

Positioning, according to Crompton (1999), refers to the place that something or someone occupies in the minds of others. Differing from *image*, positioning relates to a frame of reference or a comparison to similar entities or alternatives. In the context of rural tourism development, where a diverse set of stakeholders have been incorporated into the planning process, the positioning of one's beliefs, perspectives, and/or ideas can significantly impact the amount of support or opposition for one's idea or viewpoint. In other words, if a particular tourism development initiative is positioned favorably in the minds of stakeholders, it will be supported over less favorably positioned alternatives. This is precisely why rural tourism planning models often begin with an assessment or an investigation of public opinion/attitudes or the general mood of the community; to better understand what *position* tourism development holds in the minds of community members (e.g. Bouke & Luloff, 1996; Lewis, 1998; Sem, Clements, & Bloomquist, 1996). Such investigations can provide tourism development advocates and promoters valuable insights as to how they might strengthen a current *position* or possibly *reposition* tourism development to garner more local support and/or minimize dissonance to such development. Crompton (1999b) also warns that, "repositioning is likely to take many years of effort..." (p. 5), and "...is a difficult task because it involves shifting a widely held, long established attitude..." (1999a, p. 113). This leads him to the assertion that the identification and establishment of a strong, preferred position can be the most important aspect of strategic planning. A lack of attention to *positioning* can often be a main cause of local dissonance associated with rural tourism development. In situations where two or more individuals, groups, and/or organizations have differing views on tourism development strategies, discord and friction increases as these entities compete for favorable *position* in the minds of other stakeholders. A better understanding of the influential role *positioning* can serve in rural tourism planning and development may help minimize the amount of the local dissonance and social disruption often linked to such development.

Methodology

Based on the fact that two local newspapers – the Lock Haven Express and the Renovo Record – frequently published articles and editorials related to the PGC's management of the elk herd, the researchers chose to conduct a content analysis of both newspapers. Using a modified snowball approach within this content analysis, the investigators also found several other documents related specifically to the PGC's Elk Trap & Transfer Project. The main purpose of this investigation was to gather constructive information to document the process by which the PGC involved various stakeholders in the development and implementation of its Elk Trap and Transfer Project. More specially, the researchers searched for dates and locations of public meetings, workshops, seminars, etc., as well as evidence regarding who was invited and/or attended these venues. Documents were reviewed for pertinent information related to the following questions:

- What factors have contributed to the current public dissonance related to the PGC's Elk Trap & Transfer Project?
- Could this dissonance have been reduced or eliminated?
- Who are the key stakeholders of the PGC's Elk Trap & Transfer Project?
- What process did the PGC follow to implement its three-year Elk Trap & Transfer Project?
- How do the PGC's actions, related to this project, compare to the steps in Burr's (1996) Model for Rural Tourism Development?

This information was then utilized to construct a chronological timeline that included the date of the event, key contacts, purpose and outcomes of each meeting/event, and individuals and groups in attendance (see Figure 2 as example). It was anticipated that having developed such a timeline, the researchers could better identify key stakeholders in the Elk Trap and Transfer Project, as well as, better understand the comprehensiveness and inclusiveness of the planning process.

These stakeholders (individuals and groups) were then classified in accordance with categories contained within Burr's (1996) Model for Facilitating Rural Tourism Development in an attempt to correlate individuals and groups involved with the PGC's elk project and *types of stakeholders* identified in Burr's work. Finally, a minimal number of personal interviews with stakeholders were conducted in an attempt to verify the accuracy of the newspaper articles and editorials, as well as, the researchers' interpretations of these articles.

Findings

Over 200 documents and articles related to the PGC's Elk Trap and Transfer Project were reviewed, the vast majority of which were published between 1996 and 2000. The following individuals and groups were identified from these documents, and labeled as "stakeholders" in the PGC's Elk Trap and Transfer Project based on the fact that they either attended or sent representatives to meetings, contributed articles, and/or were invitees to specific events related to the project. These "stakeholders" have been classified into the following categories of stakeholders found in Burr's (1996) model for rural tourism planning.

HISTORICAL TIMELINE FOR THE PENNSYLVANIA GAME COMMISSION'S ELK TRAP & TRANSFER PROGRAM			
Date	*Source*	*Groups*	*Comments*
1976	Webpage	PGC Dept. of Environmental Resources' Bureau of Forestry (BOF)	Developed an elk policy directing the agency to improve elk range in Elk & Cameron Counties
1982	Webpage	PGC BOF Local farmers Sportsmen	Elk committee (sounding board – not a regulatory board)
1990	Webpage	Rocky Mountain Elk Foundation (RMEF) PGC	Donation of $38,000 to purchase State Games Land 311 – 1,600 acres at Winslow Hill, Elk County for elk habitat
1996			
Sept.	Newsbrief	PGC	Developed their Elk Management Plan – 90 elk over a three-year period to be trapped and transferred to Clinton County
Oct. 3	PGC memo	PGC County Commissioners Legislators	Elk Field Tour to Benezette
1997			
Sept. 19	Express	Consolidated Natural Gas Corp (CNG)	Sponsored luncheon at Sportsman Restaurant, Renovo for stakeholders
Nov. 6	Express	PGC DCNR BOF	Public meeting announced for St. Marys, PA to discuss the Elk Management Plan and the feasibility of establishing an Elk Hunt. Also identified RMEF, Pennsylvania State University (PSU), Frostburg State University, and Purdue University as partners in the elk program.
1998			
Oct. 10	Express	Residents – Kettle Creek Valley	Petition of 50 residents opposed to a second release of elk in their backyards.
Oct. 21	Express	Clinton County Economic Partnership	Sponsored meeting in Cross Fork (Chapman Township) of 50 residents' presentation of petition of 79 people in favor of Trap & Transfer Program.

Figure 2. Elk Trap & Transfer Project Timeline

The findings also indicated that at least 33 meetings/events were held related to the PGC's management of the elk herd, the majority of which focused specially on its Elk Trap and Transfer Project. While many of these meetings were organized to increase the public's awareness of the PGC's on-going efforts to manage the elk, sessions also involved an assortment of public and private forums intended to: promote events, share research findings, planning future initiatives, manage conflict, and to gather public input.

The content analysis revealed that there was a substantial amount of local dissonance evolving from the PGC's Elk Trap and Transfer Project. This dissonance stemmed from competing values, those supporting the PGC's expansion of the elk range into Clinton County and those local farmers and landowners opposed to such efforts. Those landowners arguing against the project viewed the PGC's efforts to be in competition with their individual property rights as landowners. The PGC, on the other hand, described its efforts as beneficial to the general public, local communities, and in the best interest of the elk herd.

Conclusions & Implications

The implementation of the PGC's Elk Trap and Transfer Project appears to have acted as a catalyst to the unveiling of conflicting values within some local communities in central Pennsylvania. A comparison of the findings of this investigation with both the process, and the stakeholder groups, within Burr's (1996) conceptual model for rural tourism development reveals genuine similarities. The most obvious difference is that while the PGC appears to have integrated the vast majority of Burr's stakeholders in the **implementation** of this project, it failed to include a significant group of local residents and citizens from the initial **planning** of the project. It is easily discernible from newspaper articles that this project has illuminated a local dissonance involving the PGC's elk trap and transfer project. Although some local dissonance is inherent to the development of rural tourism in an environment of disparate values, evidence in this case study suggests that the PGC developed and implemented an elk management strategy that incited a significant amount of public controversy, a consequence of the clashing of stakeholders' competing values.

Governmental Agencies & Groups

PA Game Commission (PGC)
PA Dept. of Forests & Water
Dept. of Env. Resources – Bureau of Forests (BOF)
Dept. of Conservation & Natural Resources (DCNR)
U.S. Forest Service
Cameron County Soil & Water Conservation District
Northcentral PA Reg. Planning & Development Comm.
PA Economic Development District
Clinton County Farm Bureau
PA Farm Bureau
PennDot

Universities

Pennsylvania State University
Frostburg State University
Purdue University
Indiana Univ. of Pennsylvania

Elected Officials

State Legislators
Clinton County Commissioners
Game & Fish Commission of the Pennsylvania House of Representatives
Pennsylvania General Assembly

Additional Individuals or Groups of Individuals

Property Owners
Residents
Farmers
Hunters

Special Interest Groups

PA Federation of Sportsmen's Clubs
PA Chap. of the Nat. Wild Turkey Fed. (NWTF)
Elk County Federation of Sportsmen Club
Western Clinton County Sportsmen's Association
Elk Hunt Advisory Committee
Rocky Mountain Elk Foundation (RMEF)
PA Wildlife Habitat Unlimited (PAWHU)
Lehigh Valley Chapter of the Safari Club International
Northcentral PA Conservancy

Citizen Groups

Benezette Homeowners Group
Citizens Against the Exploitation of Private Prop. Rights
Clinton County Elk Support Group
Sproul Forest Chapter of RMEF

Internal & External Planners and Developers

Northcentral PA Economic Development Corporation
Clinton County Economic Partnership
State Park Planners
Town and County Planners
Forest Planners
Tourism Industry Representatives

Corporations

P & N Coal Company
Consolidated Natural Gas Corporation (CNG)

The PGC appears to have been facing the conundrum of balancing the greater good and will of society with individuals' rights. An expanding elk herd would lead to elk hunts and increased elk viewing tourism, both of which seem to be in the general public's best interest. On the other hand, a larger herd needs more space, a space like that in northcentral Pennsylvania, one with few residents and farmers. The decision was made that the PGC develop and implement an elk trap and transfer project intended to expand the existing elk range and at the same time provided more tourism opportunities. A direct consequence of initiating this strategy was the generation of local dissonance between those supporting the elk project and those opposed to it. The most vocal detractors of the PGC, and most adamantly opposed to the elk relocation project were local landowners and farmers who contended that the PGC was impinging on their individual rights by transferring the elk near their properties. Some of these disenfranchised stakeholders also contended that they were being routinely excluded from access to the media, and constrained from publicly sharing their viewpoints. Finally, there is evidence that suggests that the PGC's implementation of this elk project may have negatively impacted its *position* in the public's mind.

While there may not have been a way to avoid this "public" conflict, its intensity and the negative publicity associated with it, may have been minimized had Seeking's (1980) warning that, "...all major policy proposals should be thoroughly ventilated in public [deliberately subjected to public scrutiny and debate] before becoming officially adopted as policy" (in Murphy, 1985, p. 173) been observed. This type of a proactive approach to tourism development affords stakeholders with divergent values constructive opportunities to explore differences in a collaborative process rather than simply fighting over differences in the media (Eyre & Jamal, 1998). Initial planning stages should have been designed to openly address the concerns of those who now see themselves as having been *marginalized* by the process. Although extremely difficult to quantify, it seems only logical that the PGC's position in some people's minds has worsened and that it may now need to allocate significant additional time and energy to *reposition* itself in the public arena as direct result of implementing its Elk Trap and Transfer Project the way it did.

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IMPACTS OF WILDLIFE VIEWING AT DIXVILLE NOTCH WILDLIFE VIEWING AREA

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Abstract: Dixville Notch Wildlife Viewing Area provided an opportunity to examine the motivations, knowledge level and attitudes of wildlife viewers as well as the response of wildlife to observation and other human caused stimuli at a designated wildlife viewing site. Using integrated social science and biological information allowed recommendations to be made for managing wildlife viewing sites where moose (*Alces alces)* were the focus.

Introduction

The purpose of this study was to use multiple disciplines to integrate sociological and biological data related to wildlife viewing, wildlife viewers, and viewed wildlife to determine impacts and develop management recommendations for wildlife viewing areas. The study specifically examined wildlife viewing impacts on moose, the motivation of wildlife viewers, their attitudes about forest and wildlife management practices, and their knowledge levels about related management activities. Stimuli-response interactions between human activity at a wildlife viewing site and moose behavior were also examined. Due to space limitations in the proceedings, this article focuses on an overview about the wildlife viewers and on the conclusions and recommendations for inclusion in a wildlife viewing management plan. Additional information is available from the author and will also appear in forthcoming publications.

Nonconsumptive recreational activities have grown in popularity relative to traditional wildlife and fish recreational pursuits over the past 35 years (More, 1979; Duffus & Deardon, 1990; Mangun et al., 1992; Flather & Cordell, 1995). Wildlife viewing activities grew steadily from the mid-1970s through the early-1990s, with an average annual rate of increase that exceeded all other wildlife-oriented recreation. In the early 1990s, a memorandum of agreement amongst state and federal agencies addressed the increased activity in wildlife-related recreation with the development of wildlife viewing programs (Vickerman, 1991). A wildlife viewing program integrates education and wildlife viewing components (Duda & Young, 1994). Watchable wildlife programs are based on the assumption that if we fail to provide a sufficient amount of high quality habitat, our children and grandchildren will not have the current opportunities to enjoy wildlife (Hudson et al., 1992).

Historically, environmental impacts of nonconsumptive recreation were considered benign, however, the notion that such recreation has no environmental impact is no longer tenable (Flather & Cordell, 1995). Recreationists often degrade the land, water, and wildlife resources that support their activities by simplifying plant communities, increasing animal mortality, displacing and disturbing wildlife, and distributing refuse (Boyle & Samson, 1985).

Research in the area of human impacts on wildlife has been relatively sparse and fragmented (Larson, 1995). Wildlife viewers and photographers actively seek and approach wildlife, unlike other recreationists who mostly encounter wildlife accidentally. Thus, these activities are potentially more disturbing to wildlife as encounters are more frequent and of longer duration (Boyle & Samson, 1985). In order to minimize potential conflict between recreational use and wildlife management goals there is a need to: 1) understand the responses of wildlife to recreational activities, 2) understand the factors that influence the nature and magnitude of impacts, 3) improve research methods, and 4) develop and implement new management strategies (Cole and Knight 1990). An assessment of potential wildlife impacts should consider types of visitors to an area, their recreational activities, their interaction with wildlife and wildlife habitat, and the behavioral and physiological response of wildlife (Pomerantz et al., 1988).

To date, most studies that have used a human dimensions approach to examine human wildlife interactions have focused on recreational activities such as hunting and fishing. There are basic gaps in our knowledge about wildlife viewers and factors that influence people to participate in this activity. For example, what are people's motivations for taking wildlife viewing trips, what is the relationship between knowledge of wildlife and unintended impacts to wildlife, and to what extent do interactions with wildlife influence knowledge of wildlife (Vaske et al., 1995).

Not only has scant attention been paid as to why wildlife viewers choose such recreation, few have attempted to integrate findings across ecological and social science research (Kuss et al., 1990s; Decker et al., 1992). This lack of integration of the available empirical evidence has limited the application of research data to visitor impact management. Natural resource planners must contend with both ecological and social issues. At issue is how can wildlife viewers achieve maximum overall satisfaction and have minimal impact on the wildlife they are viewing. Research needs to be applied to both development of viewing programs and to mitigation strategies for recreational impacts (Larson, 1995).

In New Hampshire, the Fish and Game Department developed a concept proposal for a watchable wildlife program in 1991. The proposal outlined a statewide program that included a wildlife viewing guide, a variety of viewing sites with varied levels of facilities development, and public programs (Silverberg, 1992). Arguably, wildlife watching was extremely popular already and important by any measure. For example, moose (*Alces alces*) were a primary tourist attraction in the northern part of the state, as evidenced by entrepreneurial moose viewing tours and town promoted moose festivals.

Research Objectives

The overall objective of this study was to integrate sociological and biological data collected about wildlife viewing, wildlife viewers, and viewed wildlife to assess potential impacts and develop recommendations for management of wildlife viewing areas as part of a wildlife viewing management plan. Specific objectives were:

1) to compare whether moose changed their rate and time of visitation at the salt lick after construction of the wildlife viewing site,
2) to survey wildlife viewers to determine their demographics, knowledge level, motivation for wildlife viewing, and attitudes toward specific wildlife viewing management techniques,
3) to determine whether there was a predictable response by moose to viewing behavior and other human-caused stimuli,
4) to utilize information from this research to develop optimal management protocols for wildlife viewing sites.

Study Area

The New Hampshire Fish and Game Department, in partnership with the New Hampshire Scenic and Cultural Byway program, built a wildlife viewing area on Route 26 in Dixville Notch during the fall of 1996. A number of factors led to this choice as a wildlife viewing site, the primary being the presence of a salt lick caused by runoff of road salt that attracted numerous visible moose; moose exhibit natural craving toward sodium (Schwartz & Renecker, 1997). A second factor was the proximity of clear cuts with abundant forage (Peterson, 1955).

A six-car parking lot, trail, and viewing blind were built in December 1996. A trail approximately 125 m in length led to a viewing blind that held up to twenty people. The viewing blind had slits which faced the main lick and a moose trail that entered the lick from the east. A kiosk at the parking lot had information about wildlife viewing ethics, services in the area, and nearby designated viewing sites. Nine educational signs were located along the trail and covered topics about wildlife management, wildlife found in the area, suggestions for successful wildlife viewing, and viewing etiquette.

Biological Study to Determine Impacts of Wildlife Viewing on Moose Use of Roadside Licks

Two segments of this research focused on determining the biological impacts on moose using the roadside licks where wildlife viewing took place. The findings are summarized here. The first segment of the research focused on the rate, use, and time of use of the roadside salt lick. There were no significant changes in the diurnal or nocturnal patterns of moose encounters when comparing data from 1996 prior to construction of the viewing blind with data from 1997-1999. Encounters were most frequent at 2200-2400h and 0400-0600h. There was no annual difference in the time patterns of moose encounters in a 24-hour period at the viewing site versus the control site.

Observers recorded reactions of moose to stimuli associated with people visiting the viewing site during June and July 1997- 1999. Typically, multiple moose behaviors and human stimuli were recorded during each observation period. Seven specific human stimuli were categorized: car passing, truck passing, car stopped, car stopped with human outside of vehicle, visitor walking to or from blind, visitor in the blind talking, visitor talking loudly or creating a disturbance.

Moose responses were defined as one of six behaviors: feeding, looking, alert, moving, fleeing, and grooming. A moose was considered feeding if it was actively feeding or licking mud. Looking was defined as when a moose appeared to stare at the stimulus. Alertness was defined as when a moose stopped its previous behavior, stared, and had its ears in a 45 degree position (deVos, 1958). A moose was regarded as moving if it took several steps and resumed its previous behavior. Fleeing meant a moose rapidly moved from the lick to perceived cover. Grooming was defined as licking or moving to repel insects.

All responses and stimuli were noted during each recorded minute. Because moose were not marked, and moose have affinity for specific salt licks, the same moose was probably observed on different days. Multiple observations occurred each observation period. These two facts meant that observations were not independent.

The standard visitor approached the blind quietly, did not talk while in the blind, and usually was in the blind before moose visited the lick. Presumably, moose rarely detected the presence of the standard visitor or, at the very least, showed no reaction to the standard visitor. Baseline moose behavior was recorded only when the standard visitor was present and there were no other human stimuli.

Analysis of single and multiple combinations (2-4) of human stimuli were necessary because multiple stimuli often occurred simultaneously (e.g., car stopped and truck passing). Moose response was quantified by totaling the number of observed responses and calculating the percentage of each response that was exhibited for individual and combinations of stimuli. A Chi-square test ($p \leq 0.05$) of independence (Zar, 1996) was used to

compare the distribution patterns of the various behavioral responses to different stimuli to the pattern of responses associated with the standard visitor.

A total of 48 observation periods occurred; 9 in 1997, 19 in 1998, and 20 in 1999. Observation periods ranged from 5 - 93 minutes; the average period lasted 22 minutes. During an observation period an average of 6.4 cars passed, 1.6 trucks passed, 3.2 cars stopped and 0.9 humans were out of their car. During the 342 minutes of observation when the standard visitor was present, moose spent 34% of time feeding, 20% of time looking, and approximately 25% of time alert. They moved within the lick almost 15% of the time. Little grooming behavior (<2%) was witnessed and moose fled without apparent reason <4% of the time).

Differences in behavioral response patterns when compared to the standard visitor response pattern were found when a truck passed (X^2=26.5, df 5, p=0.000) and a car stopped (X^2=18.8, df 5, p=0.002). The behavior that most dramatically changed with these stimuli was that the moose fled from the lick.

Wildlife Viewers Characteristics, Motivations and Attitudes

Survey data were collected in two phases. Initially, a five-minute site interview was conducted in the parking lot prior to a viewer visiting the educational signs and viewing platform. Subsequently, a survey was mailed to a subset of interviewees to further assess additional demographic information, knowledge level and attitudes, motivations for stopping, and satisfaction with the experience using the Dillman method (1978). Data were compiled and analyzed with SPSS. The level of significance for all tests was p= 0.05. Each interviewee was assigned an identification number that was used to track their interview and survey results. Descriptive statistics were derived for each variable including frequency, %, mean, and median.

Demographics

A total of 431 interviews were conducted with 222 completed in 1997 and 209 in 1998. In 1997, 97% of the interviewees agreed to complete the mail survey, while in 1998 only 66% agreed. A total of 335 surveys were mailed, 202 in 1997 and 133 in 1998. Analysis was conducted on 209 completed surveys. It is acknowledged that the mail survey group was self-selected as they agreed to be surveyed after their site interview.

About half (55%) of the viewers surveyed were non-residents of New Hampshire, 42% lived in the nine other counties of New Hampshire with 5% from local Coos County, and 3 % were visiting the United States. Almost half (48%) came to the site as couples, and a third (33%) were with families. A third of the viewers were on a day trip; the rest lodged somewhere in New Hampshire with 19% at the BALSAMS.

The interview sample was 57% female, while the mail survey was completed almost equally by males (48%) and females (52%). Viewers were overwhelmingly white (97%). Nearly half (49%) of the respondents were college graduates, 25% had attended some college, trade or business school, 23% graduated from high school, and 3% did not finish high school The income level varied from 2% with an income of <$10,000, to 11% with an income >$100,000. A similar proportion fell into the $20,000-39,000 (26%), and the $40,000-$59,999 range (27%). Viewers varied in age with 10% between 18-29, 16% were 30-39, 31% were 40-49, 26% were 50-59, 14% were 60-69, and 3% were > 70 years (Table 3). The average age was 44.6 years. The majority (57%) did not belong to any conservation organization; 23% held membership in one organizations, 11% were members of two, and 9 % belonged to three or more conservation organizations.

Two-thirds of the viewers did not see a moose that day; however, the majority (81%) saw birds and about half (51%) saw small mammals. They spent 0-≥21 days viewing wildlife in the past year Viewers had visited different types of wildlife viewing areas including sites along roads (69%), remote sites (45%), sites with informational signs (29%), and developed sites with parking lots and trails (27%).

Knowledge

Eight knowledge-based questions were asked, including several questions worded similarly to those in the site interview. Answers to these questions were found in the educational signs located at the viewing site. Each wildlife viewer was assigned a percent correct for the pre- and post-tests. Chi square analysis was conducted to determine if there were differences in how the respondents scored on their pre-and post-tests. Analysis of variance was used to determine if there were differences in knowledge based upon age, income, and level of education. All statistical tests performed were at a significance level of p=0.05.

Less than 10% of the interviewees considered themselves knowledgeable about moose, with 28% believing they had limited knowledge. However nearly a quarter scored 100% on the pretest, over half scored ≥ 75%, and only 13% scored ≤ 50%. Neither education level (F=1.115, df 4, p=0.330) or income (F=1.111, df 6, p=0.357 was related to pre-test scores. The mean score of male (67.4± 1.9 (mean ± std. dev.)) and female viewers (64.6±1.6) was not different (F=1.197, df 1, p=0.274). On the mail survey all viewers answered at least one question correctly. Over 70% of viewers scored >75%; <5% scored <50%. Sixty-five percent of the viewers increased their score on the post-test, and 33% scored lower; post test scores were higher (78.7%±1.1) than pre-test scores(66% ±1.3) (X^2=124.88, df=42, p=0.000). Scores also increased on the three questions that appeared on both the interview and the survey: why moose were attracted to muddy areas (X^2=41.6, df 1, p=0.000), what adult moose eat (X^2=10.4, df 1, p=0.000), and the best time to view wildlife

(X^2=137.5, df 1, p=0.000). Scores on the post test were not influenced by level of education (F=0.487, df 4, p=0.745), age (F=1.1.54, df 5, p=0.154), or gender (F=1.051, df 1, p=0.306). Scores of those earning >$80,000 were lower (F=4.482, df 6, p=0.000) than those of other income levels.

Attitudes Toward Wildlife Management Techniques

Specific attitudes toward wildlife management techniques at wildlife viewing areas were explored. A Likert five-point scale was used, with 1 as totally unacceptable and 5 as totally acceptable. Frequency distributions, mean, and median were derived for each technique. Responses of viewers to proposed wildlife management techniques are presented in Table 1.

Motivations of Dixville Notch Wildlife Viewers- Wildlife viewing is a leisure activity and as such viewers motivations were measured using a standard list of fourteen questions drawn from Driver's (1983) recreational experience preferences and adapted for wildlife viewing. A five-point Likert scale was used with 1 being not important and 5 being extremely important. The majority (76%) of viewers were actively looking for wildlife, and 84.5% of these were specifically looking for moose. An overwhelming majority (86%) had seen at least one moose in the wild, and 23% saw a moose previously that day. The primary reasons for stopping were because they saw the sign (27%), they were looking for moose (24%), they were curious (14%), they were told (8%), or they had combinations of other reasons (27%).The mail survey examined people's motivations for stopping (Table 2). Four groupings of motivations were identified by factor analysis using principal component analysis with varimax rotation and were labeled general, creative, experiential, and opportunist (Table 3).

Table 1. Response of Viewers at the Dixville Notch Wildlife Viewing Area to Proposed Management Activities, 1997-1998

			Percent of Responses				
	No. Of Viewers	Mean	Totally Unacceptable	Unaccept-able	Neutral	Acceptable	Totally Acceptable
Educational information present	208	4.38	.5	1.9	13.5	26.9	57.2
Arrest people for harassing wildlife	209	4.38	6.7	4.3	3.8	13.9	71.3
No hunting zones	207	4.35	7.2	4.3	6.8	9.2	72.5
Some habitat off limits	208	4.31	5.3	2.3	9.1	14.4	66.3
Close sites if impacted	207	4.15	6.8	7.7	7.2	19.8	58.5
Distances people allowed should be controlled	209	4.03	5.3	7.2	13.9	25.8	47.8
Forest should be kept in this stage to ensure moose	207	3.74	7.7	9.7	23.2	18.8	40.6
Naturalist on site	208	3.35	7.2	8.7	41.8	26	16.3
All sites should be as developed as this one	206	3.25	10.7	13.6	37.4	16.5	21.8
No. of people should be limited	208	3.00	18.8	13.9	32.3	18.3	16.8
Salt should be placed in the lick	209	2.09	45.5	19.1	23.4	4.8	7.2
Wildlife that injures people should be killed	206	1.97	49	17.5	23.8	6.8	2.9
Allowed to get as close to moose as they want	209	1.44	73.2	16.7	5.7	1.4	2.9
Wildlife should be held captive	209	1.12	92.8	4.3	1.4	1.0	.5

Table 2. Rank Order, Mean Score of Motivations and Percent of Viewers Identifying a Motivation as Moderately or Strongly Important for Stopping at the Dixville Notch Wildlife Viewing Area 1997-1998

Motivations	Number of Respondents	Mean	% of Moderate to Strongly Important
To experience new and different things	207	4.02	73.4
To see what was there	209	3.99	68.4
To learn or study about nature	207	3.84	65.2
To do something with my family	203	3.59	51.9
To experience a quiet time in the north woods	208	3.45	47.7
To get away from the usual demands of home and office	205	3.37	54.7
To develop my wildlife viewing skills and abilities	204	3.17	43.3
To experience excitement	204	3.13	42.7
To get exercise	204	2.65	29.9
To be with my friends	195	2.49	27.7
To share my outdoor knowledge with others	197	2.27	20.8
To have a personal spiritual experience	198	2.27	21.2
To do something creative, such as sketch, paint or take photographs	198	2.18	9.3
Because someone told me it was a good place to stop	189	2.17	20.6

Table 3. Preferred Experiences Based on Factor Analysis Using Principal Component Analysis with Varimax Rotation of Motivations of Visitors to the Dixville Notch Wildlife Viewing Area 1997-1998

	Eigenvalue	% Var.	Factor 1	Factor 2	Factor 3	Factor 4
Motivation Factor 1-General	5.078	36.3				
Experience a quiet time			0.80632	0.14460	0.18473	-0.14099
Get away from the usual demands			0.79168	0.13129	0.03789	0.35180
Do something with family			0.72590	0.00809	0.03789	0.35180
To get exercise			0.59724	0.33054	0.20441	0.13231
To be with friends			0.55727	0.31701	-0.08522	0.37550
Motivation Factor 2-Creative	1.314	11.5				
To do something creative			0.06076	0.81847	0.09986	-0.02857
Share outdoor knowledge			0.15384	0.73543	-0.07727	0.31880
Personal spiritual experience			0.23258	0.64456	0.16356	0.21181
To develop wildlife viewing skills			0.26957	0.53343	0.49815	0.15407
Motivation Factor 3-Experiential	1.624	9.4				
To see what was there			-0.10422	-0.09537	0.77579	0.14535
To experience new and different things			0.28811	0.18381	0.73920	-0.07210
Learn about nature			0.4.568	0.02272	0.65978	0.02483
Motivation Factor 4-Opportunist	0.925	6.6				
Someone told me it was a good place to stop			0.02636	0.26516	0.02651	0.78785
To experience excitement			0.38906	0.09090	0.37506	0.55099

Satisfaction Levels of Dixville Notch Wildlife Viewers

The majority of viewers (74%) indicated that they thoroughly enjoyed their visit to Dixville Notch; 65% wanted to return, and 71% felt that travel was a worthwhile expense. Five questions, with a five point Likert scale from strongly disagree (1) to strongly agree (5), were used to examine the viewer's overall satisfaction with their wildlife viewing experience at Dixville Notch (Ditton et al., 1981). The five statements were scaled to form an overall satisfaction level of the viewers' experience at the Dixville Notch Wildlife Viewing Area. The majority (71%) were satisfied or highly satisfied with their experience, 22% were dissatisfied or highly dissatisfied, and 7% were neutral.

Daily temperature, cloud and blackfly conditions were recorded by the interviewers. Using simple linear regression, there was no relationshipbetween satisfaction level and ambient temperature (R^2= 0.000, Beta 0.0829, Significance 0.2371), cloud condition (R^2= 0.0090, Beta-0.0949, Significance 0.2371), and blackfly condition (R^2= 0.0023 Beta 0.0476 Significance 0.4908).The majority (68%) felt that seeing a moose would be the highlight of their day, while 10 % felt that seeing either a moose, bear, or deer would be their highlight. In actuality only 33% of

the viewers saw ≥ 1 moose at the site. There was no relationship found between having a satisfactory experience and seeing a moose (F=0.203, df 6, p=0.976).

Twenty-six variables including motivation factors, age, income, education and recreational activities were used to build a stepwise regression model using backward then forward procedures to identify the variables which explain the most variation in satisfaction. The appropriate multiple regression model for the examined data includes three independent variables: Motivation Factor 1, Motivation Factor 3 and Motivation Factor 4. It was found that those viewers influenced by Motivation Factor 1 were more likely to be satisfied with the experience at Dixville Notch Wildlife Viewing Area, (beta=0.429, significance =0.000) while viewers influenced by Motivation Factor 4 were also likely to be satisfied (beta=0.184, significance 0=.000). Those influenced by Motivation Factor 3 had a negative influence on satisfaction (beta = -0.195, significance = 0.000). The R square indicates that about 26% of the variance is explained by the 3 predictor variables. Motivation Factor 1 had the most influence on satisfaction and explained the greatest variance (18.8%), while Motivation Factor 3 explained 3.7% of the variance and Motivation Factor 4 explained 3.4%.

Summary of Findings

1. The visitation rate of moose at the Dixville Notch salt lick did not change after the construction of the wildlife viewing area.
2. There was no significant change in the time of day moose visited the Dixville Notch salt lick after construction of the wildlife viewing area.
3. Moose predominantly used Dixville salt licks nocturnally with the highest diurnal visitation occurring at 0400-0800h.
4. Travel patterns immediately adjacent to the viewing blind changed after construction of the site.
5. Quiet viewers in the blind had minimal effect on moose behavior.
7. Moose were generally tolerant of human-caused stimuli exhibiting the greatest percentage of behavioral changes when cars stopped and trucks passed.
8. Wildlife viewers to Dixville Notch were predominately families and couples visiting northern New Hampshire.
9. The majority of Dixville Notch wildlife viewers did not belong to a conservation organization.
10. Viewers expected wildlife viewing sites to include educational opportunities.
10. Knowledge levels of viewers increased after their visit presumably because of educational signs.
11. Education and income level were not related to viewer knowledge of moose.
13. Viewers were amenable to regulations.
14. Viewers were less accepting of wildlife management techniques that created artificial situations.
15. There was a slight discrepancy between viewers' understanding of moose habitat requirements and acceptance of forestry management for habitat enhancement for moose.
16. Dixville Notch viewers were motivated by a variety of factors categorized as general, creative, experiential, and occasional.
17. Satisfaction regarding the viewing experience in Dixville Notch was not related to viewing moose but was related to the general, experiential, and occasional motivation factors.

Conclusion

The Dixville Notch Wildlife Viewing Area presented viewing opportunities for individuals, couples and families. Most of the viewers were visitors to the region and spent purposeful time looking for moose and other wildlife. Motivations of viewers feel into four groupings, general, experiential, creative and opportunist. Although the majority did not see moose at the site, most had a satisfactory experience.

Marketing Programs Based on Demographics

Viewers participated in a number of recreational activities that provided opportunities to view wildlife. Certainly, the impacts of moose viewing on tourism and business opportunities in the area needs further exploration Marketing programs to attract wildlife viewers to the area should be based upon the area offering new and different experiences in a relaxed environment with opportunities to learn about nature. Programs should be designed to reach a middle-aged, family oriented, gender equal audience with higher than average income. Marketing efforts should be focused both in and out of state. Marketing efforts can also be based on the motivational preferences such as emphasizing wildlife viewing as a way to enjoy a quiet time, get away and do something with family and friends.

Education and Conservation

A desire to learn and study about nature was an important motivation dimension. Wildlife viewers expected interpretive information to be available and felt that education was completely acceptable as a management tool. This study indicated that knowledge can be increased while visiting a site through the presentation of information on signs. Since knowledge plays a role in influencing attitudes, it is essential to provide education at sites. For example, while wildlife managers often rely on habitat site enhancements, some wildlife viewers don't understand the reasons behind such activities. Educational materials should explain how and why site enhancement activities occur and what are the projected results. Interpretive techniques should be tailored for different types of sites and situations. Since wildlife conservation is a goal of viewing programs, it is worthwhile to explore how viewers not involved with conservation organizations could be involved in conservation activities at viewing sites.

Wildlife Viewing Management

In considering management of wildlife viewing sites in a region there is a need for a variety of sites as evident by a third of the viewers felt that not all sites should be as developed at Dixville. Based on the types of sites visited by viewers in other locations, the mix of sites should include roadside, remote sites, and those accessible by foot travel. Motivation preferences should also be taken into account when designing a site. The four experience preferences found in this study can serve as a framework for developing specific wildlife viewing opportunities. The experience based management approach can be useful in meeting the recreational aspects of wildlife viewing. However because the goals of viewing programs extends beyond just a recreation activity, it will be helpful to use the characteristics of the four motivation factors to design activities and sites. Through designing opportunities that fulfill the outcomes of these desires, wildlife viewers will generally have a satisfactory experience.

There are a number of wildlife and recreational management activities wildlife viewers readily accept and can be used at wildlife viewing sites including providing educational opportunities, rules and regulations to minimize impacts and site selected habitat enhancements. An important component in developing a wildlife viewing management program or site is understanding potential impacts on the species being viewed. Studies such as this one, provide a better understanding of impacts of viewers on a wildlife resource.

In summary, the primary reason that resource management agencies developed wildlife viewing programs was to promote wildlife conservation. One of the greatest benefits of developing wildlife viewing sites is that they provide a place to provide educational materials, demonstrate wildlife management techniques and ultimately help viewers develop a sense of stewardship toward wildlife and other natural resource. The biological studies and survey of wildlife viewers at Dixville Notch provides a list of elements important to wildlife viewers for inclusion into a wildlife viewing management plan.

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Methodology in Outdoor Recreation Research II: Instruments & Models

EFFECTS OF PRETESTING WITH THE ADVENTURE RECREATION MODEL INSTRUMENT

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Abstract: The Adventure Recreation Model, first proposed and tested by Ewert and Hollenhorst (1989), attempts to describe participant characteristics and patterns of use in adventure recreation activities. The Adventure Recreation Model is based on the relationship of level of engagement in an outdoor recreation activity (ranging from beginner, to development, to commitment) with the variables of personal attributes of the participant (i.e., frequency of participation, skill/experience level, decision-making locus of control, and motivation factors) and activity/setting attributes (i.e., level of risk, social orientation, and environmental orientation). Because the Adventure Recreation Model is based on a developmental approach (i.e., movement from beginner to commitment), it would be desirable to use the Adventure Recreation Model instrument to measure changes in groups of participants before and after outdoor experiences. However, the instrument needs to be tested to determine the effects of exposure to the pretest. The purpose of this study was to determine if exposure to the Adventure Recreation Model instrument as a pretest had an effect on posttest scores on the instrument. Results showed that, overall, the instrument did not appear to have a pretest effect, with the exception of four out of 30 of the variables measured.

Introduction

The Adventure Recreation Model, first proposed and tested by Ewert and Hollenhorst (1989), attempts to describe participant characteristics and patterns of use in adventure recreation activities. According to Ewert (1989), the adventure model is based on the notion that the "seeking of risk and uncertainty of outcome" (p. 8) differentiate adventure recreation pursuits (e.g., rock climbing and backpacking) from other forms of outdoor recreation (e.g., hunting and fishing). The Adventure Recreation Model is based on the relationship of level of engagement in an outdoor recreation activity (ranging from beginner, to development, to commitment) with the variables of personal attributes of the participant (i.e., frequency of participation, skill/experience level, decision-making locus of control, and motivation factors) and activity/setting attributes (i.e., level of risk, social orientation, and environmental orientation). Because the Adventure Recreation Model is based on a developmental approach (i.e., movement from beginner to commitment), it would be desirable to use the Adventure Recreation Model instrument to measure changes in groups of participants before and after outdoor experiences. However, the instrument needs to be tested to determine the effects of exposure to the pretest. The purpose of this study was to determine if exposure to the Adventure Recreation Model instrument as a pretest had an effect on posttest scores on the instrument.

Overview of the Adventure Recreation Model

According to Ewert and Hollenhorst (1989), the Adventure Recreation Model is based on the personal attributes of the participant, such as frequency of participation, skill/experience level, decision-making locus of control, and motivation factors, and on the activity/setting attributes, such as level of risk, social orientation, and environmental orientation. The model is reconstructed in Figure 1 to show how the participant and activity/setting attributes relate to each other. As can be seen in the model, participants are divided into categories of Introduction, Development, or Commitment based on their level of engagement in outdoor adventure. The Adventure Model suggests that as engagement level increases:

- skill level increases
- frequency of participation increases
- locus of control becomes more individualized
- preferred risk level increases
- preferences for natural conditions increase
- social context moves to solitary or expert-only groupings
- motivations of challenge, achievement, and risk taking increase or prevail.

The model allows for classification of participants based on their experience level. This classification, in turn, is related to the level that users experience, perceive, or desire in other elements of the outdoor adventure experience. The model, in theory, could help managers more closely target and/or manage programs and resources that are suitable for the participant. On a more theoretical level, the model could help researchers understand adventure recreation behavior.

Testing the Adventure Recreation Model

Attempts to more fully understand adventure recreation behavior have been a consistent theme in the research literature in the recreation field. Although Ewert and Hollenhorst first published the Adventure Recreation Model in 1989, earlier research had led to its development. In an earlier study, Ewert (1985) examined the relationship between participant motivations for mountaineering and their level of experience. He found that type of motivation (intrinsic or extrinsic) differed for participants, depending on their self-reported level of experience in the activity. More experienced participants tended to have more

intrinsic motivations and inexperienced participants more extrinsic motivations for mountaineering. The results of this study led to the development of a more complex model, in which type of motivation was one variable among several others associated with adventure recreation. This model, the Adventure Recreation Model, was presented by Ewert (1989), and tested by Ewert and Hollenhorst (1989). According to Ewert (1989), the adventure model was based on the notion that the "seeking of risk and uncertainty of outcome" (p. 8) differentiates adventure recreation pursuits (e.g., rock climbing and backpacking) from other forms of outdoor recreation (e.g., hunting and fishing). Further, Ewert and Hollenhorst (1989) contended that models addressing recreation or outdoor recreation participation inadequately explained or even addressed the *risk-seeking* dimensions adventure experience and adventure activities (p. 127). Their 1989 study found support for the proposed adventure recreation model (Figure 1). The model was effective in identifying components of the outdoor adventure experience that were highly correlated to level of engagement in the adventure activity (described in more detail below).

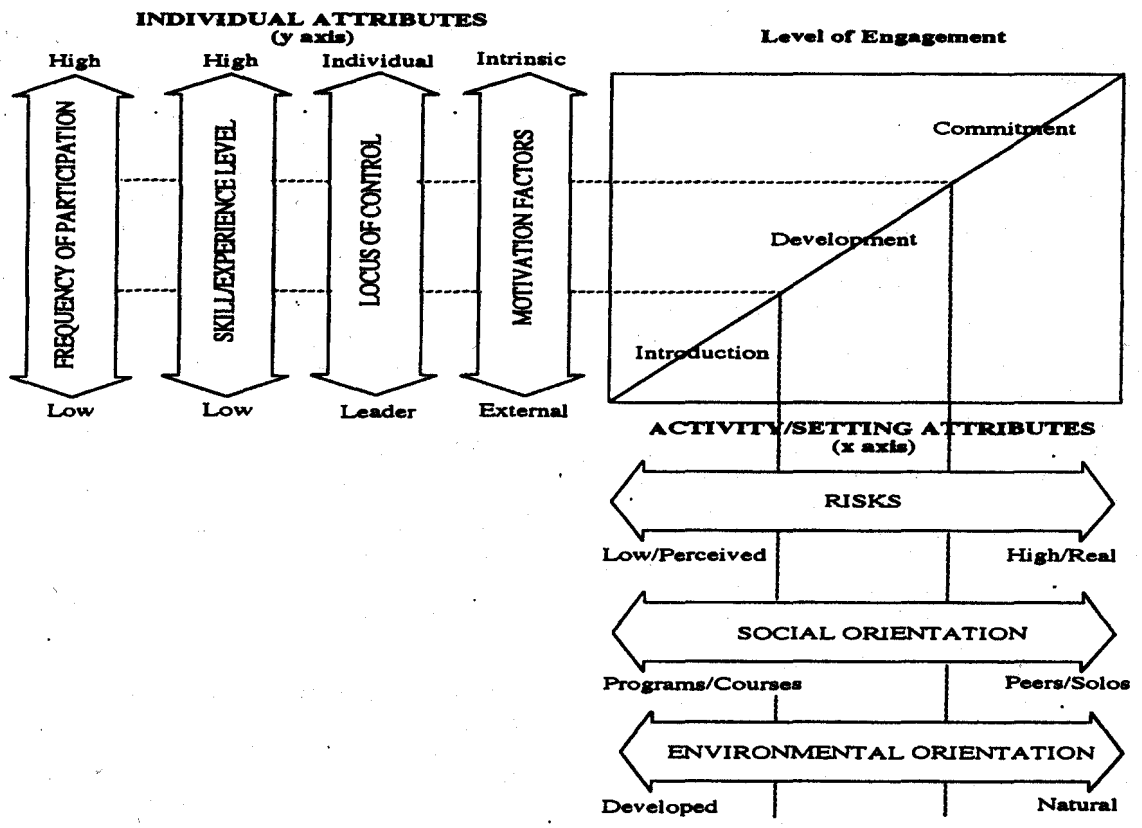

Figure 1. The Adventure Recreation Model by Ewert & Hollenhorst (1989)

Though strong support for the model was found, continued testing of its validity was suggested. Subsequent assessments have generally, but not identically supported the model. Schuett (1992) tested a revised adventure model, using slightly different variables, and reported support for that model. Priest (1992) proposed and tested an alternative model, "The Adventure Experience Paradigm," (p. 128), based on the concepts of risk and competence. His findings also provided support for the concepts in Ewert and Hollenhorst's (1989) original model. The most thorough follow-up study was done by Anderson, Anderson, and Young (2000). Using Ewert and Hollenhorst's model and instrument, the original study was replicated with a group of subjects who were more diverse in their motivations to participate in outdoor adventure and in their professed levels of engagement. Like the original study, more recent study found relationships between engagement level and all user attributes and between level of engagement and the setting attributes of risk level and type of environment. Unlike the original study, Anderson, Anderson, and Young found nine, not two motivations for participation to correlate with level of engagement.

Through continuing replication efforts, the building of a viable adventure model may be achieved. There are several benefits of having a viable adventure model. First, it would

provide a clarified conceptual understanding of adventure recreation. Second, the model could help resource managers to understand and justify the need to provide a diversity of recreation and adventure recreation opportunity settings. Third, a sound adventure model could guide adventure programmers in tailoring their programs' settings, social contexts, and risk levels to participants' level of engagement in the activities. According to Priest (1992), resource managers and other outdoor recreation service providers could provide a spectrum of recreation opportunities, which would accommodate varying levels of skill and ability. Being able to match users to the settings and programs that best meet their needs would assist managers in providing higher quality experiences and environments. Fourth, as the model undergoes validation and refinement, a new possibility emerges—using the instrument to measure changes or differences in participants over time or stemming from programmatic interventions. Adventure educators might use the Adventure Recreation Model instrument in various quasi-experimental designs to determine the effects of their programs. Because such uses of the instrument will often involve repeated testing of participants, it is important to determine whether the simple exposure to the instrument as a "pretest" affects posttest responses. Hence determining if there are "testing effects" is the purpose of the present study.

Methods

The purpose of this study was to determine if exposure to the Adventure Recreation Model instrument as a pretest had any effects on posttest scores on the instrument. The null hypothesis stated that there would be no significant difference between those students who completed both the pre- and posttest and those who completed the posttest only on the Adventure Recreation Model instrument.

Subjects for this study were 129 undergraduate recreation majors from two separate, but similar summer session Outdoor Education Practicum courses. The subjects ranged in age from 19 to 42 with an average age of 22.5. Fifty-six percent were females, 44% males.

For this study, the required course taken by these subjects was simply a context and not treatment variable. Still, a few words about that context might be helpful. The thirteen-day course included seven days in a camp-like resident outdoor education setting, with amenities, dining facilities, and a structured program. The course also included a six-day wilderness canoe trip in New York State's Adirondack Park.

This study employed the true experimental posttest only control group design (Gay, 1992). In each summer session, half the students were randomly chosen to complete the Adventure Recreation Model instrument at the beginning of the outdoor education practicum. All students completed the posttest administration of the instrument. As depicted in Figure 2, the "treatment" in this experiment was completing the Adventure Recreation Model Instrument as a pretest.

Figure 2. Posttest-only Control Group Design

R	X	O
R		O

R = Random Assignment
X = Adventure Recreation Model Instrument before course
O = Adventure Recreation Model Instrument taken post course

The instrument includes items to measure the variables of level of engagement, user attributes (skill level, locus of decision-making), setting attributes (type of environment, preferred level of risk, social orientation), and 18 motivations for participation. The questionnaire used a nine point Likert scale, to which subjects responded for each item on the questionnaire. These items are presented in Table 1.

The data were analyzed with SPSS 9.0. The two groups, those who were pre- and posttested, and those who were posttested only, were compared on each variable using independent t-tests for interval data and Chi Square for nominal data. A .10 level of significance was chosen because in this type of study, Type II (beta) errors are more worrisome. The conventional .05 level might prompt the claim of no pretest effects when, in fact, there are such effects.

Results

As can be seen in Table 2, there were no significant differences between the experimental and control group in relation to age, gender, and their frequency of participation in outdoor adventure experiences. Given the lack of difference between the experimental and control groups, it can be assumed that extraneous variables were controlled for by randomization, and that if there are any differences on the dependent variable, they would be due to the pretesting, or experimental condition.

As can be seen in Table 3, the results showed that for 26 variables measured on the Adventure Recreation Model questionnaire, there were no significant differences found between the group that was pretested and the group that was not. Four variables, level of engagement, skill level, participation with friends, and skill development motivation, were significant at the .1 level (but not at the .05 level). The pretested group had a slightly higher mean score (5.8) on level of engagement than the nonpretested group (5.2). The pretested group also had a higher score on skill level (5.5) than the nonpretested group (5.0). The nonpretested group had a slightly higher score on the social orientation/friends variable (7.5) than the pretested group (6.9). On the motivation variable to develop skills, the pretested group scored higher (7.2) than the nonpretested group (6.7).

Table 1. Items on the Adventure Recreation Model Instrument (Ewert & Hollenhorst, 1989)

1. As an outdoor adventurer, I would consider myself to have had....(little or no experience ..... a great deal of experience)
2. As an outdoor adventurer, I would consider myself to be a(n) ... (beginner with little or no skill .... expert, highly skilled)
3. How many adventure experiences have you had in the last two years? (none ... more than 10)
4. Regarding most of your outdoor adventure experiences, decisions are usually made by... (others .... myself)
5. Regarding your recent outdoor adventure experiences, the level of risk you preferred in the activity was ... (low ... high)
6. Regarding your recent adventure experiences, most of the risks in these experiences have been primarily... (social ... physical)
7. Regarding your recent outdoor adventure experiences, the environment in which they occurred was ... (man-made ... natural)

Regarding most of your adventure experiences, with whom do you participate?

1. Friends
2. Programs/Classes
3. By myself
4. Peers of similar skill/experience
5. Teachers/mentors

Regarding your adventure experiences, how important are the following reasons for participating?

1. to develop skills
2. to make friends
3. for my image in society
4. to do something new/different
5. for physical fitness
6. for the personal challenge
7. for the competition (with others or environment)
8. to experience nature
9. for fun and enjoyment
10. for my career/job
11. to enhance my feelings of myself
12. because of requests by others
13. to socialize
14. to take risks
15. for excitement and stimulation
16. to experience a sense of control
17. for feelings of achievement
18. for status among my peers
19. to express my creativity

Table 2. Comparison of Characteristics of the Experimental (Pretest/Posttest) Group with the Control (Posttest Only) Group

Variable	Test Used	Descriptive Statistics	Statistic	Significance
Age	Independent t-test	Pretest/Posttest Group: Mean = 22.9; SD = 4.9 Posttest Only Group: Mean = 21.9; SD = 4.1	t = 1.233	p = .22
Gender	Chi-Square	Pretest/Posttest Group: Female = 39; Male = 34 Posttest Only Group: Female = 35; Male = 23	$X^2 = .630$	p = .43
Frequency of participation	Chi-Square	Pretest/Posttest Group: No trips = 1 1-2 trips = 15 3-6 trips = 25 7-10 trips = 10 More than 10 trips = 9 Posttest Only Group: No trips = 1 1-2 trips = 14 3-6 trips = 20 7-10 trips = 9 More than 10 trips = 11	$X^2 = .626$	p = .96

Table 3. Comparisons of the Experimental (Pretest/Posttest) Group with the Control (Posttest-Only) Group on Each Variable in the Adventure Recreation Model Instrument

Variable	*Pretest/Posttest Group*		*Posttest Only Group*		*t* value	Significance (*.1 level)
	Mean	SD	Mean	SD		
User Attributes:						
Level of engagement	**5.8**	1.8	**5.2**	2.0	1.790	.076*
Skill level	**5.5**	1.6	**5.0**	1.8	1.679	.096*
Locus of decision-making	**5.5**	1.4	**5.4**	1.8	.664	.508
Setting Attributes:						
Level of risk	**6.1**	1.5	**5.9**	1.8	.928	.355
Type of risk	**5.5**	1.6	**5.5**	1.3	.155	.877
Type of environment	**7.1**	1.7	**6.7**	1.6	1.468	.145
Social orientation – friends	**6.9**	1.7	**7.5**	1.9	-1.872	.064*
Social orientation – classes	**5.4**	1.9	**5.0**	2.1	1.254	.212
Social orientation – self	**3.8**	2.3	**3.6**	2.3	.382	.703
Social orientation – peers	**6.1**	1.8	**5.6**	1.9	1.576	.117
Social orientation – teachers	**4.4**	2.0	**4.0**	2.3	1.064	.289
Motivations for Participation:						
To develop skills	**7.2**	1.5	**6.7**	1.6	1.808	.073*
To make friends	**6.6**	1.9	**6.7**	1.6	-.386	.700
For the image	**3.2**	2.0	**3.1**	2.1	.073	.942
For novelty	**7.5**	1.1	**7.3**	1.6	.924	.357
For physical fitness	**7.0**	1.6	**7.1**	1.5	-.347	.729
For the challenge	**7.7**	1.3	**7.8**	1.3	-.296	.768
For the competition	**4.9**	2.2	**5.2**	2.5	-.877	.382
To experience nature	**7.4**	1.4	**7.2**	1.8	.647	.519
For fun and enjoyment	**8.1**	1.1	**8.4**	.9	-1.570	.119
For career/job	**6.0**	2.3	**6.3**	2.0	-.864	.389
For feelings of self-esteem	**6.6**	1.9	**6.8**	1.9	-.642	.522
Requested by others	**4.0**	1.9	**3.6**	2.1	1.210	.228
To socialize	**5.9**	2.0	**5.8**	1.8	.476	.635
To take risks	**6.4**	1.8	**6.1**	1.8	.939	.349
For the excitement	**7.5**	1.3	**7.1**	1.6	1.266	.208
To experience control	**5.8**	1.8	**5.4**	2.1	1.058	.292
For a sense of achievement	**7.4**	1.3	**7.3**	1.5	.365	.716
For status	**3.2**	1.8	**3.3**	2.0	-.140	.889
To express creativity	**6.2**	2.0	**5.8**	2.1	1.055	.293

Discussion and Recommendations

This study found that exposure to the pretest did not appear to influence resultant scores on the posttest with the exception of the four variables identified above. For these four out of 30 variables, there is a greater probability for pretest effects. Three of these four variables were related to skill level or skill development. Subjects who take the pretest may be made more aware of their skill level as a result of the questions on the pretest.

Based on these findings, it is recommended that the Adventure Recreation Model instrument be used to measure changes in participants using pretesting. By using the instrument in this manner, more rigorous testing of the Adventure Model can occur, due to its developmental approach. However, further study of pretesting effects is in order, particularly with the variables that assess skill. The pretest may cause a sensitization of skill assessment on the part of subjects. In the meantime, using the instrument in pretest/posttest studies may proceed, but with caution in interpreting at least these four items in the instrument.

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MODELING NONLINEAR PREFERENCES

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Abstract: Economic theory, as well as intuition, supports the notion of increasing or decreasing marginal rates of substitution. That is, the marginal benefit derived from an increase in a desired good or service, or one's willingness to accept tradeoffs among various costs or benefits, depends on the current mix or allocation. However, due to widespread availability and ease of use, linear models are frequently used to model preference structure for environmental goods or services. This paper presents an approach for estimating nonlinear effects and contrasts the results with those of linear models. The effects on the optimal choice in multiattribute decisions and acceptability of tradeoffs among costs and benefits are highlighted.

Introduction

Economic theory, as well as intuition, supports the notion that preferences for most types of goods or benefits are nonlinear. The value placed on obtaining an additional unit of a good or achieving the next level of an objective usually depends on the current level. That is, the marginal benefit derived from an increase in a desired good or service, or one's willingness to accept tradeoffs among various costs or benefits, depends on the current mix or allocation. However, due to widespread availability and ease of use, linear models are frequently used to model preference structure for environmental goods or services. This paper presents an approach for estimating nonlinear effects by examining the relative values that private landowners place on various attributes of forest management.

Privately owned forests comprise nearly three-quarters of the forest land in the United States and are expected to play an important role in meeting future needs for timber, recreation, wildlife habitats, and many other forest-related benefits (USDA Forest Service, 1988; 1995). There is concern that these lands may not meet their potential in achieving objectives related to overall ecosystem health and sustainability, nor in providing benefits that transcend legal and political boundaries, e.g., biodiversity, water quality, and habitat for certain kinds of wildlife.

Surveys of private forest-land owners conducted by the USDA Forest Service show that many owners hold their woodland primarily for noncommercial reasons (Birch, 1996). Many people own forest land because it is part of the farm or residence, for aesthetic enjoyment, to view wildlife, or participate in other forms of forest-related recreation. Landowner attitudes and motivations suggest that they are favorably disposed to providing nontimber benefits and protecting the health of the forest ecosystem. However, the large number of owners, diversity of objectives, increasing fragmentation, and nonmarket nature of many benefits pose problems in estimating what can be expected from these lands and in designing policy to influence behavior (Dennis et al., 2000). We need to better understand the relative importance that landowners attach to various objectives as well as their willingness to incur costs associated with achieving these benefits. This information is relevant for policy formation and as an input to larger analytical models.

Conjoint techniques were used to solicit landowner preferences for management involving varying levels of timber harvesting, recreational trail improvement, apple tree maintenance to benefit wildlife, protection of a rare species of fern, and cost. The nonlinear nature of the relationships among the variables is explicitly explored. An ordered probit model is used to estimate preferences. The results are used to compute marginal rates of substitution (MRS), that is, the tradeoffs that landowners are willing to make to achieve changes in the levels of other objectives.

Methods

The Dillman (1978) Total Design Method was used to design a survey that was mailed to 1,250 forest-land owners who hold at least 10 acres of forest land in Franklin County, Massachusetts. In addition to answering questions on his or her attitudes toward land management and demographics, each respondent completed a conjoint survey. The useable response rate was 61.3 percent.

Conjoint analysis is a technique for measuring psychological judgments and is frequently used in marketing research to measure consumer preferences (Green et al., 1988). Respondents make choices between alternative products or scenarios that display varying levels of selected attributes. The utility of each attribute can be inferred from the respondent's overall evaluations. These partial utilities indicate the relative importance of each attribute's contribution to overall preference or utility. They can be combined to estimate relative preferences for any combination of attribute levels. Conjoint techniques are well suited for soliciting and analyzing preferences in environmental decisions that frequently entail tradeoffs between costs and benefits that are not represented efficiently in market transactions.

Forest-land owners in Franklin County were asked to rate four alternative management scenarios for a hypothetical forested property shown in a figure within the survey. The figure included an area of apple trees, a section of rare ferns, and a recreational trail that passed through the sample property. Each alternative was rated on a scale of 1 to 10, with 10 representing alternatives that they definitely would undertake and 1 those that they definitely would not undertake. Ratings of 2 to 9 represent how likely they would be to undertake alternatives about which they were unsure. Each alternative varied by one or more of the following five attributes: the proportion of the apple trees to maintain on the hypothetical property, the proportion of rare ferns to protect, the extent of the trail network to improve, the extent of timber harvesting, and cost. An orthogonal array was used to create a succinct subset of attribute combinations that allows estimation over the entire range of attribute values (3^5 = 243 possible combinations). The resulting 18 alternatives were assigned

to questionnaires in equal frequency. Each alternative consisted of a unique bundle that included all five individual attributes. Each attribute had one of the three possible levels appearing in parentheses. Alternatives appeared as follows:

- Maintain (none/half/all) of the apple trees shown on the figure that benefit wildlife.
- Protect (none/half/all) of the acres containing a rare species of fern shown on the figure by not harvesting timber in this area or otherwise disturbing the ferns.
- Improve (none/half/all) of the trail network shown on the figure. Improvements, if any, would include the cost of building a footbridge over the stream and clearing scenic vistas.
- Harvest timber from (none/half/all) of the lands shown on the figure. Any harvest would be selective, designed to remove poorly formed and leave some high-quality trees; 25 to 30 percent of all trees would be removed.
- This option would have a net cost to you of $ (50/250/500).

A secondary objective of the survey was to examine landowner attitudes about collaborative management. Landowners were partitioned into two groups. Each group received an identical questionnaire except one group that was asked to imagine that they owned a portion of the hypothetical property described earlier and to rate their willingness to cooperate with adjoining landowners to achieve the management objectives depicted by the alternatives. Because the objective here is to illustrate the conjoint technique and a procedure for estimating nonlinear effects on preferences and not collaboration, responses for both groups are pooled for estimation.

A random utility model was used to explain forest-land owner preferences. When presented with a set of alternatives, individuals are assumed to make choices that maximize their utility or satisfaction. The utility that the ith individual derives from the jth alternative (U_{ij}) can be represented as:

$$U_{ij} = X'_{ij}\beta + e_{ij}$$

where X_{ij} is a vector of variables, which may include transformations of variables, that represent values for each of the five attributes of the jth alternative to the ith individual; β is a vector of unknown parameters; and e_{ij} is a random disturbance, which may reflect unobserved attributes of the alternatives, random choice behavior, or measurement error. In the empirical study under consideration, a respondent's utility level (U_{ij}) for each alternative is not observed, but a rating (r_j) is observed that is assumed to proxy for his or her underlying utility.

Following McKenzie (1990, 1993) and others, the analytical capabilities of the conjoint rating model can be illustrated by assuming that rating (r_j) can be modeled as a linear combination of the variables representing the attribute levels. Typically, only linear effects are considered but we modify the analyses to include quadratic effects to test for nonlinear relationships:

$$r_j = a + b_1x_{1j} + b_2x_{2j} + \ldots + b_nx_{nj} + q_1x_{1j}^2 + q_2x_{2j}^2 + \ldots + q_nx_{nj}^2$$

The estimated partial utilities are the combined linear (b_n's) and quadratic (q_n's) effects of a discreet change in the level of the associated attribute on overall preference. Relative overall preference for any alternative (combination of attribute levels) can be determined by summing across Equation 2.

The MRS is the rate at which an individual is willing to trade one good for another while remaining equally well off (Nicholson, 1978). The MRS or acceptable tradeoff of one attribute for another is determined by the ratio of the marginal responses. Setting the total differential of (2) to the point of indifference and solving yields the marginal rates of substitution or the acceptable tradeoffs for the respective attributes:

$$dr_j = b_1dx_{1j} + b_2dx_{2j} + \ldots + b_ndx_{nj} + 2q_1x_1dx_{1j} + 2q_2x_2dx_{2j} + \ldots + 2q_nx_ndx_{nj} = 0$$

$$dx_{1j} / dx_{2j} = -(b_2 + 2q_2x_2) / (b_1 + 2q_1x_1)$$

Results

Seventy-eight percent of Franklin County is forested, most of which is in nonindustrial private ownership. The average respondent owned 60 acres of forest land, and 70 percent of the parcels were fewer than 100 acres. Nearly 80 percent of the respondents lived within 5 miles of their woodland, 60 percent had owned their land more than 15 years, and one-third had a management plan. Approximately half of the owners were 55 or older, and 74 percent had completed at least 1 year of college.

The model was estimated using a polychotomous probit technique developed by McKelvey and Zavoina (1975) to analyze ordinal level dependent variables. The dependent variable (r_j) is the rating for each alternative scenario and was coded from 0 to 9. The explanatory variables (attributes) were coded 0.0, 0.5, and 1.0 to account for the proportions of apple trees to maintain, trail improvements, fern protection, and extent of timber harvesting. Cost was coded in units of $100 (0.5, 2.5, and 5.0). Each respondent rated four alternatives for a total of 2,504 rated scenarios. The results are shown in Table 1.

The estimated signs and relative magnitudes of the coefficients provide information on the respondents' preferences. As expected, increased levels for each of the attributes except cost had a positive effect on ratings. The magnitude of the positive effects of maintaining apple trees to benefit wildlife and fern protection were greater than those for trail improvements and extending the area available for timber harvesting (which also can be interpreted as lower restrictions on harvesting). Landowners, therefore, generally placed higher value on wildlife and other nontimber amenities (Birch, 1996; Brunson et al., 1996) and with the attitudinal aspects of this survey (Rickenbach et al., 1998).

Table 1. Ordered Probit Parameters for a Multiattribute Conjoint Rating Survey (Dependent Variable = Rating, Coded 0 to 9, N=2,504)

Variable	Coefficient	Std. error	t-ratio
Constant	-0.1785	0.0701	-2.55
Linear effects:			
Apples	1.1019	0.1955	5.64
Ferns	1.3040	0.1871	6.97
Timber	0.2142	0.0521	4.11
Trails	0.8580	0.1863	4.61
Cost	-0.0415	0.0116	-3.57
Quadratic Effects:			
$(\text{Apples})^2$	-0.5264	0.1836	-2.87
$(\text{Ferns})^2$	-0.6996	0.1784	-3.92
$(\text{Trails})^2$	-0.6570	0.1841	-3.57

All variables were significant at the 1% level.
Log-likelihood = 5179.1

A commonly accepted economic precept with intuitive appeal is that one's preference for more of a particular good depends on how much of the good one already has and that willingness to trade among goods depends on the quantities of each good in one's possession. Quadratic effects were examined to estimate these expected nonlinear relationships. The quadratic terms for apple tree maintenance, fern protection, and trail maintenance were negative and statistically significant, which indicates decreasing marginal benefits for these attributes. The partial utility or the contribution of an individual attribute toward the total utility provided by an alternative is determined by combining both the linear and quadratic effects at a given attribute level. For example, the partial utilities for fern protection at levels none, half, and all are 0.0, 0.477, and 0.604, respectively (computed as $b_i x_i + q_i x_i^2$). Thus the increase in utility resulting from an increase in fern protection from none to half is 0.477, while the increase from half to all is 0.127. It appears that marginal increases in utility decreased once respondents believed that a significant portion of the ferns were protected or the apple trees maintained. Although respondents favored initial trail improvements, similar calculations indicate that maintaining all of the trail network versus just half actually decreased overall utility or preference for an alternative.

To examine the tradeoffs that respondents were willing to accept among the objectives marginal rates of substitution can be computed for any two attributes at the selected levels using Equation 3. The tradeoff between cost and attaining management objects is frequently useful to policymakers. The MRS between cost and the other attributes shown in Table 2 illustrate the notion of decreasing marginal benefits. Landowners were willing to incur less additional cost to maintain apple trees or protect ferns as the amounts of these attributes already under protection increased. For example, landowners on average were willing to incur a cost of $23 to protect an additional percentage of the ferns if only 25 percent were currently under protection, but only $6 if 75 percent already were being protected.

The trade-offs that landowners are willing to accept between two attributes may be determined at any level selected for each attribute by computing the MRS for the attributes directly using Equation 3 or by comparing the MRS between each attribute and cost. For example, if half of the apple trees are currently being maintained, Equation 3 can be used to determine the level at which landowners become indifferent between additional trail improvements and increased apple tree maintenance. The MRS equates to one when apple tree maintenance is at 50 percent and trail improvement is at approximately 21 percent. Thus landowners would prefer to improve the trail network up to the 21-percent level over additional apple tree maintenance at 50 percent. At this level, landowners would be willing to incur the same additional cost to improve an additional 1 percent of the trail network or to maintain an additional 1 percent of the apple trees.

Table 2. Marginal Rates of Substitution, Cost ($) per 1-percent Increase in Listed Variable at Indicated Initial Level

Level	Apples	Ferns	Trails	Timber
0.00	26.54	31.40	20.66	5.16
0.25	20.20	22.98	12.51	5.16
0.50	13.86	14.56	4.36	5.16
0.75	7.52	6.13	*	5.16
1.00	1.18	*	*	5.16

* Negative

Summary

Nonindustrial, privately owned forests are expected to play an important role in meeting needs for a wide range of forest-related benefits. Estimates of the relative values that landowners place on various nonmarket benefits provided by their land and the costs they are willing to incur to achieve different levels of these benefits are useful to policymakers. Conjoint techniques are well suited for assessing the relative values and acceptable tradeoffs (MRS) among various management objectives. Including quadratic effects allows estimation of nonlinear MRS, which economic theory and these empirical results suggest are important.

Landowners in Franklin County, Massachusetts, generally placed higher values on the ecological aspects (fern protection and apple tree maintenance) of management alternatives than on use-related aspects (timber harvesting and recreational trail improvements). Both fern protection and apple tree maintenance exhibited decreasing marginal rates of substitution. Although landowners feel strongly about providing these benefits, their willingness to make tradeoffs between these and other objectives or to incur additional cost depended greatly on the current levels to which the objectives were being met.

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Personal Relevance, Involvement & Loyalty in Outdoor Recreation

PSYCHOLOGICAL COMMITMENT AS A MEDIATOR OF THE RELATIONSHIP BETWEEN INVOLVEMENT AND LOYALTY

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Abstract: This study tested the ill-understood issues of involvement and loyalty relations. Even though many studies have indicated that loyalty is a function of involvement, only minimal agreement has been reached on the extent to which the constructs of involvement would predict repeat participation. A structural model is developed that relates members' involvement and loyalty using psychological commitment as a mediator. Results suggest that involvement has both a direct and an indirect effect on loyalty and confirm the role of psychological commitment as a mediator between involvement and loyalty.

Introduction

In recent years, leisure scholars have shown increasing references to loyalty and its antecedents in leisure activities or programs (Gahwiler & Havitz, 1998; Iwasaki & Havitz, 1998; Kim, Scott, & Crompton, 1997; Park, 1996). Their studies have emphasized that participants' involvement and psychological commitment are major concepts in the formation of loyalty. Psychological commitment has earned special attention as an essential part of the process of the formation of loyalty (Pritchard, Havitz, & Howard, 1999). Involvement, however, has not yet been empirically linked to loyalty. Even though studies show that involvement and loyalty gauge the success and effectiveness of agencies, only minimal agreement has been reached on how the constructs of involvement and loyalty should be developed and how involvement will predict the strength of repeat participation. Thus, this study will identify the relationship between involvement and loyalty, and test these relations with psychological commitment as a mediator.

Literature Review

Involvement

While scholars have reached consensus that involvement means personal relevance or psychological identification toward an object (McIntyre & Pigram, 1992; Selin & Howard, 1988), there are still various definitions of involvement in the literature. Conceptual definitions of involvement have differed with regard to the content and objects (Costley, 1988).

The content dimension proposes two positions of involvement along an antecedent-consequence continuum. First, the state approach explains involvement as a state of identification or social psychological attachment toward an object. In this sense, involvement is defined as "an unobservable state of motivation, arousal or interest toward a recreational activity or associated product" (Rothschild, 1984, p. 216). According to Selin and Howard (1988), individuals identify themselves by developing psychological attachment towards a recreational activity--'ego' involvement. Similary, relating the concept of ego and self, the personal relevance of a recreational activity is called 'enduring' involvement. 'Enduring' involvement refers to more permanent attachment while 'ego' involvement implies more situational feelings (Schuett, 1993). Whatever it is called, involvement is explained as a psychological concept from the perspective of being an affective state.

The second approach to describing involvement is a response-based perspective. It takes the consequent position of the involvement continuum. It is generally defined as behavioral involvement, that is the degree of personal relevance an activity holds for an individual and related behavioral consequences (Bloch, Black & Lichtenstein, 1989). It is also measured by response patterns such as frequency of participation, time and money spent, and type of information sources (Kim, Scott & Crompton, 1997).

Approaches to the involvement construct also differ in terms of the objects they attend to (Costley, 1988). In the field of marketing, the direction of brand-specific involvement, advertising involvement, or situational involvement is different in nature. In the field of recreation, the object of involvement can be an activity, service provider, or destination. Generally, leisure involvement refers exclusively to activity involvement. Activity involvement is most frequently studied in the field of recreation and tourism (Havitz & Dimanche, 1997). In some cases, activity involvement is defined as commitment to a specific activity or program (McIntyre & Pigram, 1992). On the other hand, activity involvement refers to the identification of self with an activity or program (Siegenthaler & Lam, 1992). Recently, there are volumes of studies showing that activity involvement is different from commitment but related to it (Kim, Scott & Crompton, 1997; Iwasaki & Havitz, 1998).

With regard to the measurement of involvement, Havitz and Dimanche (1990) proposed several propositions about involvement in the context of recreation and tourism. Among them, the first proposition addresses an important issue of involvement measurement: "Multifaceted scales that portray the involvement construct as a profile of scores, rather than as a single score, are most appropriate for measuring involvement with recreational and tourist experience" (Havitz & Dimanche, 1990, p. 184). Even though single-faceted measurement may be accepted as reliable measurement (Zaichkowsky, 1985; Kim, Scott & Crompton, 1997), it is generally believed that multiple dimensions of measurement contribute to the representation of complex involvement concepts (Havitz & Dimanche, 1997).

As multifaceted measurement better represents involvement concepts, the dimensions of involvement is another issue. Generally, involvement dimensions developed by Laurent and Kapferer (1985) are adopted and modified in leisure and recreation studies. Their study suggested a multidimensional approach with five facets: interest, pleasure, sign, risk importance, and risk probability. While this scale was developed exclusively for consumer goods and services, recreation scholars adjusted it to the concept of recreation and tourism.

Most researchers accept three dimensions of involvement in recreation and leisure (Havitz & Dimanche, 1997). First, perceived importance/interest of activity has been an essential part of involvement (Selin & Howard, 1988; Schuett, 1993; Havitz & Dimanche, 1990, Park, 1996). Every current study includes importance/interest as a facet in the construction of involvement (Havitz & Dimanche, 1997). Enjoyment/pleasure value has been also embraced as a major dimension of involvement in the leisure literature because it reflects a significant element of the leisure concept (Selin & Howard, 1988; Siegenthaler & Lam, 1992; Park, 1996). In addition, sign/self-expression value has been identified as another major component of involvement (Kim, Scott & Crompton, 1997; McIntyre & Pigram, 1992).

Many authors suggest that loyalty and involvement are different constructs and involvement is an antecedent of loyalty (Park, 1996; Siegenthaler & Lam, 1992; Iwasaki & Havitz, 1998). Related to recreational activity, Siegenthaler and Lam (1992) compared loyalty and involvement, suggesting that loyalty is a consistent behavior that involves dedication and consistency, while involvement is self-identification with an activity. Therefore, loyalty focuses more on behavior and attitude while involvement comprises self-image, interest, centrality, and importance. Even though a substantial amount of research suggests that involvement plays an important role in the formation of loyalty, no empirical studies have been conducted to date to explore the linkage between these constructs.

Loyalty

The loyalty construct has earned considerable attention not only in the field of consumer behavior but also in leisure research (Backman & Crompton, 1991; Iwasaki & Havitz, 1998). The development of the construct of loyalty has evolved within the framework of behavioral, attitudinal, and composite concepts in the field of marketing. First, loyalty was defined as an overt behavior or consequences of behavior (Cummingham, 1956). Therefore, it centers on repeat patterns of the same brand over time. Later, the attitudinal component of loyalty earned attention as a better way of understanding the underlying psychological phenomenon behind behavior. Thus, the attitudinal definition of loyalty focuses on customers' preferences and emotional attachment (Day, 1969). Then, the composite conceptualization of loyalty emerged. In this notion, loyalty is viewed as a two-dimensional phenomenon that is a function of psychological attitudes and behavioral repetition over some period (Jacoby & Kyner, 1973). This concept allows the categorization of the extent of loyalty as high, spurious, latent, and absent (Backman & Crompton, 1991; Dick & Basu, 1994).

Recently, an alternative explanation of loyalty formation has been suggested. Some researchers have argued that the integration of behavioral and attitudinal loyalty does not reflect the sensitive underlying development of the loyalty process (Iwasaki & Havitz, 1998). Therefore, it has been suggested that access to consumers' beliefs, affect, and intention phases in the attitude-behavior development structure would contribute to the development of the construct of loyalty (Oliver, 1999). Consumers develop loyalty following a cognition-affect-intention pattern and become loyal at each attitudinal phase. That is, consumers become loyal in a cognitive phase first and then in an affective manner, followed by an intentional stage and, finally, they express loyalty behaviorally.

The first phase of loyalty is cognition that is developed through available information. This loyalty is based on consumers' belief that the available information indicates one option is preferable to its alternatives. Cognitive consideration includes accessibility, confidence, centrality, and clarity (Dick & Basu, 1994). However, this stage of loyalty is more likely to be another concept of involvement rather than loyalty itself. The next stage is affective loyalty, which is developed in terms of satisfying experiences. In this phase of loyalty, the consumer develops a liking for or a preferential attitude toward the brand. Examples of affective loyalty are emotion, feeling, mood, and primary affect. Yet, there are also difficulties in effectively measuring the affective side of loyalty.

Conative loyalty is developed after the cognitive and affective phases. It implies the behavioral intention to repurchase the brand. This stage of loyalty is defined as "a brand-specific commitment to repurchase" (Oliver, 1999, p. 35). Therefore, a consumer experiencing conative loyalty appears to be deeply committed to participate at first. Generally, loyalty is defined as the behavioral intention to maintain an ongoing relationship (Sheth, Sisodia & Sharman, 2000). Also, Andressen and Lidestad (1998) operationalized loyalty as participants' repurchase intentions and intentions to recommend to others.

Commitment

From a sociological perspective, the concept of commitment is explained as consistent behavior over some period caused by social pressure or side bet (Becker, 1960). Therefore, behavioral consistency and outside influences are important facets of commitment. Extending this view, Johnson (1973) proposed two distinct meanings: personal commitment and behavioral commitment. Personal commitment refers to an individual's dedication to achieve a line of action. Behavioral commitment is a consistent behavior, which consists of social and cost components.

Unlike the sociological definition that emphasizes the social aspect of commitment, the psychological perspective

stresses the role of personal commitment. Commitment is the "emotional or psychological attachment to a brand...[that] is usually considered in purely cognitive terms that measure consumer attitudes of attachment to a brand" (Pritchard, Havitz & Howard, 1999, p. 334). According to Buchanan (1985), commitment is defined as "the pledging or binding of an individual to behavioral acts which result in some degree of affective attachment to the behavior" (p. 402). Therefore, psychological attachment is considered as a key component of commitment.

Many researchers have arrived at an increasingly accepted consensus that commitment and loyalty are different but related concepts (Pritchard, Havitz & Howard, 1999; Kim, Scott & Crompton, 1997). Dick and Basu (1994) indicated that relative attitude is predicted by the strength of psychological antecedents, that is, commitment influences loyalty. Further, models provided by previous studies confirm that commitment serves as a predictor of loyalty and repatronage (Dick & Basu, 1994; Pritchard, Havitz & Howard, 1999).

Related to the role of commitment in loyalty, Jacoby and Kyner (1973) explained that "the notion of commitment provides an essential basis for distinguishing between brand loyalty and other forms of repeat purchasing behavior and holds promise for assessing the relative degrees of brand loyalty" (p. 3). Also, Samuelsen and Sandvik (1997) insisted that loyalty results from commitment for two main reasons: affective reasons and cognitive motives. Affective commitment is an emotional attachment to the brand while calculative commitment refers to perceived risk in performance among alternatives. In conclusion, commitment that focuses on psychological attachment is an antecedent of loyalty that extends the meaning of loyalty over a simple habitual purchase and preference.

As an improvement in the measurement of commitment, Pritchard, Howard, and Havitz (1992) adapted the theory of psychological commitment (Crosby & Taylor, 1983) as a basis for the operationalization of the Psychological Commitment Instrument (PCI). The primary aspect of the PCI is symbolic consistency that measures overall reluctance to change important associations with service. The second factor of PCI is volition, which is related to components of free choice and control in one's preference for a service. Positional involvement is the third factor and refers to personal values and self-images perceived in association with a service. Additionally, informational complexity, which deals with ones' cognitive structure and how consumers manage information about their preference, contributed to the measurement of commitment (Pritchard, Havitz, & Howard, 1999). According to the previous studies, it is evident that psychological commitment plays an essential role in the formation of true loyalty. Therefore, it is suggested that psychological commitment has a direct effect on loyalty. Also, involvement influences the construct of loyalty. However, it is not clear if involvement has a direct or indirect effect on loyalty and how much it will influence the strength of loyalty. Therefore, this paper addresses: 1) the relationship between involvement and loyalty, and 2) whether psychological commitment functions as a mediator between involvement and loyalty. The hypothesized model and its null model of involvement, commitment, and loyalty are shown in Figure 1.

Methods

Study Sample

The subjects for this study are YMCA members who purchased a membership within the last year. A convenience sample of 152 subjects was drawn from the Bellefonte Pennsylvania Family YMCA. The sample consisted of approximately 60% females with an average age of 41 years. More than 70% of the respondents were married and had a college background.

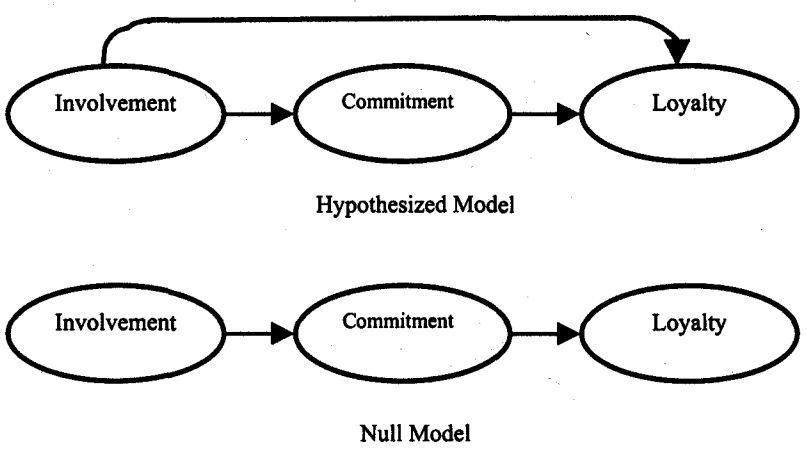


Figure 1. Hypothesized Model and Null Model of Involvement and Commitment and Their Linkage to Loyalty

Instrumentation

Measurement of involvement used a three-dimension involvement scale that is frequently used in the field of recreation and leisure (Havitz & Dimanche, 1997). The dimensions were perceived importance/interest, enjoyment/pleasure, and sign/self-expression value (10 items). Loyalty was measured with the conative loyalty scale. Conative loyalty has been proven by many researchers to be a good indicator of the construct of loyalty (Andressen & Lidestad, 1998; Webster & Sundaram, 1998; Singh & Sirdeshmukh, 2000). Conative loyalty asks about intention of repatronage and advertising by word of mouth (4 items). Psychological commitment was measured with parts of the PCI (Pritchard, Havitz & Howard, 1999). Resistance to change, volitional choice, and informational complexity were the indicators used to measure psychological commitment (5 items).

Results

Prior to testing the structural model in Figure 1, a confirmatory factor analysis (CFA) was conducted to assess the statistical fit of the observed data. Measurement of CFA and the structural equation model were examined with EQS 4.0, a structural equations program. Since every dimension of each factor was specified in advance by theory, CFA can allow for correlation among factors if theoretically justified. CFA produced a chi-square statistic of 253.9 (df=149, $p < .01$), with a comparative fit index (CFI) and non-normed fit index (NNFI) of .93 and .94, respectively. Further, it generated standardized RMR (SRMR) and root mean square error (RMSEA) values of .07, indicating an acceptable level of fit to the data (Figure 2). Although certainly of concern, the overall fit of the measurement model was of secondary importance in the study. The primary concern was to examine the hypothesized causal relations between involvement and loyalty and to test the role of psychological commitment between them.

To test the role of psychological commitment between involvement and loyalty, the hypothesis of the null model was examined: Involvement has a direct and positive effect on psychological commitment and psychological commitment has a direct and positive effect on loyalty. Estimates for the structural model are contained in Table 1. Results of the paths in the null model suggest that involvement affected psychological commitment. The effects of involvement were positive and significant. Further, psychological commitment influenced loyalty directly and positively. The goodness of fit indices of the null model support the role of psychological commitment as a mediator of the relation between involvement and loyalty.

The examination of the path between involvement and loyalty in the null model suggests an indirect effect of involvement on loyalty. The estimated parameter between involvement and loyalty is .40 (.60 x .67). On the other hand, an estimate of psychological commitment to loyalty is .67. This indicates that the effect of involvement on loyalty is smaller than the effect of psychological commitment on loyalty, confirming the importance of the role of psychological commitment to explain loyalty. But, is it true that psychological commitment has a bigger effect on loyalty compared to involvement?

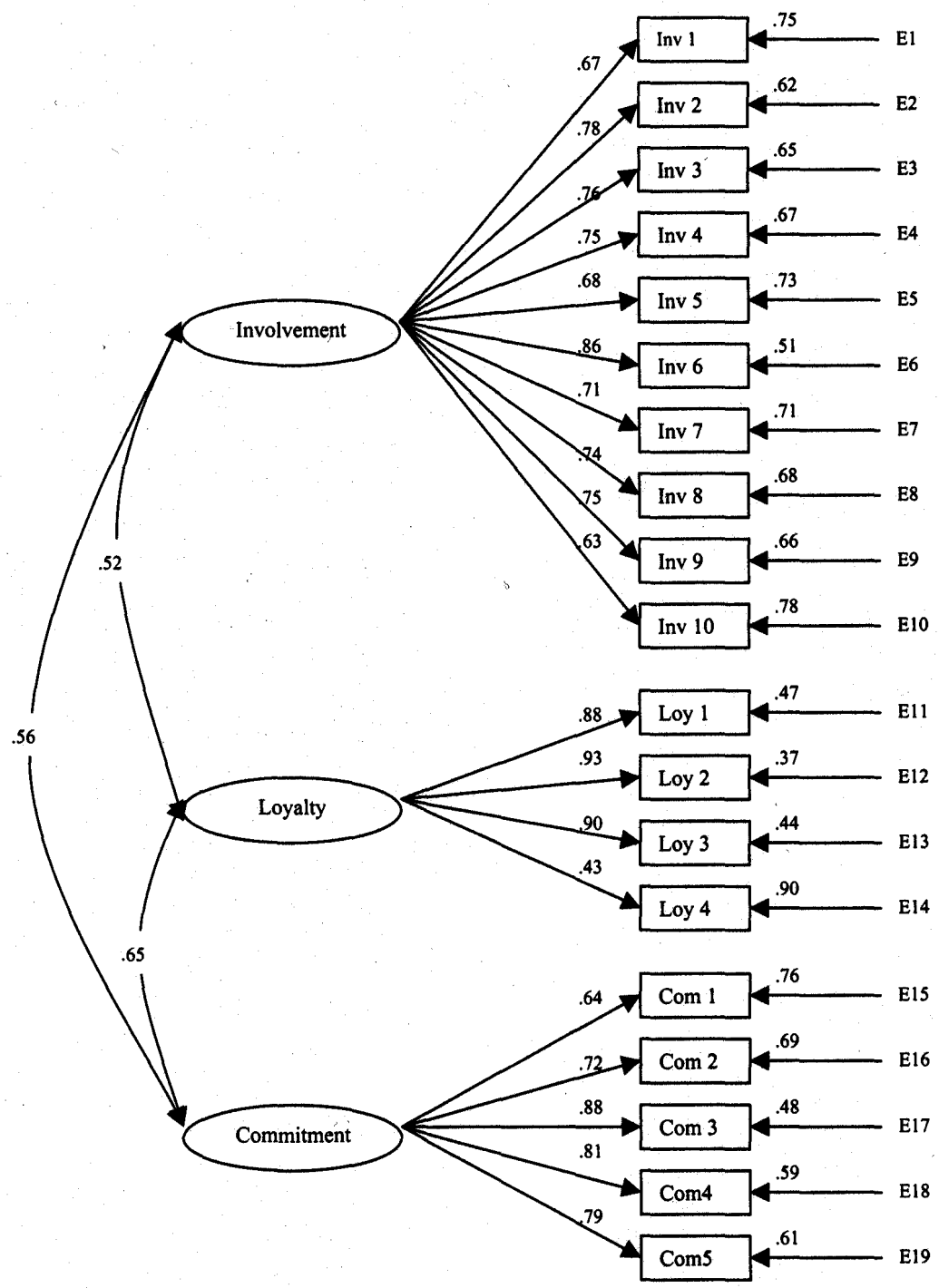
To test the relationship between involvement and loyalty, a direct path was added between them. The hypothesized model met the fitness criteria with an acceptable level (Table 1). Then, the chi-square difference test was employed to determine whether the hypothesized model performed better than the null model (Bagozzi & Yi, 1988). Results showed that the hypothesized model provided a significant improvement over the null model: $\chi^2 = 283.1$ and $\chi^2 = 230.8$ respectively (with 1 degree of freedom difference).

In the hypothesized model, the total effect of psychological commitment is simply the direct effect associated with the path to loyalty (.58). In contrast, the total effects of involvement are defined by the sum of its direct and indirect effects (.58 x.24 + .51 = .65). This total effect is bigger than the total effect of psychological commitment. Therefore, the importance of involvement for explaining loyalty cannot be underestimated.

Table 1. Estimates for the Null Model and Hypothesized Model

Null Model		Hypothesized Model	
Parameter	*Estimates*	*Parameter*	*Estimates*
Involvement → Commitment	.60 *	Involvement → Commitment	.51 *
Commitment → Loyalty	.67 *	Commitment → Loyalty	.58 *
		Involvement → Loyalty	.24 *
Goodness of fit indices			
Chi-square	= 283.1 (df=144)	= 230.8 (df= 143)	
Non-normed fit index	= .94	= .94	
Comparative fit index	= .95	= .95	
Standardized RMR	= .08	= .07	
Root mean sq. error of app.	= .07	= .06	

* p> .05



NOTE: Chi-square = 253.54 (df.149); Bentler-Bonett Nonnormed fit index (NNFI) / Comparative fit index (CFI) = .93 / .94; Standardized RMR (SRMR) / Root Mean SQ. Error of App. (RMSEA) = .07 / .07

Figure 2. Estimates for Measurement Model

Discussion and Conclusion

Several things should be noted concerning the results shown in Table 1. First, results for the two models of mediation show that the effect of psychological commitment is present. Even though some researchers still recognize loyalty and psychological commitment as identical concepts (Park, 1996; Buchanan, 1985; Jacoby & Kyner, 1973), there is increasing consensus that commitment and loyalty are different and psychological commitment is an important antecedent of the structure of loyalty (Pritchard, Havitz, & Howard, 1999; Kim, Scott, & Crompton, 1997). The findings of this study confirm the existence of a mediator between involvement and loyalty, and show the important role of psychological commitment in this relationship. Therefore, managers may strengthen loyalty by maximizing the strategies that emphasize the dimensions of psychological commitment. For example, using diverse information sources such as the Internet and newspapers can increase the consumers' information search dimension.

Second, the importance of involvement to loyalty should be recognized. The model developed in this study suggests the strong influence of involvement on loyalty. The model suggested two significant paths between involvement and loyalty: a direct effect and an indirect effect through a mediator. Even though the direct effect of involvement on loyalty was smaller than the direct influence of commitment on loyalty, the total effects of the constructs suggest that involvement is an equally important predictor of loyalty. Even though many studies have implied that involvement predicts loyalty, no empirical linkage has been revealed to explore the path between them. The findings of this study emphasize the importance of involvement to explain the strength of loyalty, as the model supported a strong linkage between them. Therefore, it is important for managers to focus on providing interesting and enjoyable programs to members, which may lead to increased repatronage by the members.

Several suggestions may be made to improve further studies. The primary limitation of this study is its generalizability. Even though members of the YMCA were well suited to examine the theoretical linkage among the concepts, the small size of the sample from only one YMCA may be questioned. Additional research is required that allows for improved generalizability. Also, the construct of loyalty is debatable. Several studies have recognized the deficiency of the operationalization of loyalty and the effort to reveal the concrete conceptualization of loyalty is still an undergoing process. Even though the intentional aspect of loyalty is well established as a dependable definition, more investigation of the loyalty construct is needed.

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Gender Issues in Outdoor Recreation & Resource Management

OLDER CHINESE WOMEN IMMIGRANTS AND THEIR LEISURE EXPERIENCES: BEFORE AND AFTER EMIGRATION TO THE UNITED STATES

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Abstract: The concept of leisure has generally focused on men. This is especially true in Chinese society where women seldom have the right to speak about leisure or mention leisure activities. For many Chinese women, the integration of household and leisure has been necessary to find meaning in life. Based on this concept, we explored older Chinese women immigrants' leisure experiences before and after their emigration to the United States and barriers that they faced in the United States. The researchers used an in-depth interview approach to discover how 9 older Chinese women immigrants interpreted their leisure. Following the in-depth interviews six themes emerged: 1. women's leisure experiences (e.g., watching TV, walking, shopping, exercising, attending church and gardening) after emigration; 2. barriers (e.g., language, transportation and cultural differences) the women experienced in the United States; 3. traditional Chinese values and their effect on the women; 4. religious activities as an important social link; 5. free time or leisure not a problem, and 6. satisfaction with life and positive attitudes toward the future. The findings are useful because more and more Chinese people are emigrating to the United States, and the number of Chinese older immigrants is increasing. In addition, the results give insight into barriers Chinese women face. This information will allow recreation, tourism and resource managers and researchers to think about how they need to market and manage their resources for this ethnic group. As for the marketing aspect, managers and planners may create promotional pieces in Chinese and hold activities for the women in parks and other recreational areas. In terms of management, they should recognize the women's unique language and cultural barriers and recruit bilingual and bicultural professionals to understand the women's needs for adequate leisure activities or programs.

Introduction

"It seems to be a unique rule that when men have established themselves as rulers, they proceed at once to make laws and evolve doctrines to limit the freedom and power of women" (Tseng, 1992, p. 74). In traditional Chinese society, marriage is the final fate for a Chinese woman. She not only marries, but also dedicates her life to her spouse's family. She has to undertake all the daily chores and responsibilities, such as serving her parents-in-law, taking care of her spouse, raising or nurturing their children and doing all the household chores. To her, it is her duty, her life.

Today, unlike traditional Chinese society, Chinese women are more conscious of their own being and desire to be treated equally (Tseng, 1992). Constraints, however, still exist in that even if a woman works outside the home, she still must assume responsibility for the household duties with little time to think about herself and even less time for leisure.

In 1965, the passage of the Immigration and Nationality Act equalized immigration opportunities to the United States for Chinese people, especially for Chinese women (Cafferty et al., 1983). Before 1965, because of the immigration and naturalization restrictions for Chinese people, most Chinese immigrants were men. After the passage of the Immigration and Nationality Act, the number of Chinese women and Chinese older immigrants increased gradually. Immigration to the United States has had an effect on Chinese culture. Kim, Kim, and Hurh (1991) indicated a movement away from the traditional Chinese value that older Chinese immigrants are to be taken care of by and to live with their children. Gutierrez (1992) found that the failure of service planners and providers to offer culturally relevant services may be based on assumptions that family members or their own communities act as caregivers to Chinese older adults; however, few studies support this notion.

In the past 10 years, there have been numerous studies about leisure and older adults in the United States; however, little leisure research has been completed on America's ethnic minorities, especially on older immigrants. Barriers to social interaction and interpersonal communication experienced by many older Chinese people accelerate their depression and psychosomatic illness. Older Chinese women immigrants with problems such as language barriers, cultural differences, loneliness, helplessness and economic disadvantage may encounter more diseases, psychological problems or a lack of a social network than native older adults. Many older Chinese immigrants cannot read, speak, or write in English and cannot drive, isolating them from and causing a lack of integration into American culture (Kauh, 1999; Tsai & Lopez, 1997).

Furthermore, the U.S. Census Bureau reported the number of foreign-born Chinese immigrants was 1,107,000 in 1997, and predicted that more and more Chinese people will emigrate to the United States. Goldstone (1997) estimated that, in the next decade, the conflicts between the Beijing regime and Hong Kong or Taiwan could raise attempted emigration from China, also increasing the number of Chinese people in the United States. Leisure researchers, however, have not studied Chinese people's leisure experiences in the United States, especially concerning those of older Chinese women immigrants and barriers affecting their leisure experiences creating a need to explore this topic.

Constraints on Women's Leisure

In the past 10 years, there has been a tremendous growth in research on women's leisure. Much of this research is focused on the relationship between gender and leisure. Shaw (1985) examined three approaches to the analysis of women's leisure and discussed ways to integrate the ideas and concepts from these different approaches. The first and dominant approach was to understand how women's leisure is constrained. "Evidence of gender inequality in many areas of social life leads to the expectation that inequality is likely to exist in leisure as well" (Shaw, 1985, p. 9). The strongest argument here is that women are so oppressed that it is impossible for them to have a fulfilling leisure experience. Other common constraints to women's leisure include temporal constraints, economic constraints and lack of opportunities or facilities (Jackson, 1988). The ethic of care is also connected to women's roles as the first caregiver in the family and helps to explain how family responsibility restrains women's leisure.

The "leisure as constraining" was the second approach focusing on how participation in certain kinds of activities influences women's lives and positions within society. Samdhal (1992) held this view and suggested that leisure is not a gender-neutral aspect of social life. The narrow range and stereotypical nature of the social activities considered appropriate for women constrain women's leisure participation. Leisure may constrain women by reducing options and opportunities for non-traditional activities.

The third approach Shaw (1985) used to analyze constraints on women's leisure examined ways in which women's leisure has the potential for resistance from societally imposed constraints. The ideas of agency and leisure as freely chosen or as self-determined are two important theoretical notions that support the argument for resistance. The idea of agency notes that women (and men) are social actors who interpret social situations and actively construct their responses (Mead, 1934). This argument is also based on a conceptualization of leisure while penetrating notions of personal choice, control, and self-determination. Through these notions, traditional views are challenged and women may regain or create a sense of themselves, even effecting gender equality (Shaw, 1994).

The three different approaches are compatible, based on three guiding principles to formulate a framework – 1. recognition of the contradictory aspects of leisure in women's leisure; 2. the different ways in which constraining factors are associated with women's leisure and, 3. the different ways in which resistance can be associated with women's leisure (Shaw, 1994). Then, this broader framework incorporated by these ideas recognizes the diversity of women's lives and experiences and emphasizes the need to understand women's leisure in the context of their everyday experiences as mediated by social structures.

Immigrants Studies

In recent years, the analysis of leisure behavior among specific ethnic populations has received widespread attention. The increasing older immigrant population places great demands on federal, state and local government agencies to respond with policies and programs that are sensitive to the needs of culturally diverse older immigrant populations (Allison & Smith, 1990).

Allison and Geiger (1993) interviewed 25 older Chinese-American individuals about the types of activities they engaged in, the nature of those activities and the reasons for continued participation in those leisure activities. They found that the types of leisure activities the older Chinese-American immigrants engaged in (e.g. walking, gardening, watching television and reading) did not appear very different from other older cohort groups. Further analyses revealed that these same activities were traditionally characterized by Chinese culture.

Tirone and Shaw (1997) asked 10 women from India about their understanding and appreciation of the North American concept of leisure and to ascertain what life concepts were not central to them. The qualitative approach reflects the meaning, significance, value and role of leisure in the lives of people who are marginalized by ethnic identity or by cultural heritage (Hughes, Seidman, & Williams, 1993). Tirone and Shaw's study illustrated the centrality of family and the lack of private time, which is often associated with reducing opportunity for leisure. Leisure was not viewed as something important or desirable for these immigrant women. The results indicated that for some immigrants, cultural traditions from the person's country of origin continue to effect the person's life. One cannot assume that the Western view of leisure will be viewed positively by people of diverse ethnic backgrounds who have different life experiences.

In traditional Chinese culture, a woman's status is confined by gender roles. One Chinese maxim states that "a woman before marriage must identify her fate with that of her father, after marriage with that of her husband, and after the death of her husband with that of her son" (Tseng, 1992, p. 78). Today, the norms are not so stringent, but women's roles are still limited to family.

Most older women (and men) live with their adult children because "filial piety is the very important Chinese social value that promotes caring relationships between children and parents" (Tsai & Lopez, 1997, p. 80). Since most young couples must work, the household and child care naturally become the work of the older adults, especially older women. Taking care of grandchildren and doing daily chores are not viewed as 'work', but rather a type of leisure. Church is another important aspect of older immigrants' lives because it acts as a socilization outlet (Pogrebin & Poole, 1990). Some active older women participate in religious activities to help others. During these activities, they make their own decisions and achieve a sense of satisfaction.

More and more Chinese people, including Chinese older adults, emigrated to the United States because of the passage of the Magnuson Act of 1943 that removed many

immigration and naturalization restrictions for Chinese people (Cheng & Cheng, 1984). However, problems such as language barriers, cultural differences, loneliness and economic disadvantage limited their activities. They must rebuild their social network, a difficult task for them, because American's form of life was a new experience. The purpose of this study, therefore, was to ascertain the leisure experiences of older Chinese women immigrants before and after immigration to the United States and to discover barriers they encountered in their leisure pursuits.

Method

Symbolic interactionism emphasizes human interaction as mediated by the use of symbols, by interpretation, or by ascertaining the meaning of one another's actions (Mead, 1934). The main idea in Mead's analysis is that the human being has a self and can be the object of his or her own actions (Blumer, 1995). The presupposition is that "human society is made up of individuals who have selves (that is, make indications to themselves); that individual action is a construction and not a release, being built up by the individual through noting and interpreting features of the situations in which he acts; that group or collective action consists of the aligning of individual actions, brought about by the individual's interpretation or taking into account each other's actions" (Blumer, 1995, p. 209). Symbolic interactionists believe that human actions are constructed by themselves through interpreting situations or others' actions instead of reacting to others' actions. From this basis human beings interpret the world they belong to by themselves. To understand life experiences, researchers need to know how people interpret situations and construct actions while interacting with others.

The researchers used the phenomenological approach, focusing on "what people experience and how they interpret the world (in which case one can use interviews without actually experiencing the phenomenon oneself)" (Patton, 1990, p. 70). The phenomenological approach seeks to reflect the meaning, value, role and experience of leisure in the lives of people who are isolated by ethnic identity and by cultural heritage (Hughes, Seidman, & Williams, 1993).

Participants were selected from a Chinese church and a Chinese association. One researcher visited the church and the association and asked for volunteers. A total of 9 women agreed to participate in this study. Immigration status for the women included three permanent residents and six naturalized citizens. Their ages ranged from 60 to 76 years old. All women had been married and two of them were widowed. The length of stay for all women in the United States ranged from 2 to 40 years. Two women lived in the United States less than 5 years, two women between 6 to 10 years, three between 11 to 20 years and two more than 30 years. Five women came after their adult children emigrated to the United States, two women came with their adult children and two came to the United States as students. Four women were living with their husbands, sons, daughters-in-law and grandchildren and three were living close to or in the same community as their adult children. One woman had no children and was living with her husband. Four women could not speak any English and three women could speak only a little English. Two women who had been in the United States for more than 30 years speack fluent English.

The researchers used a small-scale qualitative research method under the symbolic interactionist theoretical framework. One researcher, fluent in Chinese and English, conducted the interviews. A bilingual assistnat accompanied the interview to assist in interpretation and clarification. The researcher and her assistant met each participant individually in a quiet, private place (the researcher's apartment, the participant's house, and the Chinese church).

The interviewer asked all participants to talk about their leisure experiences, about their families, their children, and about what contributed to their enjoyment, fulfillment and satisfaction before and after their emigration to the United States. The researchers created four primary research questions (Henderson, 1991) based on the qualitative philosophical assumption that there were multiple truths which were socially constructed. The four research questions included: What activities would you consider 'recreation' in your daily life? How do your roles as wife, mother, grandmother, daughter, friend, etc. affect your recreation? Describe an experience you enjoyed doing when you were in your homeland? How did your recreation activities change after emigrating to the United States? The interviewer maintained control of the interview by reminding participants to express their opinions, giving encouraging feedback and responding to both positive and negative emotions that gained the participant's confidence and contributed to the quality of the interviews. The interviewer also recognized problems that were associated with interviewing. For instance, the participants did not understand what "leisure" meant, so some familiar words such as "recreation", "enjoyment", "relaxation", and "satisfaction" were used as synonyms (Tirone & Shaw, 1997). The interviews were tape recorded, transcribed in Chinese, and then translated in English. Following the transcriptions, the researchers compared interviews to discover themes regarding leisure experiences (Lincoln & Guba, 1985).

Findings

Following the qualitative analysis, six themes associated with traditional Chinese values and diverse life experiences emerged.

Experiences of Leisure after Emigration

The women described all of the activities in which they engaged in during a typical weekday and weekend. Watching television, walking, shopping, exercising (e.g. morning exercises), attending church and gardening were the most common activities.

> I usually get up at 6:00 a.m. every morning and exercise alone in front of our house. Sometimes, my husband and I take walks around the community or exercise together.... Almost every

> weekend, I go shopping with my son and daughter-in-law. I do not go anywhere to have fun, but sometimes my son takes me to church on Sundays.
>
> I love watching Chinese videotapes. I don't understand English.... He (my son) installed a cable TV for me, so I can watch a lot of Chinese programs. I watch these programs every night and then go to bed.

The researchers then asked the women about the experiences they would consider leisure.

> I think the most important thing is relaxing. For instance, if you are in a hurry while practicing Tai Chi, you cannot relax, and cannot gain health from exercise, not to mention that you cannot experience "recreation" (leisure). So I think relaxing is very important when I experience "recreation" (leisure).
>
> Actually, I never think about it, I never even think about taking a rest.... I always think I want to do my best to take care of my husband, my children, and my grandchildren. They feel happy and so I feel happy.

The participants then talked about their personal interests and activities in which they participated in their hometowns in Taiwan and China.

> After retiring, I went to exercise and practice Tai Chi with my friends in a park every morning. There was a senior's club near my house. There were many kinds of activities there, such as Tai Chi, chess, older adults' disco and something else; I sometimes went there.

The women engaged in a lot of activities when they were in their homelands in Taiwan and China. In the United States, however, they indicated that they seldom participated in activities, even those activities they enjoyed in their hometowns.

> Actually, I don't engage in any activities. I know, in the United States, there is a place I can go to practice Tai Chi, but it is too far from my house, so I don't go there.... I love to exercise with friends just like I did in China; I don't like to do it alone. So, after emigrating to the United States, I just take walks with my husband; I do not do those other activities any more.

Barriers Experienced in the United States

Most participants talked about how barriers limited their opportunities to make friends and to become part of mainstream society. The amount of time they had been in the United States influenced these issues. One woman who had lived in the United States for 16 years said:

> I still remember three big problems we met after our first arriving to the United States: having no car, and not being able to speak and read English. I felt I was like a mute, a blind person and a person with no feet.

Four women in this study identified cultural differences as barriers. One woman said:

> I hope my children can "walk out", that is, to be involved in society; I really hope they can do so. We have been here more than ten years, but our living space is still very limited.... My children asked me many times, "Mom, why cannot we be involved in American society? Even ABC (American Born Chinese) cannot, either." I don't know how to answer; I sincerely hope they can "walk out".

Effect of Traditional Chinese Values

As the women in the study reflected on their lives, traditional Chinese values played an important role in their lives.

> In traditional Chinese values, taking care of children is the most important thing, then taking care of your husband; these are more important than I am.

Childcare was the most important responsibility to these older women, especially when their children were young. In most cases, the women had no time for themselves and no time for leisure when their children were young. A good summary of this is in the following statement:

> When I was in China, I was very, very busy and my daily life was like a battle. I have four children. I had to work six days a week and did a lot of housework on Sundays.... The hardest time I had was the time that my children prepared for the entrance exams and I was even more nervous than they were and could not sleep well during those periods of time because if they did not pass the entrance exam for going to college, they could not have found a job.... My life was so hectic during that time; I had no time to think about myself, not to mention time for leisure and also my health was not good either. I did not feel released until my youngest child passed the exam. It was the greatest relief to parents.

Importance of Attending Religious Activities

The language and transportation problems limited the opportunities for these older Chinese women to be involved in society and engaged in activities. Religious activities became the center of their lives and contributed to their satisfaction, fulfillment and enjoyment. The Chinese church is a social network support for the older Chinese women immigrants.

> I do not feel lonely, even if I do not have a lot of friends here. I plan to engage in more religious activities and I believe I will meet a lot of friends there.

Effect of a Lack of Free Time or Leisure

The experiences of leisure were not something that the older Chinese women could easily discuss. Their roles - wife, mother, grandmother or daughter - had occupied most their time so that leisure was not central to them. One woman remarked:

> I do not think being a mother affects my recreation. I never complained in front of my children no matter how tired I was.... I hardly complain because, in my opinion, a mother should do her best to take care of her family and her children. This is beyond doubt. Hence, I do not think I make a sacrifice; I do my best in whatever I need to do.

One woman summed up how important it is to take care of grandchildren:

> My mother is in China now and she is 98 years old. When I stay with her, of course, I cannot go to exercise as usual. But I always think that she is old and may not have too many years to live, so I feel that taking care of her is a kind of recreation. It depends on how you look at it.... In the United States, taking care of my grandchildren has the same meaning for me.... You know, during the Cultural Revolution in China,... I had no time to get along with my children, to talk to them. Frankly speaking, I could not experience the feelings between mother and child. Now, when I take care of my grandchildren, I found the feelings I lost; I have recovered them.

Life Satisfaction and Expectations for Future

Although the women faced many problems in the United States that limited their opportunities to engage in previous recreational activities, most women still felt satisfied with their lives in the United States. They gradually adjusted to the American way of life and had high expectations for the future. One woman said:

> I am getting used to living here and I really appreciate it...especially after retiring, I do not have to worry about anything; I feel released completely.

Discussion

The results of the study indicated that leisure for the women was as a state of mind or an experience that coincided with Neulinger's (1982) definition of leisure. More than half of the women thought relaxation was the first and foremost thing to experience leisure. The main concern for the women in experiencing leisure was not what activities they engaged in, how often they participated in those activities, or how much they might benefit from doing those activities, but how they perceived the experiences (e.g., relaxing, enjoyable and satisfying). Definitions and meanings associated with leisure as typically understood by those in the leisure profession were hard for the women to comprehend. To segment leisure from work was not appropriate for investigating the meaning of leisure for the women.

The leisure activities in which the women engaged in the United States differed from those they enjoyed in their hometowns in Taiwan and China. Though barriers such as language, transportation and cultural differences changed their activities after their emigration to the United States, the women perceived pleasure, enjoyment and fulfillment by engaging in such activities as shopping and attending church. The findings implied that the women participated in different activities before and after their emigration to the United States, but the concept of leisure for the women was the same. By doing these different activities, they pursued experiences that contributed to their feelings of satisfaction, enjoyment and fulfillment.

Traditional Chinese values had a profound effect on the women. In most cases, the women had no time for themselves and no time for leisure while their children were young. They considered their children and husbands more important than themselves. Filial piety was also a very important Chinese value that promoted caring relationships between children and parents.

Attending religious activities was an important social link for the women. Because of language and transportation problems, their opportunities for being involved in society and experiencing leisure were constrained. Religious activities, instead, became the center of their lives and contributed to their satisfaction, fulfillment and enjoyment.

The women did not recognize a lack of free time or leisure as a problem. Their roles as wife, mother, grandmother and daughter had occupied most their time so that leisure was not viewed as important to them. However, almost half of the women in this study considered taking care of children and grandchildren leisure. They valued leisure in terms of how well they were able to care for their children and grandchildren. Only one disagreed because she thought taking care of children was even more important than that; it was her vocation, not her avocation.

The leisure experiences of the older Chinese women immigrants changed after their emigration to the United States. Barriers such as language, transportation and cultural differences prevented them from engaging in their previous leisure activities. These barriers, however, did not affect the women's feelings of satisfaction, enjoyment and fulfillment after their emigration. Although the women engaged in activities in the United States that were different from those they enjoyed in their hometowns, their concept of leisure remained the same. For example, why did most of the women consider taking care of children or grandchildren leisure? Why did some women prefer working at a factory after retiring? Why did some women

devote most their time volunteering at church? And why did some of the women like playing tennis or going to concerts? Engaging in these activities gave them a sense of satisfaction, fulfillment and enjoyment, and they regarded engaging in these activities as leisure. Leisure has no cultural boundaries. The women participated in different activities from those they enjoyed in their hometowns, but their concept of leisure did not change. Whether practicing Tai Chi (as the women did in their hometowns), attending religious activities (as the women did in the United States), or taking care of their children and grandchildren (which they continued to do in the United States), they pursued the same goal – to have fulfilling leisure experiences.

Leisure became more meaningful to the women only because they integrated leisure with many aspects of their lives, such as their families and religious activities. This finding is consistent with previous research involving older adults in which leisure was intertwined with life's activities (Henderson & Rannells, 1988; Kelly & Kelly, 1994; Siegenthaler & Vaughan, 1998). When investigating the experiences of leisure for older Chinese women immigrants, the qualitative paradigm provided an appropriate framework for exploring the symbolic interaction of the women.

Filial piety was another important Chinese value that maintained the caring relationships between children and parents, so most of the women in this study lived with or close to their adult children. The results implied that traditional Chinese values had a profound effect on the women. The findings corresponded to Tirone and Shaw's research (1997) in that cultural traditions from the person's country of origin continued to affect the person's life. Chinese society is based on its centuries-old feudal society. Although modernization and industrialization have changed Chinese society, patriarchy still prevails.

Recommendations

The leisure experiences of the older Chinese women immigrants changed after they emigrated to the United States. The results of the study derived from in-depth interviews reflect the characteristics of the older Chinese women immigrants in Columbia, Missouri, and suggest several implications for future studies.

First, language barriers were the most important reasons mentioned by the women that limited their opportunities to make friends with others and to be involved in society. The researchers suggest studies comparing immigrant women with diverse cultural backgrounds to see if they have the same barriers as those identified in the study and to see if their view of leisure is the same as that of Chinese women.

Second, the study raises questions about definitions of leisure for Chinese women, the effect of Chinese traditions on women's lives, the inability to segment Chinese women's lives into work/leisure dichotomies, and the centrality of family on Chinese women's lives. The themes identified here may provide hypotheses for future studies that could examine the lives of Chinese women as integrated through work, leisure, free time, religious activities and family life. Researchers may also study whether women in Western society have the same characteristics as Chinese women. For instance, do work and leisure intertwine in Western women's lives? Is family the center of their lives? Perhaps there are similar characteristics among women from diverse cultures, and the difference is only a matter of degree.

Third, the top three barriers (e.g., language, transportation and cultural differences) experienced by older Chinese women immigrants prevented them from engaging in leisure activities, even those activities that they enjoyed in Taiwan and China. To target these barriers, local government and community officials may recruit bilingual and bicultural professionals to understand the women's needs and consult with leisure professionals to provide adequate leisure activities or programs for the older Chinese immigrant women. This issue cannot be ignored, as future Chinese immigrants will encounter the same barriers.

Fourth, the researchers suggest local communities organize educational programs for immigrant women to learn English, to understand the local customs and practices, and to learn national, state, and local laws. With the help of such services, the women may 'walk out', be close to American society and participate in leisure activities.

More and more Chinese people are emigrating to the United States, and so the number of Chinese older immigrants is increasing; their unique language and cultural barriers differentiate their leisure needs. Policy makers and practitioners should be sensitive to the needs of older Chinese immigrants and respond with policies and programs to help them with life in the United States which will contribute to their life satisfaction.

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TOWARDS AN UNDERSTANDING OF GENDER DIFFERENCES WITH RESPECT TO WHITEWATER RAFTING PREFERENCES

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Abstract: Previous literature suggests that there are an increasing number of females participating in outdoor recreation. However, the majority of outdoor programs are still designed under a male dominated paradigm. Few authors have dedicated attention to the special needs of female participants. Furthermore, very little if any attention has been given to the needs of females who assume leadership roles in the community or family and who are responsible for planning and organizing group trips to the outdoors. This lack of attention is contrary to the importance that this market can have for a commercial outdoor recreation outfitter. It is therefore important to determine what type of outdoor experiences interest this market as well as to determine their preferences and the way they establish relationships with their outdoor recreation providers. As both genders are involved in planning outdoor experiences, it is necessary to gain further insight into the differences that exist to enable marketers to create more accurate strategies for attracting clients.

The purpose of this study was to examine whether there were gender differences among individuals who take groups rafting (group leaders) with respect to the characteristics of the individual, the characteristics of the group, the type of activity sought and they type of relationships they establish with the outdoor recreation provider. The sample consisted of 279 randomly selected individuals (48% females and 52% males) who had purchased a rafting trip for eight or more people from a rafting outfitter in the Southeastern region of the United States. The data were collected with a mail survey. A 48% response rate was achieved and subsequent analysis revealed that there was no threat of non-response bias.

The analysis revealed that female group leaders were significantly more likely to take groups rafting on less challenging rivers. Females were significantly more likely to take family members and friends rafting, whereas males were the predominant leaders in church groups. There were no significant differences with respect to the trip purpose. As for the type of customer/provider relationships established, males reported to receive more status from the provider and reported to invest more love and money in the provider. In light to these findings it is suggested that marketers of rafting outfitters and perhaps other outdoor recreation providers pay closer attention to the differences between their female and male market segments. Specifically, outfitters that provide activities with different difficulty levels should examine and rework their promotional materials to determine the attracting factors to women. In addition, outfitters should reevaluate the way they relate to their customers and assure that they implement relationship-building strategies that accommodate male and female group leaders alike.

Introduction

The predominant marketing paradigm is male dominated – all potential customers are marketed to based on preferences exhibited by males and principles defined by males. However, female group leaders can be a very important segment for outdoor recreation outfitters. It has been noted in the literature that female participation in outdoor recreation is increasing dramatically (Henderson, 2000). In addition, the female market segment is as important or more important than the male market segment. In fact, women account for more consumer dollars than men (Horowitz, 1995). Another aspect that accentuates women's importance as consumers is the notion that women are more likely to develop emotional attachments with their providers (Myers, 1994) and are more likely to share information about the provider with their friends (Popcorn & Marigold, 2000). The benefits of continuing relationships with customers and word of mouth advertising are well documented in the literature. Customers with an emotional attachment to the company are less price sensitive, more resistant to advertising form competitors, and tend to buy premium products (Morais, 2000). Another factor reinforcing the importance of the female segment is that they have a strong influence in the recreation participation of their family members. Women are the link between their generation and the next (Henderson, 2000; Simmons Market Research Bureau, 1994). Women are often responsible for the recreation choices of their children which is critical because the literature suggests that an important determinant of whether or not people will participate in outdoor recreation as an adult is whether or not they have previous experience and specifically if they participated as a child (Henderson, 2000).

This study is focused on female customers who took a group on a rafting trip with a professional outfitter. These group leaders are a very important market segment for outfitters because each group leader is responsible for bringing many customers and therefore responsible for a substantial amount of revenue. In addition, group leaders introduce the outfitter and the recreation activity to a large number of first time customers who may later come back individually (Kwortnik & Manciny, 1997; Morais, 2000). Due to their role in family groups and community groups, females often assume the position of group leaders. Most

outdoor recreation outfitters are aware of the importance of group leaders to their business and often spend substantial resources to nurture their relationships with this market segment. In contrast these outfitters have only recently started to realize the importance of marketing specifically to female group leaders. The marketing strategies targeted to this segment are typically the same as those used to target male segments.

Contrary to the undifferentiated marketing approach used by outfitters, the existing marketing literature indicates that "women and men don't think the same way, don't communicate the same way, don't buy for the same reasons" (Kotler, Bowen, & Makens, 1998, p. 131). Several authors indicated that female customers not only have different product preferences than men but they also relate with the providers of those products in very different ways (Henderson, 2000; Myers, 1994; Popcorn & Marigold, 2000). Myers (1994), for example, indicated that female consumers prefer to reduce uncertainty on their purchase decisions. Evidence of this is the observation that females tend to do more extensive research before they make a decision. In addition, females tend to place a great importance on the opportunities for interacting with other customers (Henderson, 2000; Popcorn & Marigold, 2000). With respect to customer / provider relationships, females tend to prefer collaborative processes where they are able to explain their specific needs to the provider (Myers, 1994). Myers adds that females have grown more aware of their importance as customers and have began to demand to be treated with due respect.

The previous paragraphs explained that females are an increasingly important market segment and that they are different from men with respect to their behavior as consumers. Despite this, little literature has attempted to investigate these gender differences. Therefore, the purpose of this study was to examine whether or not there were differences between females and males who take groups rafting (group leaders) with respect to their preferences for the activity and the type of relationship they establish with the outfitter. Hence, the following research hypotheses were tested:

Hyp 1. There are no significant gender differences with respect to river choice;
Hyp 2. There are no significant gender differences with respect to affiliation with group members;
Hyp 3. There are no significant gender differences with respect to trip purpose;
Hyp 4. There are no significant gender differences with respect to group leaders' perceptions of the providers' resource investments in them (PPRI);
Hyp 5. There are no significant gender differences with respect to group leaders' reported resource investments on the provider (CRRI).

Method

The data were obtained with a self-administered questionnaire mailed to individuals who had purchased a rafting trip with an outfitter in the Southeastern United States. The administration process followed a modified Dillman technique consisting of one packet with a letter requesting participation in the study and the instrument, a thank you/ reminder card (one week later), and a second packet with a cover letter and an additional copy of the instrument (three weeks after the first mailing).

The sample size of the study was determined base on an a-priori Power analysis (Cohen, 1988). Despite the scarcity of its use, power analysis is seen by many authors as being the most important factor to determine sample size (Cohen, 1988; Faul & Erdfelder, 1992; Parks, Shewokis, & Costa, 1999). In order to conduct this analysis, the significance level was set to α=.05; the desired statistical power was set to .80 (β=.20); and the effect size considered meaningful was r=.20. Considering these values, the necessary sample size for the study was calculated to be 194 subjects (Cohen, 1988; Faul & Erdfelder, 1992). The response rates observed in similar studies ranged between 60% and 20% (Katcham, 1990; Morais, Backman, & Backman, 1999). Consequently the surveys were mailed to a total of 600 customers.

The 600 participants were selected with a stratified proportional random sampling procedure. The strata were created based on the four rivers where the outfitter operated and based on the three seasons: Spring, summer and fall. From those questionnaires mailed out, 23 were returned because of unusable addresses. Of the 577 remaining, 279 were returned and usable for a 48.35% response rate. Due to the moderate response rate a threat of non-response bias was considered. A first test of non-response bias compared the sample and the population and found no significant differences in selected demographic variables (i.e., group size, state of residence). The threat of non-response bias was further examined by comparing the responses of participants with those from a small sample of non-respondents interviewed by phone. This analysis did not reveal evidence of non-response bias as there were no significant differences between the two groups with respect to key variables (i.e., age, intentions to repurchase a rafting trip, past purchases, word of mouth communications, information search, and resistance to counter-persuasion).

Operationalization of Dependent Variables

To test hypotheses 1, 2 and 3, categorical variables were used. The whitewater rafting provider that collaborated with the study offered rafting trips in four different rivers. The sample population was then asked to record the latest river they had rafted with the provider. The item read, "indicate in which river you took your latest trip with Outfitter A." This variable was deemed important because each river was characterized with different levels of difficulty and tended to facilitate different types of recreational experiences. To test the second hypothesis it was necessary to identify what was the affiliation of the group leaders with the rest of the group members. The hypothesis was tested with four dichotomous items. The question read, "Check the boxes that best describe your affiliation with the group members." This variable was examined because previous research has suggested that social group is a very important variable in predicting

outdoor recreation participants' motivations and preferences (Manning, 1999). Lastly, purpose of the trip was examined to test hypothesis three. Purpose of trip was assessed with five dichotomous items. The question read, "indicate what were the primary purposes of your latest trip with Outfitter A." This variable was examined because the literature reviewed indicated that males and females often have different reasons for the purchases they make.

Hypotheses four and five focused on the type of relationships established between the group leaders and the provider. To examine these customer/provider relationships a resource investment framework was used. This framework was initially developed to explain relationships of friendship by Foa and Foa (1974) and was later successfully applied to customer/provider relationships (Morais, 2000). This framework proposes that the type of relationships established between customers and providers is determined by the type of resources that they invest in each other. This study used scales developed by Morais (2000) to assess the types of investments made: the Providers' Perceived Resource Investments scale (PPRI) and the Customers' Reported Resource Investments scale (CRRI). Both scales consisted of 14 items organized in four dimensions, anchored with 5-point frequency ordinal measurements (1=never to 5=always). Examples of items from the PPRI scales are: "the outfitter treated me as an important customer" and "the outfitter educated me about all aspects of running the trip." Examples of items in the CRRI scales are: "I consider the outfitter's staff to be my close friends" and "I spent a lot of time and money to make this trip happen."

Analysis and Results

Although the study hypotheses do not address socio-demographic differences between females and males, the authors feel that it would be beneficial to provide a comparative description of both groups. For this purpose, adequate descriptive statistics were used depending on the level of data used. As can be observed on Table 1, participants were in average 40.3 years old, stayed an average of 2.1 nights in the region, traveled approximately 5 hours to the rafting destination, had rafted with the specific outfitter an average of 1.4 times before their last trip, and considering all rafting trips, they had rafted an average of 1.8 times. Table 1 also shows that the participants came predominantly from large cities (25.0%), small cities (25.4%), and from small towns (22.7%). Interestingly, from those participants that came from a suburb (18.8%) the majority of them were males (65.3%), and from the participants that came from a rural area (8.1%) the majority were females (76.2%). The most frequently observed types of employment were management (37.8%), sales (21.2%), teaching (16.0%), and students (10.3%). As shown in Table 1, a larger proportion of females reported sales (63.6%) and student (68.8%) as their occupations, whereas a larger proportion of males reported teaching (66.0%). Although participants belonged to households with incomes varying from lower than $25,000 to more than $95,000 Table 1 shows a clear gender imbalance. Specifically, whereas 61.3% of group leaders with household incomes lower than $50,000 were females, only 38.1% of group leaders with household incomes higher than $50,000 were females.

Table 1. Descriptive Statistics of Female and Male Group Leaders

Variable	Females	Males	Sample
	Mean (SD)	*Mean (SD)*	*Mean (SD)*
Age	39.3 (11.0)	41.4 (10.1)	40.3 (10.2)
Length of stay (# of nights)	2.2 (3.6)	1.9 (1.9)	2.1 (2.8)
Distance traveled (hours)	5.0 (3.6)	5.1 (3.5)	5.0 (3.5)
Times rafting with outfitter	1.4 (.8)	1.5 (.8)	1.4 (.8)
Total times rafting	1.7 (1.1)	1.9 (1.1)	1.8 (1.1)
	Frequency (% by gender)	Frequency (% by gender)	Frequency (% of total)
Residence community			
Large city	28 (43.1)	37 (56.9)	65 (25.0)
Small city	35 (53.0)	31 (47.0)	66 (25.4)
Small town	30 (50.8)	29 (49.2)	59 (22.7)
Suburb	17 (34.7)	32 (65.3)	49 (18.8)
Rural area	16 (76.2)	5 (23.8)	21 (8.1)
Employment			
Manager	29 (49.2)	30 (50.8)	59 (37.8)
Sales	21 (63.6)	12 (36.4)	33 (21.2)
Retired	2 (50.0)	2 (50.0)	4 (2.6)
Student	11 (68.8)	5 (31.2)	16 (10.3)
Manufacturing	1 (10.0)	9 (90.0)	10 (6.4)
Teacher	11 (44.0)	14 (66.0)	25 (16.0)
Craftsperson	0 (0.0)	5 (100.0)	5 (3.2)
Household income level			
Less than 55K	65 (61.3)	41 (38.7)	106 (41.9)
More than 55K	56 (38.1)	91 (61.9)	147 (58.1)

In order to test if there were gender differences with respect to trip characteristics and group leader preferences, Chi-square tests were computed. A Chi-square test conducted to examine gender differences in river choice yielded a significant effect, $\chi^2(3, N=271)=7.61, p=.055$. As shown on Table 2, females were significantly more likely to choose the Nantahala, the Ocoee and the Pigeon Rivers. In contrast males were significantly more likely to choose taking their group to the Chattooga River. Comparing the rivers preferred by females with those preferred by males it is apparent that females tended to chose recreational rivers with moderate difficulty. Males, on the other hand, tended to prefer a wild and scenic river characterized by higher levels of difficulty. Therefore, the results provided support to Hypothesis 1.

In a test of gender differences with respect to the group leader's affiliation with the members of the group significant effects were found in several variables. Specifically, Table 3 shows that females were significantly more likely to take family members rafting ($\chi^2(1, N=273)=9.29, p=.002$). The percentage of females that reported taking family members on the rafting trip was 62% whereas only 41% of males reported taking their family members. Females were also more likely to take friends rafting ($\chi^2(1, N=273)=3.79, p=.052$). Accordingly, 66% of females reported taking friends rafting whereas only 54% of males reported the same. No gender differences were found with respect to the proportion of group leaders that took business associates rafting ($\chi^2(1, N=273)=.17, p=.677$). On the other hand, a significantly larger percentage of males reported taking members of a church group than females ($\chi^2(1, N=273)=5.49, p=.019$). In this case, 39% of males reported taking members of a church group rafting whereas only 21% of females reported the same. In sum, the results provided partial support to Hypothesis 2.

In order to test whether or not there were gender differences with respect to the group leader's purpose for the trip, Chi-square tests were computed. As shown on Table 4, the Chi-square tests conducted to examine gender differences in purpose of trip yielded nonsignificant effects ($p>.10$). Based on these findings Hypothesis 3 was rejected.

Table 2. Gender Differences in River Choice

		Female		Male	
Variables		*n*	%	*n*	%
River choice	Chattooga	38	28.8	59	42.4
	Nantahala	30	22.7	26	18.7
	Ocoee	49	37.1	47	33.8
	Pigeon	15	11.4	7	5.0
$\chi^2(3, N=271)=7.61, p=.055$					

Table 3. Gender Differences in Group Leader's Affiliation with Members

		Female		Male	
Variables		*n*	%	*n*	%
Members of group are family	Yes	62	47.0	41	39.1
	No	70	53.0	100	70.9
$\chi^2(1, N=273)=9.29, p=.002$					
		Female		Male	
		n	%	*n*	%
Members of group are friends	Yes	66	50.0	54	38.3
	No	66	50.0	87	61.7
$\chi^2(1, N=273)=3.79, p=.052$					
		Female		Male	
		n	%	*n*	%
Members of group are business	Yes	26	19.7	25	17.7
	No	106	80.3	116	82.3
$\chi^2(1, N=273)=.17, p=.677$					
		Female		Male	
		n	%	*n*	%
Members of group are church	Yes	21	15.9	39	27.7
	No	111	84.1	102	72.3
$\chi^2(1, N=273)=5.49, p=.019$					

Table 4. Gender Differences in Purpose of Trip

Variables		Female		Male	
		n	%	*n*	%
To be on the river	Yes	67	43.2	53	37.6
	No	75	56.8	88	62.4
$\chi^2(1, N=273)=.89, p=.346$					
		Female		Male	
		n	%	*n*	%
Participate in outdoor recreation	Yes	86	65.2	83	58.9
	No	46	34.8	58	41.1
$\chi^2(1, N=273)=1.14, p=.285$					
		Female		Male	
		n	%	*n*	%
Get away	Yes	27	20.5	26	18.4
	No	105	79.5	115	81.6
$\chi^2(1, N=273)=.18, p=.674$					
		Female		Male	
		n	%	*n*	%
Time with friends	Yes	91	68.9	87	61.7
	No	41	31.1	54	38.3
$\chi^2(1, N=273)=1.57, p=.210$					
		Female		Male	
		n	%	*n*	%
For the challenge	Yes	98	74.2	100	70.9
	No	34	25.8	41	29.1
$\chi^2(1, N=273)=.38, p=.539$					

In order to test whether or not there were gender differences with respect to the types of resources invested by the outfitter on the group leaders, independent samples T-tests were computed. As shown on Table 5, the analysis revealed that males reported receiving status from the provider significantly more often than females (t (271)=9.29, p=.100). No significant gender differences were found with respect to the group leaders' perceptions of outfitter's investments of love (t (271)=.22, p=.829), information (t (271)=-.64, p=.523), and money (t (271)=-.837, p=.403). These findings provided very weak support to hypothesis 4. Hence, it was concluded that female and male group leaders perceived to have received equal amounts of resource investments from the outfitter.

Independent samples T-tests were also conducted to test if there were gender differences with respect to the types of resources invested by the group leader on the outfitter. As shown on Table 5, the analyses revealed that males reported to have invested more love (t (271)=-2.72, p=.007) and money (t (271)=-2.17, p=.031) on the provider significantly more often than females. No significant gender differences were found with respect to the group leaders' investments of status (t (271)=.61, p=.545) and information (t (271)=.01, p=.996). These findings provided some support to hypothesis 5. It was concluded that male group leaders invested love and money in the outfitter more frequently than female group leaders but they did not differ with respect to investments of status and information.

Table 5. Gender Differences in Type of Investments Made by Provider and Group Leaders

Variable	Female *M (SD)*	Male *M (SD)*	*t*	*df*	*p*
PPRI					
Perceived investments of Love	2.61 (.77)	2.59 (.72)	.22	271	.83
Perceived investments of Status	2.90 (.96)	3.09 (.97)	-1.64	271	.10
Perceived investments of Information	3.15 (.88)	3.22 (.93)	-.64	271	.52
Perceived investments of Money	2.49 (1.23)	2.61 (1.34)	-.84	271	.40
CCRI					
Reported investments of Love	2.46 (.98)	2.79 (1.02)	-2.72	271	.01
Reported investments of Status	3.94 (.83)	3.88 (.84)	.61	271	.55
Reported investments of Information	2.15 (.99)	2.15 (.98)	.01	271	.99
Reported investments of Money	3.68 (.94)	3.94 (1.04)	-2.17	271	.03

Note: N(females)= 132, N(males)=141

Conclusions and Implications

The purpose of this study was to examine whether or not there were gender differences among individuals who take groups rafting (group leaders) with respect to their preferences for the activity and the type of relationship they establish with the outfitter. A random sample of group leaders who took a group rafting with a commercial outfitter during 1999 were sent a mail survey assessing their river choice, type of affiliation they had with group members, the purpose of the trip, the type of resources invested between them and the outfitter, and a number of selected socio-demographic variables. Statistical analyses revealed that female group leaders were more likely to choose less challenging rivers whereas male group leaders were more represented in a more challenging and wilderness river. Females group leaders tended to bring friends and family to the rafting trip whereas males were the predominant group leaders of church groups. Males reported to have received more status from the outfitter than females and reported to have invested more love and money.

Implications for Research

The present findings are generally consistent with the literature with respect to the notion that females and males tend to develop relationships with their providers in very different ways. This study revealed that male group leaders received significantly more status and invested significantly more love and money than female group leaders. Interestingly, most of the existing relationship marketing literature does not consider the possible intervening effect of gender differences. Chaudhuri and Holbrook (2001) suggested that additional relationships marketing research might benefit form including gender in the analysis. The gender differences observed in the present study confirm these authors' proposition and therefore it is suggested that subsequent studies of customer / provider relationships should pay closer attention to gender differences.

Previous outdoor recreation literature has provided substantial evidence of differences in the preferences of various types of participants. For example Ewert (1993) reported that climbers with different skill levels preferred different types of experiences for climbing in Alaska. Ewert and Hollenhorst (1994) found additional differences in recreation preferences between rafters with various specialization levels. Literature addressing the preferences of female and male participants is, however, very scarce. This study indicates that there are such differences and due to the size and continuing growth of the female segment, it has become more important to understand them in order to more effectively market to them.

Implications for Practice

Overall, the findings indicate that outdoor recreation providers should look at females and males as two segments of their market that have different preferences and want to relate to them in very different ways. Outfitters need first to examine the various products they offer and determine which are more attractive to females and males. Knowing this may be the first step to understanding their segments and more effectively interacting with them. In this study females were more likely to take family and friends to recreational rivers whereas males tended to prefer more challenging rivers. Subsequent research should address more specific attributes of the recreational experience besides the river characteristics and group type.

The results suggested that males invested substantially more love in the outfitter than females. These findings, however, contradict previous literature. In fact, most authors agree that females are more likely to want to establish close relationships with their providers. Hence it would be expected that they would report investing more love, status and information than males. A reasonable explanation for this discrepancy could be the notion that females did not have the opportunity to create the types of relationships they desired. Additional research is needed to further examine this hypothesis, however, the present findings indicate that outfitters need to create an atmosphere where females can develop closer relationships with them and their staff members.

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Trails over Land & Water: Issues of Multiple Use & Conflict

USE AND USER PATTERNS AMONG MICHIGAN LICENSED OFF-HIGHWAY VEHICLES OWNERSHIP TYPES

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Abstract: Conventional off-highway vehicles (OHVs) range from small personal vehicles, such as motorcycles and all terrain vehicles to full-size passenger vehicles such as four-wheel drive trucks. The market and general recreational use of OHVs has changed markedly over the past thirty years. While many studies of OHV enthusiasts generalize to all OHV types, little research has drawn distinctions among different vehicle ownership segments. Consequently, in a 1998-99 study, Michigan OHV licensees were classified into seven ownership segments and differences among group members assessed. This research is presented and management implications of non-homogeneous users outlined.

Introduction

As in many other states, off-highway vehicles (OHVs) in Michigan are defined as any wheeled motor vehicle capable of off-road travel (Michigan P.A. 319, 1975). This includes small lightweight single person vehicles, such as off-road motorcycles and three and four wheel all terrain vehicles (ATVs) and full-size four-wheel drive passenger vehicles such as trucks, jeeps, sport utility vehicles, and others specialty vehicles like dune buggies (hereafter characterized as SUVs). Snowmobiles are not considered OHVs in Michigan.

The recreational use of these OHVs can be divided into two broad categories pertaining to the basic function of the vehicle (Sheridan, 1979). In one category, the OHV, particularly motorcycles and specialty SUVs, such as dune buggies, is used primarily for recreational trail and scramble area riding. In the other category, mainly ATVs and SUVs such as four-wheel drive trucks, the vehicle is primarily for transportation supporting non-trail recreation and utilitarian pursuits. These include the support of hunting, ice fishing and camping as well as hauling, mowing, and plowing.

Management Issues

Beginning with modified street motorcycles in the 1920s and converted military vehicles following World War II, OHVs grew in popularity during the 1960s and early 1970s (Hope, 1972). With their popularity came a number of social and ecological consequences including concerns about noise, trespass and privacy and the amount and impact of soil erosion on surface waters and aquatic life (USDI, 1971; Sheridan, 1979). To contend with these circumstances, numerous states enacted legislation regulating and controlling OHV use, which subsequently led to the creation of OHV programs featuring users paying to develop and maintain trails and scramble opportunities (Belknap, 1988).

However, with the advent of the ATV in the mid-1970s, the OHV situation changed dramatically complicating management. The ATV was a versatile personal vehicle capable of traversing a greater variety of terrain than motorcycles and trucks, that could also transport a person and hundreds of pounds of gear into remote, non-roaded areas. With a treadway width of 50 inches needed for ATVs, many of the developed, designated trails designed for motorcycles in the 1960s and 70s, were too narrow with their 24-inch treadways. By the late 1980s, the ATV had emerged in Michigan as the most widely owned and used OHV (Nelson, 1989; Nelson, 1996). Today, the range of OHVs challenge managers by presenting a wide variety of vehicle widths and serving a myriad of purposes for their operators. Often these operators cross back and forth from public lands and frozen waters to private lands for a variety of recreational and work pursuits. ATVs, especially in areas with little sustained, deep snow cover, are operated year round.

The situation is further compounded because many OHV enthusiasts are complex with each having different motivations, attitudes, and interests depending on the type(s) of OHVs they own and operate (Peine, 1973). For instance, those who own motorcycles may be exclusively interested in designated public trail opportunities, whereas those who only own ATVs may be more interested in riding county road shoulders and cross country travel to reach preferred deer hunting locations. Others may own a variety of OHVs for both trail riding and utilitarian purposes.

Effective management necessitates a more complete understanding of the characteristics, needs and desires of different OHV segments. While many past studies generalized to the OHV user population, some have explored differences between various segments OHV segments. For example, Propst et al. (1977) compared users of motorcycles and four-wheel drive vehicles, identifying differences related to uses of the OHV. More recently, Crimmins (1999) in a 1998 mail survey of Colorado OHV users, found those who used their OHV for hunting or were members of an OHV club differed on opinions about funding priorities from OHV enthusiasts as a whole. While these studies are telling, no comparisons were found in the literature among the full range of OHV ownership segments. Consequently, in a 1998-99 mail study, Michigan OHV licensees were classified into seven ownership segments and differences among group members and management implications were assessed (Nelson et. al., 2000).

Study Background

Michigan's first OHV regulations were promulgated in 1976 with the passage of Michigan Public Act 319 of 1975, commonly referred to as the 'Off-Road Vehicle (ORV) Law.' Since then, the OHV program, administered by the Michigan Department of Natural Resources Forest Management Division (DNR-FMD) has continued to evolve (Nelson, 1996). Today, regulations restrict non-street licensed OHVs to designated trails and areas posted "open to OHVs" on the approximately 3 million acres of state and national forests in the Lower Peninsula. In the Upper Peninsula OHVs may use on any forest road or trail unless posted closed. Non-street licensed OHVs are banned from all but one of the 100 Michigan state parks and all of the state game and wildlife areas (Nelson, 1996). Private lands, with landowner permission, are open to OHV use throughout the state. Regulations also require the licensing of all resident and non-resident OHVs to operate on any public lands or frozen waters. Revenues from licensing are used for trail development, maintenance, law enforcement, environmental damage restoration, safety education and administration. In FY1999 these totaled about $2 million. Presently, Michigan's designated OHV trail system totals 3,107 miles, with 40% maintained as 40 inch wide motorcycle trail, 43% as 50 inch wide ATV trail (open to cycle and ATV use) and 17% as 96 inch wide or wider OHV route (open to cycles, ATVs and SUVs) (Nelson, 1999). In addition, there are six major designated scramble areas, with the largest 2,500 acres.

Study Methods

The data for this study was gathered using a mail questionnaire with a sample of Michigan 1998-99 OHV licensees (Nelson et al., 2000). The DNR License Control Division reported that in June 1999 there were 124,731 OHV licenses from the 1998-99 license year (April 1998 – March 1999). Of these, approximately 71,000 were in an electronic licensing system and another 2,500 were in the Michigan Cycle Conservation Club electronic database. The approximately 120 OHV dealers not in the electronic licensing system had sold the other 50,000 licenses. These dealers are not required to maintain records of purchaser names and addresses. Yet, based on input from DNR License Control, the Michigan Cycle Conservation Club Executive Director, and the State OHV Coordinator, it was determined that the electronic system list, in combination with the Cycle Conservation Club list, was likely to be representative of the total OHV licensee population.

To select a representative sample of OHV licensees, all duplicate names (cases where a person had more than one licensed OHV) were removed from both lists. Hence a person with one or five OHVs had the same chance of being sampled. This resulted in a total of 50,904 different OHV licensees from the 71,000 licenses in the electronic system that had one or more Michigan licensed OHVs in 1998-99. A similar procedure was used with the Cycle Conservation Club list resulting in 1,651 persons who had one or more Michigan licensed OHVs in 1998-99. From these two combined lists a systematic sample of every 10th OHV licensee was selected with a random start. Excluding incomplete addresses, this resulted in a sample of 5,008 individuals.

The mail questionnaire was designed in cooperation with the DNR OHV Trail Coordinator and was reviewed by the Michigan OHV Trail Advisory Committee and the Michigan State University Committee on Research Involving Human Subjects. The 4-page questionnaire had 31 questions and elicited information on OHV ownership use, fuel consumption, spending, management preferences and demographics.

Multiple mailings of the questionnaire were used to encourage response. The initial mailing, sent in mid July 1999, included a questionnaire, explanatory cover letter and business reply envelope. The second mailing sent in early August 1999, used a follow-up reminder postcard. Finally, non-respondents were sent a third mailing of the questionnaire, revised cover letter and business reply envelope in late September 1999. Certified mail was used for the final mailing to emphasize the importance of the survey and to insure the address was correct for the licensee. Data was entered and analyzed using Statistical Package for the Social Sciences (SPSS).

Results

Of the 5,008 addresses, 312 (6.2%) were invalid. Of the 4,696 valid addresses, 2,405 (51.2%) responded by returning a questionnaire. Of those, 115 (4.8%) no longer owned or used OHVs in Michigan. The remaining 2,290 completed the questionnaire and their responses are used in the analysis.

Segmentation of OHV Licensees and OHV Use

Michigan OHV licensees were classified into seven ownership segments: motorcycle only, ATV only, SUV only, cycle/ATV, ATV/SUV, cycle/SUV, and cycle/ATV/SUV (Table 1). Altogether, ATV only licensees comprise over half of the OHV licensees, while ownership of all three OHV types accounted for the smallest percentage (3%) of license holders. Other segments with more than 10% of the licenses are motorcycle only and ATV/SUV. The motorcycle only and motorcycle/SUV segments were most likely to use the designated trail and route system, while ATV only segments were least likely to use them. Likewise, the motorcycle/SUV segment was most likely to report using at least one of the six designated scramble areas during July 1998 – June 1999, while ATV only respondents were least likely to visit these areas.

Less than a third of the OHV use in Michigan by licensed OHVs was public land riding (including the designated trail/area system) during a 12-month period in 1998-99 (Table 2). Motorcycles were most focused on public land riding, while half of ATV use was on private lands and more than a quarter was on public or private lands solely to support hunting or ice fishing. SUV riding was more common on public land than private, but over a third of the use was to support hunting or ice fishing on public or private lands.

Table 1. OHV Ownership and Use of Designated Trails/Areas by 1998-99 Michigan OHV Licensees

	Percentage		
Ownership type	Licensee households	Use designated trail system	Use designated scramble areas
Motorcycle only	12.5	87.7	45.0
ATV only	53.0	39.7	16.1
SUV only	7.9	65.9	51.4
ATV/SUV	13.4	47.5	29.5
Motorcycle/ATV	6.9	78.6	51.9
Motorcycle/SUV	3.2	86.1	59.7
Motorcycle/ATV/SUV	3.0	73.5	54.4
Total or average (a)	100.0	54.0	29.1

(a) Total for licensee households, means for other columns.

Table 2. Michigan OHV Use July 1998 - June 1999 for 1998-99 Michigan OHV Licensees

	Percentage			
Vehicle type	Public land riding	Private land riding	Hunting/ice fishing	Total
Motorcycle	58.8	38.4	2.8	100.0
ATV	21.1	50.0	28.9	100.0
SUV	41.4	24.2	34.4	100.0
All OHVs	30.6	43.9	25.5	100.0

OHV Program Management

Motorcycle only segment members were likely to be more positive in their ratings of the Michigan OHV program and have knowledge of specific program aspects than other segments (Tables 3 and 4). Conversely, the ATV only segment was least knowledgeable of OHV program aspects. Those ATV only segment members that had some knowledge of OHV program aspects rated performance lower, except in the cases of law enforcement and safety education.

OHV Licensee Demographics

The motorcycle only segment had the lowest mean age of all segments (Table 5). On average, motorcycle only licensees were 9 years younger than the ATV only segment, which had the highest average age. The motorcycle only segment also had the highest proportion of males, members with some college education and membership in OHV related organizations. By contrast, ATV only segment had the smallest percentage of members with some college education or membership in one or more OHV related organization. Median income levels were highest for the motorcycle/SUV segment. All segments had household median income ranges higher than the median for Michigan's population.

Average household was size was likely to be smallest for the motorcycle only segment and largest for licensees with all types of OHVs (Table 6). The proportion of household members who operated an OHV was also likely to be smallest for motorcycle only and largest for households with all types of OHVs. The ownership segment where household adults were most likely to have completed an OHV safety class was ATV/SUV and for household children it was the segment that owned all types of OHVs. In no ownership segment had more than one third of those 17 years old and under who actually operate the household's OHVs completed an OHV safety class.

The OHV riding history of households with motorcycles differs markedly from those without (Table 7). In motorcycle oriented segments, the mean age for first riding an OHV was less than 16 years old. Conversely, the ATV only segment, the average age for first OHV ride was almost 31. For every segment except ATV only, the first type of OHV ridden was most likely to be a motorcycle. Motorcycle related segments have much higher percentages of participation in competitive events than other segments.

Table 3. Rating of Selected Aspects of Michigan OHV Program by Ownership Type for 1998-99 Michigan OHV Licensees (a)

	Regulations		Law Enforcement		Safety Education		Trail Maintenance	
Ownership type	Mean rating	Percent no knowledge	Mean rating	Percent no knowledge	Mean rating	Percent no knowledge	Mean rating	Percent no knowledge
Motorcycle only	3.38	9.6	3.34	18.1	3.34	45.9	3.37	10.3
ATV only	2.92	21.3	3.23	38.8	3.51	46.2	2.95	51.1
SUV only	3.36	18.6	3.00	24.3	3.25	45.8	3.22	26.6
ATV/SUV	2.86	10.9	3.11	24.5	3.49	39.4	2.93	40.4
Motorcycle/ATV	2.97	10.9	3.29	21.2	3.46	35.3	3.16	17.9
Motorcycle/SUV	3.26	5.6	3.29	12.5	3.66	34.7	3.39	4.2
Motorcycle/ATV/SUV	2.94	8.8	2.90	13.2	3.30	36.8	2.82	17.6

(a) Rating scale: 5 = very good; 4 = good; 3 = OK; 2 = poor; 1 = very poor.

Table 4. Rating of Selected Aspects of Michigan OHV Program by Ownership Type for 1998-99 Michigan OHV Licensees (a)

	Trail Design		Parking Areas		Trail Maps	
Ownership type	Mean rating	Percent no knowledge	Mean rating	Percent no knowledge	Mean rating	Percent no knowledge
Motorcycle only	3.81	13.2	3.95	15.3	3.65	14.2
ATV only	3.20	54.0	3.36	61.0	3.23	54.5
SUV only	3.24	28.2	3.31	41.8	3.00	37.9
ATV/SUV	3.14	41.1	3.39	51.0	3.16	44.0
Motorcycle/ATV	3.67	23.7	3.65	27.6	3.41	23.1
Motorcycle/SUV	3.54	4.2	3.72	6.9	3.56	5.6
Motorcycle/ATV/SUV	3.02	19.1	3.75	26.5	3.11	19.6

(a) Rating scale: 5 = very good; 4 = good; 3 = OK; 2 = poor; 1 = very poor.

Table 5. Selected Characteristics of 1998-99 Michigan OHV Licensees by Ownership Type

	Mean	Percent			Median
Ownership type	Age	Male	With ≥ 1 year of college education	Member of ≥1 OHV organization	1998 Household Income
Motorcycle only	38.4	98.2	62.6	59.3	$40,000-$59,999
ATV only	47.3	93.6	41.8	17.7	$40,000-$59,999
SUV only	39.4	90.2	54.7	26.6	$40,000-$59,999
ATV/SUV	43.8	94.9	51.4	27.5	$40,000-$59,999
Motorcycle/ATV	38.6	90.9	52.6	44.9	$40,000-$59,999
Motorcycle/SUV	34.3	97.1	61.1	58.3	$60,000-$79,999
Motorcycle/ATV/SUV	38.9	90.9	51.5	52.9	$40,000-$59,999

Table 6. Selected Characteristics of 1998-99 Michigan OHV Licensees by Ownership Type

	Adults ≥ 18 years old			Children ≤ 17 years old		
	Mean	Percent		Mean	Percent	
Ownership type	Number	Operated OHV	Completed safety class	Number	Operated OHV	Completed safety class
Motorcycle only	1.91	64.3	8.2	0.84	52.9	16.0
ATV only	2.03	74.6	18.5	0.61	47.0	14.4
SUV only	2.10	70.7	8.2	0.67	18.3	0.9
ATV/SUV	2.10	80.4	22.2	0.63	46.4	12.0
Motorcycle/ATV	2.13	81.6	15.0	1.13	72.9	13.5
Motorcycle/SUV	2.03	76.3	8.6	0.65	68.2	18.2
Motorcycle/ATV/SUV	2.42	90.6	19.4	1.03	83.8	23.5

Table 7. OHV Riding History by OHV Ownership Type for 1998-99 Michigan OHV Licensees

	Mean	Percent			
Ownership type	Age first rode OHV	First rode cycle	First rode ATV	First rode SUV	Rode in competitive event (a)
Motorcycle only	15.1	91.6	7.0	1.4	31.9
ATV only	30.8	33.9	61.2	4.0	2.6
SUV only	20.7	45.4	10.9	43.6	7.7
ATV/SUV	23.4	45.6	37.1	17.3	3.4
Motorcycle/ATV	15.2	76.5	18.3	5.3	21.7
Motorcycle/SUV	13.0	84.3	10.0	5.7	40.0
Motorcycle/ATV/SUV	13.8	75.0	17.6	7.4	32.4

(a) Sanctioned event occurred in past 5 years

Region of residence in Michigan is dramatically different by segment (Table 8). The SUV only and all segments with motorcycles are concentrated in more urban southern Lower Michigan. By contrast, members of ATV oriented segments are much more likely to live in the more rural, forested northern two thirds of the state.

Motorcycle oriented segments generally have the highest levels of participation in non-motorized activities, particularly those that are physically intense such as mountain biking and cross-country skiing (Table 9). Segments containing ATV only, ATV/SUV, and those owning all vehicle types are most likely to participate in ice fishing and deer hunting. Snowmobiling is most popular with segments owning multiple types of OHVs. The ATV only segment is least likely to participate in any of the selected activities with the exception of ice fishing and deer hunting.

Table 8. Region of Residence of 1998-99 Michigan OHV Licensees from Michigan by OHV Ownership Type

	Percent		
Ownership type	Upper peninsula	Northern lower peninsula	Southern lower peninsula
Motorcycle only	4.2	18.3	77.5
ATV only	26.6	23.0	50.4
SUV only	8.4	16.9	74.7
ATV/SUV	29.4	19.7	50.9
Motorcycle/ATV	10.3	15.9	73.8
Motorcycle/SUV	3.0	18.2	78.8
Motorcycle/ATV/SUV	17.9	19.4	62.7

Table 9. Participation in Outdoor Recreation Activity Types during 7/98 – 6/99 by OHV Ownership Type for 1998-99 Michigan OHV Licensees

	Percent participating		
Ownership type	Snowmobiling	Non-motorized activities (a)	Hunting and fishing
Motorcycle only	31.4	38.9	32.1
ATV only	26.7	21.6	72.0
SUV only	29.9	29.9	58.2
ATV/SUV	40.1	34.3	80.1
Motorcycle/ATV	46.2	31.4	59.6
Motorcycle/SUV	52.8	45.8	45.2
Motorcycle/ATV/SUV	63.2	32.4	76.5

(a) Non-motorized activities includes backpacking, cross country skiing, mounting biking, and hiking.

Management Implications

ATV Only Segment of Licensees

The largest segment of OHV licensee holders is ATV only licensees. They comprise 53% of all OHV licensees. Furthermore, nearly half of them reside in the northern 2/3 of the state where only 15% of the state's population resides. A majority (60%) of this group does not make any use of the designated OHV trail/area system all of which is in the northern 2/3 of the state. Rather, over three fourths of the reported ATV use is on private property, including work around the home, second home, farm or vacant land property and in direct support deer hunting or ice fishing. Consequently, many in this segment appear disconnected from the OHV program that appears focused on designated trails/areas. When asked what should be changed about the current Michigan OHV program two of the three most common suggestions from ATV only members were to allow riding on road shoulders like snowmobiles and to reduce OHV license fees for those using the vehicles for hunting or fishing.

The Michigan DNR has done relatively little to communicate the benefits of the OHV program to non-trail oriented OHV users. First, they have invested over $500,000 of OHV license dollars since the mid-1990s to restore OHV caused environmental damage. Much of this restoration directly improves fish and wildlife habitat. These grants often go to non-profits focused on fish and wildlife related pursuits such as Trout Unlimited. Considering that hunting and fishing are primary concerns of the ATV only segment, this would be an important positive message to this segment. It may also spur new partnerships among fish and wildlife related organizations to be grant recipients of future restoration funds. Furthermore, a properly designed and designated trail system should safeguard fish and wildlife habitat from impairment by those seeking trail riding experiences, which will also benefit ATV only licensee interests. Finally, OHV license monies finance OHV law enforcement. This in turn further protects fish and wildlife habitat.

However, recent DNR policy decisions restricting deer feeding and baiting to stop the spread of bovine tuberculosis may present a further policy twist, as many purchased their ATVs specifically to support deer hunting activities. With almost two thirds of the ATV only segment involved in deer hunting, resentment concerning limitations on feeding and baiting may limit opportunities for communication and cooperation with the DNR.

Another issue for this group concerns age and personal mobility. The average age of ATV only licensees is 47, with over 21% 60 or more. Collectively, segment members also started riding OHVs during adulthood, rather than during adolescence like motorcycle oriented segments. This suggests that mobility impairments often related to age, such as arthritis and heart diseases may make ATVs more attractive for many to access outdoor recreational settings they formerly used without motorized assistance. This may bring about challenges related to the Americans with Disabilities Act concerning reasonable accommodation in the recreational use of public non-wilderness lands such as the state and national forests.

Motorcycle Oriented Segments of Licensees

Motorcycle only households, when compared to ATV only licensees, are much different. Overall, they were younger averaging 38 years old verses 47 years old for ATV only licensees. Moreover, they where much more likely to have started riding OHVs, especially motorcycles, as teenagers. They also tend to be better educated and be more active in other physically intense outdoor activities than non-motorcycle segments. As a whole, those who owned one or more motorcycles appear more satisfied with the current OHV program. The majority of their use (63%) is oriented to the designated trail/scramble system, which requires extensive travel of two or more hours with a tow vehicle for most to reach from southern Lower Michigan. They were more likely to be knowledgeable of and satisfied with the performance of OHV program managers than other segments. Of all the OHV segments, they also appear the most politically enfranchised, as over half are members of an OHV related organization. The two largest OHV organizations in Michigan, the Cycle Conservation Club and the American Motorcyclist Association, also directly represent motorcyclists by name.

Other segments that contain a motorcycle also seem to be more like motorcycle only segments than non-motorcycle segments. This includes early initiation of OHV use, higher use of the designated trail system and residing in the more urbanized southern Lower Peninsula of Michigan. This creates a challenge for broadening the scope of Michigan's OHV program to be more inclusive of ATVs. Currently all the designated trail system can be used by the motorcycle only segment, while only 60% is wide enough for use by ATVs and only 17% is wide enough for SUV use. To maintain highly technical trails, especially the type that appeal to those who ride in competitive motorcycle events, narrow (40 inches as handle bar height and 24 inches on the ground) trails are vital. Since the majority of grant money for trail maintenance and development also flows through non-profit motorcycle oriented groups, there is little incentive for change.

SUV Oriented Segments of Licensees

The SUV oriented segments, while relatively small, are strongly focused on the designated scramble area system. Operators seek places to test their vehicles and compete in such tests against other riders. Scramble areas that contain hill climbs and large areas of rolling, sandy terrain are especially attractive. The three most heavily visited scramble areas for such activities are part of a sand dune oriented state park near Lake Michigan and two areas of more than a thousand acres in the central portion of the northern Lower Peninsula, one on state forest land and one on national forest land. Development of additional scramble areas is controversial, as law enforcement, safety and environmental problems are daunting. All attempts to develop additional public facilities for this activity in southern Lower Michigan, even in abandoned industrial sites such as gravel pits, have met with strong opposition and have been stopped.

Because of their street licensed status, this segment can use the forest road system to support activities such as deer hunting and dispersed camping. However, most of the off-road trail system is inaccessible. Widening existing ATV or motorcycle trails to accommodate these larger vehicles would present significant safety risks and environmental challenges. The 17% of the trail system with 96-inch wide trail that accommodates these vehicles is also discontinuous, generally being comprised of sections of forest roads designated as OHV trail so loops of the cycle and ATV trail system can be connected. Street licensed vehicles not possessing an ORV license can also legally use this 96-inch wide trail. Hence, like the ATV only segment, SUV oriented segments have little use of the total trail system and no exclusive use areas.

Conclusion

The complexity of OHV management is steadily increasing in Michigan as the range of OHV options expands and as competition for designated trail/area space increases within the OHV community and beyond with other land uses. This segmentation of OHV ownership types provides insight into these complexities and suggests future challenges. Principally it suggests that treating OHVs as a single class of vehicles whose operators have similar interests may be ill advised and that managers need to become more sophisticated in their approach to OHV use and users.

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RECREATION CONFLICT OF RIPARIAN LANDOWNERS WITH PERSONAL WATERCRAFT AND MOTORBOAT USE ALONG THE NEW YORK'S GREAT LAKES

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Abstract: Riparian landowners of the New York's Great Lakes (NYGL) are reportedly in conflict with some motorboat and personal watercraft (PWC) use. Goal interference theory was used to explain landowners' perceived conflict caused by motorboat and PWC use. A study conducted in the NYGL area surveyed the riparian landowners' perceived conflict and problems caused by motorboat and PWC use. Data were collected from six sites: Alexandria Bay, Sandy Pond, Sodus Bay, Olcott Harbor, N. Niagara River, and Handford Bay. Study results showed three of Jacob and Schreyer's four conflict dimensions were determinants of landowners' perceived conflict. Only the resource specificity dimension was not statistically significant in predicting landowners' perceived conflict.

Introduction

Riparian landowners on the New York's Great Lakes (NYGL) reportedly have experienced conflict with personal watercraft (PWC) and motorboat users (Wang & Dawson, 2001). The various types of conflict from PWC and motorboat use include safety, environmental, and unsafe behavior issues. PWC operation has been a safety issue, such as speeding, operating too close to swimmers or facilities, jumping boat wakes, and cutting across the courses of other water craft. Environmental issues can include noise, water pollution, odors, disturbing wildlife habitat, and destroying water plants. With the rapidly increasing use of PWC and motorboats, these problems have become potentially more serious to riparian landowners.

Increased recreation use on water bodies (e.g., rivers or lakes) can result in conflicts between waterfront landowners and other waterfront users. Conflict between riparian landowners and boaters has been the focus of several studies (Adcock, 1999; Dawson et al., 1982; Roggenbuck & Kushman, 1980). Most of these studies compared the landowners' and river visitors' perceptions of river conditions and their different preferences on management actions. Few studies mentioned what social-psychological factors influenced riparian landowners' perceived conflict. Those factors can help resource managers and researchers to understand how landowners perceive conflict and take management actions or develop educational programs to reduce that conflict.

Compared to general recreational users, such as swimmers, anglers, PWC users, or motorboat users, riparian landowners may have several unique characteristics that cause them to feel conflict differently from participants in other activities. First, in addition to encountering other recreational users when participating in recreation activities, landowners may be disturbed by the noise from a passing motorboat or PWC without direct contact, or by observing a motorboat or PWC operating close to swimmers. Second, unlike recreation users who can substitute or displace their activities, landowners own properties along the water body and are attached to their property for which there is no easy substitution. Third, various attractions of a site, such as recreational activities, scenery, the price of land or geographic characteristics, may attract different types of landowners. For example, because of the numerous islands in the Alexandria Bay Area, watercraft are not only recreation equipment, but also transportation with which local people can go to work or visit friends.

Goal interference theory (Jacob & Schreyer, 1980) has been applied to explain recreation conflict between various recreation users, such as the conflict between cross-country skiers and snowmobilers (Jackson & Wong, 1982), hikers and stock users (Blahna et al., 1995; Watson et al., 1994) and canoeists and motorboaters (Aldelman et al., 1982; Ivy et al., 1992). Goal interference theory proposed four dimensions of conflict factors — activity style, resource specificity, mode of experience, and lifestyle tolerance. Among these four dimensions, lifestyle tolerance is one determinant that consistently predicts recreation conflict. Previous studies usually identified lifestyle based on the recreation activities users participated in, such as PWC users, motorboat users and landowners; however, whether recreation users have ever participated in the activities they encounter may also influence their perceptions of goal interference (Wang & Dawson, 2001). For example, landowners owning a PWC may have different conflict levels than those without a PWC. In addition, landowners from different sites may have different lifestyles causing different conflict levels. Therefore, this study examined if riparian landowners should be categorized based on study sites or watercraft equipment ownership.

The purpose of this paper is twofold. First, the relationships of conflict factors to study site and landowners' ownership of a PWC and/or a motorboat were examined. Second, based on the goal interference theory, this study tested the four important factors for predicting the conflict of NYGL riparian landowners with PWC and motorboat users.

Methods

For this study, New York's Great Lakes area was considered to include the shoreline of the St. Lawrence River, Lake Ontario, the Niagara River and Lake Erie within New York State. Data was collected from six sites

along NYGL with relatively high motorboat and PWC use. The six sites were: Alexandria Bay, Sandy Pond, Sodus Bay, Olcott Harbor, N. Niagara River, and Hanford Bay. Alexandria Bay and Sodus Bay are regional recreation attractions and have heavy recreational use during summer months.

The landowner sample was selected from the tax maps of the six study sites because of the detailed information available, such as: development on the property (e.g., docks, buildings, and land), the owner's name and address, and use type (e.g., home or summer house). The range of each study site extended one mile along the coast from either the mouth of the river or the edge of the bay; the sample range also included those landowners along the bays and rivers. The sample was selected systematically and did not include vacant lands or lands with docks only. About 100 individuals were selected from each study site with a total of 634 landowners selected overall. A mail survey with one initial mailing and two follow-up mailings was conducted in summer, 1999.

The independent variables used in this paper were factors derived from the 10 dimensions containing 94 survey items and reported previously (Wang & Dawson, 2001). The 10 dimensions were: motivation, activity style, resource specificity, lifestyle tolerance, mode of experience, problem from PWC use, problem from motorboat use, experience, sensitivity to conflict, and expected behavior of PWC and motorboat users. Each dimension contains several factors derived from factor analysis, and each factor contains one or several survey items. The relationships among dimensions, factors and survey items are listed in Table 1.

Respondents were also asked to report their ownership of personal watercraft (PWC) and motorboats. Four different ownership groups could be categorized, including landowners owning a PWC and motorboat, landowners owning a PWC only, landowners owning a motorboat only, and landowners without any PWC or motorboat. Through analysis of variance (ANOVA) with the least square distance (LSD) option, Wang and Dawson (2001) found that landowners owning a PWC and motorboat and landowners owning a PWC could be grouped together because only four items were different. Therefore, the four types of respondents were combined into three study groups based on their ownership similarities (Wang & Dawson 2001). The three study ownership groups were named: landowners owning a motorboat and PWC (L-m-pwc), landowners owning a motorboat only (L-m), and landowners without any PWC or motorboat (L). This study developed perceived conflict models for each of the three study groups.

Table 1. The Relationship among Dimensions, Factors, and Survey Items

Dimension	Factor	# of items	Dimension	Factor	# of items
Motivation	Nature enjoyment	3	Problem from PWC use	Operator behavior & machine impact	6
	Relax, rest & get away	5		Environment problems	4
	Social interaction	4	Problem from Motorboat use	Machine impact problems	3
	Excitement & exercise	2		Environment related problems	4
	Skill & equipment	3		Operator behavior problems	3
Activity Style	Self-identity	5	Experience	Year	1
	Value sharing	4		Importance of land ownership	1
Resource Specificity	Place dependence [a]	3	Sensitivity of conflict	Sensitivity to motorboating	1
	Place identity [a]	8		Sensitivity to PWC	1
Lifestyle Tolerance	Evaluation of jet skiers	9	Expected behaviors	Positive statements about PWC	3
	Evaluation of motorboaters	9		Negative statements about PWC	6
Mode of exp.	Focus on social and the nature	4		Regulations	2

a. Intending to test place attachment theory, this paper renamed factor "Best Place" and "Place Dependence" in the previous paper (Wang & Dawson, 2001) to "Place Dependence" and "Place Identity" respectively in this paper.

Results

A total 634 initial surveys were mailed out, and 37 surveys were undeliverable. After two follow-up mailings, the adjusted response rates for the six sites were between 53% and 77%, with an average of 63% (Table 2).

A two-way contingency table (Table 3) shows that ownership combination were significantly associated with the study sites (Chi-Square=75.889, df=10, and P-value<0.001). Most landowners at Alexandria Bay, Sandy Pond, and Sodus Bay have a motorboat, but only 9%~14% of the landowners at these three do not own any motorboat

Table 2. Mail Survey Response Rates from the Six Study Sites

Study site	Sample	Undelivered	Returned	Response rate
Alexandria Bay	115	8	66	62%
Sandy Pond	114	5	71	65%
Sodus Bay	123	9	88	77%
Olcott Harbor	100	3	51	53%
N. Niagara River	82	4	48	62%
Hanford Bay	100	8	50	54%
Total	**634**	**37**	**374**	**63%**

or PWC. About half of landowners at Olcott and N. Niagara River do not have a motorboat or PWC, and 6%~8% of the landowners at these two sites own a PWC. Compared to other study sites, Sandy Pond and Hanford Bay have more landowners who own a PWC. These results indicate that whether riparian landowners own a motorboat or a PWC is associated with the characteristics of the study sites.

The relationship between conflict level and study site was examined (Table 4) and Chi-square statistics show landowners' perceived conflict from motorboating is significantly associated with the study sites (Chi-square=21.092; df=5; P-value=0.001). Alexandria Bay has the highest reported conflict level with 48% of landowners feeling conflict from motorboat users. Sandy Pond landowners (14%) reported the least interference from motorboat use.

Interference from PWC use is not significantly associated with the study sites (Chi-square=10.012, df=5, and P-value=0.075). Alexandria Bay has the highest reported conflict level from PWC use (55%) and the N. Niagara River (29%) landowners report the least conflict from PWC use.

Overall (Table 4), riparian landowners at Alexandria Bay reported the highest conflict levels from both PWC use and motorboat use probably because of its highly developed water-based tourism and recreation use. Landowners at Sandy Pond, Sodus Bay, Olcott Harbor, and Hanford Bay reported less interference from motorboat use than from PWC use. One possible reason for this could be spatial separation of PWC and motorboat use in bays or ponds, where motorboaters need to operate their boats further from the shoreline than PWC users because of the shallow water near shore. However, landowners on the N. Niagara River reported more conflict from motorboat use than from PWC use not only because of the low use level by PWC, but also because high river banks distance landowners from PWC use.

Table 3. Percent of Each Ownership Group in Each Study Area

	Ownership Groups Percent			
Study Sites	L-m-pwc	L-m	L	Total
Alexandria Bay	16.7	74.2	9.1	100
Sandy Pond	23.9	62.0	14.1	100
Sodus Bay	14.8	75.0	10.2	100
Olcott Harbor	5.9	39.2	54.9	100
N. Niagara River	8.3	41.7	50.0	100
Hanford Bay	22.0	38.0	40.0	100

Table 4. Percent of NYGL Landowners' Reporting Interference from Motorboat and PWC Use

	Interference from motorboat use		Interference from PWC use	
Study sites	No	Yes	No	Yes
Alexandria Bay	52	48	45	55
Sandy Pond	86	14	66	34
Sodus Bay	64	36	55	45
Olcott Harbor	75	25	58	42
N. Niagara River	67	33	71	29
Hanford Bay	76	24	53	47

In order to understand how ownership groups and study sites affect conflict factors and landowners' problem perceptions, multiple analysis of variance (MANOVA) was used (Table 5). Results of MANOVA indicate several factors were significant, including the importance of the land ownership, sensitivity to PWC use, two motivation factors, evaluation of PWC users, problems from PWC use, problems from motorboat use, and two of the social value factors about PWCs. For these differences, most affects were caused by ownership groups but not by study site or the interaction between study site and ownership groups. Only the importance of land ownership was affected by study site, and three factors had affects on the interaction between study site and ownership combination, including: importance of land ownership and two of the motivation factors (relax, rest & get away and social interaction). These results indicate that ownership groups were an important variable that influences landowners' perceived conflict caused by PWC and motorboat users, but study site is not so important.

Logistic regression was applied to examine the four Jacob and Schreyer (1980) dimensions of conflict factors that reportedly cause the interference felt by the three groups from PWC use (Table 6). For landowners owning a motorboat and PWC (L-m-pwc), no factor was significant to predict perceived conflict, and most of this group felt no conflict with PWC users. For landowners owning a motorboat (L-m), Self-identity and Lifestyle Tolerance were significant in predicting the perceived conflict. For landowners (L), Lifestyle Tolerance and Focus of Social and the Nature were significant in predicting landowners' perceived conflict. When all landowner types were pooled together, Self-identity, Lifestyle Tolerance, and Focus of Social and the Nature emerged as predictors of landowners' perceived conflict attributed to PWC use.

Comparing the three group models, lifestyle tolerance is the only relatively consistent factor in predicting landowners' perceived conflict. The negative relationship of lifestyle tolerance with perceived conflict indicates that landowners with lower lifestyle tolerance levels reported more interference when encountering a PWC. Self-identity, a factor of the activity style dimension, is only significant in the model of landowners owning a motorboat (L-m). Its positive value indicated landowners with higher self-identity scores reported more conflict with PWC use. Mode of experience is significant in the model of landowners (L), the positive value indicated landowners with higher scores of focusing on the social and natural settings felt more interference from PWC use. Three factors (Value Sharing, Place Dependence, and Place Identity) were not significant to predict landowners' perceived conflict with PWC use.

Table 5. Multiple Analysis of Variance (MANOVA) P-value Test Results for Various Social-psychological Factors (P-values<0.05 are in bold type)

	Corrected Model	Effect from study site	Effect from ownership	Interaction of site and status
Experience				
Year	0.619	0.361	0.628	0.830
Importance of land ownership	**0.022**	**0.008**	**0.017**	**0.010**
Conflict Sensitivity				
Sensitivity to motorboat use	0.372	0.134	0.980	0.597
Sensitivity to PWC use	**<0.001**	0.565	**<0.001**	0.279
Motivation				
Nature enjoyment	0.168	0.085	0.724	0.087
Relax, rest & get away	0.129	0.412	0.060	**0.018**
Social interaction	**0.017**	0.794	**0.027**	**0.014**
Excitement & exercise	0.364	0.623	**0.008**	0.777
Skill & equipment	**<0.001**	0.667	**<0.001**	0.083
Activity Style				
Self-identity	0.158	0.664	0.148	0.435
Value sharing	0.808	0.726	0.530	0.608
Resource Specificity				
Place dependence	0.610	0.939	0.769	0.447
Place identity	0.319	0.637	0.523	0.117
Lifestyle Tolerance				
Evaluation of jet skiers	**<0.001**	0.496	**<0.001**	0.472
Evaluation of motorboaters	0.136	0.076	0.510	0.300
Mode of Experience				
Focus of social and the nature	0.762	0.950	0.394	0.430
Problem from PWC Use				
Operation behavior & machine impact	**<0.001**	0.659	**<0.001**	0.193
Environment problems	**<0.001**	0.973	**<0.001**	0.257
Problem from Motorboat Use				
Machine impact problems	**0.003**	0.201	0.062	0.084
Environment related problems	**0.005**	0.924	**0.001**	0.568
Operator behavior problems	**0.009**	0.577	**0.039**	0.059
Expected Behaviors				
Positive statements about PWC	**<0.001**	0.666	**<0.001**	0.278
Negative statements about PWC	**<0.001**	0.831	**<0.001**	0.385
Regulations	0.474	0.969	0.170	0.676

Table 6. Regression Coefficients of Significant Variables in Predicting the Landowners' Perceived Conflict Caused by PWC Use

	L-m-pwc	**L-m**	**L**	**Total**
Constant	-1.340	-1.236	-5.882	-3.165
Activity Style				
Self-identity[a]	—	0.843	—	0.428
Value Sharing[a]	—	—	—	—
Resource Specificity				
Place Dependence[a]	—	—	—	—
Place Identity[a]	—	—	—	—
Mode of Experience				
Focus of Social and the Nature[b]	—	—	1.343	0.583
Lifestyle tolerance[c]	—	-1.580	-1.279	-1.388
Nagelkerke RS	0.000	0.444	0.458	0.410
Correct prediction (%)	79.2	76.4	78.5	77.7

a. Variables coded on a 5-point scale from "strongly disagree" (-2) to "strongly agree" (2).
b. Variables coded on a 6-point scale from "never focus" (0) to "extremely focused" (5).
c. Variables coded on a 5-point scale from "negative term" (-2) to "positive term" (2).

The conflict factors were used to predict the interference between the three types of riparian landowners and motorboat users (Table 7). The activity style, lifestyle tolerance, and mode of experience dimensions are statistically significant in predicting landowners' perceived conflict attributed to motorboat use. For landowners owning a motorboat and PWC (L-m-pwc), Self-identity and Lifestyle Tolerance are significant in predicting landowners' perceived conflict. For landowners owning a motorboat only (L-m), Lifestyle Tolerance and Focus of Social and the Nature significantly affect landowners' perceived conflict from motorboat use. For landowners without any PWC or motorboat (L), Value Sharing, Lifestyle Tolerance, and Focus of Social and the Nature are significant in predicting landowners' perceived conflict from motorboat use. If all three types of landowners are pooled together, only Lifestyle Tolerance and Focus of Social and the Nature are significant in the perceived conflict model.

Comparing the significant predictors of conflict caused by motorboat use, it was found that lifestyle tolerance with its negative relationship to interference was the only consistent factor across the three landowner groups. Mode of experience was significant in two of the three groups: landowners owning a motorboat (L-m) and landowners (L). In addition, the positive regression coefficients for mode of experience indicate landowners who focus more on the social and natural settings felt more interference from motorboat use. Landowners owning a motorboat and PWC (L-m-pwc) and landowners (L) both are significant in activity style dimension, but in different factors. For landowners owning a motorboat and PWC (L-m-pwc), a positive coefficient for Self-identity indicates those who identify themselves more as landowners feel more interference from motorboat use. However, for landowners (L), Value Sharing had a negative value, indicating landowners who shared their values with others felt less interference from motorboat use. In addition, both factors in the resource specificity dimension, Place Dependence and Place Identity, do not significantly predict landowners' perceived conflict with motorboat use.

Discussion

Multiple analysis of variance results showed the social-psychological conflict factors and landowners' problem perception were most significantly different in activity status, but not in study site or in the interaction between activity status and study site. This indicated the relationship between social-psychological factors and landowners' perceived conflict. The study site was not an important influence, but ownership groups were important. This also supports previous empirical studies in which conflicted groups were categorized based on the activities respondents participated in, such as hikers versus mountain bikers (Ramthun, 1995) or skiers versus snowboarders (Vaske et al., 2000).

This study applied goal interference theory (Jacob & Schreyer, 1980) to explain riparian landowners' conflict with motorboat and PWC use. Logistic regression results indicate goal interference theory is a good model to explain riparian landowners' interference from PWC and motorboat use. However, only the lifestyle tolerance dimension and the mode of experience dimension are relatively consistent in predicting conflict in both overall models.

Like previous studies (Ivy et al., 1992; Jacob & Schreyer, 1980; Ramthun, 1995), this paper suggests that the lifestyle tolerance dimension is important in predicting landowners' conflict with PWC and motorboat use in NYGL's area. In general, lifestyle tolerance negatively relates to goal interference; indicating visitors more tolerating of the lifestyle of encountered groups will perceive less interference. Although not significant in every model, the mode of experience dimension helps predict recreation conflict, especially, for landowners without any PWC or motorboat, it became an important factor in determining their perceived conflict from PWC and motorboat use.

Table 7. Regression Coefficients of Significant Variables in Landowners' Predicting Conflict Caused by Motorboat Use

	L-m-pwc	L-m	L	Total
Constant	-1.657	-3.033	-5.344	-3.049
Activity Style				
Self-identity[a]	1.175	—	—	—
Value Sharing[a]	—	—	-0.813	—
Resource Specificity				
Place Dependence[a]	—	—	—	—
Place Identity[a]	—	—	—	—
Mode of Experience				
Focus of Social and the Nature[b]	—	0.795	1.363	0.754
Lifestyle Tolerance[c]	-1.227	-0.921	-0.733	-0.943
Nagelkerke RS	0.270	0.181	0.346	0.191
Correct prediction (%)	77.4	69.5	76.2	71.7

a. Variables coded on a 5-point scale from "strongly disagree" (-2) to "strongly agree" (2).
b. Variables coded on a 6-point scale from "never focus" (0) to "extremely focused" (5).
c. Variables coded on a 5-point scale from "negative term" (-2) to "positive term" (2).

These results support goal interference theory in which visitors who focus more on their activity in certain ways are more prone to perceive interference. However, the activity style dimension was not consistent in both model sets: PWC conflict models and motorboat conflict models. Self-identity, one factor of the activity style dimension, was only significant in the PWC model of landowners owning a motorboat (L-m) and in the motorboat model of landowners owning a motorboat and PWC (L-m-pwc). Value sharing, another factor of the activity style dimension, was only significant in the PWC model of landowners without any motorboat or PWC (L). Therefore, this study did not support activity style as a strong determinant of recreation conflict.

The resource specificity dimension proposed by goal interference theory is not a significant determinant in both model sets. The resource specificity dimension corresponds to two factors, Place Dependence and Place Identity. Neither of these two factors were significant in any model. These results do not support goal interference theory and other empirical studies (Adelman et al., 1982; Vaske et al., 2000). Resource specificity is not a useful determinant of landowners' perceived conflict perhaps because most landowners thought their property and the NYGL area was so important to their daily life they reported high values for these two factors. Therefore, these two factors were more like constants among landowners.

Comparing the two conflict model sets -- PWC conflict models and motorboat conflict models -- it was found that landowners' experience with the activity they encountered would affect the prediction ability of goal interference theory. In the PWC conflict model, for instance, the six conflict factors explain the least variation in the perceived conflict model for landowners owning a motorboat and PWC (L-m-pwc). Similarly, in the motorboat conflict model, the six factors explain very little of the variation in perceived conflict for landowners with a motorboat (L-m). Goal interference theory best explains conflict for landowners without any motorboat or PWC (L) in both models. This suggests that landowners without experience with the activity they encountered had more crystallized norms and had a clear pattern in perceiving conflict from motorboat and PWC use. These results are supported by a similar idea from previous studies (Vaske et al., 2000) in which goal interference theory could better explain out-group conflict, but not in-group conflict.

Goal interference theory (Jacob & Schreyer, 1980) can help explain landowners' conflict with motorboat and personal watercraft use. However, only mode of experience and lifestyle tolerance were relatively consistent factors in predicting landowner's interference. Resource specificity is not a determinant in predicting landowners' perceived conflict with PWC and motorboat use. The results of the study suggest that recreation conflict is more complex than past studies found, as equipment and visitors' experiences can affect their perceived conflict.

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USER PREFERENCES FOR SOCIAL CONDITIONS ON THE ST. CROIX INTERNATIONAL WATERWAY

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Abstract: In cooperation with the St. Croix International Waterway Commission the University of New Brunswick and University of Maine conducted a study of waterway users during the summer of 1999 to determine: 1) characteristics of the waterway visit, including activities, method of travel on the waterway, length of stay, camping conditions encountered; 2) characteristics of visitors, including type of groups, previous experience, place of residence, and other sociodemographic descriptions; and 3) visitor preferences for resource and social conditions encountered on the waterway. A mailback questionnaire was administered to a sample of waterway users. Approximately 404 usable questionnaires were returned, for an overall response rate of 62 percent. One of the management objectives of the St. Croix waterway is to provide opportunities for secluded watercourse travel and camping. The waterway has a diverse range of water-oriented settings, defined by geographic features, accessibility, and use history. Therefore, we examine visit and visitor characteristics based upon travel within the areas of the waterway. We compare the significance of indicators for secluded travel and camping for experience quality among the different user groups.

Introduction

The St. Croix International Waterway is a complex of lakes and river segments stretching approximately 115 miles (185km) along the border of eastern Maine and New Brunswick. The waterway is comprised of three major geographic zones: a headwater lakes and river section characterized by mostly undeveloped shoreline, a lower river section of developed and industrialized river, and a tidal estuary and bay system. This study is concerned exclusively with the headwater lakes and upper river section. This region is the longest stretch of undeveloped international waterway east of the Boundary Waters Canoe Area of Minnesota and Ontario. It is listed as one of the state of Maine's Twenty Outstanding Rivers, and it is officially recognized as the St. Croix Waterway Recreation Area by the province of New Brunswick. Most significantly, the St. Croix was included in the Canadian National Heritage river system in 1991, the first such designation in Atlantic Canada.

Since the waterway is an international boundary, recreation and resource management is conducted by several agencies, including the International Joint Commission, the Bureau of Parks and Lands and the State Forest Service in Maine, and the Department of Natural Resources and Energy in New Brunswick. In 1986 a Memorandum of Understanding between Maine and New Brunswick created the St. Croix International Waterway Commission, an advisory agency, that has since taken the lead in studying waterway-related issues and coordinating planning for future waterway management needs. In a 1993 report, the St. Croix International Waterway Commission noted that "distinct land and water management policies are applied without integration on opposite sides of the waterway, leaving it vulnerable to incompatible uses and potential quality loss" (SCICW, 1993, p. 13). It called for further recognition of the region as an "International Heritage Waterway." At the same time it also recommended a range of policies intended to guide development and management in a way that protects the area's cultural and natural heritage, environmental quality, and traditional high-quality recreational opportunities. Particular focus of the latter is placed on secluded backcountry canoe experiences available in the headwater lakes and upper river region.

Providing and maintaining a quality recreation experience requires an understanding of the resource and social conditions that exist on the waterway. Indicators and standards of quality illustrate what visitors to an area expect, prefer, or will accept as part of their recreation experience. This concept has emerged as a central focus of recreation management. Indicators of quality are measurable variables that help define the quality of the recreation experience and standards of quality that define the minimum acceptable conditions of indicator variables (Manning, 1999). Good indicators are practical to measure quantitatively, sensitive to the type and amount of use, and potentially responsive to management control (Lucas & Stankey, 1985; Watson et al., 1998). Several studies examining indicators of quality have revealed some variables to be more important than others (Manning, 1999). For example, litter and other signs of visitor use impacts appear to be more important as compared to management-related impacts such as signs and presence of rangers. Social indicators of quality at secluded campsite locations are more important than ecological indicators. Visitors to more primitive areas or sites may be generally more sensitive to a variety of potential indicators of quality than visitors to more highly used and developed areas or sites. Watson and others (1998) have reported similarity in the rankings of social and resource indicators by wilderness boaters even though users were found to have diverse motivations or experience preferences. On the St. Croix waterway, users have unrestricted access to both primitive and developed sites and a wide range of water-oriented opportunities. The situation suggests the need to understand the diverse recreation experiences and indicators of quality.

One of the management objectives of the St. Croix waterway is to provide opportunities for secluded watercourse travel and camping. The management objective related to "secluded," much like "solitude," is not commonly measured directly but rather through indicators believed to provide feedback on forces that threaten the "secluded" or "solitude" opportunities (Watson et al., 1998). For example, commonly used indicators for this factor include "the number of groups that camp within sight or sound of my campsite" or "the number of boats I see along the waterway in a day". In attempting to understand the management needs for providing for secluded travel and camping in the St. Croix Waterway, this paper does three things. Based upon visitor surveys we first report trends in visit and visitor characteristics in a way that distinguishes the distinct sub-groups of the user population. Second, we examine the significance of different indicators measuring solitude to the waterway experience desired by these sub-groups. Finally, we assess the varying standards held by each of these distinct sub-groups for these indicators of solitude. Several important management implications emerge.

Methods

A multi-stage cluster sampling design was utilized to select users of the St. Croix waterway. The sample period was from June 6, 1999, to September 10, 1999. The primary sampling unit was blocks of time established as sampling shifts of either 7:00 a.m. to 1:00 p.m. or 1:00 p.m. to 7:00 p.m. In total 14 put-in or take-out locations along the waterway were covered by four field technicians. To reduce travel time and distances for the technicians, two were responsible for four sites each and two were responsible for three sites each. This division created four sampling clusters. For each cluster, the sample sites and time were determined by random selection. Each waterway user was greeted, briefly introduced to the purpose of the study, and asked to participate. If users agreed, an interview lasting approximately 2 minutes, was used to determine group type, travel destination, length of visit, number of previous visits and average number of visits per season or if this was the first time visiting the St. Croix waterway. Also, the technician noted the type and number of boats in the group as well as group size.

A self-administered, mailback questionnaire was sent to the sample of waterway users who agreed to receive and complete the survey. Questionnaires were sent to 332 users from the United States, 336 users from Canada, and 13 users from another country, for a total of 681. The mailout procedure basically followed the approach recommended by Dillman (1983). The initial mailing included a questionnaire with a cover letter and postage-paid business reply envelope. One week after the first mailing, a postcard reminder and thank you was sent to everyone. Three weeks after the initial mailing, a follow-up mailing was sent to those who had not responded. A different cover letter in this mailing emphasized the importance of everyone's response. Another questionnaire and postage-paid business reply envelope were included. A second follow-up was sent to those who still had not responded 7 weeks after the initial mailing.

In response to the Waterway Commission's strong desire to protect opportunities for secluded backcountry canoe travel and camping among other desires, we employed a similar visitor survey approach conducted by Watson and others (1992). Among other variables we obtained assessments from waterway users on the significance of social and resource indicators on a 5-point Likert scale from mattering "not at all" to mattering "extremely" in defining the quality of experience on the waterway. The list of proposed indicators posed to all users of waterway were compiled from a literature review and feedback from select resource management specialists. Social indicators to capture secluded backcountry travel and camping included among others "the number of boats I see along the waterway," "the number of large groups (more than 6 boats) that I see along the waterway," "the amount of noise associated with human activity along the waterway," and the number of groups camped within sight or sound of the campsite," and "the percent of time other people are seen while traveling on the waterway." Preferences for these certain indicators were also assessed in a separate set of questions by asking respondents for a preferred number within a given range, as well as for ranges of acceptability and unacceptability.

The waterway has such a diverse range of water-oriented opportunities, each defined by geographic features, accessibility, and use history, that we decided to compare users based upon travel zones within the area. In assessing visit and visitor characteristics we first chose to examine what differences emerged between the five groups defined by these travel zones. The first regional group is that which utilized only the upper lakes. The next is that which utilized only the lower lakes. The third is that which utilized only the upper river, a section typified by quick water and numerous, easy rapids. The fourth is that which utilized the entire, forty-mile river section, combining the quick water of the upper river with a more remote and placid lower section. The final group we defined as those users group who traveled on both lakes and river and stayed out for two or more nights. Visit and visitor characteristics were assessed for each of these groups separately and for the survey population as a whole. In addition, we compared the significance of social indicators among the different user groups.

Results

For the onsite waterway user interviews, response rate was over 99 percent. Only a couple of the waterway users did not want to be interviewed. Of the 681 surveys mailed to waterway users, 31 were not deliverable due to incorrect addresses. Part of the this return figure can be attributed to the fact that the Province of New Brunswick was in the process of adopting a 'civic numbering' plan (Stacey & Daigle, 2000). A total of 404 completed surveys were returned with 220 coming from US users, 181 from Canadian users, and three from other countries for an overall response rate of 62 percent. The majority of the survey respondents were male (80%). The vast majority of

Canadian users were from the province of New Brunswick (94%). The origins of US users were more diverse, but 73 percent were from the New England states of Maine, Massachusetts, Rhode Island, Vermont, Connecticut and New Hampshire. Of the Canadian respondents, only 32 percent were first time users of the waterway and 48 percent of the US respondents were first time users. Of those who have used the waterway previously, approximately 49 percent reported using it between one and 20 times, 29 percent between 21 and 100 times and 22 percent over 100 times.

Visit and Visitor Characteristics

The segmentation of users based upon travel areas within the St. Croix waterway included the upper lakes (n=154), lower lakes (n=38), upper river (n=107), full river (n=57), and extended trippers (n=35). Thirteen users were not part of this classification scheme because of insufficient travel data. Approximately equal proportions of Canadian and US visitors utilized the upper lake region of the St. Croix Waterway (Table 1). Slightly more Canadians utilized the lower lakes (63 percent) and upper river (59 percent) areas. However, US visitors were much more likely to be full river users (89 percent) and extended trippers using both lakes and the river (94 percent). Much more day use was reported by users of only lower lakes (76 percent) as compared to the users of only upper lakes (41 percent). Most overnighters in the upper lakes stayed 2 or more nights (66 percent). As might be expected, users of the full river and extended trippers were more likely to utilize the waterway for extended overnight stays. The two lake groups tend to be more oriented toward motorized use and fishing, with the lower lake group strongly focused on a day-fishing experience. Boat type and primary activity indicate that the upper lakes group is less homogenous than the lower lakes group. On the river sections parties tend to be larger, with more boats. The latter two of these river groups, the two groups that stayed the longest, are also distinctly American in composition. One of the most striking differences between these river groups is in their previous experience with the waterway, with less than 1% of the upper river group visiting for the first time, compared to 65% and 49% for the other two river groups. The two lake groups also have very high levels of previous experience with the waterway compared to all the river groups. Finally, each group also differs from the survey average represented by the overall results.

Table 1. Trends in Visit and Visitor Characteristics

	Waterway user groups					
	Upper Lakes (n=154)	Lower Lakes (n=38)	Upper River (n=107)	Full River (n=57)	Extended Trip (n=35)	All Responses (n=404)
Citizenship	53% Can.	63% Can.	59% Can.	89% US	94% US	45% Can.
Percent day use	41%	76%	21%	0%	0%	29%
Typical overnight stay	66% ≥ 2 nights	1 night	38% 1 night 54% 2-3 nights	95% 2-4 nights	74% 4-6 nights	17% 1 night 27% 2 nights 24% 3 nights
Boat type	46% Motor 30% Canoe	45% Motor 45% Other	87% Canoe	100% Canoe	100% Canoe	58% Canoe 27% Motor
Primary activity	31% Fishing 18% Camp 16% Canoe	92% Fishing	64% Canoe 11% Fishing	79% Canoe	63% Canoe	42% Canoe 26% Fishing 10% Camp
Group size (median)	3	2	7	6	7	3.5
Number of boats (median)	1	1	2	3	3	1
First visit	10%	27%	<1%	65%	49%	26%
Number of years visiting area since first visit (mean)	24.4	19.0	12.7	8.3	7.7	18.6

Significance of Indicators for Secluded Travel and Camping

Table 2 shows the relative influence of 4 potential indicators on the quality of visitor experiences related to secluded travel and camping. The five waterway user groups are again easily distinguished when considering potential indicators of secluded travel and camping. Table 2 shows that for all four questions the lower lakes group responded with the lowest ratings. In no category does the mean response reach even a "matters moderately" level for this group. Conversely, the full river and extended trip groups have significantly higher rankings than the other three groups for these indicators. For all four indicators these two groups responded with averages of "matters very much" or "matters extremely." Again, each group responds in a distinct way from the overall survey results.

We should note that two other indicators ranked higher than the above items for potential indicators of secluded travel and camping. For example, indicators such as "the amount of manmade noise originating away from the waterway" and "the amount of noise associated with human activity along the waterway" were rated as being more important as factors effecting experience quality as compared to number of other users seen on the waterway. These items were consistently ranked higher regardless of the waterway user group and the full river and extended trippers were especially sensitive to noise.

Preferences for Solitude

When respondents were asked to indicate a preferred condition for these potential indicators of secluded travel and camping, the same trends appear. Table 3 shows that on the most densely used section of the waterway, the upper river, respondents have the highest preferred levels for number of boats seen in a day and number of large groups seen in a day. The lower lakes group, predominantly day-use fishers, had the highest preferences for number of groups camped within sight or sound and percent time other people are in sight. Not surprisingly, the lower lakes group also placed very low importance on these two categories as factors influencing experience quality. The two lake groups and the two lower river groups share similar preferences for the number of large groups seen in one day, but the latter have a strong preference for camping away from other groups.

The preferred condition can be useful to identify a proximate standard to describe central tendencies and to determine group norms for visitor acceptance of social impacts for indicators of experience quality. However, more analyses are required to investigate appropriate standards for example, "norm prevalence" (Kim & Shelby, 1998). Of particular importance is the relative significance of the potential indicators that helps define the quality of visitor experience. For certain user groups such as the upper and lower lakes as well as upper river users it might do little good to monitor preferences for conditions if these indicators are not as important as compared to other indicators in defining the quality of the visitor experience. A challenge is posed when for certain user groups, for example, extended trippers, where this indicator is important and travel zone areas overlap by the very nature of the activity.

Table 2. Significance of Potential Experience Indicators on Secluded Waterway Travel and Camping

This matters to me	Waterway user groups[a]					All Responses (n=404)
	Upper Lakes (n=154)	Lower Lakes (n=38)	Upper River (n=107)	Full River (n=57)	Extended Trip (n=35)	
The total number of boats I see along the waterway	2.84	2.39	2.78	3.56	3.47	2.94
The number of large groups (more than 6 boats) that I see along the waterway	2.86	2.49	2.79	3.65	3.64	2.99
The number of other groups that camp within sound of my campsite	3.04	2.18	3.07	4.04	4.03	3.22
The percent of time other people are in sight while I am boating along the waterway	2.50	2.00	2.70	3.51	3.51	2.73

[a] Mean answers on a 5-point Likert scale: 1=matters not at all, 2=matters slightly, 3=matters moderately, 4=matters very much, 5=matters extremely.

Table 3. Preferences for Conditions Related to Secluded Travel and Camping on the St. Croix Waterway

Indicator (range)	Waterway user groups[a]					All Responses n=404
	Upper Lakes (n=154)	Lower Lakes (n=38)	Upper River (n=107)	Full River (n=57)	Extended Trip (n=35)	
# Boats seen/day (0-50)	10	11	15	5	7.5	10
# Large groups seen/day (0-25)	3	3	5	2	3	3
# Groups camped nearby (0-25)	3	4	3	1	0	2
% Time see other people (0-100)	20	30	20	10	10	20

[a] Median responses for waterway user groups.

Management Implications

In designing experience-based management plans, resource managers must strive to protect the resource and the experience without unnecessarily restrictive or heavy-handed techniques. To apply a single management scheme to an area with a complex geography and pattern of visitation will ultimately fail on both these counts. Some groups will be restricted unnecessarily and others will suffer from a diminished experience. The results of this research highlight the importance of conducting baseline investigations of use and user characteristics.

As use levels increase, recreation management planning will be necessary to provide and protect the diverse experiences desired by the St. Croix visitor population. This study demonstrates that opportunities for secluded travel and camping influence experience quality for most visitors to the waterway and are very influential for certain visitors, especially for those visitors who are traveling the waterway on extended canoe trips. As such it may be a key component of planning, along with other factors which were also ranked highly such as litter, campsite condition, visibility of forestry operations from the water, and water levels.

The multiplicity of visitor groups, each with unique standards, seems at first as though it could lead to conflicts between visitors. However, the geographic zones of the waterway provide a management opportunity for offering a diversity of experiences. For example, visitors to the mostly flat water portion of the river have the most restrictive standards for solitude, therefore this region could be zoned in such a way to protect this opportunity without unnecessarily restricting visitors to the upper or lower lakes or upper river. Outreach efforts to achieve this goal might be best focused on the American visitor population, since this group is predominantly from the US. Efforts aimed at enhancing the lower lakes visitor experience should focus on improving the quality of day-oriented fishing excursions. The upper lakes, with the most diverse visitor population, might benefit from campsite types that range from primitive to developed, with certain islands or shoreline sections designated similarly. Presently, the large area of these lakes allows for diverse recreation opportunities without significant conflict.

The upper river is the area which suggests the greatest potential for conflict. Three groups utilize this zone, the upper river group, the full river travelers and the extended trip group. The upper river section could easily be traveled in a long single day. However, more than one half of the upper river group stayed 2 or more nights. This relatively slow rate of travel could perhaps lead to congestion of the limited number of sites in this zone. Also, this group has different standards regarding solitude from the other two groups. A preliminary analysis of other survey questions related to motivation, however, suggests more commonality. Approximately one quarter of the upper river group indicated the primary reason was to spend time with companions as compared to 10 percent for other river groups. However, the majority of all river groups indicated the primary reason they chose the St. Croix waterway was to engage in specific outdoor activities, especially canoeing, fishing and camping.

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SECURITY ALONG THE APPALACHIAN TRAIL

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Abstract: The Appalachian National Scenic Trail (AT) is a public footpath that spans more than 2,000 miles of Appalachian Mountain ridgelines. It stretches from Mount Katahdin in Maine to Springer Mountain in Georgia and passes through twelve other states along the way. It is estimated that the AT lies within a day's drive of over half the country's population. Thus, the AT is in close proximity to some of our nation's most densely populated areas.

Security along the trail has emerged as an important topic for trail managers, at least partially in response to recent high-profile crimes on or near the trail. How safe do visitors feel on the AT? It is a goal of trail managers to provide a safe and secure environment in which visitors can enjoy the natural, scenic, historic, cultural and recreational resources of the Appalachian Mountains. In order to assess the issue of security, managers need to be informed as to what types of security issues are arising, where they occur, and how visitors perceive the issue of security.

A wide-ranging study of visitors to the AT was conducted in the summer and fall of 1999 and included a number of questions about security. Security questions addressed the number and type of incidents encountered, preventative behaviors, and visitor's perceptions of security on and adjacent to the trail. This study presents descriptive findings from these questions and an analysis of the relationships between security and selected independent variables, including respondent gender, age, experience, and race/ethnicity, type of hiker, and location along the trail.

Key Words: Security, Outdoor Recreation, Appalachian Trail

Introduction

Recent high-profile crimes in national parks and related areas have contributed to a heightened awareness of and concern for security in parks and outdoor recreation areas. In 1996 a double homicide occurred near the Appalachian Trail (AT): two women were killed near their campsite in Shenandoah National Park (New York Times, 1996). Similarly, a series of homicides occurred in Yosemite National Park in 1999 and a National Park Service ranger was killed in Honokohau National Historical Park that same year (USA Today, 2000; NPS, 2001). These are only a few examples of violent crime in outdoor recreation settings. While these incidents may be isolated occurrences, they raise the question of how secure visitors feel in parks and related areas.

Outdoor recreation areas serve a distinct function in our society. They are the places we play, enjoy the natural world, and re-create ourselves. They give us the chance to withdraw from society and its problems, if only for a short time. However, incidents like the murders near the AT and in Yosemite give us a stark reminder of the realities of our contemporary world. National parks and related areas are not divorced from the security issues that trouble the rest of society. One of the principle values of these areas is the opportunity they present for escape from daily routines and pressures, and when crimes occur, there is a resonating impact on the recreating public. To what degree is security a problem in parks and related areas? How do crime and security issues affect recreationists? How safe do visitors feel in outdoor recreation settings?

A wide-ranging study of visitors to the AT was conducted in the summer and fall of 1999. The study included several questions about security. Questions addressed the number and type of security incidents encountered, preventative behaviors, and visitors' perceptions of security on and adjacent to the trail. This paper presents descriptive findings from these questions and an analysis of security on the AT in relation to several study variables, including age, gender, race/ethnicity, location, hiker type, experience, and group size.

Security Issues in Outdoor Recreation

Security can have multiple meanings and connotations in a recreation setting. For instance, security may refer to feelings of safety when the possibility of encountering wildlife such as a bear or mountain lion is present. The same can be said for feelings toward inclement weather or other adverse conditions in the recreation setting. Security can also be defined by users' own experience level in a particular activity and whether they are undertaking an activity that is beyond their skill level and therefore produces feelings of discomfort or insecurity. Finally, security can refer to feelings or perceptions of threat from other people. This latter definition was used for the purposes of this study. Respondents were given the following definition of security in the study questionnaire, "Security refers to feeling free from being threatened or attacked by other people on the trail." This paper focuses on security issues along the AT from this perspective.

The issue of security in outdoor recreation can be complex. The types of incidents that take place in outdoor recreation settings are continually diversifying. It is becoming increasingly apparent that parks, forests, and related areas are not devoid of the security problems that exist in society at large. Often the types of security issues that arise in

outdoor recreation settings are identified with urban problems. Chavez and Tynon (2000) identified several categories of criminal activities that take place on areas administered by the US Forest Service in the West, including one category entitled *urban-associated crime.* One common hypothesis is that criminal activity is more prevalent in front-country or urban settings. The thought is that urban problems "spill over" into adjacent recreation settings. However, outdoor recreation settings present a specific context for security issues, and it has been suggested that security in parks and recreation receive more explicit and comprehensive attention (Pendleton, 2000).

Security issues can have a dramatic effect on the visitor experience. For example, Fletcher (1983) found that perceptions of security problems negatively affect visitors' enjoyment of parks. Additionally, a pilot study conducted by Burns and associates (2000) on the AT and several Army Corp of Engineers lakes focused on visitors' perceptions of security and found that perceptions of security varied with visitor characteristics and recreation setting. These studies represent recent attempts to address this issue. Historically, however, little research has been done specifically on the issues surrounding crime and security in outdoor recreation settings. As recreation managers endeavor to provide a safe environment in which visitors may enjoy the out-of-doors and provide quality experiences, it becomes increasingly important to understand how visitors perceive of security in these settings. Clearly, an encounter with a security problem can substantially affect the visitor experience. Initial research suggests that perceived security problems may even displace visitors from parks and related areas (Fletcher, 1983; Burns et al., 2000).

Security on the AT

The AT is a vast and unusual recreation resource. It spans more than 2,000 miles of Appalachian Mountain ridgelines along the eastern third of the United States. It is estimated that over half of the country's population lives within a day's drive of the AT. Thus, the AT is in close proximity to some of our nation's most populated areas. Due in part to recent high-profile crimes on and near the Trail and its proximity to densely populated areas, security issues have increasingly become a concern of trail managers. It is a goal of trail managers and planners to provide a safe and secure environment in which visitors may enjoy the natural, scenic, historic, cultural, and recreational resources of the Appalachian Mountains. In order to meet this objective, managers and planners need to be informed about specific security issues along the AT. Further, if they are to effectively and efficiently address security concerns on the AT, managers will need to be knowledgeable about the frequency, types, and locations of security issues along the trail, and visitor perceptions of trail security.

The AT is also quite unusual in terms of its administration and management. The AT is jointly maintained by volunteer hiking clubs, the US Forest Service and the National Park Service. Such a coordinated effort presents challenges for trail management (Burns et al., 2000). The trail passes through a myriad of jurisdictions ranging from local municipalities to state and federal agencies. Similarly, the trail passes through a wide range of natural landscapes from remote highlands to the roadsides of local communities. Additionally, there are a multitude of access points along the vast expanse of the trail. These characteristics present further challenges to the effective management of security issues.

Study Methods

The primary study method consisted of a survey of randomly selected users along the AT. Sampling took place in the summer and fall of 1999 (84% of the sample was obtained in the summer and the remaining 14% in the fall). Subjects were approached and asked if they would be willing to complete a mail-back questionnaire. A total of 2,847 AT users agreed to participate in the survey and were mailed a questionnaire. Four mailings were sent out; an initial mailing (a questionnaire, a cover letter, and a postage-paid, pre-addressed return envelope), a postcard reminder, a follow-up questionnaire and a final mailing to non-respondents. Nearly 2,000 questionnaires were completed and returned, representing a response rate of 66 percent. The sample was designed to be as representative as possible of all users of the AT over 18 years of age.

For purposes of management, the AT is divided into four geographic regions – New England, Mid-Atlantic, Southwest Virginia, and the Deep South. Four types of visitors were defined in the study population, 1) day users (respondents who reported being "on the trail for one day only", 2) overnight visitors (respondents who reported being "out for more than one day", 3) section hikers (respondents who reported "hiking sections of the Appalachian Trail with the intent of hiking the entire trail over an extended period of time"), and 4) thru hikers (respondents who were "hiking the entire AT in a calendar year"). Thru hikers were purposively sampled to ensure an adequate sample size. Thus, while study data are designed to be representative of thru hikers, thru hikers do not represent as large a proportion of AT visitors as suggested in the tables. Study data are analyzed across the four regions of the trail and the four types of hikers.

Study Findings

Visitor Perceptions of Security on the AT

Respondents were first asked about their perceptions of security. Again, security was defined for respondents as "feeling free from being threatened or attacked by other people on the trail". Security ratings were based on a four-point Likert scale ranging from "Very secure" to "Very insecure". Visitors were asked to rate their perceptions of security at two locations: while on the AT and while leaving the AT (e.g., to go into surrounding towns). The majority of all AT users felt "very" or "reasonably" secure while on the trail (Table 1). However, feelings of security tended to decline when leaving the trail, especially for section and thru hikers. There were no significant regional differences in the responses to this question.

Table 1. Visitor Perceived Security

While you were out on the AT	Day user	Overnight	Section hiker	Thru hiker	Total
			Percentages		
Very Secure	67.8	64.2	58.8	74.5	66.5
Reasonably Secure	30.6	33.6	38.8	24.2	31.7
Somewhat Insecure	1.3	2.0	2.3	1.3	1.6
Very Insecure	0.3	0.2	0	0	0.2
While leaving the AT (e.g., to go into surrounding towns)	**Day user**	**Overnight**	**Section hiker**	**Thru hiker**	**Total**
			Percentages		
Very Secure	64.8	55.9	34.0	26.6	50.3
Reasonably Secure	33.8	40.0	60.9	67.3	46.0
Somewhat Insecure	1.2	4.0	4.3	6.1	3.4
Very Insecure	0.2	0.2	0.8	0	0.2

The next question asked respondents to rate their level of satisfaction with security at trailheads and parking lots, and with assistance from rangers, ridge runners and volunteers. Again, this question had a four-point response ranging from "Very satisfied" to "Very unsatisfied". Most AT visitors were "reasonably satisfied" with the level of security at trailheads and parking lots (Table 2). However, most visitors were "very satisfied" with the level of assistance from rangers, ridge runners, and volunteers along the AT. These findings were generally consistent across hiker types and geographic/administrative divisions.

Number and Types of Security Problems on the AT

The next set of security questions addressed the number and types of security problems encountered. Again, a distinction was made between two locations, along the trail and at trailheads, parking lots or within a few miles of the trail. Respondents were asked whether they encountered a security problem on or near the trail in the last 12 months, whether the incident involved a personal threat or attack, or vandalism or theft of personal property, and was the incident reported to authorities. A final open-ended question asked respondents to briefly describe any security problems experienced. Study findings are reported in Tables 3 and 4.

Only a small minority of all types of hikers reported experiencing a security problem on the trail in the past 12 months. Section and especially thru-hikers were more likely to have experienced a security problem, probably because they spend considerably more time on the trail.

Table 2. Satisfaction with Level of Security and Assistance

Level of security at trailheads and parking lots	Day user	Overnight	Section hiker	Thru hiker	Total
			Percentages		
Very Satisfied	35.7	36.3	27.7	29.1	33.6
Reasonably Satisfied	56.4	55.4	60.2	59.9	57.3
Somewhat Unsatisfied	6.9	7.7	9.6	9.7	8.1
Very Unsatisfied	1	0.6	2.4	1.4	1.1
Level of assistance from rangers, ridge runners, and volunteers along the AT	**Day user**	**Overnight**	**Section hiker**	**Thru hiker**	**Total**
			Percentages		
Very Satisfied	56.7	68.9	60.2	46.2	59.3
Reasonably Satisfied	35.9	29.6	33.3	48.2	35.7
Somewhat Unsatisfied	5.4	0.9	5.6	4.6	3.8
Very Unsatisfied	1.9	0.6	0.8	1	1.1

Table 3. Security Problems along the Trail in Last Twelve Months

Security problem along the trail in last 12 months	Day user	Overnight	Section hiker	Thru hikers	Total
			Percentages		
Yes	2.2	1.4	4.2	13.7	4.3
No	97.8	98.6	95.8	86.3	95.7
Did incident involve personal threat or attack					
			Percentages		
Yes	10.0	6.7	33.3	14.6	15.8
No	90.0	93.3	66.7	85.4	84.2
Did incident involve vandalism or theft of personal property					
			Percentages		
Yes	5.0	7.1	10.5	27.7	17.0
No	95.0	92.9	89.5	72.3	83.0
Was the incident reported to law enforcement authorities					
			Percentages		
Yes	10.5	20.0	23.5	37.8	27.5
No	89.5	80.0	76.5	62.2	72.5

Table 4. Security Problems at Trailheads, Parking Lots and Near Trail in Last Twelve Months

Security problem at a trailhead or parking lot or within a few miles of the trail in last 12 months	Day user	Overnight	Section hiker	Thru hiker	Total
			Percentages		
Yes	1.6	3.1	5.3	9.4	4.0
No	98.4	96.9	94.7	90.6	96.0
Did incident involve personal threat or attack					
			Percentages		
Yes	7.1	5.3	10.5	10.3	8.6
No	92.9	94.7	89.5	89.7	91.4
Did incident involve vandalism or theft of personal property					
			Percentages		
Yes	23.1	47.1	27.8	17.2	27.3
No	76.9	52.9	72.2	82.8	72.7
Was the incident reported to law enforcement authorities					
			Percentages		
Yes	41.7	70.6	41.7	50.0	52.2
No	58.3	29.4	58.3	50.0	47.8

Only a very small minority of security problems experienced involved a personal threat or attack. The vast majority of respondents did not report the security problem they experienced to law enforcement authorities. The number and types of security problems experienced at trailheads, parking lots or within a few miles of the trail were generally similar to those experienced on the trail. However, visitors tended to report these security problems to law enforcement authorities more often.

While the percentage of all visitors to the AT who experienced security problems may be relatively low (approximately 4%), the absolute number of all visitors to the trail who experience such problems may be relatively high, perhaps startling so. While there are no official counts of the number of visitors to the AT (such counts would be inherently difficult to conduct), the National Park Service estimates that the trail accommodates at least three million visits per year. Even if only a very small

percentage of visitors report a security incident, this represents a potentially large number of such incidents per year!

Most respondents' open-ended descriptions of security incidents can be grouped into three general categories: (1) vandalism or theft of personal property (2) inappropriate behavior (i.e. partying, heckling, and sexual harassment) and (3) perceived risk or threat from others. Vandalism and theft of property tended to be more common at trailheads and parking lots and usually pertained to automobile break-ins. Inappropriate behavior tended to be most common on the trail or in camp. Examples of this problem include loud partiers nearby or illegal activities such as horseback riding and hunting. Examples of perceived risk or threat from others include encountering people acting "strangely" and people who were inebriated.

Visitor Behavior

A final security question concerned visitor behavior in response to security problems. Respondents were asked whether they intentionally hike or camp near other people for reasons of safety or personal security. If they answered positively they were asked to explain in an open-ended format. Most AT users do not hike or camp near other people for reasons of safety or personal security (Table 5). However thru hikers are much more likely to do so than other hikers.

Explanations for this behavior were diverse. Generally, many users hike or camp near others as a precautionary measure. A common theme along this vein is the motto "safety in numbers". Still others were inclined to adopt this behavior as a result of specific encounters with others. AT users who did adopt this behavior tended to do so when camping more than hiking.

Demographic Analysis

As mentioned earlier, the questions about security were part of a larger, wide-ranging study of use and users of the AT. Respondents were queried about several variables including various demographic questions. Data were analyzed to explore for statistically significant associations between responses to security questions and other independent variables. These included gender, age, race/ethnicity, group size and type, backcountry experience, and place of residence (e.g. rural or urban). Very few significant relationships were found as a result of this analysis. Of the variables tested, gender had the most significant affect on responses to security questions (Table 6). For example, women were more likely to encounter a security problem involving personal threat or attack, were far less likely to report incidents to law enforcement authorities, and were twice as likely to hike or camp near other people for reasons of safety or personal security.

Table 5. Intentionally Hike or Camp for Safety or Security

	Day user	Overnight	Section hiker	Thru hiker	Total
Yes	13.1	13.7	22.5	40.6	19.8
No	86.9	86.3	77.5	59.4	80.2

Table 6. Relationship between Security on the AT and Gender

	Female	*Male*	*Total*
Did the incident involve a personal threat or attack against you? (N=82; Chi^2=5.53; p=0.02)			
		Percentages	
Yes	22.2	4.7	8.5
No	77.8	95.3	91.5
Was the incident reported to law enforcement authorities? (N=67; Chi^2=4.15; p=0.04)			
		Percentages	
Yes	29.4	58.0	50.7
No	70.6	42.0	49.3
When traveling on the AT, do you ever intentionally hike or camp near other people for reasons of safety or personal security? (N=1642; Chi^2=43.34; p=0.00)			
		Percentages	
Yes	29.9	15.6	19.6
No	70.1	84.4	80.4

Other variables with significant associations to security questions include group size and type, level of backcountry experience, and type of place currently living in (Table 7). Visitors who were hiking alone felt less secure while leaving the trail than visitors hiking with family, friends, or other types of groups. Similarly, moderate association was found between group size and whether the respondent hiked or camped near others for reasons of security. As group size increased respondents were less likely to adopt such behavior. Likewise, the more backcountry experience a respondent reported having, the less likely they were to hike or camp near others. Finally, visitors who currently live in a medium city or major metropolitan area were slightly more apt to hike or camp near others for reasons of security than respondents from more rural or suburban areas.

Conclusions and Implications

Security issues on the Appalachian Trail affect visitors in varying ways. While the vast majority of visitors do not personally experience security problems on the AT, many visitors do not feel fully secure and often seek out the safety of others. Moreover, this study includes only visitors to the trail. Not included in the sample are people who were fearful enough for their security that they did not hike the trail at all. To what extent this is occurring is uncertain. Nevertheless, we have a sample of visitors who expected to be relatively safe. Further, it should be noted that data from this study reflect visitor reports and perceptions of security issues on the AT. This may not necessarily reflect the full extent of actual security issues. For example, Tynon and Chavez (2000) surveyed a selected group of resource managers and law enforcement personnel from areas managed by the US Forest Service in the West and found that many crimes that take place in these areas are not reported to the public. One law enforcement officer stated, "if the general public had any idea, they would not go out there." These are powerful words that suggest that visitor and manager perceptions of security issues in outdoor recreation settings may be at odds. Given the length and diverse character of the AT, it may be useful to re-examine the findings reported here with information obtained from other sources as reported by managers, park rangers, volunteers and law enforcement authorities.

Is security a problem on the AT and, by extension, in parks and outdoor recreation more broadly? Inescapably, the answer appears to be "yes". While only a small minority of visitors in this study report encountering a security problem, the absolute number of visitors to the AT and the security incidents this represents may still be high, perhaps even shockingly so. Still more troubling is the degree to which perceived insecurity generated by such incidents – especially those that receive attention in the national news

Table 7. Relationship between Security on the AT and Other Independent Variables

Hike or camp near others for security/ Number of people in group (N=1659; Chi^2=42.33; p=0.00)							
	1	*2*	*3*	*4*	*5*	*More than 5*	*Total*
			(Percentages)				
Yes	26.9	19.4	14.3	12.5	10.2	14.6	19.6
No	73.1	80.6	85.7	87.5	89.8	85.4	80.4
Security while leaving the trail/Type of group (N=1693; Chi^2=44.02; p=0.00)							
	Alone	*Family*	*Friends*	*Family & Friends*	*Organized group*	*Commercial group*	*Other*	*Total*
			(Percentages)					
Very Secure	39.9	53.6	53.9	62.7	58.8	66.7	40	50.4
Reasonably Secure	55.7	42.8	42.4	37.3	37.1	33.3	56.7	46
Somewhat Insecure	4.1	3.7	3.4	0	4.1	0	3.3	3.4
Very Insecure	0.4	0	0.4	0	0	0	0	0.2
Hike or camp near others for security/Level of backcountry experience (N=1631; Chi^2=10.21; p=0.04)							
	Novice	*Intermediate*	*Skilled*	*Advanced*	*Expert*	*Total*	
			(Percentages)				
Yes	12.8	15.1	19.3	22.3	20.3	19.6	
No	87.2	84.9	80.7	77.7	79.7	80.4	
Hike or camp near others for security/ Type of place currently living in (N=1645; Chi^2=8.09; p=0.15)							
	On a Farm or Ranch	*Rural or Small Town*	*Town*	*Small City*	*Medium City*	*Major City or Metropolitan Area*	*Total*
			(Percentages)				
Yes	14.3	13.8	18.7	19.2	21.4	23.2	19.4
No	85.7	86.2	81.3	80.8	78.6	76.8	80.6

media – ripples through the population of trail users. Incipient doubts about personal security seem to have crept into the minds of many trail users, even to the point of seeking the safety of others while hiking and camping.

To be fair, the data reported in this study should be considered within a broader context. Clearly, crime rates are substantially higher in population centers than they are in parks and related outdoor recreation areas. In the words of one of our study respondents, "I go to get away from people. If I wanted to feel insecure, I would stay at home." However, as our study indicates, crime on the AT, and probably in other parks and recreation areas as well, is substantially underreported. And in the words of another respondent, "You just never know".

What should park and recreation managers do about problems of visitor security? Perhaps a first step is to assess and monitor the nature and extent of the problem through studies like the one described here. If security is found to be a significant problem, then management action is warranted. More focus on law enforcement may be called for, especially in the event of serious criminal activity or threats to visitor safety. However, in large parks and dispersed outdoor recreation areas such as the AT, there are obvious limits to the effectiveness of this approach, and it may even be inappropriate if carried to an extreme. Perhaps a more effective approach is to communicate clearly and deliberately with visitors, including an objective assessment of security issues, suggested guidelines for ensuring a safe visit, and encouraging visitors to report security problems encountered. The Appalachian Trail Conference, the organizing body for hiking organizations that manage the AT, has developed such guidelines that are posted on its website. These guidelines may serve as a model for other park and recreation managers.

Information about the number and types of security issues occurring in recreation settings should be an integral part of resource management. Additional research is needed to obtain more detailed information on the number and types of security problems experienced by visitors, how perceptions of security affect visitor behavior and experiences, the most effective and efficient methods for dealing with security issues in outdoor recreation settings, and how these practices might impact visitors.

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TRAILS RESEARCH: WHERE DO WE GO FROM HERE?

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Abstract: This paper describes a recent study focusing on trails research needs. This study was supported by American Trails. Using a Delphi technique, 86 trails experts representing a variety of federal, state and local agencies, nonprofits, and trail uses were queried by email on trails research needs. A Delphi technique is a prognostic tool for dealing with complex problems or issues. The project took place in three phases: Initially, individuals were chosen to participate in the study (expert panel) and respond on the type of trails research that is needed for the future. More than 200 comments were returned covering a plethora of topics, i.e., assessing physical impacts to establishing a national information clearinghouse to trail design. This information was analyzed using content analysis. Secondly, a list of 65 trails research items was sent back to the panel to be rated by level of importance, 1=Not at all Important, 10=Extremely Important. Response rate was 87% (n=75). Thirdly, after these responses were entered and scored, they were sent to the panel for final review and commentary. An overview of the findings show that the panelists rated several trails research needs as very important including values of trails to the community, economic impacts, and trail usage and demand. Results will be highlighted along with a discussion on the topics of research funding, information dissemination, and a national agenda for trails research.

Introduction

The body of literature on trails has largely been concentrated in several general areas including: trail users, (motorized, mountain bikers), benefits (personal, economic), management (training, type of use), construction and maintenance (bridge building, erosion prevention) and planning (public involvement, standards). In examining this growing body of literature in more detail, it has some limitations, because it is agency specific, lacks rigor, tends to be parochial, and often times, the actual studies can be very difficult to obtain (Schuett & Seiser, 2000). In examining the literature specifically on *trails research*, a few studies have been done by specific agencies concerning their own types of trails and needs. For example, in 1996, the National Park Service compiled a list of suggestions for trails-related research. The topics that were put together by managers focused on design, layout, construction, use patterns and facilities. In the fall of 1999, the Interagency Trails Council, spearheaded by the Bureau of Land Management, conducted a needs assessment to examine trail training needs and opportunities (Bureau of Land Management, 2000). As a result of this needs assessment, the National Trail Training Partnership (NTTP) was formed to address specific tasks that were identified on trail training programs, courses and information dissemination. However, the trails research information that is available is limited and has not been conducted across all parties involved including federal, state, local managers, users, and trails groups.

Purpose

The purpose of this study was to obtain information from trails experts in the field about the types of trails research that is needed for managers. This research was based on two pilot studies conducted at conferences in 1998, one at the National Trails Symposium and the other, the National Association of Recreation Resource Planners.

Method

This study used a Delphi technique to obtain the information on trails research from trails experts. The Delphi technique is a consensus-building tool used for futures research (Dalkey, 1969). This technique is a method of forecasting based upon the collective opinion of knowledgeable experts using several rounds of information gathering. The Delphi has been popular forecasting method since its inception in the mid 1950s and was been used in several areas in the recreation and parks literature (see Young & Jamieson, 2001 for a Delphi review). An overview of the Delphi process is as follows: a working problem is identified, individuals are selected who will be part of the Delphi panel, a pre-determined number agree to participate and the researcher uses multiple rounds of questionnaires to collect these data.

In this study, a first round questionnaire was used in an open-ended format to identify trails research needs. The panel chosen for inclusion in the study was made up of trails experts who were involved in a managerial or supervisory capacity with all types of trails and agencies. Names were obtained from a variety of sources including conference attendance lists, the trails literature, referrals, workshop organizers, academics, and personal knowledge from the researcher. Initially a list of 100 experts were contacted with a final list of 86 individuals agreeing to participate in the study.

Data were collected using an electronic survey, through the use of individual email addresses and a website. The electronic survey format was chosen for several reasons including time, efficient administration of the questionnaire, and ease of data entry. Three rounds of data collection was used in the Delphi process.

Results

In the initial round, the panelists were asked to list trails research needs. Individuals obtained the questionnaire in two ways to facilitate the process, via email in the body of the

message or by access to a website using a password. Results from this round, yielded over 200 comments. These comments were then recorded, categorized using content analysis, and put together into a structured questionnaire for comment. These items were checked for reliability using outside experts. The questionnaire had a total of 65 trails research items representing several areas including benefits, management and impacts. In the second round, these items were rated on an Importance scale from 1-10, 1= Not at All Important to 10=Extremely Important. The third round had respondents examine the final results giving comments as needed. Overall response rate was 87%, (n=75). The results of the top ten items in the Delphi process can be found in Table 1. The items that received the highest overall score (between 7-10) by at least 70% of the respondents are listed in Table 1.

Table 1. Top Ten Research Needs

Research Need	Percentage*
Values of the trail to the community	85
Economic impacts of a trail to local communities and adjacent landowners.	83
Trail usage and demand on local, state, regional, and national levels.	83
Affect of educational / informational programs on reducing user conflicts on multiple-use trail	79
Impacts of trail design, type, and use on natural resources (flora, fauna, and environment).	77
Assessment of adjacent property owners' perceptions of a trail.	77
Impacts of multiple use on trail user experiences.	76
Volunteer groups' trail maintenance and monitoring programs.	76
Health and quality of life impacts on trail users.	73
Implications of permitting additional forms of trail use (equestrian, trail bikes, etc.).	72

* reflects items in the 7-10 range

Discussion and Implications

The purpose of this study was to establish and obtain feedback from trails experts on research needs. The strength of the results lies in the varied backgrounds of those chosen for the study including trails in federal, state, and local areas. The findings are limited to those experts who decided to participate in the study and the items used in the Delphi process. Nonetheless some degree of generalization is appropriate given the fact that trails research priorities have limited availability on a national scale. It is clear that several of the items in the study emerged as important establishing some patterns to consider in future research. In highlighting some of the results, values of the trail to the community emerged as the most important item on the least. The value of a trail can be concrete measured through increased property values and economic impacts or more subjective as in place attachment and benefits. This item although difficult to measure at times, is a powerful force for trail users and communities. More information is needed about how these values can be measured and determined. Specific types of values were also expressed as important including health and quality of life issues. Managers are clearly looking for more information about the personal values of trails to individuals and communities. Impacts, economic and physical, also surfaced as an important group of items. Economic impacts and property values are a continual concern for communities to justify trail creation, maintenance and construction. For many communities a new trail can add "life" to a community. More tangible outcomes, economic impacts outcomes are something concrete that can be measured and can be very helpful in trail creation and promotion. Several studies have outlined the economic impacts of trails (Moore & Barthlow, 1998) but obviously more are needed.

Considering the increased usage trails are experiencing now and in the future, (Cordell, 2001) along with new and varied uses (e.g., mountain bikes, motorized vehicles), more studies about physical impacts are also needed. This finding on resource impacts also relates to the need for more information about participation trends. Numerous agencies and states are collecting more pertinent information on participation patterns and trends as they incorporate these data in their trail plans. However, this type of data can be expensive, difficult to obtain and time consuming to collect and interpret.

It is clear that managers from a variety of areas representing many different types of trail users feel trails research is important and have specific needs. The needs are diverse, varying from demand trends to resource information. Yet the needs are there and a unified effort amongst the trails community needs to be considered in creating a research agenda. Funding issues can often be one of the reasons research is not done which is compounded by historically low budgets on a federal and state level. More partnerships need to be created with the public, private and third sector (nonprofits) in order to make more funds available for research. The availability of information can be problematic, too. The research that is being conducted is often times agency specific, lacks application or goes unpublished, and therefore may not be widely disseminated. Some information clearing houses have been set up by mostly by non profit trail groups on the Internet making current studies available, i.e., American Trails, National Off-Highway Vehicle Conservation Council, Inc., International Mountain Biking Association and South Carolina State Parks. A research agenda put forth by a national group such as American Trails or drafted as part of a Trails Summit should be put forth in conjunction with federal, state and local agencies and private industry. This is a topic that should be strongly considered for future Trails Symposia.

The dissemination of this research could also be improved by the creation of a journal more exclusively for trails. At the present time, trails research appears in a number of journals from recreation and parks to landscape architecture. None of these periodicals have the tile of "trails journal" and one may need to be created and supported from a wide constituency. In this way the information could be made available to all types of managers from basic research to action research. In closing, as trails continue to become more important and intertwined into the fabric of our lives, more information will need to become available to address and improve the management, construction, demand, and impacts of trails everywhere.

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Attachments to Places & Activities in Outdoor Recreation

VISITOR MEANINGS OF PLACE: USING COMPUTER CONTENT ANALYSIS TO EXAMINE VISITOR MEANINGS AT THREE NATIONAL CAPITOL SITES

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Abstract: A mix method study designed to explore the meanings, interest, and connections visitors ascribe to three National Park Service sites: National Capital Parks—Central, Rock Creek Park, and George Washington Memorial Parkway's Great Falls Park. The researchers employed the focus group interview technique and asked visitors prior to and then after an interpretive encounter what the resource and the place meant to them. Both hand-coding and the Minnesota Contextual Content Analysis (MCCA) software program were used in the analysis process. Selected findings suggested audiences' understanding and appreciation of the park resource.

Introduction

Recent studies have explored and documented the relationships among recreation resources, visitor meanings and perspectives of place, and the likelihood of participating in resource stewardship. Williams, Patterson, Roggenbuck, and Watson (1992) suggest to incorporate the concept of "sense of place" to better understand recreation. Sense of place concerns people's *meanings* associated with places, which are formed through personal experience (Tuan, 1974, 1977; Relph, 1976). Various studies suggest applying the sense of place concept in resource management and interpretation (Appleyard, 1979; Roggenbuck, Williams & Bobonski, 1992; Brandenburg & Carroll, 1995; Masberg, 1996; William & Stewart, 1998; Galliano & Loeffler, 1999).

Every year, visitors from the U.S. and other countries flock to national parks to understand the places and to be inspired. Visitors attach significant personal meanings to national park sites such as the Lincoln Memorial and Vietnam Veterans Memorial (Goldman, Chen, & Larsen, in press). Quality interpretation requires an effort to integrate knowledge of the resource, knowledge of the audience, and appropriate techniques to yield desired interpretive outcomes (NPS, 1997; 2000a; 2000b). Understanding visitors' meanings of place can increase interpreters' knowledge of their audience and regenerate interpreters' passion toward both the resource and the visitors (Goldman et al., in press). Interpretive mangers and front-line interpreters need a more comprehensive understanding of the meanings that visitors bring to sites as well as the ability to apply that understanding to the development of interpretive programs. Understanding and interpretation are closely related, and most sociologists now recognize that some interpretation is involved in the acts of understanding (Marshall, 1994). To help interpreters achieve desired interpretive outcomes of facilitated intellectual and emotional connections with the resource and therefore a sense of stewardship, this study explored the meanings that visitors attach to the resources at three National Park Service (NPS) administered sites: National Capital Parks—Central, Rock Creek Park, and Great Falls Park.

Literature Review

Meanings, Places & Resource Stewardship

Meaning is the most fundamental unit to understand people and their perceptions (Blumer, 1969; Marshall, 1994). Dutch hermeneutic phenomenologist Van Manen (1990) believes that the whole human science research "is concerned with meanings—to be human is to be concerned with meaning, to desire meaning" (p. 79). Meanwhile, The concepts of "place" and "meanings" have archived prominence in the fields of geography, landscape architecture, public administration, historic preservation, natural resource management, education, counseling, and cognitive and social psychology. Place is a powerful concept that enables researchers to understand people's attitudes, values, motivations and behavior more holistically (Williams & Stewart, 1998). Specifically, place-based research explores the psychological engagement that transforms space into place (Tuan, 1977). Participation in resource stewardship increases when visitors connect to resource/place meanings (Roggenbuck et al., 1992).

Meaning—The Fundamental Element

It would be difficult to imagine any sociological study did not look at how people think about the social world and social relationships—in other words, the *meanings* that the society has for individuals and groups. Osgood (1952) defines meanings as "a bundle of components including experiences, images, and feelings in addition to information." Indeed, some schools of thought (mainly the Chicago School) argue that meaning emerges through interaction (Blumer, 1969). For Blumer, whom later being

considered as the leader of symbolic interactionism, meanings are organic and can "grow" through the interacting and interlinking between one and another. He illustrated this point as followed:

> Human group life consists of the fitting to each other of the lines of action of the participants indicating to one another what to do and in turn interpreting such indications made by the others. People are prepared to act toward their objects on the basis of the meaning these objects have for them. Human beings face their world as organisms with selves, thus allowing each to make indications to [oneself]. Human action is constructed by the actor on the basis of what [one] notes, interprets, and assesses. And the interlinking of such ongoing action constitutes organizations, institutions, and vast complexes of interdependent relations. (Blumer, 1969)

Researchers have been closely associated the concept of meaningful action with Max Weber, who distinguishes it from behavior (Marshall, 1994). Weber distinguishes meaningful actions from merely behavioral movement of which the actor does not attach a meaning (for example breathing). Meaningful social action, by contrast, is the action directed towards others and to which we can attach a subjective meaning. In addition, sociologists and linguists are interested in social actions because they draw from a socially constructed and acceptable language. Giddens (1984) addresses the significance of peoples' meanings of place; he suggests that places are both enabling and embedding. Physical locations affect people and people in turn affect those locations, constructing social meanings and determining their significance.

Meanings of Place & National Park Service's Interpretive Philosophy

Phillips (1997) links three components in his conceptualization of the meaning-making process: individual ascription, social consensus, and specific attributes of the object, event or place. The National Park Service's Interpretive Development Program (IDP) adopts a similar approach to understanding meanings. The IDP views meanings as inherent in the resource (i.e., "the resource possesses meanings and has relevance") due to social consensus and specific attributes of the resource (Larsen, 1997). The IDP also recognizes that visitors ascribe personalized meanings to the resource (NPS, 2000a). Thus, a resource represents layers of meanings, and meanwhile, humans bring various perspectives to the site. The IDP also emphasizes the importance of incorporating universal concepts into interpretation. A universal concept, as defined by the National Park Service, is any intangible meaning (e.g., idea, concept, system, process) that is relevant to almost everyone but that does not mean the same thing to any two people (NPS, 2000a). Universal concepts can be any broadly relevant concept including, for example, beauty, family, love, death, justice, change, survival, power and freedom. They can be applied to human relationships, cultural resources or the natural environment. Ham (1992) refers to these concepts as "highly personal things" including, "ourselves, our families, our health, our well-being, our quality of life, our deepest values, principles, beliefs and convictions" (p. 13). Ham urges interpreters to incorporate these concepts into interpretation and connect them to the inner circle of their lives. Universal concepts can be used to tap into the memories, values and experiences that many visitors share (Silverman, 1997; Wager, 1975).

Meanings of DC Parks—National Icons & Urban Wildland

As the national capital, Washington, DC is the home for several world-renowned heritage sites, which represent the spirit of America. Frequently, people consider these sites as the "national icons." Take the Triangle for example, the Lincoln Memorial, the Korean War Veterans Memorial, and the Vietnam Veterans Memorial constitute a triangle area which is one of the most visited sites in Washington, DC. The Lincoln Memorial is a tribute to President Lincoln and the Union he sought to preserve. The memorial records Lincoln's Gettysburg Address and Second Inaugural Address. The steps, plaza and reflecting pool in front of the Lincoln Memorial have functioned as a place of protest and a forum for discussing issues such as race, civil rights, war and peace, and AIDS. The Vietnam Veterans Memorial has drawn millions of visitors from all over the country over the years. The site commemorates the sacrifice of American military personnel during one of the nation's least popular wars (NPS, 1998b). A journalist from the New York Times described the memorial as "a hallowed site" with a "spiritual dimension that transforms it into something like a sacred shrine, where pilgrims come and devotions are paid" (Niebuhr, 1994, November 11th). The Korean War Veterans Memorial is dedicated to all those who served during the Korean War (1950-1954), the first major conflict of the Cold War. The returning veterans were the first Americans not to receive a heroes welcome in recognition of the hardships they endured in their fight for freedom (NPS, 1998a). Taken together, the three study sites at NCP—Central represent diverse meanings related to war and peace, freedom and slavery, civil rights and patriotic duty, national leaders and common heroes, and the fundamental ideals upon which our nation was founded.

Meanwhile, Washington, DC is not just about memorials. "Urban" parks—parks that are located in urban areas but large enough to provide a sense of wildness are favourites for Washingtonians (e.g., Great Falls Park and Rock Creek Park). Rock Creek Park holds its uniqueness for which it contains both of a city park's connivance and a wilderness' pristine and diversity. The picturesque valley of Rock Creek has earned its fame especially during the spring by the visitors. But the 1,754 acres of forest, meadows, groves, paths, trails, and heritage landscapes within 5 miles of the White House, offers "a quiet respite from the bustle of urban life all year long for both Washingtonians and visitors to the Nation's Capital" (NPS, 2000c). The extensive system of trails and paths gradually leads the urban explorers from the street corners to a world of foodchains and ecosystems. In addition, Rock Creek Park has been recognized by city planners as a model of an urban "preserve," for which the park is "penetrate deeply

into the city" and with "easy access to nature" (Duany, Plater-Zybek, & Speck, 2000, pp. 143-4). This unique characteristic is highly appreciated by landscape architects and urban residents. In addition, it serves as a boundary to restrain urban sprawl and unregulated rapid growth. Urban parks such as Rock Creek Park that cover large geographic areas may not be considered as "true" wilderness in the ecological sense, however, these parks provide "a close approximation of a wilderness experience" for many urban dwellers (Rust, 1994; Hester, 1999).

Unique challenges and opportunities present themselves as one tries to interpret resources like the memorials in our nation's capital that reflect such diverse meanings as war and peace, freedom and slavery, civil rights and an obligation to serve (Martinez, 1988; Machlis, 1992; Bennett, 1998). An expanded understanding of the meanings of the resource, a sense of connecting with significant places, and spiritual experiences sound like worthwhile goals, but is this what visitors want? Visitors come to sites with a range of pre-existing meanings, but often it is unclear what meanings they bring. How does on-site experience influence the meanings visitors attach to these sites? Do visitors really care about relating to park sites in a way that transcends their sense of self and provides meaning at a deeper than intellectual level (Schroeder, 1990)? When interpretive rangers are overwhelmed with daily responsibilities and visitors' "ludicrous questions" (Tilden, 1977, p. 46), they can easily overlook the extent to which these dynamics might be in play. Therefore, this study was undertaken to better understand the meanings visitors ascribe to three significant places on the national landscape: Great Falls Park, National Capital Parks—Central, and Rock Creek Park to foster the excellence of interpretation and a sense of stewardship.

Study Objectives

This study did not intend to measure visitor attitude and then predict their bahavior. Instead, the researchers propose to better understand the meanings that visitor have toward the three National Park Service sites at the greater Washington, D.C. area and provided suggestions for resource management and interpretive program development. The four study objectives include:

- To identify the meanings visitors attach to three NPS sites: Great Falls Park, NCP—Central (the Lincoln Memorial, the Korean War Veterans Memorial, and the Vietnam Veterans Memorial), and Rock Creek Park.
- To identify visitor interests related to interpretive programs.
- To identify the type and frequency of connections between the meanings of the resource and the interests of the visitor that occur among participants who have attended interpretive programs.
- To provide recommendations to improve interpretive training and on-site interpretive programming through expanded interpreter knowledge of the audience.

Methods

The study incorporated a mixed method design. Methods include purposeful sampling for visitor interview participants, quasi-experimental pre-test/post-test design, focus group interview, and both quantitative and qualitative data analysis. During the summer of 1998, researchers conducted 89 focus group interviews and interviewed a total of 527 visitors. The study recorded participant responses to open-ended questions. The study used both hand coding and the Minnesota Contextual Content Analysis (MCCA) computer program to analyze the differences and similarities in visitor meanings between visitors who attended an on-site ranger-led interpretive program and those who did not.

Sample Interview Questions

Focus group interviews were ideal for this study because "...the intent of focus groups is not to infer but to understand, not to generalize but to determine the range, not to make statements about a population but to provide insights about how people perceive a situation" (Krueger, 1994, p. 87). Focus group data also have high face validity because of the believability of participant comments (Krueger, 1994). During the focus group interview, researchers sought to elicit participant responses to open-ended questions about visitor meanings, interests and connections. Sample interview questions include the following:

- What drew you to the site today?
- What do these sites teach us?
- When you look at the statue of Lincoln, what thoughts go through your mind?
- What would you tell the younger generations about this place?
- When you are here, do you have a sense of interacting with history? How so?
- If you were a ranger, what would you tell your audience?
- *(For those who had attended an interpretive program)* Did the ranger's talk help you think about this place in a new way?

Focus group interviews were tape recorded and transcribed verbatim.

Computer-aided Content Analysis Software

MCCA was chosen for its ability to help users to compare a large number of complex texts. MCCA has been used to disambiguate and categorize word meanings of a wide variety of general social science concepts (Pierskalla & Anderson, 2000). The analysis procedures are standardized and extremely reliable for texts $\geq$ 500 words (McTavish & Pirro, 1990). MCCA calculates two normed score profile for each text segment: institutional or social context scores (c-scores) and concept emphasis scores (e-scores). First, *emphasis scores* or *e-scores* are computed for 116 idea/word categories and are measures of the overemphasis

or underemphasis of visitor ideas compared to usual English usage. Examples of E-score categories include: cognition, sanction, enjoy-like, virtue, future, community, deviance, and self-expression. Secondly, *contextual* or *c-scores* are computed for four social perspectives (traditional, practical, emotional, and analytical) and are measured of the overemphasis or underemphasis of a social perspective of a text.

Selected Findings

Participant Demographics

Focus group interview participants (N=527) were approximately half male (46%) and half female (54%). They came from various geographic regions. Participants from the United States represented more than 30 states and the District of Columbia. International participants came from England, Canada, Israel, Mexico, China, France, Nigeria, Germany, Russia, and the Netherlands. Results of the participants geographic regions indicated that the three study sites have different visitor compositions. For the National Capitol Parks—Central, only 1.1% were from nearby area and states (Washington DC, Virginia and Maryland) and 10.9% were international visitors. For Great Falls Par, 51.3% were local visitors and 6% were from other foreign countries. While for Rock Creek Park, the majority of the participants were from local (96.4%) and less than 1 % were international visitors. Participants were drawn from a wide range of age groups: 17% were under 13 years of age; 7% were 13-18 years old; 9% were 13-25 years old; 28% were 26-40 years old; 24% were 41-55 years old; and 15% were 56 years of age or older. The majority of participants were first time visitors to the site (41%) and 30% had visited the site five or more times. Not a question directly asked in the questionnaire, the researchers noted that most participants were of Anglo descent, although participants of African, Hispanic and Asian descent did engage in the interview process.

In terms of participant representation, the 182 participants interviewed at the National Capitol Parks—Central in this study closely mirrored participants in a much larger visitor study (N=2,720) conducted at the same park during summer 1998 (Littlejohn & Hoffman, 1999). One notable difference between the two study populations is that the present study included more participants who had visited the site five or more times (17%) compared to Littlejohn & Hoffman who found that 8% of their sample had visited the site five or more times. Similarly, 44% of participants in the present study were first-time visitors to the site, compared to 56% first-time visitors in the Littlejohn & Hoffman study. Although the relative proportions still hold, these differences suggest that repeat visitors may have been more inclined to participate in an on-site focus group interview, and first-time visitors may have been less inclined to do so. However, the close demographic correlation between the two studies across all information categories suggests that the present study obtained a fairly representative sample of on-site visitors.

Emphasis Scores (E-Scores)

The MCCA computes the overemphasis or underemphasis of context ideas compared to standard English usage. These emphasize ideas are categorized into 116 idea/word categories with nominal scores (E-Scores) (McTavish & Pirro, 1990). The results of the computer-aided content analysis indicated the ideas emphasized by study participants. In Table 1, visitors as a whole emphasized several idea categories including (listed by frequency ranking: tender, cognition, object, location, move-in-space, if, reasoning, implication, humor-expression, and happy). These top-ten idea categories were identical for Rock Creek Park and Great Falls Park but in different orders. The results for the National Capital Parks—Central were distinguished from the other two parks. The highest score in the top ten list was the "object" rather then the "tender" category. Visitors of the National Capital Parks—Central highlighted different idea categories including "study," "we," and "being." Meanwhile, three idea categories that were excluded from the overall top-ten idea category list. These three idea categories were reasoning, happy and humor-expression.

Table 1. Overemphasized Idea Categories

	All Three Parks	Great Falls Park	Rock Creek Park	National Capitol Parks—Central
Rank 1	Tender	Tender	Tender	Object
2	Cognition	Location	Cognition	Tender
3	Object	Move-In-Space	Move-In-Space	Location
4	Location	Cognition	Object	Cognition
5	Move-In-Space	Object	If	Study*
6	If	Reasoning	Reasoning	Implication
7	Reasoning	If	Location	If
8	Implication	Humor-Expression	Implication	We*
9	Humor-Expression	Implication	Happy	Being*
10	Happy	Happy	Humor-Expression	Move-In-Space

* Indicated idea categories that were not in overall the top-ten list.

The study results indicated the differences between visitors who had attended interpretive programs and those who had not. The researchers choose three emphasis scores which may have the implication on a concern for the parks' future: the *past*, *now*, and *future* idea categories. Figure 1 shows the relative shift of emphasis on these three categories for all there park sites. The three bars on the left indicate the e-scores of the three categories for the people who did not attend an interpretive program. The three bars on the right show the e-scores for the people who had attended a program. For the three categories, there was an increased overemphasis of the *past* idea for the after interpretation group interviews, a decrease of overemphasis on the *now* category, and an increase of the underemphasis on the *future* category.

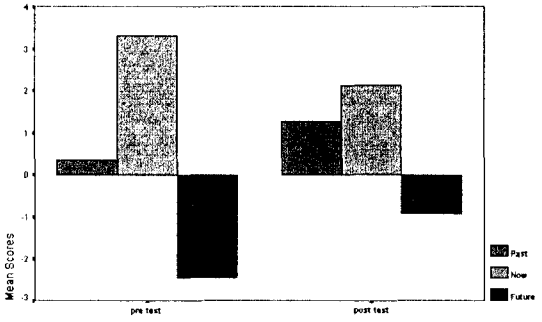

Figure 1. Emphasis Scores of Pre and Post Groups on All Three Sites

Discussion

The study intended to identify visitor meanings and interests of park resources. The study also intended to measure the intellectual and emotional connections that visitors made through interpretation with the meanings of the park. Study results suggested that visitors actively engaged in various park experiences. The top ten e-scores suggested that visitor did ascribe meanings to park resources when responding to interview questions. The results of the three focused e-scores "past, now, and future" suggested the shifts of emphasis between people who were exposed to interpretation and those who were not.

Heuristic e-scores suggest the overall character of ideas that are emphasized in the text (McTavish & Pirro, 1990; Garwick, Detzner, & Boss, 1994). The top ten e-scores suggested visitor meanings and their on-site experiences. Through thematic analysis, it was better understood the phenomenon of visitors experienced park settings physically by moving through the site and viewing it from all angles (move-in-space). They were strongly oriented to the physical space where their experience occurred (location and object). They thought about the meanings of site resources (reasoning, cognition, implication, if, study). They cared about site resources (tender). They enjoyed themselves while on site (happy, humor-expression). They fully immersed themselves in the on-site experience (being), and in some cases that experience was group oriented (we) and a concern of the society as a whole.

The three focused e-scores measured the differences between visitors who *have* and *have not* attended interpretive programs in terms of their relative emphasis on meanings and connections. The scores implied interpreters' ability in facilitating connections with the past and future as this participant expressed a sense of willingness to act as a citizen in the future for the whole society:

> [This place teaches us that] however big the problem, and however diverse the people involved, if you all have a common goal you can get together and do it. All races, all religions, they have experienced what these [sites] memorialize. And we've all [overcome the problems] in the U.S. together. (Post 1, pp. 4-5)

Van Manen (1990) raises a philosophical discussion on the idea of time that people experienced in the lived world. We act our lives of time. As van Manen examines, "the temporal dimensions of past, present, and future constitute the horizons of a person's temporal landscape" (p. 104). For the park managers who seek to foster a sense of stewardship with the park resource, a connection with the past and, mostly, an increased connection with the future may imply a success on caring about the park resource in the future. Study results not only help researcher to better understand the phenomenon of visitor meanings, interest, and connection, they also help interpretive trainers to strategize the sequence and contents of interpretive training and development.

The MCCA e-score profiles function like an "idea spectrograph" or a park "fingerprint." Over time, the researchers may become well experienced in analyzing park "MCCA fingerprints." Future research may be able to compare fingerprints across various types of parks/resource settings, predict which concepts will be most likely to be emphasized, identify "surprises" in terms of categories emphasized, and better articulate what it means that visitors emphasized category X.

Conclusion

The Minnesota Contextual Content Analysis program's e-score profiles can help qualitative researchers zero in on visitor quotes that contain frequently emphasized concepts, serving as a "check" on the representativeness of the quote. Other visitors may not have expressed ideas so eloquently, but if a quote contains commonly emphasized idea categories, it's probably not too "unlike" other quotes in the transcripts. The ultimate goal may be to develop software that can pick up more of the nuances that we are interested in for interpretive training and recreation/natural resource management.

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THE IMPORTANCE OF VISITORS' KNOWLEDGE OF THE CULTURAL AND NATURAL HISTORY OF THE ADIRONDACKS IN INFLUENCING SENSE OF PLACE IN THE HIGH PEAKS REGION

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Abstract: This study examined various dimensions of the sense of place experience felt by visitors to the High Peaks of the Adirondack Park. More specifically, a 6-page questionnaire (mail-back postage-paid) was distributed to 803 people over a three-month period (June, July & August, 1999). The two primary objectives of this study were to: 1) explore the various characteristics that influence visitors' sense of place within the High Peaks (including the emotive ties and symbolic associations visitors' *assign* to their special place), and 2) explore a possible relationship between visitors' knowledge of the cultural and natural history of the Adirondacks and a broader personal preservation/environmental ethic. Final results indicated that many visitors who experience a sense of place in the High Peaks feel so because it is a place of 'exceptional beauty' and many feel a sense of place based on their 'knowledge of the cultural and natural history of the Adirondacks'. Further analysis revealed that the level of importance visitors' felt toward their 'knowledge of the cultural and natural history of the Adirondacks' had some influential effect on their personal preservation/ environmental ethic. Not surprisingly, there was a strong correlation between those visitors who felt a sense of place--verses—those who did *not* experience a sense of place, and the likelihood of them possessing a preservation/environmental ethic. Results indicate there is room for additional educational and interpretive programming in the area, focusing specifically on educating visitors about the cultural and natural history of the Adirondacks, besides basic visitor education about the conditions (and means by which) wilderness is realized.

Introduction

The prevailing approach to research on outdoor recreation has been to focus primarily on the recreational setting itself. That is, focusing on the various physical, social, and managerial factors that create a particular setting. In addition, past research on outdoor recreation has tended to further reduce the analysis to a general and frequently broad overview of the level of satisfaction one associates with a particular recreational setting, given he or she can carry out his or her preferred recreational activity in that particular setting. However, both modes of analysis are somewhat limited. In that, the first approach attempts to identify setting features necessary to support specific activities or desired experiences (Schreyer, Knopf & Williams, 1985), and in so doing, the recreational setting is seen as a collection of features or attributes that allow the individual recreationist to fulfill or realize his or her personal recreational goal.

According to this view, the setting (described by its attributes) that the recreationist seeks out -- and eventually uses and impacts -- is ultimately viewed as a means to an end (McCool, Stankey & Clark, 1985). In effect, this approach to studying outdoor recreation underscores a utilitarian approach and suggests a degree of substitutability with regard to the recreational setting. That is, if a particular group of features or attributes are present at a given recreational setting – allowing for specific types of recreational activities to occur -- than it seems likely that individual recreationists will be pleased or satisfied with the recreational setting itself. However, by emphasizing the role of setting attributes in the decision-making process, the problem of designing recreational settings (and allocating increasingly limited funds) is simply reduced to that of identifying the most valued and optimal combination of attributes for a given clientele (Peterson, Stynes, Rosenthal & Dwyer, 1985).

Furthermore, Williams (1989) observes that this view of the recreational setting as merely a collection of features and attributes leads to a severely limited view of the recreational setting as more of a uniform commodity (much like our mass produced automobiles) than a one of a kind setting that is special to the individual recreationist for reasons beyond its setting attributes. Furthermore, this utilitarian or commodity oriented view has resulted in numerous empirical studies which attempt to identify and measure the perceived utility of various setting attributes in satisfying various recreation goals (Cooksey, Dickinson & Loomis, 1982; Manfredo, Driver & Brown, 1983; McCool et al., 1985).

The second mode of analysis – which is somewhat linked to the first -- attempts to gauge or measure the overall quality of the recreational experience itself according to a host of somewhat uncontrollable factors such as the number of visitors one encounters when engaged in the recreational activity of their choice. Moreover, how this positively (or negatively, which is more often the case) influences the individuals' recreational experience. For example, several studies document that privacy from persons in other parties and other users camping near one's campsite is the most important attribute of a wilderness experience (Stankey, 1973; Graefe, Donnelly & Vaske, 1986).

Both modes of outdoor recreation analysis are limited however. In that, both views tend to overlook the "meaningfulness" of the recreational experience as a whole. That is, the more affective or emotional and symbolic qualities of the recreation experience as a whole – moving beyond merely the physical setting or the activities one engages in. The previous modes of analysis view recreation settings as somewhat interchangeable or reproducible provided there are similar combinations of replicable setting attributes. Brown (1989) however, asserts that outdoor recreation studies call for a more holistic type of analysis, one that tends toward the gestalt, rather than separate and disparate pieces of information.

Various Place Phenomena

Within the past decade various studies have emerged that tend toward a more holistic characterization of the outdoor recreational engagement as a phenomenological experience (Fishwick & Vining, 1992; Fredrickson & Anderson, 1999; Mitchell, Force, Carroll & McLaughlin, 1991; Roberts, 1996). That is, recognizing that there are direct (through the senses) and indirect (through cognitive and symbolic processes) ways in which we take in information – and hence, make sense of, or derive *meaning* from our various life experiences. Furthermore, Williams (1988) suggests that there are three primary "modes" of outdoor recreation experience: activities, companions, and place settings.

Yet as Greene (1996) suggests, there are still only a few relevant studies that recognize the importance of the place setting by recreation researchers. More specifically, that an individual may experience a sense of affinitive connection or 'sense of place' toward a particular place. That is, a sense of special-ness or connectedness that the individual has for that particular place. Greene (1996) summarizes that a place acquires special meaning when an individual moves through a particular setting, acquiring information about the place and encountering memorable place-related experiences -- which are influenced by the characteristics of the physical setting, the characteristics of the social setting and characteristics of the individual perceiver. In effect, a sense of place results from an interaction between the unique cultural and physical characteristics of a setting and the personality and behavior of an individual in that setting (Steele, 1981). As Tuan suggests (1974) sense of place is frequently associated with an emotional or affective bond between an individual and a particular place. The bond may vary in intensity from immediate sensory enjoyment to a long-lasting deeply rooted attachment to a particular place.

Therefore, undifferentiated space becomes 'place' as one gets to know it better and endows it with value or *meaning,* and essentially what results is a degree of place attachment toward a particular geographic locale. A place becomes inextricably associated with certain life events and the people with whom the individual shared the event, and for many people what results is a strong sense of attachment toward that particular place or a deep identification with the place (Low & Altman, 1992; Korpela, 1989; Proshansky, Fabian & Kaminoff, 1983; Stokols & Schumaker, 1981; and Proshansky, 1978).

Research Objective

It seems natural to suggest that when an individual develops a strong association or special attachment to a particular place that the individual would extend a certain ethic of concern and care toward that particular place. That is, if an individual has strong feelings about a particular place they would be concerned about its long-term welfare – just as if the place were a family member or friend. The degree to which there is a correlation between one's feelings of strong place attachment and one's broader environmental concerns is central to this study. Moreover, the underlying focus of this study is to determine whether a relationship exists between an individual's symbolic association with the High Peaks region of the Adirondack -- vis-à-vis various place phenomena -- and one's broader stewardship concerns for the natural world, evidenced by their involvement and membership in a conservation/environmental organization.

Preserving the unique character of the Adirondack Park -- which many would agree is a global model for integrated land use and conservation – is something that cannot be accomplished without understanding more completely the various reasons people choose to live and recreate in the region. Thus, identifying the various factors that contribute to, and/or influence a persons' sense of place and place attachment for the High Peaks region may help future regional managers understand public reactions to various management directives, such as limiting the number of hikers per group or banning campfires in designated wilderness areas that fall above a certain altitude. More specifically, by determining whether a person's strong sense of place attachment influences their conservation/environmental concerns, this could aid area managers in planning for and making future environmental education and visitor interpretation decisions, among other management directives.

The issue of place attachment and the degree of land stewardship peoples have toward special places in the High Peaks region of the Adirondacks is of particular interest, given the newly approved unit management plan for that area. For years the High Peaks region -- which lies in the northeastern section of the Park -- had been carrying out its field operations without any guiding long-term management plan for the area. Many would agree that managing in this way could possibly result in landscape degradation and misuse of resources, and in some instances the sensitive alpine vegetation in and around the summit areas of several High Peaks would suffer greatly.

Study Design

Study Area

Whereas the western and southern Adirondacks are a gentle landscape of hills, lakes, wetlands, ponds and streams, the northeast section of the park contains the High Peaks. Forty-three of them rise above 4,000 feet and eleven have alpine summits that rise above timberline, making them quite popular for hikers and backpackers. Thus, the High Peaks region is the most popular region of the Adirondack Park, and subsequently receives heavy and intense visitation throughout the spring, summer and fall.

The Adirondack Park is the largest park in the contiguous United States. It contains six million acres, covers one-fifth of New York State and is nearly three times the size of Yellowstone National Park. More than half of the Adirondack Park is private land, devoted principally to forestry, agriculture and open-space recreation. The Park is home to 130,000 permanent and 110,000 seasonal residents, and hosts an estimated nine million visitors each

year. The remaining 45 percent of the Park is publicly owned Forest Preserve, protected as "Forever Wild" by the New York State Constitution since 1895. One million acres of these public lands are designated as wilderness, where a wide range of non-mechanized recreation may be enjoyed in a natural setting. The majority of the public land (more than 1.3 million acres) is classified as Wild Forest, where motorized uses are permitted on designated waters, roads and trails. Nearly 75 million people live within a day's drive of the Adirondack Park and the Park hosts more than 10 million people each year. Within the Park are more than 2,800 lakes and ponds, and more than 1,500 miles of rivers, fed by an estimated 30,000 miles of brooks and streams. Backcountry use of the most popular wilderness areas of the Parks, especially the High Peaks Wilderness Area, is increasing at about six percent per year.

With such an interesting (and often perplexing) mix of public and private lands, the overall management of the Adirondack Park itself has proven over time to be ultimately challenging. In the next century and beyond, the Adirondack Park must continue to offer vast areas of undisturbed open space as a sanctuary for native plant and animal species, and as a natural haven for human beings in need of physical and spiritual rejuvenation. It must also provide for sustainable, resource-based local economies and for the protection of community values in a Park setting.

Data Collection

The data for this study was collected over a three-month period beginning in June of 1999 and continued through August of the same year. Visitors were contacted primarily at the main trailhead and parking area at the Adirondack Loj, located approximately 12 miles southeast of the hamlet of Lake Placid, New York. The Adirondack Mountain Club, a non-profit conservation organization that performs vital trail maintenance functions throughout the Park, manages the Adirondack Loj itself, and the surrounding parking areas. However, the interior of the High Peaks region is managed under the broader land management directive of the State's Department of Environmental Conservation. Thus, historically, this accounts for some of the public's misunderstanding and resistance to particular recreation management directives.

The first time visitor is usually unaware that the Adirondack Mountain Club is responsible for much of the trail system throughout the Park, yet the state's Department of Environmental Conservation (DEC) is responsible for region wide resource management directives. These directives include not only recreational concerns but also issues regarding watershed management, fish and wildlife management, and various law enforcement matters. Oftentimes, the way in which the various regions of the Park are managed is often confusing to the first time visitor.

A total of 169 groups were contacted over the three-month sampling period. Of those, 125 were contacted in and around the Adirondack Loj and adjacent parking area. The remaining 44 groups were contacted at one of several critical trail junctures within the interior of the High Peaks region -- primarily those in and around Mount Marcy and the John's Brook Lodge – as well as the summits of several frequently climbed peaks in the region. Within the study period, three weekend (Friday – Sunday) and two week day (Monday – Thursday) sampling clusters were randomly selected each month. During sampling all parties entering or leaving the area were contacted and a short interaction took place between potential study participants and a field research assistant to determine whether or not the person(s) was interested in taking part in the research.

Those people who were interested in partaking in the study (and were at least 18 years old), where given a 6-page questionnaire to complete and mail-back in a pre-addressed stamped envelope. Daily sampling occurred from the hours of 10:00 a.m. until 8:00 p.m. A total of 803 surveys were distributed over the three-month sampling period. Of the parties initially contacted, only five individuals declined to participate in the study. In addition to first-person field contacts, field research assistants left 27 questionnaires on parked vehicles left along the roadside in non-designated parking areas just outside the managerial boundary of either the Adirondack Mountain Club or the DEC.

Instrument

A review of relevant sense of place and place attachment literature did not reveal a standardized scale for measuring place attachment. Past research efforts have employed individualized methods suited to the specific study (Fredrickson & Anderson, 1999; Greene, 1996; Shumaker & Taylor, 1983). Toward that end a pilot study was conducted over a two-month period during the summer of 1998 in the High Peaks region of the Park. The pilot study aimed to identify and evaluate self-report response items that captured various aspects of the sense of place and place attachment phenomena.

A six-page questionnaire was devised in conjunction with the information that was originally gathered from the pilot questionnaire. The questionnaire used for this study contained four distinct sections. The first section focused on examining the individuals' experience of various place phenomena, including various characteristics that influence a sense of place, the emotional and symbolic ties one attaches to their special place. The second section focused on examining whether or not the individuals possessed an preservation/environmental ethic based on their understanding of the cultural and natural history of the Adirondacks. The third section gathered general demographic information, and the fourth section identified various trip characteristics of individual respondents.

The first section provided an introductory descriptive statement about what constitutes a sense of place and place attachment, and the following operational was put in a text box at the top of the first page to prompt the participant as to the various types of place phenomena the questionnaire was designed to explore:

'Sense of place' and 'place attachment' refers to the emotional or affective bonds that you form with a particular place; this bond may vary in intensity from immediate sensory delight to long lasting and deeply rooted attachment. It may occur even though you have visited a particular place only once. In other words, the place takes on special and important meaning for you. When you experience this deep sense of place attachment, the particular place lingers in your mind long after you have left it. These are the types of places I want to know about.

The first question was designed to distinguish between respondents who had no special attachment for a particular place in the High Peaks region of the Adirondack Park, and those who did. After reading the previous description, respondents were then asked the following question "Is there a place in the High Peaks region of the Park that is particularly important or special to you -- a place toward which you experience a deep sense of place or sense of attachment as described above?" Respondents were forced to choose between a 'yes', or 'no', response. The next series of questions (questions 2 – 5) were designed to explore the range of characteristics, emotional ties and symbolic associations that respondents held for their special place in the High Peaks.

The second section of the questionnaire focused on the participants' knowledge of the natural and cultural history of the Adirondacks as it relates to a conservation/environmental ethic. Two key questions were asked in this particular section and the first read as follows: "Has your knowledge of the cultural history of the Adirondacks encouraged a desire to preserve the long-term health and integrity of the 'people, places, and community' that make up the Adirondacks? In other words, has your knowledge of the cultural history of the Adirondacks stimulated a conservation ethic in you?" The second key question read: "Has your knowledge of the natural history of the Adirondacks made you want to preserve the long-term health and integrity of the 'natural places and biotic community' that make up the Adirondacks? In other words, has your knowledge of the natural history of the Adirondacks stimulated a conservation ethic in you?" Respondents were asked to answer each question with a 'yes', 'somewhat' or 'no, not at all' response. If they answered 'yes' to either of the questions, they were then asked to identify the specific part(s)of the cultural or natural history of the Adirondacks that was especially important to them.

The third section of the questionnaire solicited general demographic information such as the participant's age, gender, location of primary residence, and annual income. The fourth and final section of the questionnaire gathered basic trip characteristics for each participant such as: day of week visited, length of stay, activities pursued during visit, and group size.

Data Analysis

To learn more about the underlying characteristics that influence an individuals' sense of place or place attachment for a particular place in the High Peaks region a general frequency distribution was run on 7 independent characteristic variables. The characteristic variables were then examined to determine any general trend in the data. In addition, general frequency distributions were generated to determine the emotional ties and symbolic associations participants' had towards their special place. As well, frequency distributions were generated to examine whether individuals' perceived an acceptable substitute for their special place within the Adirondack Park.

To compare the responses of two particular questions with several potential answers, two-way tables (contingency tables) were produced with a Chi-square analysis of the distribution (alpha = .05). Observed responses were compared with expected responses to determine the source of significant associations between two questions. For example, Chi-square analysis was used to establish whether a relationship existed between those individuals' who experienced the presence or absence of a sense of place and their overall level of understanding of the natural and cultural history of the Adirondacks.

In addition, Chi-Square analysis was used to determine whether or not a significant relationship existed between those individuals' who claimed their understanding of the natural and cultural history of the Adirondacks influenced their conservation/environmental ethic and their involvement -- vis-à-vis membership – in an environmental or conservation organization, such as *The Nature Conservancy, The Adirondack Mountain Club* or the *Environmental Defense Fund.*

Results

Of the 803 surveys that were distributed, 312 were completed and returned through the mail by the fall of 1999. Three surveys were initially dismissed from the analysis due to the fact that the participant was either not 18 years of age or older, or the questionnaire had been only partially completed. A total of 309 surveys were used in the final analysis, yet some variation in the sample size still exists for a few questions due to respondents who randomly skipped a particular question.

Since one of the primary goals of this study was to learn more about the various characteristics that influence an individuals' sense of place or place attachment (i.e. strong sense of connection to a particular place), the first question on the survey was designed to distinguish between those respondents who did experience strong place attachment for a particular place within the High Peaks region of the Adirondack Park and those who did not. Of the 309 questionnaires that were used in the final analysis, 217 were from participants who self-identified as having experienced strong place attachment to a particular place in the High Peaks region and the remaining 92 responses were gathered from participants who claimed no special place attachment to a particular place in the High Peaks region. Sampling results are summarized in Table 1.

Table 1. Survey Contacts and Response Rate

Survey Contacts	Study Area: Adirondack Loj Parking Area	Study Area: Hiking Trails & Trail Junctures	Total
Total individuals contacted (number of groups contacted)	627 (125)	176 (44)	803 (169)
Valid surveys completed and returned by mail	172	137	N = 309
Participants who experience a strong sense of place	145	72	217
Participants who do not experience a strong sense of place	61	31	92
Response rate per study area (%)	27	78	38(%)

Key Question Results

Participants were asked to rank the importance of several characteristics that potentially influence attachment to a special place: 'exceptional beauty' was the most influential characteristic (83% ranked it as "very important"), with 'the knowledge of the cultural & natural history of the Adirondacks as second-most influential (81% of 199 respondents). Participants also included characteristics such as: 'engagement in recreational activities' (67% of 202 respondents), and 'wilderness' (52% of 203 respondents). See Table 2.

The third question asked participants about the emotional ties that they had for their special place: eighty-three percent of the 217 respondents felt 'refreshed/restored'; seventy-one percent felt 'relaxed'; seventy-three felt 'wonder & awe'; and surprisingly, eighty-six of all 217 respondents indicated *not* feeling 'peaceful' toward their special place.

Table 2. Characteristics That Influence Visitors' Sense of Place Within the High Peaks

Characteristic	N	Response	Frequency	Percent
Past Personal History	203	Not Important	65	0.32
		Somewhat Important	52	0.26
		Very Important	86	0.42
Knowledge of the Cultural & Natural History of the Adirondacks	199	Not Important	8	0.02
		Somewhat Important	13	0.06
		Very Important	162	0.81
Engagement in Recreational Activities	202	Not Important	16	0.08
		Somewhat Important	51	0.25
		Very Important	135	0.67
Place of Exceptional Beauty	208	Not Important	5	0.02
		Somewhat Important	30	0.14
		Very Important	173	0.83
Place Has Spiritual Meaning	192	Not Important	54	0.28
		Somewhat Important	64	0.33
		Very Important	74	0.39
Place is Part of My Personal Identity	198	Not Important	30	0.15
		Somewhat Important	70	0.35
		Very Important	98	0.49
Place is Wilderness	203	Not Important	17	0.08
		Somewhat Important	80	0.39
		Very Important	106	0.52

The next question sought to determine the broader symbolic associations participants made in response to their special place: seventy-one percent of 217 respondents indicated the place represented 'serenity/peace'; sixty-nine percent indicated it represented 'wonderment'; and surprisingly, only eighty percent indicated their special place represented 'refuge/sanctuary'.

Of the 217 respondents who experienced place attachment to a particular locale in the High Peaks, nearly three-quarters of the participants (73%) felt there was a suitable substitute for their special place. Moreover, sixty-six percent felt they could find a substitute special place in another area of the Park.

The next question attempted to gauge the level of influence various environmental, social and managerial conditions had on visitors' sense of place. As shown in Table 3, respondents found: the 'absence of litter, soap in the water, and trail erosion' as extremely positive (69%); 'direct encounters with other park visitors' as extremely negative (75%), while thirty-nine percent indicated that 'in-direct encounters with other park visitors' as somewhat negative; almost half of the respondents (40%) found 'encounters with park officials (rangers, peak stewards, etc.)' as somewhat positive; and nearly half of the respondents (40%) found the 'presence of park facilities (trail markers, lean-to's, interpretive signage)' as somewhat positive.

The following two questions were designed to assess whether the participants understanding and knowledge of the cultural and natural history of the Adirondacks precipitated a particular land ethic. For example, question number 7 read, "Has your knowledge of the cultural history of the Adirondacks encouraged a desire to preserve the long-term health and integrity of the people, places and communities that make up the Adirondacks? In other words, has your knowledge of the cultural history of the Adirondacks stimulated a preservation ethic in you?" The number of respondents (N=302) who responded 'yes', 'somewhat' and 'no, not at all' was 35%, 32% and 32% respectively. Participants were additionally asked to indicate which parts of the cultural history of the Adirondacks visitors found important. Typical responses included: era of the Great Camps; history of lumbering; history of the Adirondack Park formation; State declaration of the "Forever Wild" forests; era of guiding and the importance of guide boats; and the era of hunting & trapping.

Table 3. Influence Various Environmental, Social & Managerial Conditions Has On Visitors' Sense of Place In High Peaks

Condition	N	Response	Frequency	Percent
Absence of Human Induced Impacts (e.g. Litter, Soap in Water, Trail Erosion)	213	Extremely Negative	7	0.03
		Somewhat Negative	3	0.01
		Neutral	14	0.07
		Somewhat Positive	41	0.19
		Extremely Positive	**148**	**0.69**
Direct Encounters With Other Park Visitors (e.g. on trail, campsite, trail juncture)	203	**Extremely Negative**	**152**	**0.75**
		Somewhat Negative	37	0.18
		Neutral	11	0.05
		Somewhat Positive	3	0.01
		Extremely Positive	0	0.00
In-Direct Encounters With Other Park Visitors (e.g. distant sights and sounds)	206	Extremely Negative	35	0.17
		Somewhat Negative	**81**	**0.39**
		Neutral	73	0.35
		Somewhat Positive	12	0.06
		Extremely Positive	5	0.02
Encounters With Park Officials (e.g. rangers, peak stewards)	205	Extremely Negative	3	0.01
		Somewhat Negative	11	0.05
		Neutral	58	0.28
		Somewhat Positive	**82**	**0.40**
		Extremely Positive	51	0.25
Presence of Park Facilities (e.g. trail markers, lean-to's, interpretive signage)	205	Extremely Negative	4	0.02
		Somewhat Negative	3	0.01
		Neutral	45	0.22
		Somewhat Positive	**81**	**0.40**
		Extremely Positive	72	0.35

The next question read, "Has your knowledge of the natural history of the Adirondacks made you want to preserve the long-term health and integrity of the natural places and biotic community that make up the Adirondacks? In other words, has your knowledge of the natural history of the Adirondacks stimulated an environmental ethic in you?" Out of 293 respondents who completed this question, nearly half (49%) replied 'yes', roughly one-third (29%) indicated 'somewhat' and the remainder of the participants indicated 'no, not at all.' Additionally, participants were asked to identify which parts of the natural history of the Adirondacks visitors found important: extirpation of wolves and extinction of other species; geologic history and the landforms of the region; ecological history (e.g. natural fire regimes; shift in species composition; forest succession, etc.

Moreover, Chi-square analysis was performed on the results of those individuals who experienced a sense of place verses those who *did not* experience a sense of place to determine the degree to which the importance of their knowledge about the cultural history of the Adirondacks influenced a preservation ethic: there was a statistically higher incidence of those individuals who experienced a sense of place (verses those who did not) and the likelihood of them possessing a preservation ethic (Table 4). In addition, Chi-square analysis was performed on the results of those individuals who experienced a sense of place verses those who *did not* experience a sense of place to determine the degree to which the importance of their knowledge about the natural history of the Adirondacks influenced an environmental ethic: there was a statistically higher incidence of those individuals who experienced a sense of place (verses those who did not) and the likelihood of them possessing an environmental ethic (Table 5).

Correspondingly, a comparison of results was conducted to determine the significance of an individuals' knowledge of the cultural and natural history of the Adirondacks and their membership in a conservation, preservation or environmental organization. Chi-square analysis showed a strong association between those who placed great importance on their knowledge of the cultural and natural history of the Adirondacks and the likelihood of them belonging to a conservation/environmental organization. (See Tables 6 and 7.)

Table 4. Importance of Knowledge of the Cultural History of the Adirondacks with Regard to Visitors' Preservation Ethic

	Park Visitors Who Did Not Experience A Sense of Place	Park Visitors Who Did Experience A Sense of Place	All Park Visitors
Cultural History Not At All Important to Visitors' Preservation Ethic	44 28.56	54 69.44	98 98.00
Cultural History Somewhat Important To Visitors' Preservation Ethic	20 28.56	78 69.44	98 98.00
Cultural History Highly Important to Visitors' Preservation Ethic	24 30.89	82 75.11	106 106.00
All Park Visitors	88 88.00	214 214.00	302 302.00

Chi-Square = 17.572, DF = 2, P-Value = 0.000

Table 5. Importance of Knowledge of the Natural History of the Adirondacks with Regard to Visitors' Environmental Ethic

	Park Visitors Who Did Not Experience A Sense of Place	Park Visitors Who Did Experience A Sense of Place	All Park Visitors
Natural History Not At All Important to Visitors' Environmental Ethic	30 18.41	35 46.59	65 65.00
Natural History Somewhat Important to Visitors' Environmental Ethic	21 23.80	63 60.20	84 84.00
Natural History Highly Important to Visitors' Environmental Ethic	32 40.79	112 103.21	144 144.00
All Park Visitors	83 83.00	210 210.00	293 293.00

Chi-Square = 13.275, DF = 2, P-Value = 0.001

Table 6. Significance of Individuals' Knowledge of the Cultural History of the Adirondacks and Their Membership in A Conservation, Preservation or Environmental Organization

	Non Member of Preservation Organization.	Member of Preservation Organization	All Park Visitors
Cultural History Not At All Important	70 55.53	28 42.47	98 98.00
Cultural History Somewhat Important	58 54.97	39 42.03	97 97.00
Cultural History Highly Important	42 59.50	63 45.50	105 105.00
All Park Visitors	170 170.00	130 130.00	300 300.00

Chi-Square = 20.961, DF = 2, P-Value = 0.000

Table 7. Significance of Individuals' Knowledge of the Natural History of the Adirondacks and Their Membership in A Conservation, Preservation or Environmental Organization

	Non Member of Environmental Organization	Member of Environmental Organization	All Park Visitors
Natural History Not At All Important	48 36.86	17 28.14	65 65.00
Natural History Somewhat Important	58 47.06	25 35.94	83 83.00
Natural History Highly Important	59 81.08	84 61.92	143 143.00
All Park Visitors	165 165.00	126 126.00	291 291.00

Chi-Square = 27.544, DF = 2, P-Value = 0.000

Socio-demographic Results

Exactly half of the participants were between the ages of 34-54, and 57 percent of the respondents were male while 43 percent were female. Half of the respondents had completed advanced graduate level education. One third of the respondents who permanently resided in a suburban location, while 25 percent resided in urban areas over 75,000 people. The remaining participants were from rural areas, small villages or lived within the Park itself. Of the respondents who participated in the study, 79 percent had previously visited the High Peaks before, and of those who had previously visited, over half (58%) claimed to visit the area several times a year. Well over half of the respondents (89%) had visited the High Peaks as part of a larger group (1-5 people), while only eleven percent traveled solo. Just over half of the respondents (56%) visited on a weekday and the remainder visited on a weekend. Sixty-six percent of the respondents included an overnight stay during their visit. The range of reasons for visiting the High Peaks included: the availability of diverse outdoor recreation opportunities (42% of respondents); because the High Peaks is a wilderness area (23%); because of their strong attachment to the place (22%); and fourteen percent of the respondents indicated it gave them time to enjoy companionship with others.

Discussion & Management Implications

What these study results clearly indicate, is that many visitors to the High Peaks region of the Adirondack Park experience a strong sense of place or place attachment that is due, in part, to their knowledge of, and importance they place on understanding, the area's cultural and natural history. Furthermore, that this strong sense of place or place attachment is *not necessarily* based on past, repeat visitation to the area, nor living in close proximity to the area – which is a particular viewpoint several researchers and scholars hold (Low & Altman, 1992; Shumaker & Taylor, 1983; Tuan, 1974; Seamon, 1980). Rather, primarily the visitors' knowledge of the cultural and natural history of the Adirondacks, the relative beauty of the area, and the fact that much of the High Peaks is a wilderness area greatly influence visitors' experience of various place phenomena. This is not to suggest that visitors' past personal history with the area has no influence on sense of place – it is comparatively just less influential.

The state Department of Environmental Conservation, in conjunction with the Adirondack Mountain Club (ADK), may want to develop and promote additional cultural and natural history interpretive programming, considering the number of respondents who claimed that having knowledge of the history of the Adirondacks was important to their sense of place. Additionally, given the number of respondents who claimed their knowledge of the cultural and natural history was very important, and it was an influential factor on their membership in a preservation, conservation or environmental organization, the DEC and the ADK would be wise to further develop collaborative interpretive programming partnerships – similar to the collaborative effort demonstrated by the Peak Stewards Program.

Moreover, considering visitors' responses to the various environmental, social and managerial conditions present in the High Peaks and the impact direct encounters with other Park visitors had on participants' sense of place, it appears that the recently implemented reduction in party size limits in the High Peaks would be viewed as a positive management action. Additionally, considering the number of visitors who viewed direct encounters with Park officials, as positive overall, Park officials should continue with the various environmental/visitor-use education efforts they currently have in place – and perhaps, enhance those efforts to include basic information about the cultural and natural history of the Adirondacks.

Results also indicate that the DEC and other organizations that are involved in stewardship activities within the High Peaks – such as the Adirondack Mountain Club – should continue with various rehabilitative and conservation efforts in the area. For example, continuing with trail restoration efforts and re-vegetation and tree planting in areas that have experienced severe overuse, such as the site in the immediate vicinity of Marcy Dam. Another management strategy that could be implemented to mitigate or lessen the impact at heavily used areas is to amplify visitor education efforts regarding *other* wilderness options within the larger Adirondack Park considering the number of respondents who felt they could find a suitable substitute for their 'special place' in another part of the Park. In other words, put additional effort into educating users about other use options – thereby dispersing use overall.

Lastly, considering the number of visitors who claimed to experience a sense of place in the High Peaks region based on the fact that the area was a wilderness, additional visitor education efforts could be put into place to educate users about the unique characteristics that "define" wilderness. For example, some first time visitors might not understand the necessity of party size limits, non-motorized use regulations, or the need to limit future development on tracts of land that are classified as wilderness.

Conclusion

Resource managers are just beginning to recognize the impact of managing recreational settings for their emotional, symbolic, and even spiritual values (Roberts, 1996; Salwasser, 1990), and the investigation of how sense of place and other place phenomena adds to our growing understanding of the importance of managing for these types of values. While the results presented here represent an initial exploratory step about how one's understanding of the cultural and natural history of an area helps to shape or influence sense of place, much remains to be done to understand and further measure the meaning of places outside the High Peaks.

The significance of a place approach is that it attempts to establishes the connections between people and geographic areas directly rather than establishing such connections indirectly in the form of use and user characteristics, and activities-based recreation research. This approach can enhance future wilderness planning in the Adirondack Park. For instance, much of the resource planning that has occurred in the past has failed to satisfy the public, in part because plans often do not indicate where proposed actions are to take place, *specifically*. Place attachment and strong sense of place reminds resource managers and other decision makers that the public is intimately involved with specific places under their jurisdiction. Furthermore resource planning fails to adequately capture the full range of meaning associated with wilderness and other wild lands. More often than not, planning has emphasized the ecological – and certainly the economic – values, while tending to ignore or overlook the emotional, symbolic and spiritual values of wilderness. Approaching the management of such richly complex areas as the Adirondack Park through a place perspective prompts managers to reconsider the outdated commodity approach to resource management. That is, the place perspective demonstrates that places are not just the sum of interchangeable attributes, but whole entities in themselves that people care passionately about. This type of approach acknowledges that resources – both ecological *and* historical – are not simply raw materials to be manipulated into a particular recreational opportunity. Rather, and perhaps more importantly, wilderness areas such as the High Peaks are places rich with deep history, places that hold significant symbolic value for the novice and return visitor alike, and lastly, those places which invoke a deep sense of place – for many people – bring shape, purpose and meaning to ones' life.

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ATTACHMENTS TO PLACES AND ACTIVITIES: THE RELATIONSHIP OF PSYCHOLOGICAL CONSTRUCTS TO CUSTOMER SATISFACTION ATTRIBUTES

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Abstract: This study explores the nature of place attachment, enduring involvement and human territoriality and their relationship with customer satisfaction for a diverse group of anglers at lakes in the New England region. Previous work has made limited headway in our understanding of how place attachment, enduring involvement, and human territoriality relate to people's evaluations of experiences and settings. This study attempts to address the deficiencies of previous research by combining the three constructs and examining their relationship with customer satisfaction. These constructs and their sub-dimensions (independent variables) were examined with twelve importance and satisfaction items as well as gap scores (dependent variables). The results suggest that, as place attachment and attraction (EI) increase, satisfaction with the type of fish an angler can catch increases. Meanwhile, as territorial beliefs increase, anglers' satisfaction with the type of fish they can catch decreases. Significant paths were also found for other domains of customer satisfaction.

Introduction

A number of factors including feelings that an individual may have for an area can play an intricate role in his or her choice of facility or setting (Bryan, 1977; Peterson, Stynes, Rosenthal, & Dwyer, 1985). A better understanding of how people discern, choose and relate to recreation settings and activities is important to understanding the recreation experience. Managers of recreation facilities attempt to use their own personal experience and knowledge along with information provided to them to make the best decisions. In the end, both researchers and managers want the recreationist to have the most satisfying experience possible. This study includes many of the variables that have been previously studied in order to improve visitor experiences.

A person's attachment to a geographic location has been of interest in a variety of fields for many years. In the field of geography, attachment to a place has been studied in terms of environmental behavioral issues (Relph, 1976; Stolkols & Shumaker, 1981; Tuan, 1974) as well as a person's emotional or symbolic attachment to an area (Low & Altman, 1992; Relph, 1976; Tuan, 1980). While fields like geography have been studying attachment to place for some time, recreation researchers began exploring the concept during the first half of the 1980s. Research has consistently shown (Bricker, 1998; Moore & Graefe 1994; and Williams & Roggenbuck 1989) that place attachment is comprised of two central dimensions known as place dependence (functional meaning) and place identity (emotional or symbolic attachment to an area). A particular recreation area can be especially valuable to a person if it fulfills both dimensions of place attachment.

Past place attachment research has sought to understand what variables are most likely to influence the level of attachment a person will have with a recreation area (Moore & Graefe, 1994; Williams & Roggenbuck, 1989) and what influence place attachment will have on experience and managerial options (Bricker, 1998; Wickham & Kerstetter, 2000). Mowen, Graefe, and Virden (1998) took an important step in our understanding of place attachment when they examined the relationship of a combined place attachment/enduring involvement scale with both setting and experience evaluations.

Work by McIntyre (1989) generated interest in the concept of "enduring involvement" (EI) and its relationship to recreation specialization. In his study, McIntyre (1989) proposed the application of an EI instrument for examining the relationship between level of commitment to camping and choice of campground setting. The four-component EI model did not hold up under factor analysis. Rather, three components characterized enduring involvement in relation to camping. The three factors were termed attraction, self-expression, and centrality. An important step in our understanding of EI was taken by Mowen et al. (1998) when they examined the relationship between place attachment and enduring involvement with experience and setting assessments. The combined typology exhibited a positive and significant relationship with both setting and experience evaluations, confirming some previous work on involvement and service quality (Dimanche & Havitz, 1995).

In this study, as well as previous studies in the field of Environmental Psychology, human territoriality has been conceptualized as a person's attitude towards a specific place. Human territory is believed to consist of three dimensions known as territorial cognition, emotion, and behavior (Taylor, 1988). Territorial behaviors are an attempt on the individual's part to control not only the activities of others, but their access to a particular area. Territorial beliefs include an individual's perceptions or beliefs about who should enter a site, what goes on at the site, and who should take care of the site (Taylor, 1988). Territorial emotions include a positive emotional bond for a place and the condition of that site as well as the type of user that should use the area, and negative emotional reactions to possible changes in conditions and users in that very same area. Because recreation sites are often symbolic and have deep personal meaning for people, territorial models (e.g. crowding and conflict) stress an

individual's perceived control as an important part of a satisfying experience (Zinn, 1992).

Since the 1960s, researchers have been trying to determine what represents quality in outdoor recreation and how satisfied recreation customers are with their experiences. Consumer behaviorists have conducted similar research related to service quality and customer satisfaction. Parasuraman, Zeithaml, and Berry (1988) have played the leading role by developing a 22-item instrument named SERVQUAL. In the recreation and leisure field, SERVQUAL was adapted by Mackay and Crompton (1988) to better understand how people engaging in recreation activities evaluate quality of service from recreation providers. The gap analysis method (as used in this study) has been used to examine service quality. Gap scores can be positive or negative. When there is a positive gap score, this indicates that an item is performing greater than a person's expectation. A positive score represents satisfaction with an item a person is evaluating. Conversely, negative gap scores represent items that are performing below a visitor's expectation.

In an attempt to make satisfaction models more tangible for researchers and managers, Burns, Graefe, Absher and Titre (1999) created a customer satisfaction model with four domains (facilities, services, information, and recreation experience). This customer satisfaction model is believed to be more easily translated and understood by recreation researchers and managers because the items within the domains are designed to be more relevant and tangible. The domains used are also believed to be flexible in nature and may be adapted to meet the needs of the specific recreation area under study.

The purpose of this study was to examine the relationships between place attachment, enduring involvement, human territoriality and customer satisfaction. This study investigates the individual and cumulative effects of these variables on customer satisfaction. Data were obtained from anglers in the New England District of the U.S. Army Corps of Engineers (COE). Anglers were asked about the lakes they fish most frequently. The study's overall intended purpose was to investigate the relationships between several psychological constructs, service quality indicators, and overall satisfaction. More specific to this paper was the examination of the relationships between place attachment, enduring involvement, human territoriality and customer satisfaction attributes.

Methodology

A multiple-method approach was used for data collection to obtain a diverse sample of anglers from the New England region. Several COE project offices provided names of individuals, groups, and club representatives for researchers to contact by phone. A total of eight groups out of fifteen contacted agreed to provide the names and addresses of their members for a mail-out survey. As a means of increasing the sample size for the study, a stratified random sample of users was contacted on-site at four lakes (Hopkinton-Everett Lake, East Brimfield Lake, Buffumville Lake, and West Thompson Lake). Upon the completion of a brief on-site interview, each respondent was asked if she/he was willing to provide his/her name and address for a follow-up mail-back survey.

In total, 433 addresses were collected for this survey. A modified implementation of Dillman's (1978) multiple mailing process was used (four instead of five mailings). A total of 123 usable surveys were returned from the address database for a response rate of about 33%. Surveys were also sent to two large state bass fishing organizations. By combining the surveys returned from the mail-out portion of the study and the surveys distributed to the state bass organizations, the total sample size for this study increased to 176.

A telephone survey of non-respondents was conducted as a precautionary measure in order to determine if there was a significant difference between non-respondents and respondents in the study. Thirty interviews were completed and the sample means of 13 items were compared with the results in the original mail survey. This comparison between respondents and non-respondents showed little significant difference between the two groups.

Measurement

Customer satisfaction was measured using a list of 12 items patterned after scales developed by Parasuraman et al. (1985), Mackay and Crompton (1990) and Burns et al. (1999). The domains used in this study include facilities, services, information, and recreation experience. Respondents rated each statement using a five-point Likert-like scale ranging from "not at all important" to "extremely important" and "not at all satisfied" to "extremely satisfied."

Respondents were asked to respond to eight place attachment statements patterned after previous research (Moore & Graefe, 1994; Bricker, 1998). The proposed sub-dimensions of this construct are place dependence and place identity. A five-point scale ranging from "strongly disagree" to "strongly agree" was used to measure level of agreement with each of the place attachment items.

An angler's level of involvement with fishing was measured with 13 items. These items were closely designed after previous researchers' use of the scale. The four domains of enduring involvement included in this study are enjoyment, importance, self-expression, and centrality (McIntyre, 1989). For involvement, a five-point scale with possible responses ranging from "strongly disagree" to "strongly agree" was used.

Human territoriality (Wickham & Zinn, 2001) was measured with 12 items. The items used in this study are newly designed and intended to measure recreationists' emotions, beliefs, and behaviors towards a specific place. The items in the human territoriality scale use a five-point scale with responses ranging from "strongly disagree" to "strongly agree."

Analysis

A factor analysis was used to determine the dimensions of place attachment, enduring involvement, human territoriality and customer satisfaction (importance/performance). One of the most important characteristics of factor analysis is its data reduction capability. Factor analysis and Cronbach's coefficient alpha were used to verify the internal dimensions of these constructs in an outdoor recreation setting. This study also used multiple regression analyses to examine the relationships between dependent variables (importance and satisfaction for each of the customer satisfaction items) and independent variables (place attachment, enduring involvement, human territoriality).

Results

In terms of past research regarding place attachment, studies have traditionally found the construct to consist of two main dimensions, place identity and place dependence. In this study, the 8 items used to measure place attachment loaded onto one factor. With all items contributing to the factor, it was not necessary to remove any items for further analysis. The single factor for place attachment, with an Eigenvalue of 4.43, explained 55.35% of the variance and had a reliability level of .88.

A factor analysis for the construct, enduring involvement, initially achieved four factors. Factor 1 was made up of items from the importance, enjoyment, and centrality domains. Similar in nature to a dimension McIntyre (1989) found, the 5 items that made up the first factor were called "attraction" (Eigenvalue=4.66; Variance=35.86; Reliability=.81). The second factor loaded with all the self-expression items (Eigenvalue=1.62; Variance=12.43; Reliability=.79). This factor loaded exactly as McItyre's four self-expression items did with beach campers. Two more factors were extracted during the analysis, each with two items. Because of conceptually unusual factor loadings (factor 3) and low reliability scores (factor 4), both factors were removed from further analysis.

The third variable to be tested with factor analysis was human territoriality. An initial factor analysis of the 12 items in the construct identified five factors. Of the 12 items originally predicted to represent human territoriality, two items loaded separately from the first three factors and were dropped from further analysis. The first dimension, territorial emotions, retained all four items originally hypothesized to represent this domain (Eigenvalue=2.67; Variance=22.26; Reliabily=.69). The second dimension, representing territorial behaviors, retained three of the four items predicted to represent this aspect of human territoriality (Eigenvalue= 1.93; Variance=16.07; Reliabily=.52). Lastly, the third factor represented territorial beliefs. As with the dimension representing territorial behaviors, territorial beliefs retained three of the four predicted items (Eigenvalue=1.23; Variance=10.23; Reliability=.55). While the reliability scores for the three dimensions revealed through factor analysis were moderate to low, principle component analysis with varimax rotation supported the three factors initially conceptualized as components of human territoriality. Therefore, it is believed that further analysis of these dimensions is warranted.

For the importance and performance variables, principle component factor analysis was again used to examine the dimensionality of the variables. For both sets of variables, factor analysis did not reveal any logical relationships between the items. Because the items did not load together in a logical manner, all individual items representing importance and satisfaction domains were used and no composite indices were created.

The use of factor analysis revealed some expected and some surprising results regarding the internal structure of the constructs used in this study. In summary, one dimension represented place attachment, two dimensions (attraction and self-expression) represented enduring involvement, and three dimensions (beliefs, emotions, and behaviors) represented human territoriality. The created indices were used with multiple regression to better understand the relationship between independent and dependent variables.

Based on the proposed theoretical model (Figure 1), regression models were developed to identify the relationships between place attachment, enduring involvement, human territoriality, and the importance/performance customer service items. Standardized beta coefficients were used to identify the relative importance of each independent variable to the subsequent dependent variable. For the relationships between independent variables, correlations between variables (r-values) ranged from .003 to .761. While there were a few moderately high correlation scores among the independent variables, the majority were well within an acceptable range. Figures 2 through 4 show the significant relationships between the identified independent and dependent variables.

A total of twelve items were examined as dependent variables (Importance items 1-12) with the independent variables of place attachment, attraction (EI), self-expression (EI), territorial beliefs, territorial emotions, and territorial behaviors (Figure 2). The purpose of this section of the study was to examine the relative strength of the independent variables in explaining the importance of various customer service items.

Four of the twelve regression equations tested were statistically significant. The importance of cleanliness of toilet facilities was related to territorial beliefs and self-expression (6% of variance explained). The importance of appearance and maintenance of the lake area was related to territorial behaviors and territorial beliefs (15% of variance explained). The importance that an angler places on the type of fish they can catch was significantly predicted by the attraction dimension of enduring involvement (8% of variance explained). Lastly, territorial behavior was the only significant predictor of importance of the number of fish a person can catch at a lake (5% of variance explained).

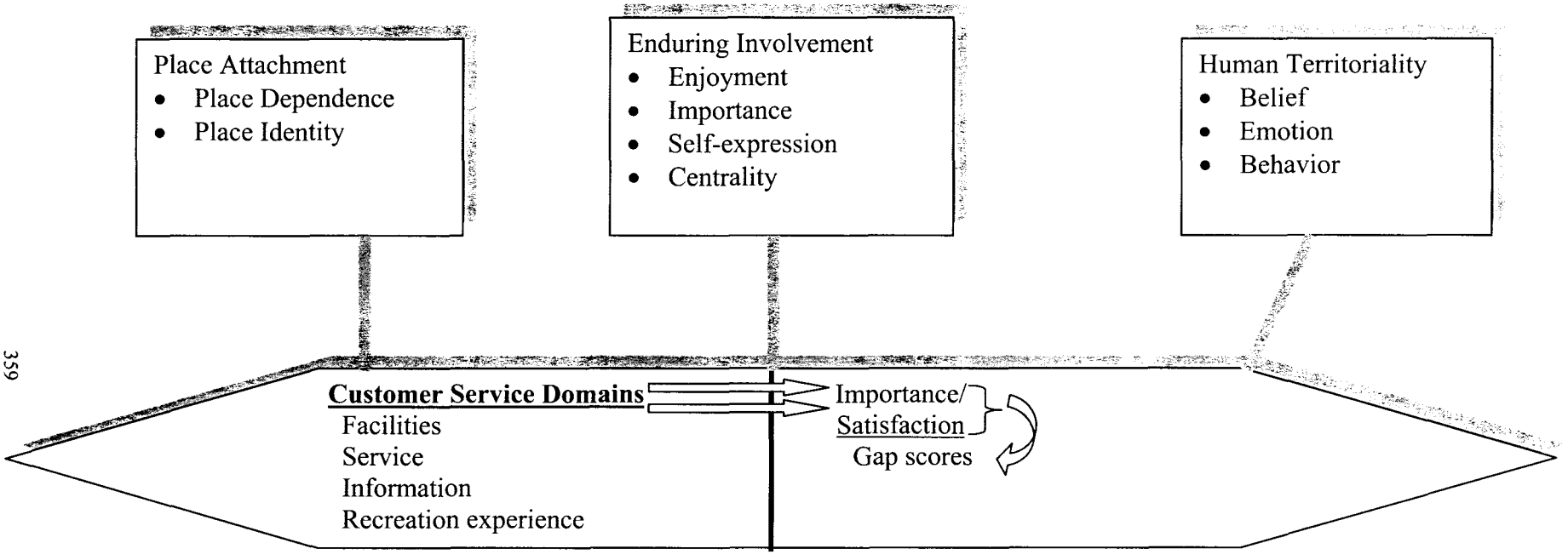
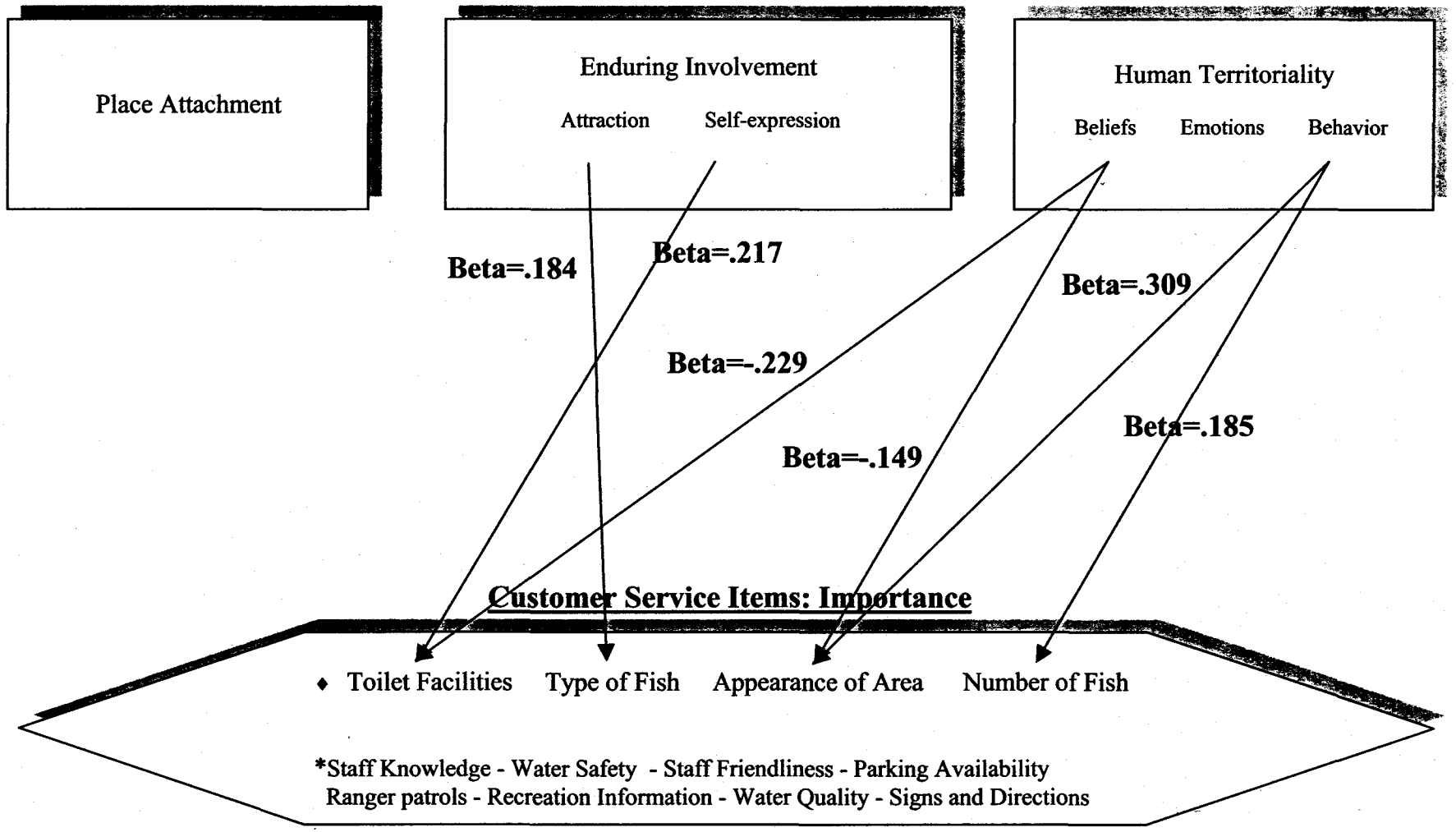
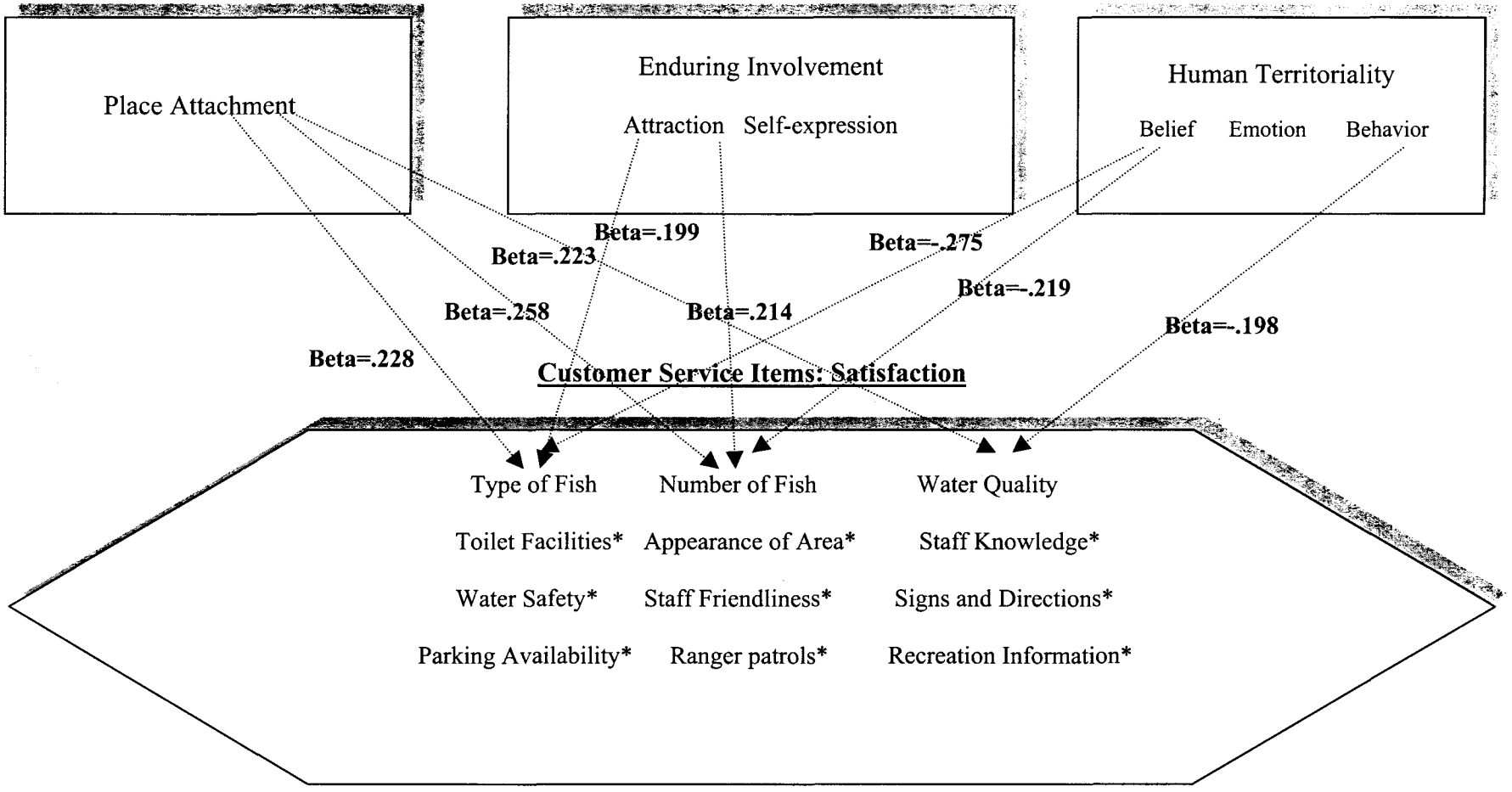


Figure 1. A Proposed Model of Place Attachment, Enduring Involvement, Human Territoriality, and Customer Satisfaction 1



♦ Dependent variables found to be significantly predicted by independent variables
* Dependent variables found to have no significant relationship with independent variables

Figure 2. Relationship of Place Attachment, Attraction, Self-expression, Beliefs, Emotions, Behaviors with Importance Items as Dependent Variables



* Dependent variables found to have no significant relationship with independent variables

Figure 3. Relationship of Place Attachment, Attraction, Self-expression, Beliefs, Emotions Behaviors with Satisfaction Items as Dependent Variables

Place attachment, enduring involvement, and human territoriality were next tested for their relationship with level of satisfaction with the customer service items. For this hypothesis, three of the 12 regression equations were found to be significant (Figure 3). The significant relationships included: satisfaction with the type of fish that can be caught and territorial beliefs, attraction (EI), and place attachment (16% of variance explained); satisfaction with the number of fish a person can catch and place attachment, territorial beliefs and attraction (EI) (11% of variance explained), and satisfaction with water quality and territorial behaviors and place attachment (5% of variance explained).

The final step of the analysis was to examine the relationships between the independent variables of place attachment, attraction (EI), self-expression (EI), territorial beliefs, territorial emotions, and territorial behaviors and the item gap scores (Figure 4). Only one of the item gap scores was significantly predicted by any of the independent variables. Apparently, the independent variables are better predictors of importance and satisfaction scores than they are of the item gap scores (difference between importance and satisfaction). The only regression equation that was significant included the gap score for appearance and maintenance of the lake area with territorial behavior (7% of variance explained).

Conclusions and Implications

The theoretical framework for this study was formulated from both existing research and newly designed instruments to measure formerly speculated relationships. Previous research has explored the relationship between variables like place attachment and enduring involvement with various satisfaction-related items. However, no studies were found that used a management-oriented customer service model. This study takes place attachment, enduring involvement and human territoriality and explores the relationship of these variables within a conceptual model of customer satisfaction.

The customer satisfaction model examined in this study uses items that are believed to be closely related to actual services at recreation areas. Because the independent variables measure psychological constructs related to place and activity, it should not be surprising that they best predict those items that are theoretically related to either activity or place. The results are similar to those found by Mowen et al. (1998) in which place attachment and activity involvement measures were significantly related to measures of satisfaction for both place and recreation experiences. Thus, the results of this study partially support previous research in this area. Place attachment, enduring involvement, and human territoriality were less successful in predicting items that were related to either the service or information domains of customer satisfaction.

Future researchers should consider using the same variables and perhaps other recreation-related variables; however, some of the results show a need for modifying the current constructs as they were used in this study. As Bricker (1998) determined, qualitative methods of researching recreationists' attachments to special areas can produce vastly different results than quantitative methods. Certainly, all four constructs (place attachment, enduring involvement, human territoriality, and customer satisfaction) could benefit from future qualitative research.

Most current studies examining involvement no longer use the construct examined in this study. A more common and current involvement scale has been designed and modified by Dimanche, Havitz and Howard (1991) and others over the last decade.

Human territoriality, as used in this study, will also have to be modified. Low to moderate reliability scores show a weakness in the current items and, perhaps, the dimensions will need to be altered for future research in this area. For the importance/performance domains, it may be useful to examine other domains such as a natural resources domain or a more developed recreation experience domain. While this study has opened many doors, it has also raised many questions. Researchers should continue to refine the measures that were used in this study and explore their relationships.

In this study, various dimensions of place attachment, involvement and human territoriality were related to different items measuring satisfaction. The continued use of these items and their refinement could help researchers and mangers better understand how they might improve recreationists' experiences. Because public recreation agencies are being asked to provide a wide variety of activities and satisfying experiences within various settings, positively influencing place and activity attachment appears to be an effective strategy for increasing visitor satisfaction. This study supports this notion as has past research (Dimanche & Havitz, 1995; Mowen et al, 1998). A continued refinement of measures such as those used in this study could provide more information to make quality decisions with regard to management plans. In the end, if programs could target people in an effective and efficient manner, future policy decisions regarding the allocation of funds to specific programs could be more efficient and, ultimately, produce more satisfied customers.

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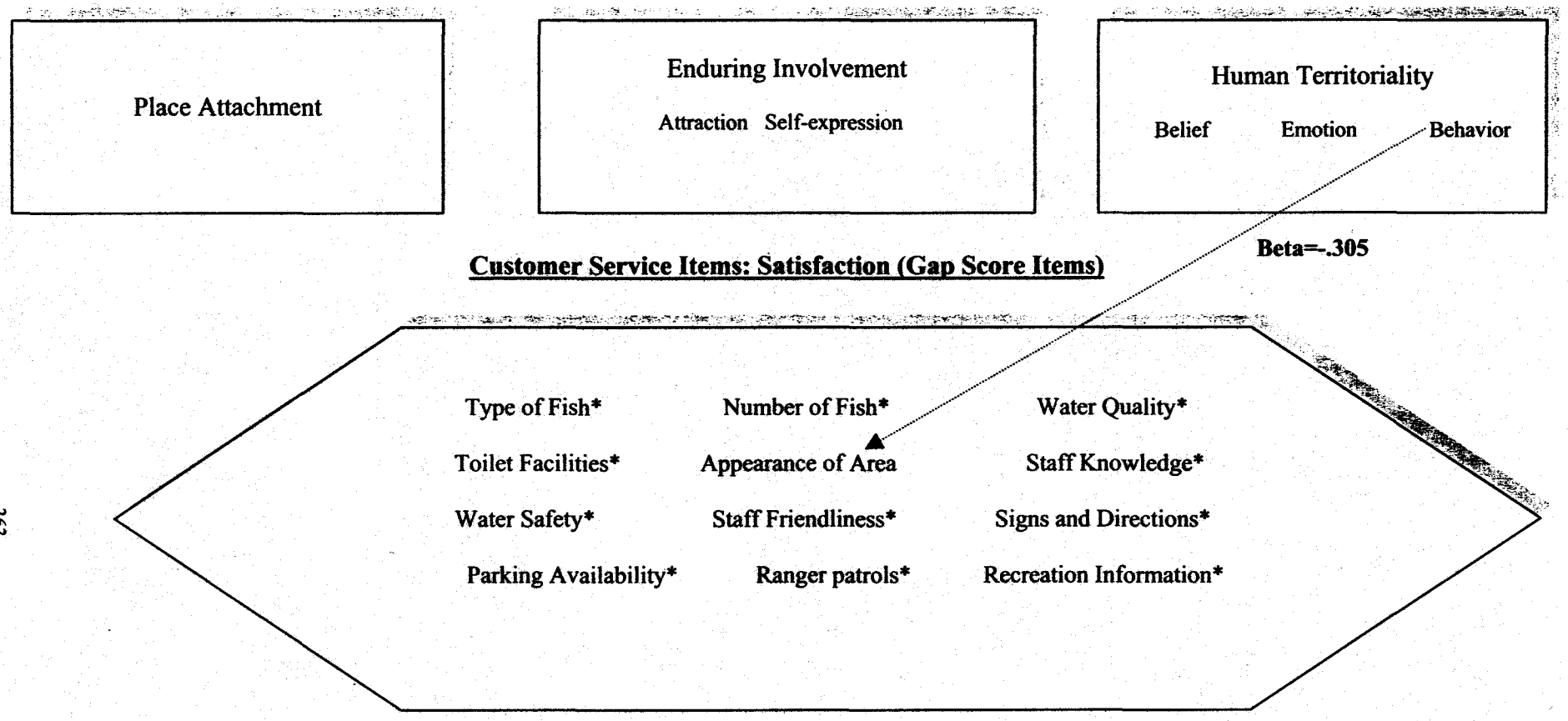

* Dependent variables found to have no significant relationship with independent variables

Figure 4. Relationship of Place Attachment, Attraction, Self-expression, Beliefs, Emotions Behaviors with Gap Scores as Dependent Variables

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AN EXPLORATION OF HUMAN TERRITORIALITY IN FOREST RECREATION

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Abstract: Previous studies in human territoriality have focused largely on behavior in urban settings. It is only recently that researchers are examining this construct in the context of forest settings. This study was designed to assess the territorial responses of visitors to Bald Eagle State Forest in central Pennsylvania and explore the structure and predictive validity of a proposed territoriality scale. Results indicated the sample was relatively homogenous in terms of demographics but included consumptive as well as non-consumptive forest visitors. Further analysis demonstrated only limited support for an exploratory territoriality scale and suggested the need for further research into the meaning and structure of human territoriality in forest recreation settings.

Introduction

Resource-based recreation is often place-specific, and recreationists can develop strong bonds to favored places, as has been investigated with the place attachment construct. Another construct, human territoriality, may add to our understanding of human-place bonds in recreation and how these bonds relate to management issues.

Human territoriality has generally been studied in urban locations (Edney, 1976; Taylor & Brower, 1985). Applying the construct in the context of outdoor recreation is likely to require modification of existing measures and the development of new measures.

Human territoriality has been suggested to consist of three dimensions: place-specific cognitions; emotions; and, behaviors (Taylor, 1988). Territorial beliefs may address social contact, autonomy, escape, perceived control, and responsibility for place. Territorial emotions may include positive affect toward a place and preferred conditions there as well as negative affect toward possible changes in conditions. On-site territorial behaviors may include responses to intrusions such as defense of occupied space and exercise of dominance over perceived outsiders. Off-site, territorial behaviors may include advocating for favored uses and management practices.

This study is an exploration of the territoriality construct in the context of forest recreation. The study was designed to measure territorial responses to "favorite places" in a state forest and test the structure and predictive validity of an exploratory scale incorporating Taylor's (1988) three dimensions of territoriality.

Methods

In a year-long survey of visitors to a central Pennsylvania State Forest, participants were asked to identify a favorite place in the forest and answer a battery of fixed-answer and open-ended questions about their relationship to that place. Key variables in this study included respondents identification of their favorite place, beliefs about managing their favorite place, satisfaction regarding forest management issues, and responses to an exploratory territoriality scale.

A total of 477 useable responses was received. Seventy-two participants (15%) identified large, undifferentiated areas (e.g., the trails, the mountains) as favorite places, and 405 (85%) identified specific sites. Because we were attempting to examine territoriality as it relates to a specific place, in our analyses, we used only the latter group.

Content analysis was used to examine the open-ended responses regarding beliefs about participants' favorite places. Primary categories were identified for each of the questions into which participants logically were grouped. Principle components factor analysis with varimax rotation was used to examine the structure and predictive validity of the exploratory territoriality scale. Correlation and chi-square statistics were then used to examine the relationship between the hypothesized dimensions of territoriality and responses to satisfaction and beliefs about forest management.

Findings

User Characteristics

Respondents who identified a specific favorite place within the forest were generally white (98%), male (85%), long-time forest users (mean = 25 years), middle income (56% = $30,000-$79,000/year), and moderately educated (51% = more than a high school education. Approximately half of the respondents (46%) lived within 30 miles of the forest and their mean age was 47 years. Interestingly, Table 1 indicates that many members of this group identify both consumptive (e.g., hunting/fishing) and non-consumptive (e.g., hiking, viewing scenery, relaxing) as favorite activities.

Table 1. The Most Important Activities in which Respondents Participate at Their Favorite Place

Activity	N
Hunting/fishing	357
Hiking/biking/riding	208
Viewing scenery/wildlife	145
Relaxation/peace/solitude	86
Cookouts/picnics	48
Camping	47
Motorized recreation	40
Swimming	35
Being with friends/family	19

Note: Respondents could list up to three activities.

Geographic Distribution

Locating all favorite places on a forest map indicated that these sites were predominantly in the valleys of the state forest near roads, and not in less accessible areas. Further examination revealed over 80% of the locations to be located near a stream, e.g., Penns Creek, Poe Valley Area, White Deer Creek Area, Cherry Run. This is typical of visitation to other public recreation areas where visitors are more likely to visit areas with water than those without if given the opportunity.

Beliefs about Favorite Places

Content analysis of open-ended responses indicated that the characteristic that made favorite places special most often was conduciveness to a particular recreation activity (Table 2). Not unexpectedly, the same characteristic was typically enjoyed most by participants' during their most recent visits to their favorite places. Other frequently identified characteristics of favorite places included privacy, quiet, memories linked to the site, and natural qualities. Both positive and negative characteristics of favorite places were related to the impact of other people. For example, opportunities for privacy, memories (often of other people), and encounters with others were important to more than one-third of the participants. In contrast, characteristics of favorite places that were enjoyed least included other's behavior, litter, and inadequate or intrusive maintenance.

The next set of questions centered on management issues and asked respondents to identify what they would keep the same, as well as what they would change, about their favorite place. Again, responses were analyzed for content and results are provided in Table 3. Interestingly, almost equal numbers of respondents indicated that the current wilderness quality and existing uses were the most important items to keep as suggested that facilities be improved and use patterns be modified. There appears to be two distinct groups in terms of this particular set of responses.

Table 2. Content Analysis of Open-ended Responses about Favorite Places

Beliefs	Percent	N
What makes this place special?	**100%**	**452**
Conducive to recreation activities	27.9%	126
Privacy/Quiet	21.9%	99
Memories	15.3%	69
Natural quality	14.6%	66
Convenience	10.8%	49
Views/Scenery	6.2%	28
Encounters with others	3.3%	15
What did you like most about your favorite place on your last visit?	**100%**	**422**
Conducive to recreation activities	33.2%	140
Natural amenities	27.2%	115
Quiet/Private	17.3%	73
Views/Scenery	13.5%	57
Encounters with others	6.2%	26
Memories	2.6%	11
What did you like least about your favorite place on your last visit?	**100%**	**245**
Natural constraints	17.0%	83
Other's behavior	9.6%	47
Litter	8.4%	41
Inadequate maintenance	5.7%	28
Personal constraints	5.1%	25
Rules	2.9%	14
Intrusive maintenance practices	1.4%	7

Table 3. How Favorite Place Should Be Managed

Belief	Percent	N
What would you keep about your favorite place?	**100%**	**219**
Wilderness quality	32.8%	72
Existing maintenance	27.4%	60
Existing uses	27.4%	60
Accessibility	8.2%	18
Existing rules	3.6%	8
Quiet/peace	.5%	1
What would you change about your favorite place?	**100%**	**283**
Improve facilities	36.7%	104
Modify use patterns	24.0%	68
Modify nature management	17.3%	49
Enforce rules	11.3%	32
Improve roads	10.6%	30

Territoriality Scale Items

Exploratory factor analysis of an exploratory scale provided limited support for Taylor's three-dimensional (beliefs, emotions, behaviors) structure of human territoriality (Tables 4 & 5). The four items that loaded unambiguously on the first factor were emotional in nature as suggested by Taylor. However, the structure of the second and third factors was unexpected and unclear. Neither belief nor behavioral items loaded together consistently, and two items did not load strongly on any factor. Furthermore the internal consistency of the three hypothesized sub-scales as well as the three sub-scales suggested by the exploratory factor analysis was low, with Cronbach's alphas ranging from a high of .64 to a low of .27. Finally, the three sub-scales were tested as predictors of expectations regarding favorite places, satisfaction with forest management, and responses to forest management issues, but no significant relationships were found.

Conclusion

The first issue to examine is the lack of relationship between the territoriality scale and respondents' satisfaction and beliefs regarding management. The satisfaction and management items were measured with respect to the entire forest. However, the territoriality items were measured within the context of the favorite place identified within the forest. Satisfaction and responses to forest management issues may differ according to the level of geographic specificity defined. Thus, it may be that territoriality of a specific place does not provide insight regarding beliefs and behaviors relative to the broader context within which that specific place operates.

Table 4. Factor Structure of Hypothesized Territoriality Scale Items, Their Factor Loadings and Reliabilities

Sub-scale	Sub-scale item	Factor Loading	Standardized Alpha
Factor 1 (Emotion)			**.6431**
	I have a lot of fond memories about this place.	.646	
	I have a special connection to this place and the people that use it.	.620	
	This place means more to me than any other place I can think of.	.591	
	For me, lots of other places could substitute for this one.	.568	
Factor 2 (Behavior)			**.4275**
	I know this place better than the people who run it.	.712	
	I treat this place better than most other people that come here.	.583	
	I don't tell many people about this place.	.576	
	I do (or would) bring my children to this place.	-.194	
Factor 3 (Beliefs)			**.3130**
	People should be free to do whatever they want at this place.	.678	
	Managers need to restrict use at this place.	.672	
	Everyone should be able to use this place.	.503	
	People who have used this place longest should have priority using it.	.172	

Table 5. Factor Structure of Territoriality Scale Items as Revealed by Exploratory Factor Analysis, Their Factor Loadings and Reliabilities

Sub-scale	Sub-scale item	Factor Loading	Standardized Alpha
Factor 1			**.5548**
	I know this place better than the people who run it.	.712	
	People who have used this place longest should have priority using it.	.591	
	I treat this place better than most other people that come here.	.583	
	I don't tell many people about this place.	.576	
Factor 2			**.6127**
	I have a lot of fond memories about this place.	.646	
	I have a special connection to this place and the people that use it.	.620	
	This place means more to me than any other place I can think of.	.591	
	For me, lots of other places could substitute for this one.	.568	
	I do (or would) bring my children to this place.	.533	
Factor 3			**.2713**
	People should be free to do whatever they want at this place.	.678	
	Managers need to restrict use at this place.	.672	
	Everyone should be able to use this place.	.503	

In addition, as previously mentioned, the investigation of human territoriality in dispersed, non-urban settings, is still exploratory. More in-depth, qualitative data may be necessary in order to better understand this construct in the context of forest recreation.

Finally, this study may have masked patterns within individual groups (i.e., between consumptive and non-consumptive types of activities). Previous research on specific user groups such as anglers (Wickham & Zinn, 2001) suggests a stronger relationship between the territoriality construct and expectations. More information may be obtained for managers, particularly in this exploratory stage, if research is focused on specific user groups such as anglers or specific recreation sites such as campgrounds or picnic areas.

While not supported strongly by this study, other research suggests that the human territoriality construct can contribute to our understanding of outdoor recreation and recreationists' responses to management issues. However, additional research will be required to develop items that best capture the dimensions of the territoriality construct and clarify the relationship between territoriality and recreation.

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COMMUNITY ATTACHMENT AND RESOURCE HARVESTING IN RURAL DENMARK

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Abstract: Community attachment has been related to "sense of place," and by extension to factors such as the natural resource base of a local geographic area and the utilitarian uses of those resources-a functional attachment that helps root people to a place. The purpose of this study was to examine the resource harvest activities of residents of three modern rural communities in Denmark and relate their participation in these activities to community attachment and satisfaction. A total of 160 residents from the three small communities selected in Jylland, Denmark, responded to a single wave of the survey. Even though this was a limited sample, the study found that about one-third engage in harvesting of natural resources and two-thirds are involved in domestic resource use. Eighteen motivations for engaging in natural resource harvesting were reduced to four factors which were subsequently used in a k-means cluster analysis to differentiate five motivational types of harvesters: 1) Outdoor Recreation oriented, 2) Non-recreation oriented, 3) Experience Nature, 4) Recreation Activity Tradition, and 5) Self-sufficiency oriented. Analysis of Variance was used to determine if the five types differed in their participation in natural resource harvesting activities and domestic resource activity use; the "Self-sufficiency" type was differentiated by its greater participation in both sets of activities. A measure of community attachment was then regressed on natural resource harvesting motivations, an aggregated natural resource harvesting index, an aggregated domestic resource use measure, community satisfaction, and life satisfaction. The t values of the multiple linear regression suggest harvesting of natural resources has the strongest positive relation to community attachment, followed by community satisfaction, and that the other variables do not have a strong relation to attachment. While motivations appear useful for developing a typology for examining harvest activities, they do not appear to be strongly related to community attachment; rather, actual engagement in harvesting activities appears to be more significant. Further exploration of rural cultures is needed to determine if this functional attachment to communities is supported in other settings.

Introduction

Social researchers have described the tensions in modern cultures between the reward of residential mobility for economic and human capital development and the desire for a sense of place. Community attachment has been empirically related to the intensity of a sense of place, contributing to bonding and helping to develop a rootedness (Tuan, 1980). Some authors have suggested these concepts of sense of place and community attachment also include an aspect of a culture's cosmology, a relationship with nature (Relph, 1976; Stokols & Shumaker, 1981). For rural cultures this has been conceptualized as not only a land ethic, but a utilitarian relationship, often involving consumptive uses of natural resources which bond people and people to place and thus, by extension, to community. Empirical studies in the U.S. have indicated that a positive, but weak, relationship exists between natural resource harvesting and place attachment (Williams, Patterson, Roggenbuck & Watson, 1992). A few studies have focused on such relationships in indigenous cultures, and found stronger relationships, but few have explored the relationship to community attachment in rural modern cultures with complex technology, mobility and education.

The purpose of this study was to examine a rural modern culture (i.e., rural communities within Denmark) with regard to their natural and domestic resource harvesting activities, explore the underlying motivations of those who engage in consumptive harvesting activities (e.g., hunting, fishing, vegetable/fruit farming, gathering wild edibles, and maintaining farm animals), and then relate these activities to community attachment and satisfaction.

Study Setting

Three communities were selected in western Denmark for this study. Bobøl is primarily a farming community of less than 40 residences. The community has a well known private fishing area, Ribehøj Fiskepark. Stenderup is a crop and dairy farming community of approximately 160 households, and Jels is a large village and agricultural area of approximately 650 households. All three communities have existed since the 17th century as agricultural samfund (communities or unions). Even though 17th century buildings are still used for dwellings and housing farm/dairy animals and equipment, the crop, dairy, and swine operations are highly mechanized. The Danish government provides low cost capitalization loans, subsidies and tariff protection for much of the dairy and swine industries.

The communities were selected because of their location in rural Jylland, Denmark; a known area for hunting, freshwater fishing, and less than 35km access to saltwater fishing; variation in population size; and the researcher's familial ties to the area.

Methods

A seven-page questionnaire booklet was designed for self administration. It included questions on number of adult relatives within a radius of 25km of the respondent, length of time in the lokalsamfund (community), three questions that were used in an aggregated community attachment measure, and questions on satisfaction with the local community and satisfaction with life in general.

Respondents were also asked a series of questions about whether they engaged in different types of hunting, fishing, and gathering activities, and activities related to domestic resource production such as gardening, raising farm animals, and of things others had discarded. In addition to their own activity and household use of these activities, the respondents were asked about their barter, selling and receiving of products from these activities. The sample members were also asked a series of questions about their motivations for participation in natural resource harvesting, rating the importance of each. They were also asked a series of socioeconomic and demographic questions. The questionnaire was translated to Danish, reviewed and checked by both the translator and a third party translator. It was then printed locally in Vermont.

Originally, the plan was to hand distribute the self-administered questionnaire to postal boxes at individual farm postal boxes in each of the three selected communities by walking or bicycling between residences. Upon the initial arrival in the communities and a two day surveillance, the initial distribution plan was abandoned as postal boxes were often at dwellings which were a quarter mile from the main road , residences were often considerable distances apart, and many residents retrieved their mail at the postal station. After receiving assistance and helpful suggestions from the regional post office in Rødding, a decision was made to distribute the questionnaire by mail, with a self-addressed stamped envelope for return. Subsequently, a census sample of households was drawn for Bobøl (N=37) and Stenderup (N=156), and a random sample of 350 households from Jels. As all stamps for the initial mailing, post card postage and return postage were purchased from the regional post office, postal authorities provided (after pleas and negotiation) two sets of labels for all households in the three lokalsamfunds. Questionnaire booklets were coded with an identification number, a cover letter was developed, translated to Danish, and printed in Copenhagen, and all 543 were mailed from Rødding, Jylland, Denmark. Returns were mailed to a postal pick-up in Copenhagen. Approximately three weeks later a postcard reminder and thank-you was sent to all members of the sample.

There were 532 deliverable questionnaires, a total of 160 were returned and considered to be useable. Response rates varied from 24 percent received from residents of Bobøl to 33 percent from Jels; a total response rate of 30 percent was obtained for the single wave of the survey and reminder.

Results

Over fifty-four percent of the respondents were male, 41.6 percent female. Approximately seventy-nine percent (78.7%) were married or living with a partner, 11.5% single, 6.1% separated or divorced, and 4.7% of respondents were widowers or widows. Education varied for 130 respondents to the question, 39.2% reported having a folkeskole education (equivalent to 11-12 year schooling in U.S.), 7.7% have gymnasium (high school) education, 13.1% have a 2 to 3 year teacher certificate, 7.7% have a university or post-graduate degree, and 30% report having "other", which include technical schooling, folkehojskole, certificate programs, etc. Approximately 58% of respondents were employed full-time, 18.3% were employed seasonally or part-time, 8.8% were on paid student or paid parental leave, 6.6% were unemployed, and an additional 8.8% listed their employment status as "other."

Respondents were asked about the type of area in which they grew up; 42.7% grew up in a village, 23.1% grew up on a rural farm, 13.3% in the rural countryside, 11.9% in a provincial town or suburb, and 9.1% grew up in a city. Respondents lived in their communities for an average of 20 years (Stnd. Dev. = 16.66) with a distribution of less than 1 year local residence to 80 years. Respondents were asked to rate how satisfied they were with their lokalsamfund (community). Approximately 85.8% were somewhat satisfied or satisfied with their local community. In contrast no one reported being dissatisfied and only 4.1% were somewhat dissatisfied (see Figure 1).

Generally the respondents were satisfied with life. Only 6.2% were somewhat dissatisfied or dissatisfied as contrasted to the 85.6% who were at least somewhat satisfied (see Figure 2).

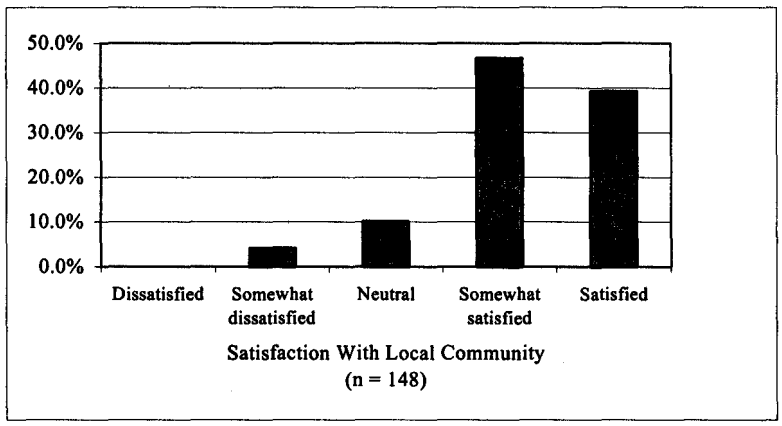

Figure 1. Respondent Satisfaction with Their Local Community

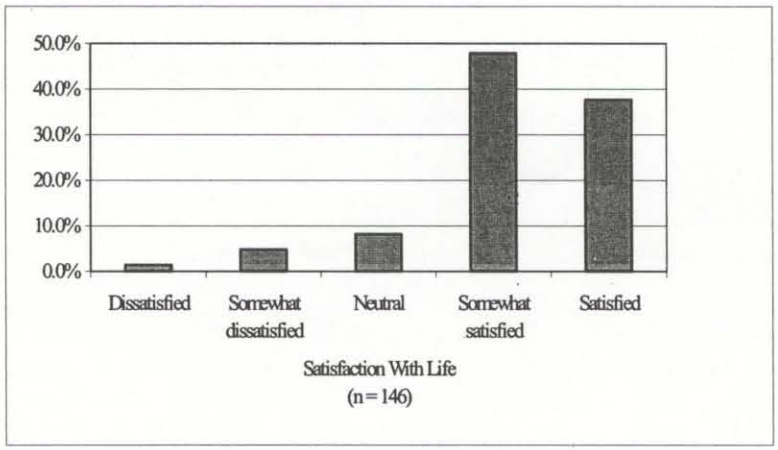

Figure 2. Respondent Satisfaction with Life, in General

Respondents engage in a variety of natural resource harvesting activities and domestic resource production activities; over 30.4% fresh water fish, 22.4% salt water fish, 19.4 % hunt birds, 21.4% harvest small game, and 31.7% gather wild edible plants. These five variables were aggregated to form an index of natural resource harvesting. Approximately 60% of the respondents plant and harvest their own gardens, 64.5% of the 138 respondents harvested from their own fruit trees, 21.8% raise farm animals, repaired discarded items for sale or own use (43.9%), sold things at yard sales or roadside (12.6%), 68.8% home canned vegetables or fruits, and 89.2% maintained own equipment and car. These latter seven variables were aggregated and used in an index of domestic production.

Respondents were asked to rate a series of 18 motivations of why people participate in natural resource harvesting on their importance each was to the respondent, with "not at all important," coded as 1 to "extreme importance," coded as 5. These were subsequently used in a principle components factor analysis with varimax rotation to reduce the 18 variables to linear combinations of variables representing underlying dimensions of the motivations. The number of components was determined by eigenvalues > 1, an examination of a scree plot, and interpretability of the components (factors). Factor loading greater than .500 were used to interpret the components. Cronbach alpha was used to assess the reliability of the motivation variables that were used to interpret the components.

A four component (factor) solution was selected as the best fit. The first component "loaded" on motivations related to the pleasure and enjoyment of the activity/experience and being and sharing with others. The first component was labeled as "Affilitative Recreation." The second component is defined by motivations related to self-reliance, independence and providing for self and family, it was labeled "Self-sufficiency." The third component was defined as "Experience Nature." The fourth component was defined by maintenance of "Tradition," and was labeled as such (see Table 1).

The factor scores on these four dimensions were subsequently used in a non-hierarchical cluster analysis to develop a typology of respondents based on the components (factor dimension). K-means cluster analysis runs were used to cluster the respondents into distinct groups or types. A five-cluster solution was selected based on changes in cluster groups and interpretability. Cluster 1 was defined by the relatively high standard deviation units above the mean for the "Affiliative Recreation" component and the .51 standard deviation above the mean on the "Experience Nature" component, this cluster was labeled "Outdoor Recreation." Based on the negative standard deviations units below the mean for the "Affiliative Recreation," component (1.1 sd.) and the 1.3 standard deviation below the mean on the "Experience Nature" component, the second cluster was labeled "Non-Recreation." Cluster 3 was defined by the 1.07 standard deviation units above the mean on "Experience Nature." On the fourth cluster Affiliative Recreation and Tradition were .72 and .50 above the mean respectively, the cluster was labeled as "Recreation Tradition." The fifth cluster was defined by the 1.4 standard deviation units above the mean on "Self-sufficiency." Clusters were then used as a constructed typology to examine respondents with regard to their involvement in natural resource harvesting.

One purpose of this study was to examine if respondents with varying motivations (as separated into "motivation" clusters) differed in natural resource harvesting activity and domestic resource use. A one-way ANOVA was used to compare the natural resource harvesting index scores of the five cluster types. A significant difference was found among the types ($F(4, 99) = 2.836$, $p = .028$). Tukey's HSD was use to determine the nature of the difference among the types. This analysis revealed the Self-sufficiency type (cluster) had a higher harvest activity ($m = 1.43$, $sd = 1.47$), than the Non-recreation oriented type ($m = .222$, $sd = .73$). The other three types did not significantly differ from these two nor were statistically significant differences observed among the three other types.

Table 1. Motivational Components for Engaging in Natural Resource Harvesting

Motivation	Component			
	Affilitative Recreation	Self-sufficiency	Experience Nature	Tradition
Experience fun & pleasure of activity	.824			
Participate in a favorite outdoor activity	.816			
Do something exciting & challenging	.740			
Have an enjoyable experience	.630		.582	
Share skills & knowledge with others	.604			
Be with friend who do the activity	.596			
Share experiences with my family	.556			
To be self-reliant		.897		
Provide food for my family		.873		
To be independent		.825		
Provide income for self & family		.740		
Observe nature			.812	
Learn about nature			.807	
Maintain family tradition				.775
Maintain rural Danish tradition				.738
Because I have always done it				.649
Cronbach Alpha	.9094	.9010	.9130	.7918

A significant difference was also found among motivation types on domestic resource use ($F(4, 101) = 3.835$, $p = .006$), using a one-way ANOVA. Tukey's HSD revealed the Experience Nature type ($m = 4.3$, $sd = 1.48$) differed from the Non-recreation oriented type ($m = 2.7$, $sd = 1.45$); and similarly the Self-sufficiency type ($m = 4.2$, $sd = 1.17$) also differed from the Non-recreation type. No other differences among types were found for domestic resource use.

A community attachment index was developed by aggregating scores on ratings of how well they fit into their local community (1 = poorly to 5 = well), how much they have in common with most of the people within their community (1 = nothing to 5 = everything), and ratings of their community in terms of an ideal community in which they would want to live (1 = farthest from ideal to 5 = closest to ideal). An Alpha reliability of .710 was obtained for the three variables of the index.

The community attachment (ATTACH) index was then related to the natural resource harvesting motivations (the four linear components: FAC 1-FAC4 described above), natural resource harvesting index (aggregated harvesting activity: HARVEST), domestic resource production activity (aggregated domestic production activity: DOMESTIC), community satisfaction (SATCOM), and life satisfaction (SATLIF) using multiple linear regression. A significant regression emerged ($F(8, 93) = 7.177$, $p < .001$), with an adjusted R^2 of .329. Respondents natural resource harvesting is equal to: 4.755 + .799(HARVEST) - .079(DOMESTIC) + .975(SATCOM) + .313(SATLIF) – .016(FAC1) - .148 (FAC2) + .114(FAC3) + .146(FAC4), where FAC1 is the component of Affiliative Recreation, FAC2 is the Self-sufficiency component, FAC3 is Experience Nature component and FAC4 is the component related to Tradition. Only HARVEST and SATCOM variables appeared to be significantly related. As shown in Table 2, the t values of the regression suggest harvesting of natural resources has the strongest relation to community attachment followed by community satisfaction, and that the other variables ($t < .2000$) do not have a strong relation to attachment.

Discussion

Motivations can be used to differentiate the rural Danes in this study on natural and domestic resource harvesting, primarily discriminating between those who are motivated by self-sufficiency aspects of harvesting and domestic production from those who are defined by their lack of recreation motives. The respondents motivated by "Self-sufficiency " are, as expected, more engaged in the attenuated harvesting and production activities. The differences among motivational types on other activities, such as bartering and actual consumption of these goods by the households, remains to be tested. Motivational types do appear to be useful for exploring activities and behavior of a rural modern culture such as found in Denmark's Jylland province.

While motivations appear useful for developing a typology and examining harvest activities, they do not appear to be strongly related to community attachment. Rather, actual

Table 2. Regression Coefficients for Community Attachment Index

Model	Coefficients ß	*t*	Sig.
(Constant)	4.755	3.836	.000
HARVEST	.799	5.561	.000
DOMESTIC	-.079	-.598	.551
SATCOM	.975	4.017	.000
SATLIF	.313	1.305	.195
FAC1 (Affiliation)	-.016	-.088	.930
FAC2 (Self-suffic)	-.148	-.810	.420
FAC3 (Exp Natur)	.114	.600	.550
FAC4 (Tradition)	.146	.83	.409
Regression	$R^2 = .329$	7.177	.000

engagement in harvesting activities appears to have a more significant and positive relationship with community attachment. Similar to what has been revealed in previous literature, community satisfaction in this study was related to community attachment, but natural resource harvesting appeared to be stronger predictor. The relationship of harvesting to community attachment suggests that the connection to the land and resources may be operating as a place dependent variable. Rural Danes from these three small communities appear to have a functional attachment to community as a result of the access and established relationship they have with the natural resource base of the region. The benefits of such harvest activities are often referred to as "process benefits" (Kruse, 1991) and may be particularly valued for their maintenance of social support and self-reliance (Muth, 1990) in the complexity of modern rural life. The increasing decline of such harvest activities and their meanings for rural residents as a result of policy initiatives (such as increased regulation), land fragmentation, and animal welfare concerns may result in erosion of a significant factor which maintains the fabric of community.

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Poster Session

THE POLITICAL ECONOMY OF WILDERNESS DESIGNATION IN NOVA SCOTIA

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Abstract: This paper traces the various policy stimuli shaping the development of the Nova Scotia Wilderness Areas Protection Act (December, 1998). It does so by examining international, national, provincial, and local influences on wilderness designation, legislative structure, and implementation issues that influenced, or are likely to influence, wilderness area management. By combining content analysis of theoretical literature, governmental and legislative documents, transcripts of key-actor semi-structured interviews including provincial politicians, government officers, and a first nations' leader, as well as input from wilderness policy experts and mass media analysis; this study identified a number of key issues likely to daunt the most avid supporter of wilderness preservation in Nova Scotia. Close examination of the Wilderness Act's composition and giving specific attention to the Jim Cambells Barrens Wilderness, the Polletts Cove/Aspy Fault, and the Cloud Lake Wilderness Areas, this analysis suggests that wilderness managers have very difficult challenges ahead in maintaining ecological integrity while allowing for a broad range of recreational and other non-conforming uses.

Background

Little more than a decade ago, large-scale designation of wilderness areas in Nova Scotia seemed not much more than a pipedream for a few dedicated park managers and idealistic environmentalists. Today, thirty-one new wilderness areas encompassing 291,000 hectares (Figure 1) stand alongside the protected areas of Nova Scotia's two national parks: Kejimikujik and Cape Breton Highlands, and the sizeable hectarage of Louisbourg Historic National Park to form, at least on paper, an impressive assemblage of lands that increases Nova Scotia's protected areas by 300%.

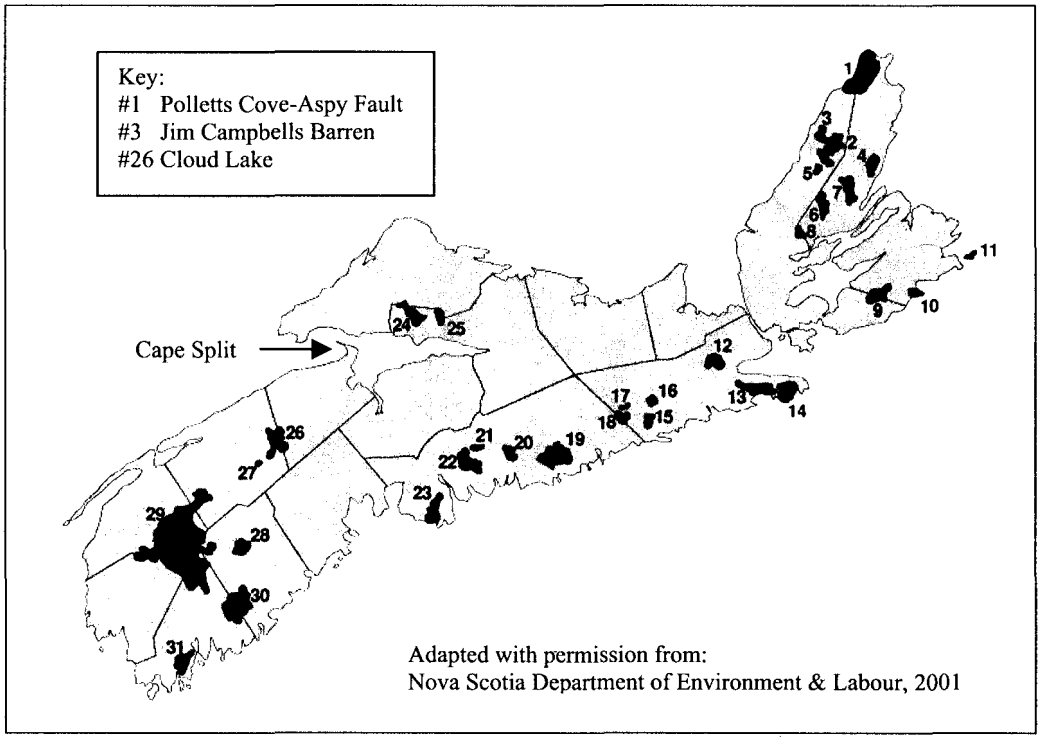

Figure 1. Map to Show Location of Nova Scotia's Designated Wilderness Areas

The purpose of the Nova Scotia Wilderness Areas Protection Act (NSWAPA) is to: "provide for the establishment, management, protection, and use of wilderness areas, in perpetuity, for present and future generations" (1998). In particular, as stated in Section 2, the Act is designed to:

(a) maintain and restore the integrity of natural processes and biodiversity;
(b) protect representative examples of natural landscapes and ecosystems;
(c) protect outstanding, unique, rare and vulnerable natural features and phenomena,

and deliver the following secondary objectives:

(d) provide reference points for determining the effects of human activity on the natural environment;
(e) protect and provide opportunities for scientific research, environmental education and wilderness recreation; and
(f) promote public consultation and community stewardship in the establishment and management of wilderness areas, while providing opportunities for public access for sport fishing and traditional patterns of hunting and trapping.

While this paper broadly examines the influences on the political economy in Nova Scotia that led to the enactment of the NSWAPA, it also assesses the Act's potential to protect the wilderness integrity by paying special attention to three designated wilderness areas: the Jim Cambells Barrens Wilderness, the Pollets Cove-Aspy Fault Wilderness, and the Cloud Lake Wilderness.

Methodology

This study combines document analysis with over thirty in-depth semi-structured interviews of key policy actors, visitations by some key actors to the Acadia University campus, and four phases of fieldwork: two in the Northern Cape Breton Region, one focused in Halifax (the provincial capital), and the other in the Cloud Lake Wilderness area. The Cape Breton phases were conducted in the summers of 1997 and 1999. The Cape Breton fieldwork included interviews with senior personnel from the Cape Breton Highlands National Park, municipal politicians and personnel, both volunteers and administrative personnel in local and regional economic development corporations, various special interest groups supporting and opposing wilderness designation, and provincial wilderness planning specialists. The Halifax phase trained senior undergraduate recreation management students to interview ten key actors concerned with legislative enactment of Bill 24 in December 1998. Politicians representing both the government and opposition parties were interviewed, so to were provincial officers, non-government organisational (NGO) personnel, and a member of the Mi'kmaq First Nations. Both face-to-face and telephone interviews were used at the convenience of the respondents. The fourth phase included a detailed analysis of Cloud Lake's natural resources inventory focusing on potential recreation impact and was completed during the September 1999 to June 2000 period. This phase also included phone consultations with provincial protected area planners and field observation by canoe.

Political-Economic Influences

While it is difficult to pinpoint the exact impact of any one or particular combinations of political economic pressures on wilderness designation in Nova Scotia, it is clear that a number of international, national, provincial and local influences converged to shape policymaking. At the international level a series of conventions bolstered the confidence of backroom park planners and civic boosters, and increasingly sensitised politicians and the electorate to the importance of protected areas as a key sustainable development initiative. In Bali, Indonesia in October 1982, for example, the International Union for the Conservation of Nature and Natural Resources' convention, called the World Congress on National Parks and Protected Areas, resulted in guidelines for establishing a comprehensive network of protected areas. The National Wilderness Research Conference in Colorado in 1986 outlined objectives for maintaining wilderness protection and emphasized the need for, and urgency of protecting wilderness areas all over the world. In 1987, an initiative entitled "Our Common Future" by the World Commission on Environment and Development committed to "save species and their ecosystems"; while the Rio Earth Summit in 1992, which included the Convention on Biological Diversity under the United Nations Environment Program, also promoted the importance of protected areas (DNR, 1995a). Besides the United Nations, importantly, many other international bodies held various conventions and conferences to lobby for the conservation of wilderness areas. Together they created awareness and spurred political, bureaucratic, and civic activity within Canada.

The National Task Force on the Environment and Economy in Canada for instance, was created shortly after the World Commission on the Environment and Development (the Brundtland Commission) reported in 1987. This taskforce called upon each provincial and the federal government to create Round Tables on the Environment and the Economy. Frequently, it was in these forums that influential politicians, business people, bureaucrats and civic leaders were exposed to the value of protected areas as a key component of a sustainable society. Critical to broadly sensitising the Canadian public to the importance of habitat protection in saving endangered species was the Endangered Spaces Campaign jointly sponsored by the World Wildlife Fund (WWF) Canada and the Canadian Parks and Wilderness Society (CPAWS). This ten year long campaign was launched in September 1989. This campaign not only enlightened Canadians about species-at-risk but also drew attention to the insidious impact of urban expansion, pollution, agriculture, and industry on the environment in general, to habitat, and to saving endangered species. Interestingly this campaign exploited the rule of thumb made popular in the Bruntland

Commission report that 12% of the Canada's area was a reasonable target for protection. Despite the lack of definitive evidence that any particular level was essential for sustainable development, the Canadian Government's "Green Plan" launched in 1990 also set the long-term preservation goal of 12%. This initiative was followed in 1991 by 'A Protected Areas Vision for Canada' established by the Canadian Environmental Advisory Council. This idea sharpened Canadians' resolve for sustainable development and focused on the need to protect "representative and unique natural areas, wilderness areas and wildlife habitats". In 1992, the Canadian Council of Forest Ministers announced their commitment to preserving the representative forest communities. Later, in 1996, the Canadian government further embraced safeguarding biodiversity by examining ecosystem conservation in the 'Caring for Home Place: Protected Areas and Landscape Ecology' conference. The philosophical core of Nova Scotia's protected area strategy largely reflected the various ideas discussed in these forums (Lynds & Leduc, 1995).

As it turned out, a key influence in changing the thinking of both the citizens and the politicians of Nova Scotia was the Endangered Spaces Campaign. Colin Stewart, working for and representing the Nova Scotia chapters of both the WWF and CPAWS steadfastly lobbied the provincial government and commercial land and natural resource managers over most of the nineteen nineties to persuade and occasionally cajole key decision-makers and policy influencers regarding the efficacy of protected areas legislation. The expiry of this ten-year campaign became a self-imposed deadline for wilderness advocates to realise legislative enactment. While identification of wilderness areas was to a large extent scientific and systematic (DNR, 1995b), political and economic influences substantially shaped designation. Landscape regions were first identified using largely national criteria then increasingly more detailed categorisation was employed to identify areas worthy of inclusion in a comprehensive protected areas system (Lynds & Leduc, 1995). The initial goal was to protect a representative area in each basic biogeographic landscape category. Early on in the designation process it was decided to include only lands under provincial tenure (DNR, 1997). While clearly an astute political move that avoided potential conflict with private and commercial land managers, this decision also eliminated seventy percent of the province from consideration. Initially park managers identified over a hundred potential wilderness sites on provincial Crown lands that met the criteria for protection, however, large numbers were subsequently purged, many were reduced, and a few enlarged in internal bargaining within the Nova Scotia Department of Natural Resources and other government departments, and externally with commercial forestry and mining concerns that controlled provincial forest management licenses and mining claims. In the early years of the nineties decade, when most of this filtering process took place, parks managers were yet to gain the political momentum that would later allow them greater persuasive power among their mining, forestry and development contemporaries. This bargaining process saw the original list of candidate areas wilt to thirty-one. As the nineties decade matured so the political economic equilibrium shifted; the multinational forestry companies found themselves under considerable market pressure to adopt environmentally friendly forest management practices. Operating from a region perceived internationally as environmentally progressive was increasingly seen as a positive image-maker and important marketing tool by these multinationals. During this period endemic opposition to preservation within the resource exploitation industries softened, and subsequently, with great fanfare, the province felt politically secure enough to announce in 1995 their intention to enact protected areas legislation (DNR, 1995a). This was accomplished with the overt support of the Nova Scotia Resource Council, the mining industry's lobby group. Marketing pressures from abroad then, made protected areas legislation palatable to the resource industries, and this in turn made the political process more acceptable for provincial politicians.

It is interesting to note how these dynamics played out at the local level as local concerns sometimes supported legislative enactment, some seemed indifferent, and others appeared to act relentlessly to derail the legislative process. The designation of the Jim Campbells Barrens was particularly noteworthy and quite volatile. The Jim Campbells Barrens sits adjacent and south of the Cape Breton Highlands National Park (CBHNP). As part of the legislative planning process all of the designate areas were afforded interim protection from new resource extraction initiatives. Nevertheless, the government made explicit their intent to honour existing mineral claims, although the long-term viability of these claims seemed vulnerable to resource companies in the ensuing legislative gestation process. The proposed wilderness designation in the Jim Campbells Barren philosophically split the local community apart. Those supporting the mining claim within the proposed protected area boundary pushed to have the area de-listed. In December 1996, after concerted lobbying from the industry, the Liberal Cabinet did indeed remove this area from the candidate list to allow for unencumbered mineral development. A provincial newspaper columnist captured the moment best when he wrote that: "the cabinet... [in an instance] voted to override four years of planning and public consultation and delete the Jim Campbell Barren as a candidate protected site" (Dobson, 1996). This action not only risked this specific area's ecological integrity, but was viewed by protected area advocates as making the other listed areas vulnerable to interference. Those supporting tourism and salmon fishing for example, as well as environmentalists locally, regionally, provincially, and internationally mobilized to lobby for re-listing. In the middle of considerable political upheaval the government backtracked and re-listed this area in time for legislative enactment.

Not far away and adjacent to the northern boundary of CBHNP, the Pollets Cove-Aspy Fault proposed wilderness area also became a focal point of local concern. Civic action included substantial vandalism in Cape Breton Highlands National Park, formation of local and regional support and opposition groups, and damage to provincial civil servants' vehicles as well as various other threats. Some locals argued that they were already essentially

"parklocked" (Bissix et al., 1998) by the Cape Breton Highlands National Park and further wilderness designation in their region would simply exacerbated the problem of further restricting access to natural resource utilization. Anxiety by some that the proposed wilderness act was the provincial government's hidden agenda to designate more national parks or increase the size of already established national parks—further restricting resource utilization (Bissix et al., 1998)—raised local frustration and perhaps gave rise to the vandalism. Significantly from a policy development perspective, such concerns drove the legislature to include a provision that no designated wilderness area could later be reclassified as a national park.

In stark contrast to the political turmoil of northern Cape Breton, the Cloud Lake Wilderness Area, which straddles the counties of Kings and Annapolis in western Nova Scotia, generated little public concern. The public review process (DNR, 1995c) received no specific comments regarding Cloud Lake although several respondents called for the inclusion of nearby Cape Split in Kings County--a privately owned and wild land protrusion into the Bay of Fundy. Despite the lack of overt concern among the locals, the Cloud Lake area nevertheless draws attention to other apprehension about the Wilderness Act. This particular wilderness area especially emphasizes the need for adequate funding for restorative ecological management. Some parts of this area have been significantly degraded, having been used for many years as the venue for an air force cadet camp. It includes rather extensive and aesthetically unpleasing parking lots, camp areas, and a communications tower, and has backcountry approach roads that seriously threat typical notions of wilderness. Continued intensive use as a cadet training area and relatively easy access by motor vehicle will no doubt put this area's wilderness values at further risk. It is important therefore, that each wilderness area management plan be carefully crafted to maintain and enhance wilderness values. To ensure this happens, there is a need for the provincial government to appropriate sufficient funds to ensure that all thirty-one wilderness areas move beyond mere paper designation to incorporate a legitimate management process that boosts wilderness preservation and restoration. This, as discussed later, will be problematic under the provisions of this act.

Despite the vagaries of each local political economy surrounding each designate wilderness area, it was unlikely that the language of the wilderness act would have finished up so convoluted without an unusual political circumstance. The Nova Scotia general election of March 24, 1998 produced a legislature with 19 Liberals, 19 New Democrats and 14 Progressive Conservatives. Until that election, this provincial legislature--which was the first overseas jurisdiction in the former British Empire to gain responsible government in 1848--had no experience with a minority government although, according to Hyson (1998), the strong two party tradition had been punctuated a few times with a very slim majority. This meant that very different legislative processes were worked out on the run, and the bill to enact the Wilderness Act was in effect a political science laboratory. The Liberals were awarded the government status by virtue that they had formed the previous government; as a result the New Democrats became the official opposition. By the time this bill had run its course through the legislature the New Democrats had reduced its complement to 18 by expelling a member from caucus who then sat as an independent. While the Progressive Conservatives were the third party of the legislature, they had a substantial voting block and had to be reckoned with if any amendment was to survive, or if the Act itself was to stay alive. Although Hyson (1998) concluded that this minority situation might lead to a rebirth of interest in the art of responsible government, the reality for wilderness advocates was that no piece of legislation could pass through the legislature without any two of the parties' support. Each of the members of the legislature was aware that this session of the legislature was unlikely to last very long, so no politician or party was willing to upset any faction of the electorate. Consequently, just about any special interest could find a sympathetic ear with at least one of the parties. As a result there was incessant lobbying from numerous quarters to persuade the legislature to include this or that special interest provision.

While the previous Liberal government had carefully overseen the formulation of this legislation and had reluctantly withdrawn it from the order table of the previous legislature for technical revision, they were fully supportive and enthusiastic about its passage this time. Now, however, they had to contend with the special interests of influential resource companies, the time pressure imposed by CPAWS and the WWF, and the growing might of local interest groups--especially those creating political upheaval in the Pollets Cove-Aspy Fault region. Each interest vied for influence over the government directly, and more indirectly by attempting to influence the other two opposition parties. It was theoretically possible for anyone interest to capture the hearts of the two opposition parties, and perhaps add quite unwelcome amendments or worse, defeat the bill outright leaving the province open to the scorn of increasingly more influential environmental groups nationally and internationally. Consequently the Act, as passed in the legislature, was the result of substantial political bargaining and compromise. In the end, with the passage of the Wilderness Act, the government could boast its legislative accomplishment in sustainable development. In reality, however, this enactment left a legislative legacy that was likely to stretch the ingenuity of the most gifted resource managers to deliver wilderness values in its thirty-one designated areas.

Implementation Challenges and Issues

Perhaps the most challenging aspect of this legislation was its grossly inadequate financial resources. As inferred earlier, there were no special funds appropriated at the time of legislative enactment, although the protected areas staff and its meagre programming resources were subsequently transferred from the Department of Natural Resources (a relatively resource rich department) to the Department of

Environment (a relatively resource poor department). The protected areas division of eight staff (including secretarial staff) will necessarily have to scratch and claw for adequate resources to move beyond 'paper park' (see Shackell & Willison, 1995, p.7) designation to more meaningful wilderness management implementation, especially in a continuing era of government restraint.

There is little for concern in the broad objectives of this legislation; nevertheless the devil is in the details. As a result of the lobbying efforts emanating from the various political-economic concerns of the more vociferous adjacent communities, a number of testing provisions were included in the Wilderness Act. In sub-section (a) for example of Article 39 (1), it states that the Governor in Council may make regulations "respecting the erection, development, operation, maintenance, use or licensing of structures or facilities or the type of construction, location or cost of structures or facilities within a wilderness area". Whereas in sub-section (e), it states that the government may engage in regulating, restricting or prohibiting modes of travel in or through a wilderness area; and in sub-section (f), it states that it may make regulation "respecting any activity undertaken in accordance with a mineral right or other interest held before the coming into force of this Act". While at first glance these provisions seem quite innocuous, they seem to infer restrictive provisions to protect the wilderness resource; they in fact reflect the reality that in some wilderness areas certain developments are likely inevitable. For example, some wilderness areas lock-in private enclaves where motorised access will necessarily have to be maintained. In other areas legal mining claims exist and will conceivably be developed in time, and will have to be serviced with transportation systems, heavy mining machinery and other support facilities. In other areas long-term private cabin leases exist. It is difficult to imagine how these non-conforming uses can be maintained without endangering wilderness values. Given the compromises imbedded in the details of the Wilderness Act such as those above, and those concerning sport fishing, recreational access, and the yet to be defined provision for "traditional patterns of hunting and trapping" (as specified in Section 2), it is difficult to see how the Wilderness Act can act, for example, as a "reference points for determining the effects of human activity on the natural environment" (Section 2 d). This is especially so when heavy recreational use is likely to be condoned and even promoted in the name of tourism. Perhaps more significant than the shortcomings of the explicit provisions of the Act is the blind eye given to present uses such as the Canadian Military's use of the Cloud Lake Wilderness Area. It seems inconceivable that continuance of uses of this sort is compatible with wilderness values.

A particularly interesting provision in the Act is Article 15, which states that:

> (1) The Minister shall complete management plans to guide the protection, management or use of a specific wilderness area, a part of a specific wilderness area or any action or activity undertaken to manage a specific wilderness area.

In addition, this article states that "the Minister shall engage in such public consultation on the management plan as the Minister considers appropriate", and a further sub-section states:

> (4) Before the designation, a socio-economic analysis of the impact of designation of a wilderness area shall be prepared for every wilderness area designated on Crown land after this Act comes into force, the analysis shall be completed and made available to the public before the designation.

It would appear that before a wilderness area is fully ratified under this act, it must pass a test of social and economic viability. How those tests are structured, and whether there is consistency from one wilderness area to another, will be of considerable import to the viability of the Act. As much of the political support for Wilderness Act ratification was contingent upon continued access by off-road vehicle operators, hunters, fishers, and snowmobilers, social acceptance is likely to be acknowledged in some areas only if their particular demands are met. It is clearly inconceivable, however, that the designation of a wilderness area can meet any established measure of economic viability. The economic activity generated from a wilderness area is unlikely to match the possible revenue stream from natural resource exploitation such as forestry or indeed sub-dividing a wilderness into cottage lots. It is clear then that quite different social and economic assessment tools will be necessary to meet this provision if any wilderness areas are to pass this test and be officially designated.

Conclusions

Criticism has often been laid at developing countries, for example India (RLEK, 1997) and Belize (Mather & Chapman, 1995), for the designation of national parks and other protected areas that have provided little concrete conservation at ground level. It seems, however, that wilderness managers in Nova Scotia will have their work cut out to avoid similar criticism. Given the small operating budget and miniscule management and enforcement staff for designated wilderness, and the anticipated compromises to be embedded in wilderness management plans, such areas are likely to remain only 'paper wilderness'.

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THE WESTFIELD RIVER WATERSHED INTERACTIVE ATLAS: MAPPING RECREATION DATA ON THE WEB

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Abstract: Imagine searching the web to create a map to your house. You could use one of the many Internet mapping sites like MapBlast™ or MapQuest™ to create such a map. But maybe you wish to get a map of trails for the Grand Canyon. The National Park Service web site could serve that need. Or you may wish to get a map to show you the way from the Orlando Airport to Disney World. Again the web will come to the call. Generally, the web delivery of maps may simply involve the printing a graphics file. But in some cases, you create the map specific to your need by suggesting what elements are shown, at what scale and for your particular interest. The interactive element of delivering maps and data specific to a recreation and tourism theme will be illustrated in this paper. With a computer software program called ArcIMS, one can create maps on the web. Using the Westfield River Watershed Interactive Atlas, tourism data and maps can be delivered to a surfing population. Keywords: Internet Mapping, Westfield River.

Introduction

In recent years we have experienced a tremendous growth of two technological events that have influenced society. The first is in the explosive growth of the Internet. Some "think tanks" project that over 350 users worldwide will use the Internet by 2005 (NUA, 2000). About half of the users are found in North America, with the other half coming from Eurasia. This growth, despite the recent demise of many "dot-coms" can be expected to continue with a more refined and cautious surfer.

The second area of technological growth has a longer history and involves the automated creation of maps using computers. Geographic Information Systems, or a package of computer mapping software, hardware and data, permit the user to not only capitalize on the number-crunching capabilities of the computer, but also allow the creation of new information. Thus a GIS can aid in decision-making with the formation of new data from the analysis of digital data bases that reflect the "lay of the land".

It is the combination of these two technological advances, the Internet and GIS, and the birth of Internet Mapping Servers that this paper focuses on. In particular, Internet-based mapping sites have also experienced a similar growth. With origins in Local Area Networks (LANs), the need to deliver maps to users is widely varied. For example, the Greater Atlanta Data Center (http://www.gadc.kennesaw.edu/) allows web users to track crime in Metro Atlanta, while Internet surfers can visit the US Air Force Bird Avoidance Model (http://bam.geoinsight.com/) to learn how pilots and flight planners can select flight paths and thereby avoid bird causing crashes!

For tourism interests, travelers can visit MapBlast (http://www.mapblast.com) or MapQuest (http://www.mapquest.com) to plan their next driving trip. In addition to the route, more and more Internet based mapping sites provide site specific information about parks, open space and regional attractions. In this paper we follow the creation and maintenance of a web-delivered interactive atlas. The Westfield River Watershed Interactive Atlas (WRWIA) premiered during the Spring 2001 and serves to deliver human and natural dimension data for Western Massachusetts.

Background

The use of technology for tourism is not new. The travel industry has fully grasped the information super highway (Sheldon, 1997). The natural linkage between the Internet and GIS is an obvious extension for decimating spatial information to the public. Recent research has noted the importance of tourism promotion via GIS technology. For example, Kilical and Kilical (1997) illustrate the potential use of a GIS for the Tourism Office of Turkey and the eventual use by tourism operators and tourists. Likewise, the Greater Yellowstone Area Data Clearinghouse (GYADC) shows the partnership between several public and private interests in the management and publication of ecosystem data via the web (Scarrah & Hamerlinck, 1998).

The National Geographic Society's Map Machine provides Internet surfers one of the most powerful mapping sites available today (http://www.nationalgeographic.com/maps/). So besides the occasional paper map wedged between the covers of the magazine, web users can log onto the Society's Homepage and create maps at their leisure.

The National Park Service (http://www.nps.gov) provides copies of many of their maps on the website, but these are essentially copies of the regular paper printed map. More and more web sites allow users to draw a map to meet their particular need. For example, hikers can plan trips on Ice Age Trail Map Buffet (http://www.dnr.state.wi.us/org/at/et/geo/iceage/). Likewise, ecotourists can create maps on the Ecotourism Interactive GIS provided in Australia (http://www.gisca.adelaide.edu.au/cgi-bin/eco/ecogis).

Fortunately for users, there are several web indexes available to start your search. The University of Minnesota maintains a gallery of map servers. Berkeley provides a link page (http://sunsite.berkeley.edu/GIS/intergis.html) for

inquires also. Environmental Systems Research Institute, Inc (ESRI) has a several pages of links available on their web site (http://www.esri.com). ESRI has even published a book called Serving Maps on the Internet (Harder, 1998). McKee (2001) highlights this revolution, noting the relative ease for today's surfers. He also notes that mapping web sites provide not only maps, but also other forms of data including video, photographs and text documents. For a general guide to leisure and tourism Internet resources see Theobald and Dunsmore (2000).

Westfield River Watershed Interactive Atlas

The Westfield River Watershed Interactive Atlas (WRWIA) was born during early Spring 2001. As a response to the growing demand for information about Massachusetts' first Wild and Scenic River, the Westfield River, and to provide an educational forum for social and natural environmental data via the Internet, the WRWIA project began. The GIS lab at Westfield State College had been involved with mapping projects for several years, the next logical step was the publication of these data via the Internet. Using the software called ArcIMS (ESRI, inc.) and Servelet Exec 3.0 MS IIS/Windows, and a computer server, Westfield State College premiered the first mapping server in the Massachusetts State College Nine Campus System. The River, as the server is called, is available at the web address http://river.wsc.ma.edu. For those interested in estimating costs, the Dell Server cost approximately $1600 (educational pricing), the Servelet was $658. The price for ArcIMS is unavailable since Westfield State College has a Site License for ESRI products.

The mapping software uses ESRIs ArcView GIS data structure and thus while not required to deliver maps on the web, the ArcView software does come in handy in the initial preparation of maps. The first map delivered to our web audience was one of neighboring Stanley Park (http://www.stanleypark.org). The second author edited this map and created an orienteering course using GPS technology.

Other maps have followed and with data collected during the summer 2001 (funded by a Massachusetts' Department of Environmental Management Greenways Grant), the River will deliver tourism related maps and data to the public. Included one will find information about parks, open space areas, as well as support infrastructure such as lodging and restaurants. Considering the popularity of the Berkshire Mountains in Western Massachusetts, on should find this information especially useful for tourists.

Interactive Mapping Technical Information

This section of the paper will identify some of the key elements involved in the creation and maintenance of an Internet Map Server. For the casual reader, you may wish to skip this section since it is filled with computer details and jargon.

For the WRWIA, the ArcIMS software and Microsoft Windows NT 4.0 with Service Pack 4 Server operating system were employed. The River resides on a Dell Power Edge 1400, 800 MHz Server with 256 MB RAM. The machine has one floppy disk drive (1.44 MB) and 20/48x CD Drive. An external 100 MB Zip Drive and the network connections provide a backup. The ArcIMS software works with a web server software. The Application Server Connectors (ActiveX Connector) uses Microsoft IIS 4.0 for Windows NT Server as a Servlet Engine. Java Runtime Environment (JRE) is needed for some mapping applications and is downloaded from the River to the client browser if needed.

Client browsers include Microsoft Internet Explorer 4.0 or higher and Netscape 4.5 or higher. However, we have found IE 5.0 and Netscape 4.7 to work best. Java prepared maps obviously requires the higher end browsers and current limitations with ArcIMS preclude Netscape with Java Custom Viewers.

The ArcIMS architecture involves the serverside and the clientside. The client is the end user, typically one surfing on the web, while the server is the host machine that delivers the map product. Clients may use a standard HTML Viewer (any typical browser) or a Java Viewer (usually a higher end browser). On the server end, one will find the Manager, a Web Server, an Application Server and a Spatial Server. All link the software with the hardware to produce interactive maps.

The Spatial Server is the backbone of ArcIMS. It processes the clients' request for maps and data. The Application Server manages the whole system by balancing the requests for maps and tracking usage. The Application Server Connectors links the Web Server and the Application Server. The ArcIMS language is known as ArcXML. Lastly, the Manager is just that, a management system that is an interface and supports the three main tasks in ArcIMS. The three tasks are to author MapServices, Design Web pages and to Administer the site. For more information, readers are directed to the ArcIMS website (http://www.esri.com/software/arcims/index.html) and the ArcIMS Manuals.

Summary

The delivery of maps and data for tourism applications over the Internet has a great potential. As high speed connections and faster computer become commonplace, we could expect virtual tourism to explode. Further, tourism maps, as a deliverable product over the net will broaden the publics' "spatial" awareness. That said, developers must adhere to cartographic standards and produce quality products. Or else, tourism maps could become a biased marketing tool that will feed into the divide between the "Haves" and the "Have nots".

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PARK RESOURCES AS AN ESSENTIAL TO URBAN SOCIETIES

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Abstract: Open recreation space is a necessity to urban environments. People who reside in a crowded living condition need to have a place where they can go to escape everyday pressures and stress. Many have realized the importance of recreation space as a place to recuperate both physically and mentally. Overtime, parks have evolved to become an array of different types of resources ranging from a preserved piece of the natural landscape to a highly artificial habitat. Urban parks are known to contribute such benefits as physical health, mental health, stress relief, relaxation, self-realization, provide an escape mechanism, and provide psychological benefits. This paper highlights some of these reasons with a brief literature review and introduces a community's quest to protect a small urban park.

Introduction

Urban parks are a limited resource. They have become increasingly important to the urban landscape since there is an increase in demand for park spaces in cities. Today, new parks are not constructed as often as new buildings. Citizens are left using old park systems that are over-utilized and inconveniently located. Hence, individuals are limited in their choice of recreational spaces, and what parks that are available are needed to preserve the elements of history, scenery, or natural environments for people to enjoy. The relative shortage of open space and recreational facilities in metropolitan areas has created a shortage of good quality parkland. Parks offer an escape from the hustle and bustle of busy city streets. For example, parks supply a place where people can congregate to socialize or relax and may be used for exercise or as a place to read. Green spaces put people in a calmer mood and can also help to make the air a little cleaner. Therefore, all cities should have specific areas of open space set aside for the benefit of people.

Today there is an increasing awareness that preservation efforts are needed in order to keep our national, state, and local parks as protected areas that must be viewed as part of the surrounding ecological and cultural landscapes. Local community groups, such as the Friends of Grandmothers' Garden, Inc. in Westfield Massachusetts join the ranks of volunteer-based groups who dedicate their free time to preserve and manage public open spaces. And due to a growing disparity between location and condition, America's vast inventories of public parks are at forefront of public consciousness and political agendas (Cranz, 1982; Garvin, 2000; Russell, 1996; Vaughn, 2000; Wright, 1996).

Many groups of people run to the outdoors on weekends to escape the congestion of crowds. People may try to escape the city to find "re-creation" of body and soul. Individuals achieve this in a variety of ways ranging from simply enjoying the scent of woodland, listening to the sounds of nature, or by just lying around (Johnson, 1972).

In this paper, a brief history of urban park resources will be provided. The reader will find a literature review followed by a case study of a small urban park. Finally, the paper will conclude with a discussion of urban parks' role in modern society.

History of Urban Parks

In the following section, the history of urban park resources will be introduced. It begins by introducing the ideas and concepts that gave rise to the construction of the park systems in North America. Next, the three key individuals responsible for starting this park movement in America will be identified.

Parks and outdoor recreation have had a long and complex history of overlapping ideas and concepts. Three different concepts of parks are realized from studies tracing from the beginning of the park and recreation movement. These are:

- Concerned conservationists wanted to preserve forestry, wildlife, and related natural resources. The concept of park usage resulted in federal and state legislation to help conserve and protect some of these resources.
- Park planning and design.
- Organized recreation, which gathered momentum at the turn of the twentieth century. (Johnson, 1972)

The conservation of natural resources was the beginning of the recreational use of our land. The recreation and playground movement resulted from a growing need to organize, schedule and give meaning to the activities taking place in the newly established parks, activity centers, and open space areas (Johnson, 1972). More recently, Williams (1995) traced the evolution of urban parks in three phases: Foundation, Consolidation, and Expansion. In the Foundation Phase during the 19th Century, British planners saw urban parks grow in numbers. For the Consolidation Phase, more specialized urban recreation opportunities were promoted. And the Expansion Phase was experienced in the post WWII period and brought greater diversity and opportunities to urban residents (Williams, 1995).

As a result of the increasing demands for recreation, parks were beginning to take form in early America. Three individuals in specific had a tremendous influence on the development of park spaces in America. These were Andrew Jackson Downing, Frederick Law Olmstead, and Calvert Vaux. Downing's designs of an informal landscape park, much like England's first public parks, were to later influence Olmstead and Vaux. Olmstead and Vaux

collaborated their efforts in the planning and design of New York City's Central Park. After Central Park, they remained partners in landscape architecture (Johnson, 1972).

It was Central Park that began the park movement for many cities in the United States during the late 1800s and early 1900s. The planning, acquisition of land, and the development of Central Park in New York City were the first big milestones in the municipal park system of the nation (Garvin, 2000).

However, most new park construction had to wait until after the Depression and World War II. By the 1950s park construction started to boom (Cranz, 1982). Parks became numerous throughout the fabric of all cities. However, it was not until the 1960s that emphasis was placed on open space itself in cities. In the 1960s, parks protected for open space became a political issue. This was in response to the so-called urban-crisis and the resultant "escape from the city" out-migration (Cranz, 1982). "Paley Park in New York City is the epitome of open space mentality. This small oasis offers a visual counterpoint to the city without escaping the adjacent street" (Cranz, 1982, p. 136). By the 1970s, emphasis of urban parks took on a moral imperative. "Park and recreation people must begin to take seriously their obligations to provide recreation experiences" (Brauer, 1972, p. 14). Fueled perhaps by the entire environmental movement following Earth Day, citizens began to recognize outdoor spaces were vital to the Earth's well-being. Therefore, in the late 1970s, municipal, regional, and federal agencies cooperated to preserve segments of historic towns and landscapes. For example, Lowell, Massachusetts is one example where a National Historic Park was founded (http://www.nps.gov/lowe/). These urban/cultural parks opened on the assumption that all parts of the city had equal aesthetic and recreational potential. "Diverse urban elements as historic sites and urban parks both serve as social gathering places" (Bray, 1978, p. 1).

More recently, Americans have experienced an explosion in urban greenways as a landscape planning tool (Little, 1990). While, the term greenway has only been around since the 1950s, the design of these open spaces has been in existence as early as 1860 due to Olmstead's goal to provide access to these open spaces to the residents that surrounded them. As Olmstead realized, greenways are a response to classic human needs and part of an evolving, centuries old landscape form (Fabos, Milde, & Weinmayr, 1968; Stearns, 1995).

Literature Review

The following literature review will provide summaries of the selected research materials in this area. Included here is a discussion of various benefits provided by parks. Observed positive benefits of urban parks include providing open space, psychological benefits, self-realization, escape mechanism, and therapeutic value. In fact, outdoor recreationists already realize many of these benefits. Outdoor recreationists are often those who primarily seek psychological rewards, and wish to avoid negative elements of their daily living environment (Iso-Ahola, 1980; Driver, Brown & Peterson, 1991; Chubb, 1981). The Urban Parks Institute at Project for Public Spaces (http://urbanparks.pps.org) introduces the reader to a wealth of information on benefits.

Parks offer many benefits for the citizens and the community. One benefit that parks provide to city dwellers is open space. Open space may be utilized in many ways, including opportunities for recreation. While it may be obvious that recreation may provide one with physical benefits by engaging in sports and other activities, it also provides psychological benefits. From previous studies and observations, it appears that all forms of recreation have some sort of psychological significance, but the amount depends on the perception of the individual. These psychological aspects include relaxation, self-realization, escape mechanism, and therapeutic values.

Perhaps, the most important psychological benefit obtained from recreation is relaxation. The relaxation theory explains play as an activity that allows the individual to recuperate from fatigue and stress. When tired from work, people play. Opposite from the surplus energy notion, the relaxation theory claims that energy expended for survival activities is replenished during play (Vaughn, 2000). Relaxation provides a respite from life's worries and pressures relieves feelings of tension and fatigue and restores mental efficiency. Without relaxation, the human being would not be capable of functioning to the fullest potential.

In addition, recreation can provide valuable opportunities for self-realization by providing feelings of personal worth. The standard notion is personal enhancement and self-development is a developmental process of psychological growth and positive self-transformation. Leisure provides a distinctive life-space in which people can either cultivate preferred definition or creatively elaborate new self-definitions in the face of change. Examples may include: art activities that promote originality, participation in sports that result in feelings of exhilaration and accomplishment or by fulfilling personal goals which leads to feelings of self-improvement (Russell, 1996).

Escape Mechanism may also be achieved by offering temporary relief from unpleasant realities in a person's personal life. By immersing oneself in the make-believe world of daydreaming, and/or exercise that one often finds people doing in parks, one can recharge the emotional or physical strength they need to cope with what life deals them later (Chubb, 1981).

Urban parks are also known to provide a kind of healing therapy. Mandel (1998) suggests the value of recreation may help reduce pain, relieve anxiety, and strengthen the immune system. Improved physical conditioning and the release of endorphins can even remedy the brain. Endorphins are feel-good chemicals in the brain that are released when you do physical activity. Going outdoors and taking part in outdoor recreation helps manage stress

by relaxing the mind. This shows that the natural outdoors may play a positive role on the individual. Recent growth in the field of therapeutic recreation services and the recent demand in jobs provide evidence in the importance of this benefit. Visit the National Therapeutic Recreation Society at http://activeparks.org/branches/ntrs/ for more information.

Citizens understand instinctively that a park's calming effect is as necessary as ever. Humans need open space just for social fabric, just as for mental well-being (Mandel, 1998). These patches of green stitched into the urban fabric form our playgrounds, our escapes from the gritty streets, bland shopping centers and blank office towers. A contemporary park is a place where you do not have to buy anything. Park planners ponder questions that most of us never consider such as: what exactly is "open space," and how is it important to our cities and our daily lives? Park experimentation has flourished in recent years, resulting in a series of innovative, expressive and often unexpected new landscapes in our cities. Designers are still trying to offer relief from the crowded city, but they are also struggling to shed the weight of park history (Vaughn, 2000).

To give an example of how park experimentation has shaped contemporary parks, consider the Tennessee River Park. It is a series of unique public parks connected by a twenty-two mile winding greenway along the river. This park brings together Chattanooga's citizens, public spaces, and scenic beauty. It is a very popular place for recreation. It offers a vast array of activities including rowing, viewing wildlife, a climbing wall, biking paths, fishing, walking, rollerblading and learning (the walk incorporates history). It also has an aquarium, sculptures throughout, wetlands, and many flowers. Each development has raised the bar on the design standards of the city's built environment and offered a rediscovery of the natural world (Vaughn, 2000). In essence, each place has its own unique character.

Case Study: Grandmother's Garden in Westfield, Massachusetts

Albert Steiger, a successful businessman, donated a 10-acre parcel of landscaped land that he acquired from his father-in-law Chauncey Allen, to the city of Westfield in the late 1920's (Wellington, 2000). This donation was given with a wish that one part of the lot would be made into a flower garden with old-fashioned flowers in dedication of his mother, "Grandmother Steiger". The towns' people of Westfield came together and developed the parcel into a beautiful parcel of land. Steiger himself was moved by the completion of the garden now named "Grandmother's Garden". The garden flourished with the never-ending efforts of many hard working citizens. After the completion of Grandmother's Garden (GG), work started on a picturesque park that included a wading pool, frog pond, bandstand, and upper terrace that all overlooked GG and was named "Chauncey Allen Park". A map of available open space in the community is shown in Figure 1.

Grandmother's Garden has seen it share of ups and downs. In 1934, it was featured in a horticulture and landscape architectural magazine for winning a blue ribbon. However, in

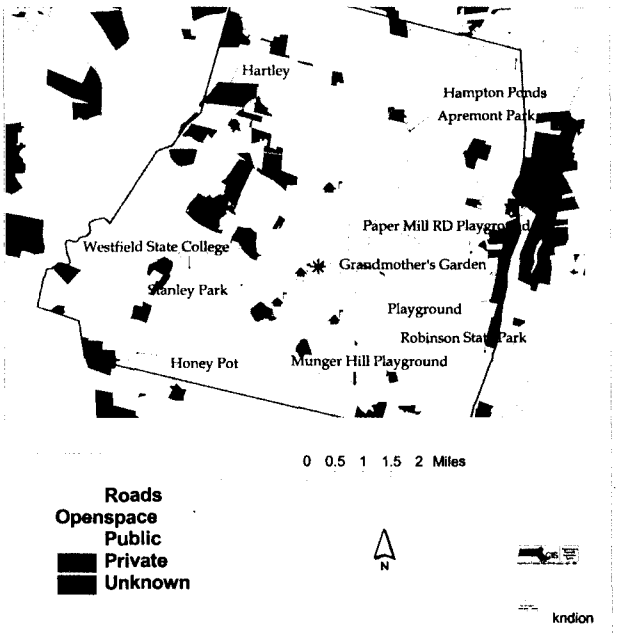

Figure 1. Open Space in Westfield, MA

the late 1970s money and volunteers were hard to come by and by 1994 the garden had to be closed due to the lack of both. This was provided the seed to grow a group of volunteers who were concerned for the love and care of the garden. This group is known as the "Friends of Grandmother's Garden". This group cares and publicizes for the garden. They are in the midst of a re-birth of GG, by renovating the garden. They produce a web site, (http://community.masslive.com/cc/GrandmothersGarden), flyers, membership and volunteer programs, such as a Grandmothers' Day essay contest.

Discussion

Recreation is an important part of life that people enjoy through various activities. Recreation is used for exercise, rest and relaxation, stress relief, family togetherness, and a variety of other reasons. After one is done with working, eating, sleeping, he or she may look for something to occupy this leisure time. This leisure time may be fulfilled with by the use of public parkland. Playing catch, taking a walk, or simply sitting on a favorite park bench observing the natural beauty of the landscape are ways park resources may be enjoyed. The value of parks and recreation may also arise by just looking forward to going to the park after a stressful and hectic day. Going to the park and doing an activity may result in stress relief, mental and physical revival, and a healthful state of mind. This in turn helps individuals continue with their busy lives by providing a renewed physical and mental capacity, which enables them to tackle whatever may be thrown their way. Therefore, parks are a most vital component of urban landscapes. Individuals need open space provided so they are not denied the necessity of recreation space as both a physical and mental supplement to overall well-being.

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PARKS AND RECREATION EMPLOYMENT STATUS: IMPLICATIONS FROM A CIVIL SERVICE PERSPECTIVE

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Abstract: Current research on the credentialing process in parks, recreation and leisure services has focused primarily on accreditation and certification and has largely ignored the civil service exam as a credentialing toll or condition of employment in many state and municipal parks and recreation departments. It is the experience of the researchers of this study that a significant number of students are stunned when seeking many state and municipal parks and recreation jobs. This is so because they are usually confronted with the need to be tested and perform well on civil service examination as a condition of employment or a condition for retaining their position after provisional status has ended. The purpose of this study was to examine the extent of public recreation employment and wages at the state and municipal levels and draw inferences as to the extent employees and potential employees are subject to the civil service examination process. The results indicated that: 1) recreation employment at both the state and municipal levels is significant, 2) many prospective employees will inevitably be impacted by the need to take & successfully pass civil service examinations, since state & municipal departments are subject to this process, 3) although employment in terms of numbers & payroll amount is significant, public sector recreation employment is small compared to total public sector employment, 4) both within a region and among regions some inference can be drawn as to the recreation & leisure values held by elected officials and the population in general, and 5) Students will continue to acquire little knowledge of the civil service employment system because there are no current curriculum accreditation standards that require recreation programs to specifically address civil service employment issues.

Introduction

The U.S. Census Bureau (1998) reported that there were approximately 45,584 state and 202,888 municipal recreation employees in the United States. Approximately 5,000 state and 16,000 municipal employees were in the Northeast region. State recreation employee payroll was $90,623,678 and the municipal payroll was $455,558,562. It is assumed that recreation programs across the country want their graduates to secure good and well paying jobs, many of them in the public sector. Therefore, investigation of the public sector employment process as it relates to recreation and parks professionals is important.

The vast majority of public sector jobs (state and municipal) are controlled and regulated by state departments of civil service. They provide a wide range of services to ensure that state and municipal agencies meet their human resource needs in a timely manner. These departments determine salaries, classify job titles, recruit and test prospective employees, and certify eligibility lists. This study only begins to scratch the surface of the public sector employment process, therefore the researchers decided to segment their research into three phases and restrict data collection in phase one primarily to the Northeast region of the United States. The three phases of research cover: 1) a pre-census directory survey of all 87,000 local governments. It will include extensive legal research into government structure by state, as well as a mail survey, and will produce an updated list of all local governments and selected data, 2) all state governments, and will expand the census year annual finance survey from about 14,000 to all 87,000 local governments. It will use on-site data collection for many of the state and largest local governments, consolidated data submissions (usually electronic files) for about 55,000 local governments, and a mail survey of the remaining governments, and 3) all of the state governments and expands the census-year annual employment survey from about 10,000 to all 87,000 local governments. It relies on consolidated submissions for a limited number of state respondents, but is primarily a mail survey. The purpose the initial phase (phase 1), as presented in this paper, is to examine the extent of public recreation employment and wages at the state and municipal levels and draw inferences as to the extent employees and potential employees are subject to the civil service examination process.

Methodology

Data for phase one was collected from two secondary sources: 1) 1998 U. S. Census data (on-line via the Internet), and 2) state government civil service web sites. United States Census data was down loaded from the Census Bureau web site (http://www.census.gov/govs/www/apesstl.html) into MS Excel spreadsheet software. It was decided to group the data into regions for analysis at a later date. The state groupings are: Northeast (Maine, New Hampshire, Vermont, Rhode Island, New York Connecticut), Mid-Atlantic (Pennsylvania, New Jersey, New Jersey, Maryland, Delaware, Virginia, West Virginia), Southeast (North Carolina, South Carolina, Georgia, Florida), South (Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Arkansas, Missouri), Mid-West (Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa), Great Plains, (North Dakota, South Dakota, Kansas, Oklahoma, Nebraska), Rocky Mountain (Montana, Wyoming, Colorado, Idaho, Utah, Nevada), Southwest (New Mexico, Arizona, Texas), West (Alaska, Washington, Oregon, California, Hawaii).

The data that were collected from the U. S. Census Bureau web site included: 1) number of part time and full time state recreation employees, 2) number of all part time and

full time state employees, 3) total state recreation employee payroll, 4) total state employee payroll, 5) number of full time municipal recreation employees, 6) number of all municipal employees, 7) total full time municipal recreation payroll, 8) total payroll for all municipal employees, and 9) number of municipal recreation employees per ten thousand of population. The number of part time employees and payroll information for the municipal sector was not available. Job descriptions and job classifications were collected from the Northeast region via web sites. The State of Maine does not permit access to this type of information by the general public. The data for the remainder of the states was downloaded into word processing software for later analysis. Employment data was analyzed using descriptive statistics in the form of raw scores, rank ordering and percentages.

Results

As Table 1 indicates, the total state recreation employment payroll was $90,623,678, and total municipal recreation payroll was $455,558,529. It is important to note that the Southeast region had the largest municipal payroll ($18,060,443) while the Northeast region had the third largest ($13,501,027). The West region had the highest state payroll ($104,140,492) while the Northeast region had the fifth largest ($41,243,059). Additionally, Table 1 shows the ratio of regional state payroll to regional municipal payroll. The region with the lowest ratio of state payroll to municipal payroll was the Mid-West and the region with the highest ratio of state to municipal payroll was the Great Plains.

Table 2 shows the percentage of regional state recreation payroll to total regional state payroll. The Northeast regional ranked fourth with a share of total state recreation payroll of .86%. The region with the largest share of total state recreation payroll was the Great Plains (2.11%), while the Mid-West held the smallest share (.38%).

As Table 3 indicates, the recreation employment share of total payroll for the Northeast region was 9.3% of the national recreation payroll. The West region had the highest percentage of total national payroll (23.4%), while the Great Plains reported the least (3%).

Table 1. State & Municipal Payroll by Region, 1998

REGION	STATE RECREATION PAYROLL	MUNICIPAL RECREATION PAYROLL	RATIO STATE TO MUNICIPAL PAYROLL
Northeast	$13,501,027	$ 41,243,059	.325
Mid-Atlantic	$14,144,925	$ 47,424,467	.298
Southeast	$18,060,443	$ 53,491,833	.351
South	$10,585,421	$ 30,180,578	.350
Mid-West	$ 7,987,682	$ 93,768,383	.085
Great Plains	$ 8,438,440	$ 13,227,816	.637
Rocky Mountain	$ 2,926,491	$ 25,347,225	.115
Southwest	$ 3,953,000	$ 36,734,679	.107
West	$11,026,249	$104,140,492	.105
TOTAL	**$90,623,678**	**$445,558,529**	

Table 2. Percent of Regional State Recreation Payroll to Total State Payroll, 1998

REGION	% RECREATION PAYROLL
Northeast	.86%
Mid-Atlantic	.87%
Southeast	1.37%
South	.82%
Mid-West	.38%
Great Plains	2.11%
Rocky Mountain	.55%
Southwest	.39%
West	.56%

Table 3. Percentage of Regional Municipal Recreation Payroll to National Recreation Payroll, 1998

REGION	PERCENTAGE
Northeast	9.3%
Mid-Atlantic	10.6%
Southeast	12.0%
South	6.8%
Mid-West	21.0%
Great Plains	3.0%
Rocky Mountain	5.7%
Southwest	8.2%
West	23.4%

Whereas job classifications were available for most states, for the purpose of phase 1 of this study, such information was only collected for the Northeast at the state level. It was found that the majority of civil service classifications for recreation positions were grouped into two categories: 1) park operations and 2) therapeutic recreation. Table 4 illustrates job classifications for the state of Connecticut. Although the other states in the Northeast were not presented in this paper, the patterns that are indicated in Table 4 are typical.

As indicated in Table 5, the data was rank-ordered from the most number of employees to the least number of employees. It shows that for the Northeast region the State of Connecticut possessed the highest ratio (6.7:10,000) of municipal recreation employees to the general population and the State of New Hampshire had the lowest (2.5:10,000).

Table 6 depicts the ratios of states with the highest and lowest municipal recreation employees to the general population within a region. The State of Hawaii possessed the highest ratio (15.7:10,000) and the State of New Hampshire the lowest (2.5:10,000).

Table 7 indicates that the Rocky Mountain region had the highest average number (9.52:10,000) of recreation employees per ten thousand of population, while the Northeast region had the lowest (3.87:10,000).

Table 4. Job Classifications for Connecticut

PARK OPERATIONS
Park Operations Environmental Protection Operations Supervisor
Environmental Protection Park and Recreation Supervisor 1
Environmental Protection Park and Recreation Supervisor 2
Environmental Protection Park and Recreation Supervisor 3
Environmental Protection Recreational and Resource Coordinator
THERAPEUTIC RECREATION
Rehabilitation Therapist 1
Rehabilitation Therapist 2
Rehabilitation Therapy Assistant 1
Rehabilitation Therapy Assistant 2
Rehabilitation Therapy Supervisor 1

Table 5. Number of Municipal Recreation Employees per 10k of Population: Northeast Region, 1998

STATE	EMPLOYEES
Connecticut	6.7
New York	5.9
Maine	4.8
Massachusetts	3.5
Rhode Island	3.4
Vermont	3.1
New Hampshire	2.5

Discussion and Conclusions

Recreation employment at both the state and municipal levels is significant even though, at face value, it is a small fraction of total public sector employment. When examined in the context of the volume of total public sector jobs, the raw numbers are vital as a marketing tool for attracting prospective parks and recreation students. In addition, many prospective employees will inevitably be impacted by the need to take & successfully pass civil service examinations, since state & municipal departments are subject to this process, as evidenced by the job classifications.

The data reveals very interesting information about each region and within regions. Payroll data suggests how

Table 6. Number of Employees per 10k of Population High/Low All Regions, 1998

REGION	STATE	EMPLOYEES
Northeast	Connecticut	6.7
	New Hampshire	2.5
Mid-Atlantic	Maryland	12.1
	Pennsylvania	2.9
Southeast	Florida	10.8
	North Carolina	5.7
South	Alabama	7.8
	Mississippi	3.5
Mid-West	Illinois	12.4
	Michigan	4.8
Great Plains	North Dakota	13.1
	Oklahoma	6.3
Rocky Mountain	Colorado	14.4
	Montana	4.4
Southwest	New Mexico	10.5
	Texas	6.5
West	Hawaii	15.7
	Alaska	5.6

Table 7. Regional Mean of Number of Employees per 10k of Population, 1998

REGION	MEAN
Rocky Mountain	9.52
West	9.48
Southwest	8.4
Great Plains	8.34
Mid-West	7.27
Southeast	7.2
Mid-Atlantic	6.82
South	5.91
Northeast	3.87

evenly/unevenly employment is divided. The region with the most even employment is the Great Plains. This may suggest the lack of state parks as tourist destinations and more use of these state parks by the local population. Therefore, the distribution of services between state and localities is more evenly divided. While the region with the most uneven distribution between state and municipal employment payroll (Mid-West) may indicate a different set of issues. The Mid-West (Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa) has a much greater number of high population cities than the Great Plains which may indicate a higher concentration of municipal recreation services. Additionally, the organization of park districts in Illinois my skew the data, as it is not known how the U.S. Census Bureau categorized employment in special districts.

Other data that stands out is the information concerning the Northeast region. The Northeast (Maine, New Hampshire, Vermont, New York, Massachusetts, Connecticut, Rhode Island) possesses the highest concentration of people in the United States. Yet in total recreation payroll (state & municipal) the Northeast is ranked 6th, in state payroll it is ranked 3rd, in municipal payroll it is ranked 5th, in percent of regional state payroll to total state payroll it is ranked 4th, in percentage of regional municipal payroll to national municipal payroll it is ranked 5th, and lastly the Northeast region is ranked 9th or last in the number of municipal employees per 10,000 of population.

This data covering the number of municipal employees per 10,000 of general population both within a region and among regions indicate that some inference can be drawn as to the recreation & leisure values held by elected officials and the population in general. Full data is provided for the Northeast region in Table 5. For example the states/regions which seem to be the most conservative possess the highest number of municipal employees per 10,000 of population. Does this mean that residents of these regions place a high value on local recreation services that counter balances their belief in small government?

The regions and states with the highest ratio of municipal recreation employees are places with a great number of outdoor recreation opportunities and tourist destinations. Does this mean that municipalities are taking a greater roll in supporting tourist activities? One example that one of the researchers observed during a 1997 trip to Colorado was the community recreation center in Breckenridge. It was built with a dual role. First, to provide community recreation for its residents. Second to provide winter tourists to the area an alternate location to enjoy family indoor recreation in the evening and when the weather was poor, providing a secondary recreation opportunity.

Public sector employment in the United States is a very complicated and regulated process. Each state controls public employment through their respective civil service organizations, and each lower level of government (county, city) has its own civil service organization. Research suggests that like many government agencies, civil service organizations are subject to political stress (Desai & Hamman, 1994; Kellog, 2000; Kellough, 1999; and West & Durant, 2000). In New York State, for example, prospective employees of recreation positions have responded in interviews (B. Emelson, personal communication, April 3, 2000) that the tests they recently took, for the most part, do not reflect what is being taught in the recreation programs that they received their undergraduate degrees from. This implies the need to examine the congruence between education preparation and the competencies necessary to successfully complete the civil service examination. Currently there are no NRPA/AALR accreditation standards regarding the civil service process for undergraduate degree programs. Without a standard addressing the civil service process and testing, or a systematic plan by educational institutions to address civil service competencies, students will be inadequately prepared for the entry process to public sector employment.

Areas for Further Study

As mentioned in the introduction, the researchers realized that the subjects of the civil service process, credentialling and accreditation is a very large area for study, and that the researchers decided to segment the research into three phases. Phase one, determining the importance of the subject presented here. Phase two of the research process will encompass the following: collecting data from all of the state governments, and expand the census year annual finance survey from about 14,000 to all 87,000 local governments. It will use on-site data collection for many of the state and largest local governments, consolidated data submissions (usually electronic files) for about 55,000 local governments, and a mail survey of the remaining governments.

Phase 3 will cover all of the state governments and expands the census-year annual employment survey from about 10,000 to all 87,000 local governments. It relies on consolidated submissions for a limited number of state respondents, but is primarily a mail survey.

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NATURAL RESOURCES INTERPRETATION: THE ROLE OF RESEARCHERS A NEW-OLD APPROACH

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Abstract: For the past several years interpretive programs for visitors at Isle Royale National Park have included presentations by natural resources researchers. These researchers are presenting the findings of their Lake Superior and Isle Royale National Park research directly to the public. This cooperative and developing project involves many individuals representing many fields in a joint venture bringing together Michigan Technological University (MTU) and the National Park Service (NPS) personnel. Park personnel and University staff have been very supportive of these successful efforts to create an additional interpretive experience for Park visitors.

Background

When Americans think of their National Parks, the image of the Park Ranger is one that often comes to mind. For many visitors, the Ranger campfire program was and still is one of the main sources of information and interpretation of the Park unit that they are visiting. While Ranger duties are numerous, it can be said that interpretation remains the most public and identifiable component of the National Park Service (NPS) Ranger activities. Public education has been part of park visits even before there were park rangers. It has been said that the first park naturalists were the university professors that did public presentations in Yosemite National Park starting in 1919. These researchers were there at the invitation of National Park Director Stephan Mather. Both the naturalist programs presented by the concessions and the presentations by the professors were instrumental in the development of the interpretive programs of later years (Albright,1985). Many of the early park naturalists were employed as professors, teachers or natural resources researchers. These early efforts are very similar to the project at Isle Royale National Park which is why this paper recognizes past NPS efforts.

Over the years there have been improvements and directives in the manner that interpretation should be presented to the public. One of the most notable was Freeman Tilden's book, Interpreting Our Heritage, written in the 1950s. This book is still recognized as a useful resource by many NPS personnel. In his book, Tilden outlines six principles of interpretation that are still considered useful guidelines.

The Isle Royale project suggests an expansion and continuation in the concept of public presentations by researchers that was first seen in 1919 at Yosemite. This project is a cooperative educational and interpretive approach within the NPS that could complement and be included in Interpretive Ranger programs. This effort involves natural resource researchers or scientists presenting the results of their research directly to the public rather than in presentations by NPS Interpreters. Many National Parks include natural resources research information in their interpretation ranger training yearly, but it has been reported that this information is not always integrated into the rangers programs (NPS interview, Acadia, 2001).

For the purpose of this paper, interpretation can be defined as a method for "people (to) communicate the significance of cultural and natural resources" (Knudson et al., 1999, p. 4). As already indicated, traditionally National Park interpretation has been performed by naturalists or Park Rangers referred to as interpreters. The interpreters provide programs, exhibits, and educational opportunities for the public (Mackintosh, 1986). These Ranger programs have been a very popular component of NPS efforts to educate and inform the public about Park issues.

The Isle Royale project suggests a different educational and interpretive approach within the NPS because it involves natural resource researchers presenting the results of their research directly to the public rather than in presentations by NPS interpreters. Researchers in cultural resources have for many years presented their findings directly to the public in many settings, but public presentations are more unusual for the natural resources researcher.

NPS research is often funded by the public through taxes and donations yet generally not understood or even seen by those that pay the bill. Research results are generally presented at conferences to an audience of other researchers. Studies may be published in journals that researchers view but are rarely read by the general public. There are exceptions including the annual report of the wolf-moose study conducted by Dr. Rolf Peterson of MTU that is published by the Isle Royale Natural History Association.

This project is referred to as a "new-old approach" in recognition of interpretation done by researchers in other fields. For example, interpretation has been done by cultural researchers here in Michigan at Fort Michilmackinac for forty years. At that park archeologists are viewed by the public while they are conducting their research by uncovering the old fort sites and interpreting the artifacts as they are uncovered (DNR, interview 1999). This Michigan State Park is a good example of cultural resource researchers interacting directly with the public in a manner that happens in many parks in this country. There are park units that have a few presentations by researchers during a season, but none to my knowledge are attempting the numbers of programs that the Isle Royale project has already successfully accomplished. There are also a small number of NPS units that are starting to suggest an incorporation of researchers into their interpretive programs (NPS, 1999). One example is the conference that Fire Island National Seashore provides biennially where the public can hear researchers explain their studies (NPS interview, 2001).

Isle Royale National Park

Isle Royale National Park is the project site and there are many park personnel that are very supportive of these efforts. Isle Royale was authorized as a National Park in 1931 as one of the nation's first nature parks rather than a scenic park (Runte, 1997). Isle Royale National Park is an archipelago of 400 islands, located within the northwest corner of Lake Superior. The islands, which include the largest island in Lake Superior, vary in size from over 40 miles in length to only a few square feet (NPS, 1995). In addition to the islands, the National Park Service manages the surface of Lake Superior four and one-half miles out from the shoreline. This results in approximately 80% of the Park consisting of water (Isle Royale National Park Pamphlet, 1996). The total area of the Park is approximately 571,790 acres of which approximately 133,782 acres are land. (National Park Service, 1995). In 1976, 98% of the land area of the Park was designated as Wilderness by the federal government. This percent has since been increased to 99% (NPS, 1995). Today, Isle Royale National Park remains one of the largest federally designated wilderness areas in the Midwest. In 1980, the United Nations declared the Park an International Biosphere (DuFresne 1991). This designation is one indicator of the importance of the natural resources in this park for all peoples of the world. Isle Royale National Park is one of the least visited parks in the National Park system, due in part to the difficulty in traveling to it. The total number of annual visitors is less than 20,000 (Isle Royale Report, 1999).

Isle Royale Project

This project involves the presentation of a new format of interpretive programs on board the ship *Ranger III* as it crosses Lake Superior with Isle Royale National Park visitors. *Ranger III* is a 165-foot ship operated by the National Park Service and carries up to 125 passengers per six hour trip. This ship makes approximately 64 round trips from Michigan to Isle Royale National Park per season. Park Interpretive Programs traditionally have been offered to the visitors by a NPS Ranger to prepare them for their visit to this wilderness national park. These Ranger programs have presented topics such as rules/regulations of the Park, safety, and low impact camping. Since 1996, programs have been expanded to include presentations by researchers discussing the results of their research at Isle Royale. The topics of those presentations have included wolf-moose balance, Lake Superior, geology, remote sensing, astronomy, habitat fragmentation, frog, flower and bird studies, climate change and loon research. The impact of these presentations by researchers on visitors' knowledge and attitudes has not yet been studied.

During the summer of 1999, researchers used a large screen television and a computer to display their research directly to the public as part of their interpretive presentations. These presentations incorporate technology through the use of computers (PowerPoint) as well as being able to display research as it is generated. This "real-time" data display is unusual in the field of natural resources interpretation. Some researchers onboard the *Ranger III* present their data, using this technology, directly to the public as soon as they receive it. For example, Lake Superior water study data (primarily temperature) is collected from the *Ranger III* using probes. When these probes are dropped into the lake they transmit their data directly to the researcher's computers onboard the ship and then this data can be displayed to the public.

How Effective Are These Programs?

The public has responded very positively, both verbally and in writing, to programs by natural resources researchers. While there is interest in expanding these presentations, it would be useful to understand the impacts of presentations by researchers on visitors experiences, knowledge, and behavior during their Park visits; as well as the researchers' presentation style on the audience's enjoyment and education. What do Park visitors experience and learn due to their direct involvement and exposure to natural resources research?

Proposed Procedures

- To qualitatively interview Park visitors during summer of 2001.
- To assess impact by collecting informal feedback from Park visitors and staff.
- To develop and pilot an instrument during 2001 that will assess impact of the project to be used during summer 2002.
- To administer the instrument to Park visitors during the summer of 2002.

Conclusion

I believe this project will be of interest and benefit to at least three groups. First, the National Park Service will be able to better understand the public's ability to learn from interpretive programs and therefore be able to add to the present formats of programs being presented. The second group that could benefit are the researchers and their related institutions. They will have a better understanding of useful approaches to the public in presenting their research. Finally, the public may develop a greater understanding of and interest in the research that is occurring in the National Parks. Through that understanding, there may be a change in behaviors that adversely affect the Parks and their resources. Additionally, the public may become more supportive of the financial needs of the Park Service and related research efforts.

One side benefit of this research project is that it is not limited to a narrow field of interest but rather it could appeal to anyone who wants their research better understood by the public. Additionally, researchers may find presentations beneficial in meeting with other researchers. An example of this occurred when two different groups of researchers became aware of each other's efforts that are similar during a presentation.

Finally, the public may be the biggest beneficiary of this project. Last summer after participating in one of the "real time" programs, an individual exclaimed that it was the first time he had been treated like an adult in a National Park interpretive program in several years. He concluded by saying that unless you are exposed to programs that are over your head you will not learn (Park Interview, 2000).

Another visitor to Isle Royale National Park wrote the following to the Park Superintendent, "I believe the National Parks were created under the same guidelines as the Constitution. They were created by the people for the people. If the people do not feel welcome, they will cease to come. If they cease to come, they will cease to bring their children. These children will be the ones who will inherit Isle Royale. If they do not know her, when the time comes for funding cuts, they will not hesitate killing something they do not know" (Personal letter, 1998). The Isle Royale Project is one of the many cooperative projects that are being undertaken by the NPS and researchers to help our park visitors understand the unique resources that we all have inherited.

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MOUNTAIN BIKE TRAIL COMPACTION RELATION TO SELECTED PHYSICAL PARAMETERS

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Abstract: The purpose of this research is to explore the rates of compaction and their relation to trail contextual aspects of: soil type, slope and crown cover on a newly established mountain bike trail in the northern reach of Vermont. A random sample of 52 sites was selected for monitoring on the 1.09-mile trail. Three penetrometer readings were taken at each of the sample sights on two-week intervals beginning the day after trail construction was complete. Soil core samples were also taken at each site to determine soil type. Crown cover estimates were determined using the USDA Forest Service code-a-site estimation categorization, and slope aspect was evaluated by the use of a clineometer.

The data collected in this study support the basic premise found in (Hammitt & Cole, 1998) that compaction is curvilinear. Compaction on the midpoint of the trail occurred within six weeks of the inception of the trail and stasis was reached by the fourth time period (eight weeks). Compaction for the tread as a whole likewise occurred, but at a slower rate and to a lesser degree.

No interaction effect was observed between the effect of compaction measurement over time with slope and crown cover. The lack of an interaction effect between compaction and slope may have been a result of the relatively small deviation in slope among sites. The lack of an interaction between compaction over time and crown cover may be a result of the relatively virgin characteristics of the soil. The duff layer of organic material is being pulverized and compacted but is still able to dry even in areas with significant crown cover. The lack of variability in soils at this stage in the trail lifecycle may account for the non-significant interaction with soil type and compaction.

The study has multiple implications for managers of mountain bike trail systems in the eastern United States. Managers will need to monitor trails once stasis is reached because the forest duff levels are pulverized and the trails are susceptible to erosion. As established trails are compacted managers may: prefer to confine users to existing tracks by narrowing trial side conditions; hardening the track to minimize erosion and by educating riders to stay within the established track, and limiting access during prolonged wet conditions.

The relationship of the contextual or setting aspects of a trail to compaction rates and the interrelation with recovery rates provide a better understanding of the physical parameters of trail location. Understanding and study of these relationships can aid in trail planning and enable managers to build a sustainable trail. A study of this type can be easily replicated in other areas to account for differences in soil and vegetation type.

Introduction

Compaction of recreation trails and use areas is well documented in the literature. Increase in compaction vary with regard to soil type, type of use, and soil characteristics such as moisture content, texture and structure. Most studies have examined such compaction as a result of human trampling, pack stock, and off road vehicle use; and have focused on existing trails or use areas (Wilshire, Nakata, Shipley, & Prestegaard, 1978; Manning, 1979; Marion & Cole, 1996; Hammitt & Cole, 1998). Little literature has examined the compaction on newly established trails, especially by mountain bicycle users, nor related such compaction to other physical aspects of the setting. As more areas allow such use on new and established trails, there is a need to study the effects of compaction on soils in the context of slope, soil type, and crown cover as they are the basic structure for understanding vegetation loss and erosion.

This research was conducted on a trail managed Kingdom Trails Association (KTA) in East Burke Vermont. The trail was designed to utilize the natural contours of the landscape, thus eliminating the need for excavation. The site was chosen because it extended the existing system, the owner allowed trail development, and the new trail provided a scenic river vista. A Youth Conservation Crew from the Vermont Leadership Center in East Charleston Vermont cleared the trail, which was laid out by KTA. The crew cleared a tread to 20 inches in width and of 36 inches in width up to 7 feet high. The ground compacted as bicycles began to use the trail.

The purpose of this research was to explore the rates of compaction and their relation to trail contextual aspects of slope, crown cover, and soil type on a newly established mountain bike trail in the northern reach of Vermont. The trail is divided into two segments. The first is essentially a linear segment of four-tenths of a mile that allows the user to crossover to an intersection of trails, one of which was cut at the same time as the new linear segment and is essentially a loop approximating seven-tenths of a mile in length. A random sample of 52 sites was selected for monitoring compaction on the 1.09-mile trail. Sites were selected at intervals of 105 feet from the trailhead of the linear segment. The trail varies in vegetation type, slope, soil type, and degree of mature vegetation crown cover.

Methods

Three penetrometer readings were taken at each of the sample sites on two week intervals beginning the day after the trail construction was completed; readings continued until the first heavy frost penetration on unprotected sites

the beginning of November 2000. Penetrometer readings were taken perpendicular (across) to the trail, one in the estimated middle of the trail, and one each, 25 centimeters on each side of the middle reading. Baseline data was collected at each of the 52 field sites on July 27, 2000, the first day after the cutting of the trail was completed. Five of the seven data collection days were dry; two were misty with intermittent light precipitation. Subsequent to the baseline data collection, increasing use of the trail was observed from July through the end of October. Although no actual counts were taken, it was estimated by observation and interpolation that an average of eighteen to twenty five riders used the trail segments weekend days and ten to twelve used them during weekdays.

Soil core samples were also taken at each site to determine soil type. Soil samples were taken at each site at a constant depth of approximately four inches and were subsequently typed by a soil scientist of the USDA Natural Resource Conservation Service. Crown cover estimates were determined using the USDA Forest Service code-a-site estimation categorization, and slope aspect was evaluated by use of a clineometer. The relationship between compaction rate and percent of crown cover and degree of slope was tested using Repeated Measures ANOVA.

Results

The mean penetrometer measures from the initial reading and the final seventh reading indicated an increase in the resistance levels for each of the three site measurements (middle, left, and right side of trail), over the 52 sites. An averaged reading over the three measurements at each of the 52 sites had a similar pattern, showing a significant difference between the baseline measurement and the end of the season (see Table 1). The middle trail reading indicates a higher compaction differential than the two outside readings on the trail tread.

Repeated measures ANOVA were calculated for both the averaged penetrometer readings and for those in the middle of the trail, comparing the penetrometer readings of the 52 sites at seven different times. A significant effect was found ($F(6,306)= 41.91$, $p< .000$) for the averaged penetrometer readings. Protected t tests were used to compare the time periods; because we are in essence conducting tests on all possible pairs (21 tests) and therefore inflating our Type I error rate, we used a significance level of .0024 (.05/21) instead of .05. Protected t tests revealed that averaged penetrometer readings did not increase from the first time period (m=201.07, sd=85.14) to the second time period (m=200.23, sd=60.03), but increased from the second time period to the third (m=225.51, sd=56.12), and again increased from third to fourth time period (m=260.43, sd=72.45). There was no significant increase from the fourth time period (m=260.43, sd=72.45) to the fifth (m=267.85, sd=46.02), no significant difference from fifth to the sixth (m=274.53, sd=55.02), and again, no increase from the sixth to the final, seventh time (m=295.35, sd=58.15, $p= .007$). This indicates that most of the compaction occurred across the tread before the fifth penetrometer reading.

The repeated measures ANOVA, with slope as a covariate, for the middle of the trail readings, revealed a similar pattern—there was a significant effect ($F(6,300)= 37.45$, $p<. 000$) for the penetrometer readings taken in the middle of the trail. Follow-up protected t tests (see Table 2) indicated an increase in penetrometer resistance in the middle of the trail from the first time period (m=252.85, sd=104.98) to the second period (m=300.82, sd=57.36), again from the second time period to the third period (m=345.81, sd=69.91), but not from the third to the fourth period (m=403.64, sd=148.16). No significant differences were found between successive time periods from the third period. This suggests that compaction occurred more quickly in the middle of the tread than across the width of the entire tread.

An analysis of within subject effects of the covariate of slope with the middle of trail penetrometer readings over time indicated no interaction effect ($F(6,300)= .998$, $p>.05$). Similarly, there was no interaction of penetrometer readings over time and the covariate crown cover ($F(6, 300)= 1.462$, $p= .191$).

Table 1: Paired Sample Differences in Penetrometer Resistance (psi) for the Three Measurement Points on the Trail

Measurement Point	Mean PSI	Std. Deviation	Paired samples t	Sig.
Middle of Trail				
Pair Mid 1-	252.85	104.98	-10.42	.000
Mid 7	429.24	73.29		
Left Side				
Pair Left 1-	241.04	100.92	-2.53	.015
Left 7	274.14	75.45		
Right Side				
Pair Right 1-	208.73	91.70	-48.20	.000
Right 7	282.02	81.12		
Average Over Three				
Pair Ave 1-	201.07	85.14	-8.58	.000
Ave 7	295.35	58.15		

Table 2: Paired Sample Tests for Seven Successive Time Periods

Pairs	Mean	Std. Deviation	Paired samples t	Sig.
Pair Mid 1- Mid 2	252.85 300.82	104.98 57.36	-3.56	.001
Pair Mid 2- Mid 3	300.82 345.81	57.36 69.91	-5.36	.000
Pair Mid 3- Mid 4	345.81 403.64	69.91 148.16	-2.49	.016
Pair Mid 4- Mid 5	403.64 426.55	148.16 63.24	-1.13	.266
Pair Mid 5- Mid 6	426.55 418.23	63.24 63.15	.764	.448
Pair Mid 6- Mid 7	418.23 429.24	63.15 73.29	-.868	.389

Discussion

The data collected in this study supports the basic premise found in Hammitt and Cole (1998) that compaction is curvilinear (see Figure 1). Compaction on the midpoint of the trail occurred within six weeks of the inception of the trail and stasis was reached by the fourth time period. No statistically significant compaction occurred after the third time period for the middle of the trail. Compaction for the tread as a whole (average in Figure 1) likewise occurred, but at a slower rate and to a lesser degree.

No interaction effect was observed between the effect of compaction measurement (penetrometer readings) over time and slope or crown cover characteristics of the trail at each site. Slope gradients averaged 5.15 degrees, sd = 4.31, and other than three outliers, the gradients ranged between 1 and 11 degrees; only thirteen percent of sites were over 9 degrees in slope.

The decline in compaction between the fifth and sixth time period may be the result of the level of compaction that was measured at the fifth time period in which wet soil

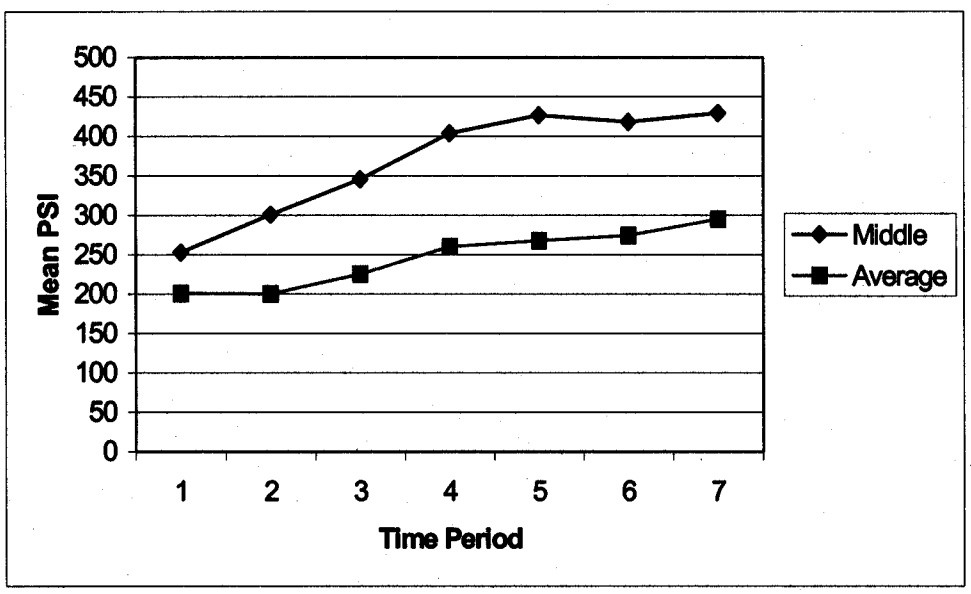

Figure 1: Mean PSI for Middle of Trail and Average over Tread for Seven Time Periods

conditions occurred after two days of steady rain. The lack of an interaction effect between compaction and slope may have been a result of the relatively small deviation in slope among sites. The lack of an interaction between compaction over time and crown cover may be a result of the relatively virgin characteristics of the soil, the duff layer of organic material is being pulverized and compacted but is still able to dry even in areas with significant crown coverage.

Implications

The study has multiple implications for managers of mountain bike trail systems in the eastern United States. Similar to previous studies in the west, mountain bike trails compact quickly. Little traffic causes compaction to accelerate fairly rapidly—there was observable evidence of compaction within three days of the trail opening and significant compaction occurred within six weeks, at which time stasis appears to have been reached. Managers will need to monitor trails during periods of this stasis, as this appears to be the point at which forest duff levels are pulverized and susceptible to erosion. As established trails are compacted, managers may prefer to confine trails to existing tracks by altering trail side conditions, harden the track to minimize erosion, and by educating riders to stay within the established track. Wet soils resulted in greater compaction, suggesting that managers may wish to limit access during prolonged wet conditions.

The relationship of contextual or setting aspects of a trail resource to compaction rates and their interrelation with recovery rates provides a better understanding of the physical parameters of trail location for more effective trail planning and for decisions regarding trail maintenance. Such a study can be easily replicated in other areas to account for differences in soil and vegetation type.

KTA saw a need to develop a monitoring system in order to quantify the rate of change as trail use increases. The results provide criteria for future monitoring (i.e. desirable slope, canopy cover and sustainable soil characteristics) as KTA studies the effect of freeze-thaw conditions on trail recovery, rates of compaction the second year, and as soil duff levels dissipate and erode to the mineral level. The monitoring of the trail over time may also provide management with indicators for implementing action strategies such as hardening the trail before over use occurs.

Future Monitoring Activities Will Incorporate:

1) number of users – with the use of counters;
2) how a trail effects the surrounding vegetation;
3) extent of recovery and subsequent acceleration of compaction; and
4) continued monitoring of the relationship between compaction over time and slope, crown cover, and soil type.

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INTERNET & BRANDING: A PERFECT MATCH OR A FATAL ATTRACTION? ANALYSIS OF FIFTY STATES OF THE U.S. OFFICIAL TOURISM WEBSITES

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Abstract: Internet plays a significant role in generating new business and facilitating customers' need for a better way to plan and book their trips. From a marketers' perspective, one of the seemingly "fatal attractions" of the Internet for DMOs is that it can be an extremely effective tool in terms of both cost effectiveness and market penetration compared with other traditional forms for destination branding. Employing a content analysis of the slogan, graphic projection, verbal expression, and other explicit or implied messages at the official tourism website of each state, the study attempts to delineate unique selling propositions (USP) and positioning strategies of destination organizations at the state level. Also, the state's tourism slogans were analyzed and categorized into types for an evaluation of their efficiency in terms of USP and targeting. Five types of slogans emerged as the result of content analysis: 1) Buy us because we are good; 2) Attribute based but not unique; 3) Focused on unique product attributes; 4) unique appeal; and 5) no possible categories. As for the USP, almost all states emphasized nature and culture/heritage as USP. However, many of the states' official websites do not maximize their utility as a marketing tool due to a lack of consistency among the elements.

Introduction

Electronic commerce has far reaching impact on the way travel is marketed, distributed, sold and delivered (Williams & Palmer, 1999; Pollack, 1995). The importance of the U.S. State official travel website has been recognized not only as a key promotional vehicle but also as a major distribution channel for domestic and international tourism with 167 million Americans (Nielsen/Netratings, 2001) with Internet access and 400 million worldwide (Computer Industry Almanac, 2001). In the most recent survey of Internet usage by Neilsen/Netratings (Dan Creekmore, personal communication, April 27, 2001) conducted during March 2001, 34.8 million Americans visited a tourism/travel related website. This represents 39.9% of the active Internet market. During each visit they stayed for an average of 10.5 minutes. In 2000, Americans made purchases of travel and travel related goods and service over the Internet worth more than $13 billion (Patkose, Stueve, & Cook, 2001). The Travel Industry Association (2001) estimates that at least 90 million Americans over the age of 18 with Internet access are part of the travel market; of those, more than 59 million people have used the Internet to make plans for travel (Figures 1 & 2). The Internet has put consumers in control of their plans.

One of the "fatal attractions" of the Internet for DMOs is that it can be an extremely effective tool in terms of both cost effectiveness and market penetration, compared with other traditional forms such as pamphlet, print, and media materials, for destination branding. Benckendorff and Black (2000) studied the Regional Tourism Authorities of Australia who had a WWW site and found that the Internet

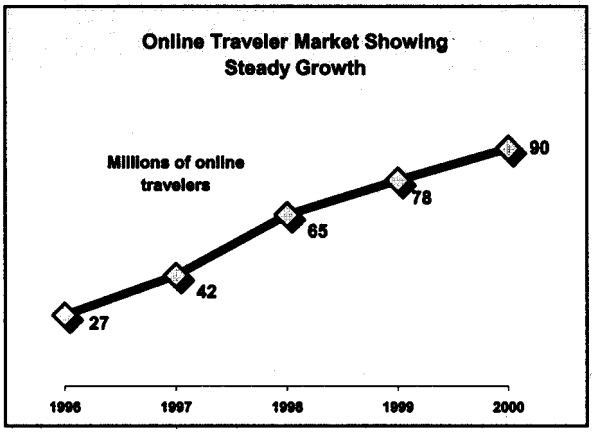

Figure 1. Online Travel Market Growth

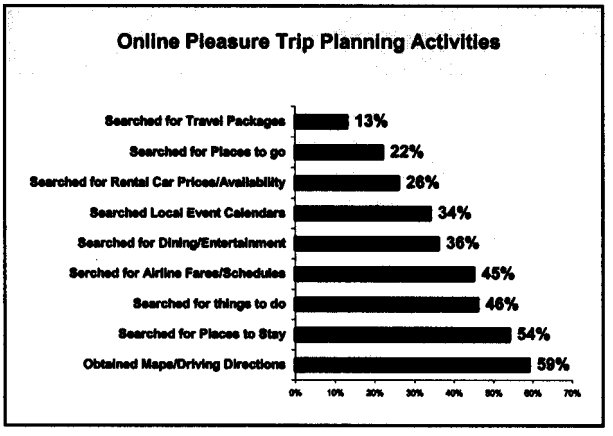

Figure 2. Online Pleasure Trip Planning Activities

Source: Travel Industry Association of America [TIA]. (2001, March). Newsline.

was most useful for tasks such as building visitor awareness, providing customer service, and public relations and education. Although it is a recent phenomenon, Internet marketing for tourism destinations, destination branding, and as a core positioning strategy, has become a key issue for both private industry and public tourism organizations alike. In destination branding, image plays a pivotal role. The purpose of this paper is to analyze 50 U.S. state tourism organizations' official websites, assessing their brand and image strategy in terms of the slogan and graphic messages. Based on the image projection and brand creation of each state in vehicle of slogan, graphic projection, and verbal expression, the unique selling points (propositions) and positioning issues are addressed.

Specifically the objectives of the study were to: 1) analyze the graphic/verbal images of each state website and interpret in terms of branding & targeting; 2) analyze the state's tourism slogan and categorize them into types; and evaluate their efficiency in terms of USP and targeting.

Literature Review

Branding Tourism Destinations

Branding has long been popular in consumer goods marketing. Even though branding management has been introduced in tourism research rather recently, in the hospitality and tourism marketing arena, it is recognized as a powerful force. However, branding a tourism destination is relatively new development (Gnoth, 1998). A brand is a name, term, sign, symbol, design or a combination of these elements that is intended to identify the goods or services of a seller and differentiate them from competitors to influence the behavior of the consumer (Kotler, 1999; Crawford-Welch, 1998). Branding as marketing strategy is to create and manage these components of a brand, which is key to winning the battle of "market positioning." Branding strategy is developed for "encouraging awareness and establishing perceptions of quality and favorable associations" (Henderson, 2000, p. 37). When market competition gets fierce in today's tourism marketplace, branding becomes the most effective and powerful strategy for market positioning, making the product stand out in the minds of existing and prospective customers relative to its competition in terms of benefits and promises (Crawford-Welch, 1998). Given that the definition of destination brand image is the set of beliefs potential tourists hold about a particular destination, it is well established that tourist destinations with a positive and clear image create stronger market positioning over those without it.

Image as a Pivot in Destination Positioning

In destination market positioning, destination image plays a pivotal role. Brand image is a key component in the formation of a clear and recognizable brand identity in the market (Williams et al., 1999). Due to the interrelationship between destination choice behavior and destination image, there is an increased interest in destination image as a predictor variable in the destination choice model. Diverse literature on travel behavior research has supported the proposition that destination image plays a significant role in a traveler's destination choice (Hunt, 1975; Woodside & Lysonski, 1989; Crompton, 1977; Pearce, 1982; Tourism Canada, 1986-1989; Gartner, 1989; Martin & Eroglu, 1993; Milman & Pizam, 1995). As Bojanic (1991) posits, tourist preferences for destinations largely depend on the positive perception future visitors possess of the destination. Court and Lupton (1997) also illustrate that destination image determines the segment membership among three categories of tourism consumers, adapters, inactives, and rejectors. As earlier researchers such as Mayo (1973) and Hunt (1974) posited, destination image is a critical factor in a traveler's destination choice.

State Tourism Slogan

A slogan is used to deliver a message about unique selling propositions (USP) of a product to the market. It has long been widely used in various products as part of advertising campaigns. Slogans are believed to play a crucial role in advertising (Richardson & Cohen, 1993). Moriarity (1991) posited that slogans are "battle cries" of advertising campaigns. He emphasized that slogans must reflect the character or personality of the product to play this role of "battle cries" successfully. The product personality and character can be summarized in "image." Ultimately, a good state tourism slogan should express the USP of the destination brand pleasantly and effectively to the eyes and mind of the audience.

A review of all American states' official tourism website leads to intriguing results in the entities involved. Each state tries to present a slogan to represent its destination image and key selling points in order to increase the awareness of brand and stimulate interest from their potential visitors.

Methodology

The current study is based on a content analysis of the fifty U.S. states' official tourism websites. The official websites of the individual states were located through the official website of each state and from *http://www.july15.com/julia/statetravel.htm*. Each tourism website differs from each other in terms of its contents and format. Therefore, the authors tried to analyze common elements, limiting to the first three tiers of each site. Content analysis as an "observational research method is used to systematically evaluate the symbolic content of all forms of recorded communications" (Kolbe & Burnett, 1991, p. 243). It is believe to offer several benefits in consumer research including unobstrusiveness, a possibility to assess environmental variables and to provide an empirical starting point (Kolbe & Burnett, 1991), and it also has potential as a companion research method in multimethod studies (Brewer & Hunter, 1989).

Results

The Slogan, Image, and Branding & Positioning

The official websites of each of the U.S. states are analyzed in terms of slogan and graphic and verbal image projection for an analysis of its selling points and target market (Table 1).

Table 1. Analysis of Official Tourism Websites of Fifty States in the U.S.

Name of States	Slogan	Graphic/ Verbal Image	Selling Points -> Branding	Target Market -> Positioning
Group 1: "Buy us because we are good"				
Iowa	"Come be our guest"	Limited graphics	Culturally rich cities Authentic American farms Many things to do and see	Midwest vacationers
Kansas	"Simply Wonderful" theme "Heart of American West"	Sunflowers	Friendly Midwest hospitality Sunflower state Special interest travel opportunity Wild beauty Sports	Vacation destination - traveling alone/family/ group tours/special interest traveling
Nebraska	"Genuine Nebraska"	Peaceful graphic image Native American dancer	Wildlife Birds' native habitat Tranquility of environment *Separate Wildlife site	Crowdedness avoiders Birdwatcher Urban escapers
Tennessee	"Sounds good to me"	Riverboat passing through river Aquarium with children around "Listen its Tennessee"	Authentic mountain music Sunrise above the mountain Individualized itinerary/ tailored trip schedule	Not specified
Georgia	"Georgia on my mind"	Limited graphics	Not specified *International assistance-exchange rate	Not specified
Alabama	"Unforgetable"	Black jazz musician playing music	Provided in separated links	Not clear
California	"Find yourself here"	Limited graphics	Very descriptive website-decentralized by region or cities	*Regional focus
Massachusetts	"Massachusetts, take a real vacation"	Affective wordings such as feel, under the star, swing music, candle light, swan	To see & do Travel experience such as local cousin	Not specified (the web was very sophisticated urban image with elaborated wordings)
Connecticut	"We are full of surprise"	Rowing boat picture	Poor website	NA
North Carolina	"A better place to be"	Wallpaper type of beach image	Heritage Natural beauty	Weekend market
Indiana	"Enjoy Indiana"	Limited graphics	History Hoosier people	Getaway weekenders
Illinois	"Right Here Right Now"	Limited graphics	State of Lincoln African American heritage Hispanic culture Diverse theme trips Budget travel	Getaway trip
Ohio	"A Perfect Getaway"	Fall colors	Wide spectrum of activities Buckeye state	Family getaways
Wyoming	"Like no place on earth"	Natural scenes	Natural scenery Friendly people Heritage & value Great nature	Urban dwellers
Group 2: Attribute based but not unique				
Missouri	Missouri, "Where the river runs"	City image	State of diversity Proud heritage Music & musicians Cities	Family holiday Fun & adventure seekers
Arkansas	"The natural state"	Limited graphics	Feel free to do everything Catch your breath Family fun Outdoor activities Natural beauty Star gazing	Family Outdoor escape *Seniors' site
Vermont	"Vermont is plain beautiful"	Green mountain Farm files Villages Lakes, ponds	Small scales Intimacy Peaceful scenery	Family travelers/ package tourists, searching for diverse themes

Table 1. Analysis of Official Tourism Websites of Fifty States in the U.S. (Cont.)

Name of States	Slogan	Graphic/ Verbal Image	Selling Points -> Branding	Target Market -> Positioning
Group 2: Attribute based but not unique (cont.)				
Oklahoma	"Parks, Resorts & Golf"	A young camping couple Natural parks	Strong outdoor recreation focus State Parks Golf World class equestrian trail State park Package special (*CEO Membership program)	Outdoor recreationists State Park visitors Golfers
Mississippi	"The south's warmest welcome"	Sunset in a mountain Nature	Golf Casino Highway 61 tour Delta blues Beaches Heritage African American heritage *International site and domestic group tour sites provided	Domestic group tourists International tourists
Texas	"It's like a whole other country"	Rodeo Cowboys Wild West graphic image	"Wild west Texas adventure" Cultural diversity-"Texas melting pot" Sea, sands, & sights	Tourists seeking 3-5 day vacations and getaway/ package tourists
New Mexico	"Put yourself in a state of enchantment"	A train passing cross mountain	Beauty of ancient cultures Rich landscape Nature with deep contrast, i.e., mountain & dessert, lake, forest	Not clear
Washington	"A little trip to the extraordinary"	Limited graphic image	Not specifically presented	No distinctive message at all
*Nevada	"Home of adventure & entertainment"	Night life-bright lights Natural scenes	Entertainment/Night life Casino Hotels Nature Outdoor recreation-ski, fishing Silver state Sports events Bypass Wedding-official tourism offices provide marriage information for the visitors & tourists * Korean/Japanese websites – detailed information in Korean and Japanese languages, also very detailed guidelines against crime and theft	Korean & Japanese tourists-try to attract these markets also to nature and outdoor, sports event in conjunction with casino and city tour Domestic city tourists for entertainment (casino) and nature-based tour
N. Dakota	"Discover the spirit" "Begin the adventure"	American Indians & frontiers faces	Salient message: visit a land where history never gets old "Place of American democracy" "The Faces" festival	History/culture oriented tourists
Maine	"The Maine attraction"	A light house	Marine resources Seafood Natural treasure Summer youth camp Outdoor recreation Culture	Clear target on summer vacationers/youth campers
Pennsylvania	"Pocket edition of World"	17C Sail boat Verbal image projection - "relaxed," "unique" and "authentic"	Hunting/fishing Wildlife observing Unspoiled natural beauty Beer festival 100% pure Pennsylvania	Nature lovers and culture oriented travelers
Delaware	"The first state"	Limited graphic image	Easy access to the one third of the nation's population Culture/history Tax free shopping (top 10 shopping place in the U.S.)-Value for money	Geographic target-NY, Washington D.C. Family pleasure vacationers Overnight stoppers Getaway weekenders Short stay

Table 1. Analysis of Official Tourism Websites of Fifty States in the U.S. (Cont.)

Name of States	Slogan	Graphic/ Verbal Image	Selling Points -> Branding	Target Market -> Positioning
Group 2: Attribute based but not unique (cont.)				
W. Virginia	"Wild and Wonderful"	Limited graphic image	Web is being improved	NA
New Hampshire	"The road less traveled"	Picture of children	Tax free shopping Theme parks	Kids and families/people traveling with children
*South Carolina	"Smiling face, beautiful places"	A couple on the beach	Adventure Climate Theme parks Golf Beach Nature based activities Value & variety	Domestic market *Strong international focus: German and Japanese sites
Group 3: Focused on Unique product attributes				
Minnesota	"Explore Minnesota-Take home a story"	Lakes & mountain	Giant ridge golf Long trails Outdoor activities Scenic bypass	Family tourists Fun and education seekers Fall-breakers
Arizona	"Grand Canyon state"	Highway crossing desert Canyon	Outdoor recreation Nature wonders Old west attractions Desert adventures-attractions/cacti gardens	Hikers Desert adventure seekers Travelers Outdoor recreationists
Kentucky	"Heart of America"	NA	Getaway- mini vacation, long weekend	Not clear
Michigan	"Great Lakes Great Times"	Harbor light	Summer golf capital Snowmobiling/skiing Culture	Personalized vacation with variety experience
Colorado	"Totally Winteractive"	Mountains Skiers	Snow ski Ecotourism sites	Not clear
Montana	"Big sky country"	Natural scenes	Ski (Rocky ski area) Wildlife watch Cousin: Big-sky-way Cooking recipes Ghost town tour Crystal lake/canoeing Mountain bicycling	Outdoor recreationist Wildlife watchers Sight-seeing tourists
S. Dakota (Provided better cite than N. Dakota)	"Great faces, great places"	Great faces and mountains	History Great faces American Indian culture-history Adventure history	Family vacationers Fun seekers Getaway Active outdoor vacationers: "Vacation, it is not virtual, it is reality"
Utah	No official state slogan, a catchphrase instead: " The great snow on earth"	Limited graphic image except Olympic promotions	Ski Rafting Winter Olympic 2002: Salt lake 2002- Emblem "Contrast-Culture-Courage"	Winter Olympic attendees
Group 4: Unique appeal				
Hawaii	"Visiting the Aloha state", "The island of Aloha"	Tropical colors Pictures of Hawaiian women	Adventure in paradise Action Adventure opportunities World-class event Shopping * Decentralized webs	Family vacationers Honeymooners
New York	"I Love NY"	"Nobody beats New York state!" Ski Family Youth Horseback riding pictures	Hudson river-America's identity Rich heritage & diversity History Romance Outdoor activities Road trip Family gathering NYC weekends Waterways	Domestic tourists from all around the U.S. International travelers

Table 1. Analysis of Official Tourism Websites of Fifty States in the U.S. (Cont.)

Name of States	Slogan	Graphic/ Verbal Image	Selling Points -> Branding	Target Market -> Positioning
Group 4: Unique appeal (cont.)				
*Wisconsin	"Stay just a little bit longer"	Pictures of little children Mountains Lots of beautiful nature pictures	Memory Beauty of nature Wonderful people & wonderful nature Scenic beauty	Family for nature-based vacations Families with young children Nature-based tourism
Virginia	"Virginia is for Lovers"	History Beaches Mountain graphic image	Beaches Mountains Mountain trails History-first English settler	Outdoor recreationists Vacationers *International tourists-very detailed, well organized international sites in several languages
Group 5: No possible categories				
Idaho	"Come fine Idaho" - Come find Idaho and come back to life	Waterfalls Resort	Waterfalls Resorts Ski Ranch Scenic byways	Not specified
Florida	"FLA USA, Visit Florida"	Palm trees on the beaches	Hospitality Kids fun (Disney) Sophisticated big city tour Nature Cultural attractions Beaches/sugar white sands	For all or Not clear
New Jersey	"New Jersey and you, perfect together"	Limited graphic image	Family vacation Getaway Something for everyone	Getaway weekenders Family vacationers
Rhode Island	"Ocean Current"	Traditional English mansion English men in costume	Tradition English culture Culture rather than Nature	Cultural interested
Currently No slogan				
Oregon	NA	Mt. Hood	Japanese website	*Japanese travelers
Alaska	NA	Limited graphic image	Decentralized & descriptive	NA
The list is ordered in geographical regions, i. e., Mid-west, South Regions, Western Regions, and Eastern. The analysis was based on the information available as of November 2000. * indicates particularly good or unique features				

The Slogans for USP

The slogans of the U.S. states tourism department seem to fall into one of five types: The first group takes a "buy us because we are good" approach, such as "Come be our guest" (IO), "Simply Wonderful" (KA), and "Genuine Nebraska" (NE), for example. These slogans did not identify what brand image and USPs they try to make. More of these types are: "Sounds good to me" (TE), "Unforgettable" (AL), Idaho's "Come find Idaho", "Find yourself here" (CA), "Take a real vacation" (MA), and " A better place to be" of (NC). The second type tries to present the personality of their brand based on product attributes that are not unique. For example, "Missouri, where the river runs", tries to emphasize its beautiful rivers, but others have beautiful rivers as well. Others like this include Arkansas, "The natural state", Texas, "It's like a whole other country", "The road less traveled" (NH), "Smiling face, beautiful place", South Carolina. These slogans try to make USP but fail to differentiate themselves from others. The third group focuses on unique product attributes, such as "The Faces"(SD), "Grand Canyon"(AZ), "Great Lakes" (MI), "Totally winteractive" (CO), and Montana's "Big sky country". The fourth category of slogans is different from three categories described above. They are "I love NY" (NY, since 1977), which successfully evokes emotional attachment to the state; Hawaii, which uniquely creates a foreign tropical atmosphere with "The island of Aloha" (Aloha means hello); Wisconsin, "Just stay a little longer"; and "Virginia is for lovers" (VA) are persuasive and deliver a clear message. Finally, there are some slogans characterized by ambiguity of meaning or mismatch with their image such as "The first state" (DE, first of what?), Rhode Island's "Ocean current" (Is it a slogan? If so, what does it say about itself?).

The majority of state slogans seem to fall in the first three categories. As for the USP, almost all states emphasized nature and culture/heritage as USP, only to make it common and usual.

Conclusions

There seems to be ample opportunity to improve states' websites with respect to brand image, personality and creating slogans that better focus on the unique selling points of each state tourism products. Five types of slogans emerged as the result of content analysis (Table 1). However, many of the states' official websites do not maximize their utility as a marketing tool due to a lack of consistency among the elements. In other words, the slogan and graphic/verbal image are not consistent, the target market is ambiguous, and they fail to clearly deliver the USP. The shot-gun approach ("We offer you all you want") was rampant. On the other hand, the majority of state slogans seem to fall in the first three categories: (1) Buy us because we are good; (2) Attribute based but not unique; and (3) Focused on Unique product attributes. As for the USP, almost all states emphasized nature and culture/heritage as USP, making it common and usual.

One challenge, however, that the state marketing managers may confront seems to be heterogeneity of their tourism products in terms of geographical, cultural, and natural resource diversity within a state. This is well evidenced in large tourism host states such as Hawaii, Florida, New York, California and Illinois (national top spenders of tourism budget for websites). Their state tourism organizations seem to decentralize their organizations. The decentralization tendency is well reflected in their official websites, which hardly project a uniquely concentrated personality for their brand. Empirical research example on the topic discussed and analyzed in the current paper is limited and still in its infancy. Therefore, the topic warrants more empirical research both by industry practitioners and academia.

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JOB SATISFACTION AMONG RECREATION PRACTITIONERS

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Abstract: Job satisfaction among recreation professionals can be affected by many working conditions. This study has investigated the impact fourteen variables had on the job satisfaction of recreation practitioners. The sample consisted of 106 responses from members of the Resort and Commercial Recreation Association (RCRA). The results of the regression analysis for job satisfaction indicate that for recreation practitioners, five variables (type of work you do, goals of organizations, control in work life, hours per week and current salary) out of fourteen lead to greater job satisfaction; the strongest variable was "type of work you do". This may lead us to believe that the more important and worthwhile the work is for the employee, the more satisfied the employee will be with their job. One variable (current salary) led to both greater overall job and overall career satisfaction. Only one variable (working conditions) led to only overall career satisfaction. This may show support for the job characteristics theory, whereby the more involved the employee is with his/her job the higher the chance of job satisfaction.

Introduction

An understanding of the relationship between perceived job characteristics and job satisfaction would enable public and private leisure service managers to more effectively manage their resources. According to the job characteristics theory, enrichment and the resultant motivating potential of jobs is determined by the core job dimensions. When these core dimensions are highly evident in jobs they trigger three critical psychological states in individuals: experienced meaningfulness, sense of responsibility, and knowledge of actual work results (Nogradi, Yardley, & Kanters, 1993). Nogradi. et al. (1993) noted an employee who experiences these psychological states is more likely to be satisfied, willing to exert effort toward task accomplishment, and thus prosper at work. The primary purpose of this study was to determine what factors determine a recreation professional's job satisfaction.

This study was performed to better understand what characteristics of the recreational profession led to overall job satisfaction in the field. Specifically, this study sought to determine what variables were most highly correlated to job satisfaction and overall career satisfaction. This research asked the following questions:

1. What variables lead to overall job satisfaction?
2. What variables lead to overall career satisfaction?
3. Does overall career satisfaction differ based on current job satisfaction?

Literature Review

The labor force in the leisure services profession is changing, organizational structures are being evaluated and reorganized, social and economic forces are new, diverse, and constantly evolving as are client leisure interests. The future labor force will reflect the values of baby boomers that place importance on jobs with variety, flexibility, choice, emphasis on autonomy, and ownership (Robinson, 1989). In these days of rapid and diverse changes, it is essential for leisure managers to gain new insights into employee motivation. The greater appreciation and understanding of critical work related employee values currently are seen as important links to increasing organizational output and individual productivity. It is important for managers of recreation and leisure service organizations to help employees feel and become empowered within their area of responsibility. Hobbs (1987) noted that employees in parks and recreation "appreciate the opportunity to express their ideas about how their job could be made easier, more productive, or less wasteful. Peters and Waterman (1982) have argued that productivity of an organization should be through people: Creating awareness that their best efforts are essential and that they will share in the rewards of the organizations success.

Research about motivation has been a popular subject written about in organizational literature. Herzberg (1959) developed a model to explain employee motivation known as the two-factor theory. Herzberg argued that two sets of variables were relevant to the question of motivation. One set, the "hygiene factors" related to job dissatisfaction; the other set, "motivators" related to job satisfaction. Herzberg theorized that variables associated with job satisfaction (recognition and opportunities for achievement) would lead to increased productivity and motivated workers. He argued that improvements in hygiene factors such as pay would not increase job satisfaction; instead any improvements would simply reduce dissatisfaction. This theory of motivation indicates that to motivate employees the job must be challenging. Higher level needs can be defined as job growth, achieving work related goals, and have a role in decision making. Lankford (1992) noted that the opposite of job satisfaction is not job dissatisfaction but rather "no job satisfaction". Consequently, motivators and hygiene factors should not be considered opposite; they should be seen as complimentary. Both must be maintained at the highest level, or the result may be employees who are not operating at full proficiency.

Controversy about the effect of job satisfaction and performance can go back as far as the Hawthorne studies conducted during 1920 and 1930. Some authors have interpreted the findings of these studies as indicators that higher levels of job satisfaction lead to higher levels of worker performance, a conclusion that some argue was never present in the original research reports and is thus a

misinterpretation (Organ, 1986). Whether it is a misinterpretation or not the Hawthorne studies are usually credited for the discovery that a happy worker is a more productive worker.

Job characteristics theory continues to be the most prominent model for assessing and designing jobs. This distinction is due to the evidence that enriched jobs have a positive effect on job effectiveness outcomes. According to job characteristics theory, enrichment and the resultant motivating potential of jobs is determined by the core job dimensions. When these core dimensions are highly evident in jobs, they trigger three critical psychological states in individuals: experienced meaningfulness, a sense of personal responsibility and a knowledge of the actual work results. Employees who experience such psychological states are more likely to be satisfied, willing to exert effort toward task accomplishment, and thus prosper at work (Nogradi et al, 1993).

In spite of the popularity of job characteristics theory, research efforts have been burdened with problems. Job characteristics theory posits that core job dimensions interact with certain individual difference variables in determining job effectiveness outcomes. Enriched jobs merely hold the potential for motivating individuals. Transformation of this potential into reality is contingent on the attributes of the person involved. Much of job characteristics research has either ignored person-work environment relationship or has almost exclusively focused on variables that have been explicitly included in the original theory.

Methods

This study was conducted in the summer of 2000. Data was collected from members of the Resort and Commercial Recreation Association (RCRA). A total of 444 members were sent a mail survey and 160 individuals responded, resulting in a 36% response rate. Job satisfaction variables were measured on a 5-point Likert scale, where 1 was "very satisfied" and 5 was "very unsatisfied". Overall job satisfaction and overall career satisfaction was measured on a 5-point Likert scale, where 1 was "very satisfied" and 5 was "very unsatisfied".

All data were analyzed using SPSS 10.0 for Windows. A stepwise regression analysis was performed to test which variable contributed to overall job satisfaction and overall career satisfaction.

Results

Descriptive Analysis

The results of the descriptive analyses are shown in Table 1. Sixty-seven percent of the respondents were female while 33% were male. Thirty percent were between the ages of 26 and 30. Twenty-one percent were between the ages 31 and 35. Of the respondents, nearly 70% possessed a bachelors degree and 15% held a masters degree. Eighty seven percent of the respondents were directors of recreation or activities and 25% were department/program managers. Twenty five percent earn between 30,000 and 35,999 dollars. The largest group of respondents (26.8%) had been in the field 6-10 years.

Table 1. Descriptive Statistics

Gender	N	%
Male	106	66.9%
Female	54	33.1%
Age	**N**	**%**
<21	2	1.3%
22-25	22	13.8%
26-30	48	30.2%
31-35	33	20.8%
36-40	16	10.0%
41-45	14	8.8%
46-50	13	8.2%
51+	11	6.7%
Education	**N**	**%**
Associates Degree	10	6.0%
Bachelors Degree	111	69.0%
Masters Degree	24	15.0%
Doctorate	1	.6%
Responsibility	**N**	**%**
Administrator	118	73.8%
Supervisor	30	18.8%
Line staff	3	1.9%
Other	9	5.6%
Compensation	**N**	**%**
under 24,000	29	18.1%
24,000 - 29,999	30	18.8%
30,000 - 35,999	41	25.6%
36,000 - 41,999	24	15.0%
42,000 - 47,999	9	5.6%
48,000 - 53,999	11	6.9%
54,000 - 59,999	4	12.7%
60,000 - 65,999	2	12.1%
66,000 - 71,999	2	19.7%
72,000 - 77,999	1	26.8%
78,000 - 83,999	1	9.6%
84,000 - +	6	19.1%
Years in Career	**N**	**%**
0-1	20	12.7%
2-3	19	12.1%
4-5	31	19.7%
6-10	42	26.8%
11-15	15	9.6%
16-55	30	19.1%

Job/Career Satisfaction Scores

As seen in Table 2, respondents seemed to be most satisfied with the type of work they do (1.54), the community they live in (1.74) and their housing situation (1.84). They were least satisfied with their Current salary (2.85), Free time (2.82) and the hours per week that they worked (2.50).

Table 2. Job/Career Satisfaction Scores

Item	Mean	sd
Type of work you do	1.54	0.65
Community you live in	1.74	0.78
Housing situation	1.84	0.93
Your co-workers	1.85	0.71
Working conditions	1.88	0.82
Satisfied with this job	1.98	0.84
Benefits package	2.14	0.90
Control in personal life	2.15	0.96
Goals of organization	2.17	0.89
Control in work life	2.24	0.98
Management of organization	2.25	1.03
Professional respect	2.30	1.08
Hours per week	2.50	1.03
Free time	2.82	1.22
Current salary	2.85	1.01

Note: Items were measured on a 5-point Likert Scale with 1 = high satisfaction and 5 = low satisfaction

Inferential and Multivariate Analysis

The results of the regression analysis for job satisfaction (Figure 1) revealed that five variables contributed to job satisfaction. These were "control in work life", "type of work you do", "current salary", "goals of the organization" and "free time". The most important variable impacting job satisfaction was the "type of work you do". This may lead us to believe that the more important and worthwhile the work is for the employee, the more satisfied the employee will be with their job.

The results of the regression analysis for overall career satisfaction yielded four significant variables: "the type of you do", "current salary", "working conditions" and "free time". The variable "type of work you do" was the strongest correlation with career satisfaction but "current salary" also had a strong correlation. The revealed that the current salary of an employee has a strong effect on their overall career satisfaction. The variables "type of work you do", "current salary" and "free time" were shared by both job satisfaction and career satisfaction. "Control in work life" and "goals of the organization" affected job satisfaction, but not career satisfaction. This may show support for the job characteristics theory, whereby the more involved the employee is with his/her job the higher the chance of job satisfaction.

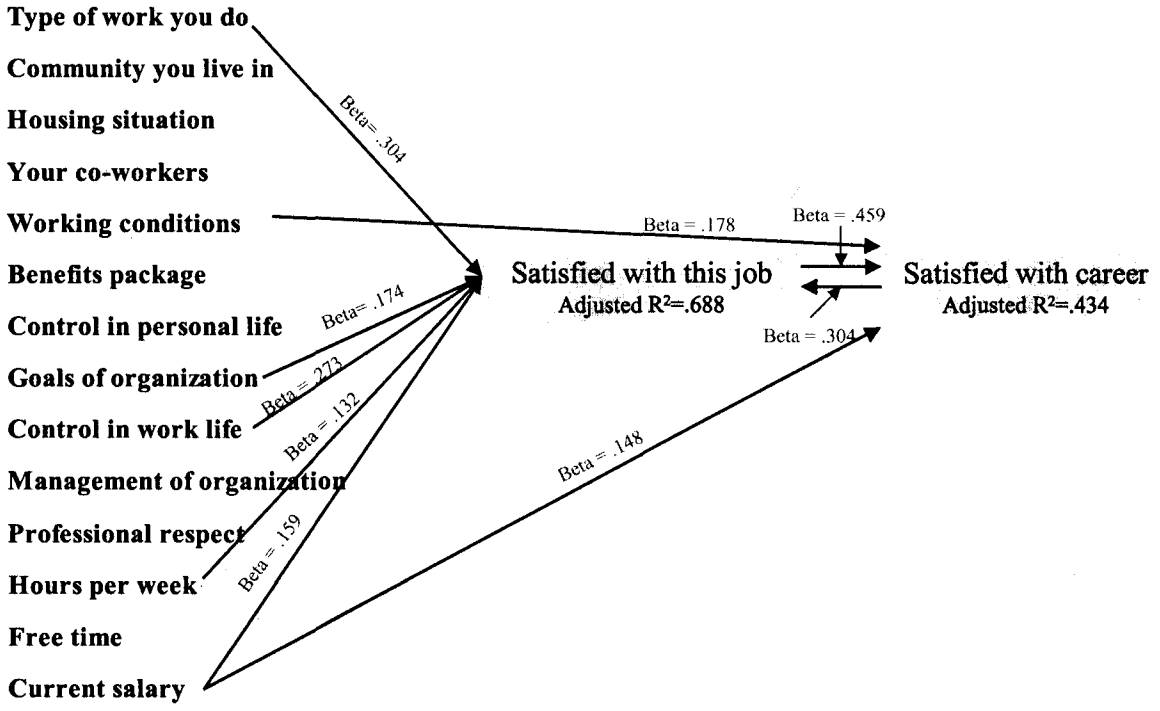

Figure 1. Regression Model

Discussion and Conclusions

The results of this study indicated that a recreation professional's job satisfaction and career satisfaction is impacted mostly by the satisfaction in the type of work he or she performs and his/her current salary. An important finding is that employers might be more successful in their business if they ensure their employees are content with the type of work they do and that their salary level is adequate. Thus an employee is more likely to be satisfied, more willing to put forth extra effort and overall be more satisfied with work if these two criteria are met.

Attracting and retaining qualified staff is a major challenge for recreation managers in all sectors particularly in times of low unemployment. This issue is particularly important in the hospitality industry where annual turnover is reported as high as 90% - 130% (Angelo & Vladimir, 1999). The tourism industry is characterized as offering low salaries, long hours, and little career satisfaction. This study found the respondents were less than happy with their compensation and working hours, respondents to this survey were fairly satisfied with their jobs and careers. A better understanding of the factors other than wages and hours that affect job and career satisfaction for this group could assist in attracting and retaining employees in other areas of the recreation and hospitality industries.

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EXTENSITY AND INTENSITY OF GRANTS USAGE IN OBTAINING FUNDING FOR RECREATION SERVICES AND CAPITAL IMPROVEMENT PROJECTS AMONG PARK AND RECREATION AGENCIES IN THE STATE OF MICHIGAN

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Abstract: The purpose of this research was to examine the use of grants among park and recreation agencies in the State of Michigan. A mail-out questionnaire was used to collect data. The sample was obtained from a listing of park and recreation directors. The data indicate that grant writing is regarded as a necessary activity among some leisure services providers to accomplish their aims of providing services and capital improvement projects that otherwise could not be provided. A number of statistics are provided that describes the grants received by the park and recreation agencies. The data also offers insight into grant activity in the state both among the agencies and the agency representatives.

Introduction

Directors of public park and recreation departments consistently cite the need for funding to provide quality leisure services for community residents. It is increasingly through grants that agencies, public and private, seek funding for a variety of social and recreational services and capital improvement projects to fulfill their missions. Overall, the state level grant application process, the source of many of the grants received at the community level in Michigan, has been simplified to the point that a minimum of forms are required that detail the project, the budget, and the time line for completion. Removing the cumbersome literature reviews has made grant seeking a desirable managerial activity. According to Bauer (1999) the primary motivator for grant seekers is not money; it is the interest and desire to accomplish a project, something that has high value to the individual or group. In addition, grant seekers strive for recognition from their agency and their colleagues. Successful grant seekers are persistent in their efforts to secure grants. The attitude required is that grant writing is a necessary management activity, not something to be done when time permits. Although the necessity for and the application for grants has long been recognized and is an on-going process among some park and recreation agencies, little is known about how extensive grant seeking is among public service agencies in recreation nor the amounts nor the kinds of services and capital improvement projects made possible by grant funds.

Objectives of the Research

The objectives of the research are to examine the extensity of use of grants by leisure service agencies in the State of Michigan, that is, how widespread is the activity among park and recreation professionals. This research also examines the intensity or depth of involvement in grant usage relative to:

a. The characteristics of the grants: status of grant usage over the previous fiscal year, current dollar amounts awarded, current sources of grant funds (federal, state, foundations, corporations, individuals, or other), current project/services that grants were used for, and the importance of the grant funds in accomplishing the projects.
b. The characteristics of the agencies: the operational level of the leisure service agency (local, regional, or state), the size of the agency's annual budget, the number of full time employees, and the size (population) of the community or area served.
c. The characteristics of the agency administrator: his/her job title, length of service with the agency, length of service in providing leisure services, his/her responsibility for obtaining grant funding, and the perceived importance of grant writing skills among park and recreation professionals.

The Sample

The sample for this research was obtained from a listing of leisure service agencies who are members of the Michigan Recreation and Park Association. The population consisted of 256 leisure service agencies. The sample size is 89 agencies.

The Data Collection Instrument

The data collection instrument was a mail-out questionnaire. The questionnaire was one page in length printed front and back. It contained a study title, Grant Usage Survey 2001, followed by a brief introduction to the survey. The data collection instrument was divided into three sections, the first section contained questions about the number, size, and source of grants, the kinds of projects grant monies were used for, and the importance of grant writing skills among park and recreation professionals. Section two asked questions about the agency, the kind of agency (public or private, local, regional, or state), the size of the agencies' annual budget, number of full and part time employees, and the population served. The third section asked the agency administrator to state his/her job title, the length of service with the present agency as well as his/her total length of service in the leisure services provision, his/her responsibility in obtaining grant funding, and the current most important problems facing his/her agency. The questionnaire ended by thanking the respondent for completing the survey.

There was one mail out. No attempts were made at reminders nor additional mail out questionnaires to non-respondents. Eighty-nine agencies returned completed questionnaires, a return rate of 34.7%.

Findings—Characteristics of the Grants

- 68 of the 89 agencies (76.4%) participating in this survey used grants to fund a variety of recreation services and capital improvement projects. The number of grants received in FY99-00 ranged from 1 to 13 among the 68 agencies awarded grants. The average number of grants received was 2.07 (s.d.=2.34).
- 48% of the agencies awarded grants in FY98-99 indicated that they increased the number of grants awarded to their agencies in FY99-00, 24% indicated no grant activity, and 17% of the agency respondents replied they had remained the same in FY99-00 as in FY98-99.
- Grants ranged in size from $100 to $260,000 at the low end range. At the high end grants awarded ranged from $6,000 to $2,800,000. The average size of grants received at the low end was $43,900, and at the high end the average size of grants received was $356,100.
- 49% of the agencies awarded grants in FY99-00 stated they had an increase in amount of grant monies received, 8% indicated a decrease in grant funds received, and 16% stated they remained the same as in FY98-99.
- The primary source of grant monies awarded came from state agencies (66.6%) followed by federal agencies (14.5%), foundations (10.1%), and corporations and community agencies, each at 1.5%.
- The primary use of grant funds awarded in FY99-00 supported facility development (36.9%), park development (20.0%), youth programs (13.8%), land acquisition (7.7%), waterfront development (6.1%), equipment for programs/areas (6.1%), recreation programming (4.2%), senior/adult programs/services (3.1%), and transportation (1.5%). Refer to Table 1 for a listing of specific projects funded by grant monies.
- Among those agencies awarded grant funds for projects, agency directors reported that the projects either were unlikely to be completed without the grant funds (60.0%) or grants speeded up the process (24.6%). Only 7.7% of the respondents stated that the projects supported by grants would have been completed without grant funds.
- Among those agencies receiving from 1 to 4 grants in FY99-00 (55 of 65 agencies or 84.6%), 21.8% of those agencies provided recreation services to communities less than 14,999 population, 29.1% serviced populations between 15,000 to 35,999, and 45.5 served community populations from 40,000 to 999,000. Only 3.6% of the 55 agencies that received from 1 to 4 grants in FY99-00 served populations of 100,000 or more.
- There is no relationship between the number of grants awarded and the number of agency full-time employees. The number of full-time employees among those agencies receiving from 1 to 4 grants ranged from none to 240. Approximately one-half of these agencies employed 6 or less full-time persons, 26% employed between 7 to 13 full-time persons, and 23% had more than 13 full-time employees.

Findings—Characteristics of the Agencies/Respondents

- 58 of the 89 respondents (65%) are male and 31 (35%) are female.
- 83% of the respondents are directors or superintendents of park and recreation agencies.
- 85.4% of the agencies are local or regional park and recreation departments, 9.0% are public school agencies followed by private nonprofit leisure service agencies (2.2%). The average annual budget of agencies receiving grants was $2,283,900 in FY99-00. Annual budgets for these agencies in FY99-00 ranged from $45,000 to $56,700,000.
- 79.7% of the respondents claimed full responsibility for securing grants, 7.8% assisted in writing grants, and 6.3% had a grant writer.
- 68 of the 89 agencies (76.4%) used grant monies to fund a variety of recreation services, maintenance, and capital improvement projects.
- The average number of years employed in the present agency among those securing grants was 14.2 years (s.d. of 10.3 years). Among those not securing grants the average number of years employed in their present agency was 9.9 years (s.d. of 9.1 years).
- The average number of years employed in the field of leisure services among those securing grants was 18.8 years (s.d. of 8.9 years). Among those not securing grants was 17.5 years (s.d. of 9.8 years).
- All respondents stated that grant writing skills among park and recreation professionals were extremely important (41.8%), very important (39.5%), or important (13.9%), a total of 95.2%.
- The current first most important problem cited by respondents were funding (49.4%), the need for and condition of facilities (19.3%), staffing (13.3%), marketing services and/or image of the department (4.8%), meeting the needs of community residents (4.8%), meeting ADA requirements (2.4%), and providing quality services (2.4%).
- The second most important problem cited by respondents was staffing (28.2%), funding (24.3%), facilities and/or park development (16.6%), marketing/customer services (11.5%), planning and coordination with other agencies (5.1%), and creative programming (3.8%).

Conclusions

Many agency directors or superintendents in this sample population (76%) are active in the grant writing process. It is, however, not possible to generalize this finding among all park and recreation directors throughout the State of Michigan. The limitations of the sample do not permit such a generalization, as the sample is limited in size (a 35% return rate) and sample respondents were taken from a membership listing obtained from a state recreation association. Despite these limitations, there are some interesting conclusions. Throughout the state there are some very notable activities going on to provide recreation amenities as listed in Table 1. Most of the grant monies received are being funneled to the local and/or regional

levels through state agencies. The state agency in Michigan that administers grant applications for public monies for recreation (among other natural resource concerns) is the state Department of Natural Resources. The application process is a step by step procedure unencumbered by exhaustive literature reviews quite properly characteristic of private foundations. In its simplistic form the state requires a description of the project, a map if needed, a budget, and submission by a given date. To access more foundation monies, directors need to collaborate with recreation resource specialists, sociologists, psychologists, and political scientists among others to access specific expertise that is required for thorough literature reviews in, for example, such areas as at-risk youth. Most of the projects funded in this study (71%) were for capital improvement projects and the remainder (29%) was used for providing recreation services. A balance among both tangible and intangible projects can be achieved through interdisciplinary collaboration. Moreover, agency directors need to carefully examine park and recreation long range planning efforts to find needs to support social and environmental community vitality. With the focus on the health and sustainability of the community, park and recreation managers can find areas where their resources and grant monies can be applied. The extra effort required will position park and recreation departments in new market areas that will strengthen the organization through increased community participation, increased public support, and an improved public image as a comprehensive social services agency.

Agency directors reported that only 8% of the projects funded with grant monies in this study would have been completed anyway, that is, without grant money. This fact is impressive in that it indicates the importance of an active grant writing program among recreation providers. Grant monies made possible an impressive array of areas, structures, facilities, equipment, and services reported earlier in this paper. Overwhelmingly, 95% of directors and superintendents cite the need for grant writing skills among recreation professionals. This fact is particularly true given that 80% of the directors and/or superintendents in this study claimed full responsibility for writing and applying for grant monies, and, secondly, funding was listed as the current first most important problem facing Michigan park and recreation agencies. Some university recreation departments have recognized the importance of grant writing skills among present and future park and recreation professionals by requiring a grant writing course as part of the park and recreation curriculum.

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Table 1. Projects Funded by Grant Money among Michigan Park and Recreation Agencies in FY99-00

Areas	Structures	Facilities	Equipment	Services
Landscaping	Tennis courts	Community Center	Computers	Youth programs
Playground	Waterfront boardwalk	Park improvements	Play equipment	Recreation programs
Land acquisition	Fishing dock	Restrooms		After school programs
River dredging	Picnic shelter	Nature interpretation building		At risk youth programs
Golf course construction	Seawall construction	Marina expansion		Intergenerational programs
Trails	ADA accessibility			Park/greenway planning
Rail trail	Picnic tables			Day care
Parking area				Youth scholarships
In-line skating area				Computer instructional classes
Bikeway				Professional development

RESIDENT CAMP DIRECTORS, SPIRITUALITY, AND WILDERNESS

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Abstract: A vast majority of resident camp directors in this study perceived wilderness to hold spiritual qualities. In addition, resident camp directors also valued educational components for campers and staff as important before they ventured into wilderness areas. Resident camp directors influence the lives of millions of youth and they are an important provider of wilderness experience programs. Resident camp directors' attitudes and preferences toward wilderness can be helpful in the development of the perception of wilderness by the youth staying at their camps. Consequently, camp directors should not be overlooked as a constituent group for both developing future attitudes towards wilderness and support for wilderness management strategies.

Introduction

Organized camping is a well-established industry. Organized camping has evolved into a year-round industry servicing children, adults, families, businesses and other organizations. From 1970 through 1991, over four million boys participated in the Boys Scouts of America and over two and a half million girls participated in the Girls Scouts of American (Chadwick & Heaton, 1996). At least fifty-five hundred resident (overnight) camps operate in the United States (Knudson, Cable, & Beck, 1995; ACA, 1998b). The total economic impact of the eleven thousand two hundred organized camps operation in the Unites States in 1982 was $2,418,192,000 (Organized Camping Resources Center, 1984).

Resident camps can be defined as having a fixed site and permanent facilities located in a natural setting and where campers live for a period of time usually from a few days to eight or more weeks (Mitchell & Meier, 1983; Shivers, 1989). Camps not already located in primitive locales frequently take advantage of trip camping programs to provide wilderness experiences and new challenges for campers (Shivers, 1989; Gager, 1996). The use of wilderness experience programs is of particular interest to this study. The following passage is the *Recommended Wilderness Ethics for ACA Camps:*

> As camp people we have a unique opportunity to teach youngsters and adults to care for and respect, to feel at ease in, and to come to love the natural world around them. We should always seek to go through the woods and forests, the deserts, and the canyon lands and across the mountains so no one will know we have passed that way. We should seek to instill a reverence for all living things, and where possible, point out their interrelationships. (American Camping Association, 1993, p. 227)

The importance of positive values for natural areas is clear from this statement. And one that is both compatible with wilderness management strategies and with educating the public to take proper care of wilderness areas.

Resident camps are among the key providers of wilderness experience programs in the United States (Gager, 1996). Early exposure in life to wild lands can shape attitudes toward wilderness for life (Bixler & Floyd, 1997). Spiritual growth and renewal has been found to be an important reason for engaging in many outdoor recreation activities (Driver, Dustin, Baltic, Elsner & Peterson, 1996). Since camps can play a strong role in forming people's attitudes toward wilderness (Atkinson, 1990), this paper examines some spiritual values associated with wilderness reported by resident camp directors. In addition, this paper examines their opinions on other values of wilderness and its uses. Resident camp directors, who oversee programs under their direction, are an important group to study in the formation of attitudes held by youth.

Methods

The subjects for this study were camp directors. Subjects for this study were selected from the American Camping Association's (ACA) *Guide to ACA-Accredited Camps* (1998a). The guide contains a listing and brief description of all its camp members. Only camps which provided their own summer resident camping program, were included in the study. Specialty camps (e.g., computer camp and sports camps) were not included. A total of 1,240 camps were identified as having a traditional resident camp program. Of this group, 630 camps had an e-mail address listed. All of these camps were contacted first with a post card sent by first class mail. A week later the questionnaire was sent by e-mail. A second questionnaire was sent a week after the first. A thank you note was sent by e-mail to every respondent within 24 hours.

A random sample of 40 camps, which did not have e-mail addresses listed, was contacted and surveyed by telephone to inquire whether the camp's director had access to e-mail. A group of 12 non-respondents (to the e-mail survey) was randomly selected and survey by telephone. Both of these samples' responses were compared with the main data group. They were found to be very similar in character.

As part of a broader focused questionnaire, Likert-type questions were used. The answer categories ranged from *strongly disagree* to *strongly agree* to measure perceived values of wilderness by resident camp directors. An expert panel of three recreation and leisure studies researchers and two resident camp directors served as judges in the evaluation of the content validity and clarity of the original pool of survey questions. Ten camping professionals (e.g.,

program directors) participated in a pre-test of the questionnaire. Wordings of items were modified in response to the results of these efforts.

Results

Approximately 54 percent (68 of 125) of the respondents were male. The mean age for a camp director in this samples was about 40 years old. The mean level of formal education was 17.5 years (with this being skewed to the low side as the top of the scale was "19+" and 18 respondents checked this category). The mean level of experience for camp directors was 8.9 years (range .10 to 35 years). The mean number of years respondents had been camp professionals was 13.2 years (range .25 to 37 years). The average number of years the camps of the directors had been operating was 57 years (range 5 to 112). The percentage of respondents who indicated that they had led a wilderness trip within the past two years was 31.1 percent. The mean number of trips led over this time was 4.2 per person. The percentage of respondents who indicated that they had ever led a wilderness trip while working for a resident camp was 72.8 percent with the mean number of trips equal to 18 per person over this time.

Two items of the questionnaire asked directly about the spiritual value derived from wilderness experiences. On both items over 90% of the respondents agreed or strongly agreed that wilderness experiences did provide spiritual value. Wilderness experiences were felt by 87.1% of respondents felt that wilderness is a factor in regards to one's spiritual health. In response to weighing the relative value of wilderness as a spiritual resource versus recreation, scientific, economic, education, and/or aesthetic use, 80.6% of respondents agreed or strongly agreed that spiritual value was at least of equal value. When asked if they felt closer to God in wilderness areas, 75.8% agreed or strongly agreed, and 57.3% felt that spiritual considerations should be considered in decisions concerning wilderness regions.

On other issues, 87.1% or resident camp directors agreed or strong agreed that camps should inform and educate campers and staff about cultural sensitivity and local people before departure on wilderness trips. Wilderness areas were seen as important to camps by 84.8% of respondents who agreed or strongly agreed with that statement. A high percent of respondents (85.5% agreeing or strongly agreeing) that educational and interpretive programs should be provided to campers before they venture into wilderness areas. And, 82.3% agreed or strongly agreed with the wilderness ethic statement of the American Camping Association cited in the introduction above.

Discussion and Conclusions

Resident camp directors have a great deal of experience both in directing camps and in using wilderness to supplement the camping experiences of resident campers. Their education level is high and their interest in properly preparing campers to fully appreciate their wilderness experiences is also high.

Given this predisposition to support and promote wilderness, resident camp directors may represent a relatively unrecognized advocacy group for wilderness. Wilderness managers may wish to consider tapping this resource where such resident camp directors are found in proximity to the lands that they manage.

Little research has been conducted on the benefits of nature-based recreation that may arise from a possible relationship between nature and the human spirit (Elsner, Lewis, Snell &Spitzer, 1996). For man, wilderness has a spiritual quality (Jaakson & Shin, 1992). Spiritual growth and renewal has been found to be an important reason for engaging in many outdoor recreation activities (Driver, Dustin, Baltic, Elsner & Peterson, 1996).

The high degree of agreement with the importance of spiritual values in association with wilderness should draw attention for future research. While certainly difficult to quantify, the spiritual value of wilderness should be addressed when significant changes are planned in managing wilderness areas. And in learning of these values, resident camp directors may be a rich source of future information.

Resident camp directors are in a unique position to influence future generations in their attitudes and values associated with wilderness. For those who manage these lands, a long range approach in shaping future attitudes and values should include resident camp directors. And this same group may be able to articulate spiritual values of wilderness that are presently left unsaid in much of the literature.

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SOCIAL GROUPS PREFERENCES RELATION TO MOTIVATIONS AND ABILITY LEVELS OF WHITEWATER KAYAKERS

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Abstract: Social groups play an important role in many adventure recreation activities. The purpose of this study was to examine the social group preference relation to motives and ability levels of whitewater kayakers. When participants go out on a kayaking trip they are seeking varying degrees of experiences, a major contributor to that experience comes from the members of their group. Looking at level of ability and motivations as two primary indicators, such indicators should provide deeper insight into social group preferences. Data was collected from 283 participants, through the use of a hand distributed survey instrument on the Deerfield River near the town of Charlemont, Massachusetts. The data was analyzed through the use of a factor-cluster analytical technique using motivational variables and ability levels to identify sub-segments of participants; these were then related to ability level.

Motivations were seen to play an integral part of the social group decision for kayakers' who were there for the challenge compared to the those who were skill/experience oriented. If participants share the same type of motivations for kayaking, then it is likely that they will be drawn to people with similar motivations.

The research found there were significant differences in social group preferences among the three different levels of self reported ability: Beginner, Intermediate and Advanced; and it was made apparent that each ability level had a specific type of social group or groups to which they were drawn.

Introduction

The purpose of this study was to examine the relationship between preferences for social group and motivations for participating in whitewater kayaking. The study also examined the relationship between ability levels and preferred social group. There has been little research done which has examined the importance of the social group in adventure recreation activities (Schuett, 1995), and little research which has attempted to relate motivations to group preference.

When participants go out on a kayaking trip they are looking for varying degrees of experiences and a major contributor to that experience comes from the members of their group. The social group participants can be any number or type of people ranging from family members, peers, neighbors, friends, club associates, or workmates. Relationships with other members tend to be one of the main reasons why people choose the recreational activity in which they participate, and they influence what, when, and how recreation participation occurs (Bergier, 1981). Social interactions can lead to learning more about an individual recreation participant's identity (Kelly, 1990).

Methods / Instrument

Data were collected using a self administered survey instrument that was hand distributed to a population of whitewater kayakers on the different sections of the Deerfield River in Charlemont, Massachusetts during the summer of 2000. The survey looked at the social group preferences, motives and ability level of whitewater kayakers using this river.

The researcher surveyed a purposive sample of kayakers at the put-in and take-outs of each section of river and administered the questionnaire to participants signing up for instructional classes at Zoar Outdoor Adventure Resort. The survey was three-and-a-half pages in length and took approximately three to five minutes to complete.

The questions on the survey were focused on people's ability level/ skill, length of time they had been kayaking, favorite rivers/ rapids, how frequently they kayak with varied groups of people and their motivations.

The different sections of the Deerfield River were chosen for approaching potential respondents because of the wide variety and ability levels of kayakers available. Zoar Outdoor, a local kayaking school, also agreed to allow the researcher to survey their instructional programs, which are primarily directed to beginners. The Deerfield River offers three different sections of river that were used by private boaters of all ability levels, The Dryway (Advanced), Zoar Gap (Intermediate/Beginner) and the Lower Deerfield (Beginner/Instructional). There were 100 surveys collected from each of the three sections of the river during the course of the summer.

Results

Data were collected for this research and analyzed with regard to the relationship of paddlers' motives, ability/ skill levels and type of groups with which they paddle. Principle Components Factor Analysis and K-means Cluster Analysis were employed to develop motivational types. A one way ANOVA test was then used to test if there were any differences between the motivation types and respondent's preferences for participating in kayaking with six selected social groups and preference for paddling alone.

In the initial analysis, three groups of kayakers were identified based upon the section of the Deerfield River that they paddled and self reported ability level. These three groupings were (1) paddlers on the Dryway rapids,

considered as Advanced (X=100); (2) paddlers on Zoar Gap, classified as Intermediate paddlers (X=92); (3) those participating in instructional classes with Zoar Outdoor classified as Beginners (X=91).

A total of 300 surveys was hand distributed to a purposive sample of kayakers, 283 surveys were returned with usable data. Of the missing surveys 15 of them were not returned, and there were two refusals by participants. The number of surveys collected resulted in a 94.3% return rate. The age brackets for respondents ranged from 18 years of age to over 56 years in age. This suggests that a younger age group responded to the questionnaire. The gender of respondents was 189 males and 93 females.

Descriptive Results and Findings

Data were analyzed in two steps. First, descriptive statistics were obtained to illustrate the characteristics of the sample and mean scores for the sample of kayakers that were identified. Second, a factor-analysis with varimax rotated components, allowed for the 18 original motivational variables to be broken down into linear combinations; these were then examined and factor loadings were used to label the factors. (See Table 1.) The labels of each factor represent the meaning of the variables on which the factors loaded (>.05).

The principle component factor scores were then used in a non-hierarchial (K-means) cluster analysis to develop a motivational typology of respondents. A five-cluster solution was developed based on cluster centers, stability of clusters, and interpretability (see Table 2). The first cluster was labeled Close to Nature (2.19066). The second cluster was identified as Internal Control as it loaded positively on this factor (.89820). The third cluster was identified by high mean standard deviation on Challenge (.89391). The forth cluster was identified with the Escapism factor (1.64740), and the fifth cluster could not be labeled directly from the original 5 linear variables. This latter grouping showed that there was an inverse relationship to the factor variables challenge, internal control, and escapism. A cross-tabs test was run using the 5 new cluster types against "ability level"; the fifth cluster was strongly related to advanced ability level, suggesting those respondents of this latter cluster were skill/experience oriented.

Table 1. Rotated Component Matrix (Factor Scores)

Variables	Group 1	Group 2	Group 3	Group 4	Group 5
	Close To Nature	**Challenge**	**Internal Control**	**Social Aspect**	**Escapism**
To View the Scenery	0.913				
To Be Close to Nature	0.880				
Enjoy the Wilderness	0.856				
To Be with Friends and Family					
Challenge and Risk		0.794			
Personal Testing		0.791			
Feeling of Accomplishment		0.733			
Excitement		0.717			
To Think			0.805		
Creativity			0.757		
To Develop My Abilities			0.534		
To Gain Control			0.528		
To Be Known As a Kayaker				0.886	
Recognition				0.880	
To Help Others				0.618	
To Get Away					0.790
For Relaxation					0.784
To Slow My Mind					0.745

Extraction Method: Principle Component Analysis

Table 2. K-Means Final Cluster Centers to Show the New Cluster Centers

	Close to Nature	Internal Control	Challenge	Escapism	Skill/ Experience*
REGR factor score 1 for: **Close to Nature**	**2.19066**	-.56175	-.16590	-.41595	.20886
REGR factor score 2 for: **Challenge**	.15136	-.07950	**.89391**	-.61128	-.58329
REGR factor score 3 for: **Internal Control**	.84907	**.89820**	-.32911	.03304	-.73619
REGR factor score 4 for: **Social Aspect**	-.01020	-.59871	.30596	.16589	.15973
REGR factor score 5 for: **Escapism**	.46958	-.42970	.18001	**1.64740**	-.66468

*Label identified through the use of cross-tabs

Social group preferences were then analyzed with One-way ANOVA, using a Post Hoc Scheffe test to determine differences in motivation in their expressed social group preferences in kayaking the Deerfield River (see Table 3). The ratings of social group preference ranged from "Always" = 1 to "Never" = 5.

The results of the One-way ANOVA and Post Hoc Scheffe tests indicates motivational types were differentiated on their preferences for paddling with "Friends" and "Fellow Paddlers of Similar Experience". The Post-Hoc Scheffe test suggests the motivational types "Challenge" and "Experience Oriented" were differentiated in preferences for paddling with friends and paddlers of similar experience level, this can be seen in the super-script.

A One-way ANOVA test was also performed to see if there was any difference among ability levels and preferences for the Social Group (see Table 4). This table shows that there is significance among all levels of ability in their preferences for social groups while paddling. The Advanced level group differs from both the Beginner and Intermediate groups in preference for paddling with "Friends", "People in Classes or Instruction Groups", "Teachers and Mentors" and "With a guide". Differences among ability levels are displayed by the superscripts in Table Four. The Advanced group differs from beginners on "preferences for paddling with fellow paddlers of a similar experience," and in their preference for paddling "alone." Advanced kayakers lower means on these two variables indicates a higher preference for paddling alone or with those of the same experience level.

The Beginner and Advanced level groups differ from the Intermediates on the preference for "Groups from Outing Clubs or Organizations" variable. It is speculated that Beginners differ from the Intermediates in that they do not want to feel uncomfortable in front of more experienced people. Beginners want to be with people who are kayaking at the same level. The Advanced level group on the other hand do not want to be involved with organization Groups or Clubs, this group is much happier paddling on their own or with people they are comfortable with at the same skill/experience level.

Table 3. Social Groups vs. Motivational Types

Preferences	Close to Nature[a]	Internal Control[b]	Challenge[c]	Escapism[d]	Skill/ Experience [e]	F=	Sig.
Friends	**2.05**	**1.91**	**2.17[e]**	**2.00**	**1.50[c]**	3.475	**0.009**
People in Classes or Instructional Groups	3.00	3.77	3.46	3.32	3.58	2.023	0.092
Alone	3.94	4.38	4.33	4.42	4.17	1.269	0.283
Fellow Paddlers of Similar Experience Level	**2.53**	**2.25**	**2.62[e]**	**2.37**	**2.03[c]**	3.533	**0.008**
Teachers/ Mentors	3.10	3.27	3.34	3.03	3.04	0.798	0.528
Groups from Outing Clubs or Organizations	3.95	3.82	3.87	4.10	3.87	0.383	0.820
With a Guide	3.60	4.10	4.19	4.00	3.90	0.305	0.269

- Superscript shows difference between Social Groups on each of the Motivational Types.

Table 4. Level of Ability vs. Social Groups

Preferences	Beginner[a]	Intermediate[b]	Advanced[c]	F=	Sig.
Friends	**2.33[c]**	**1.72[c]**	**1.61[ab]**	12.033	0.000
People in Classes or Instructional Groups	3.06[c]	3.74[c]	3.76[ab]	11.311	0.000
Alone	4.63[bc]	4.32[a]	3.83[a]	19.277	0.000
Fellow Paddlers of Similar Experience Levels	**2.65[c]**	**2.30**	**2.09[a]**	7.451	0.001
Teachers/Mentors	2.69[c]	3.41[c]	3.50[ab]	14.336	0.000
Groups from Outing Clubs or Organizations	4.11	3.64[c]	3.91[b]	4.644	0.010
With a Guide	3.51[c]	4.15[c]	4.33[ab]	13.024	0.000

- Superscript shows differences between the Ability Levels on each Social Group.

This study lends some insight about understanding social group preferences of one group of adventure recreators, whitewater kayakers. Motivations were seen to play an integral part of the social group decision for kayakers' who were there for the challenge compared to the those who were skill/experience oriented. If participants share the same type of motivations for kayaking, then it is likely that they will be drawn to people with similar motivations.

The research also found there were significant differences in social group preferences among the three different levels of self reported ability: Beginner, Intermediate and Advanced. It was made apparent that each ability level had a specific type of social group or groups to which they were drawn, and it was also apparent that ability was a more discriminating variable than motivational type in differentiating paddlers' preference for social group.

Discussion

Whitewater kayaking experience is multifaceted; therefore, the reasons why these individuals pursue this adventure recreation activity are varied. Even though this type of adventure recreation involves more risk and danger than passive outdoor recreation pursuits such as picnics and bird watching, the social aspect is still an important underlying dimension (Schuett, 1995). We were able to see the differences among ability levels in their preferences with whom they preferred to kayak.

The Beginners appeared to prefer "people in classes or instructional groups" and "Teachers/Mentors," this suggests that they were looking for people who were most likely just starting to kayak and are less skilled. This would place the beginner in a non-threatening environment where they are most likely surrounded by people of similar ability.

By examining the means in Table 4, the Intermediate ability level preferred paddling with "Friends," and also showed a preference for "Fellow Paddlers of Similar Experience." This indicates intermediate level kayakers have developed their abilities/skills to a certain level and are looking for people with whom to share a good time; they are less focused on honing their skills/abilities.

Advanced level kayakers looked for "Friends" and "Fellow Paddlers of Similar Experience," they were differentiated from the intermediate and beginner level with a lower mean score on the preference for paddling with "Friends" and more differentiated from beginners in preference for paddling with "Fellow Paddlers of Similar Experience". This tells us that they are not looking to improve upon their skills and abilities, but participating in kayaking for the social aspect of being with friends and people who share the same abilities.

All of the social group variables involve kayaking with others and few participants' kayak alone (see means on Table 4). The importance of the social groups in kayaking was apparent, kayaking alone is not seen as desirable. All preferences with the exception of "alone" involve social contact. Kayakers consider paddling a social sport, but the motivational types of participants and ability level groupings vary in preference with whom they prefer paddling.

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Management Presentation

HUMAN PREFERENCE FOR ECOLOGICAL UNITS: PATTERNS OF DISPERSED CAMPSITES WITHIN LANDTYPE ASSOCIATIONS ON THE CHIPPEWA NATIONAL FOREST

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Abstract: Forest Service landscape architects sought a method for determining if people showed a preference for certain landscape-scale ecosystems and if ecological classification units could be used in visual resource management. A study was conducted on the Chippewa National Forest to test whether there was a systematic relationship between dispersed campsite locations and landtype associations (LTA) (most National Forests allow "free-choice" camping; sites with repeated use are inventoried and monitored as "dispersed campsites"). A statistically significant pattern exists in dispersed campsite locations as a function of LTAs. End moraine and sand plain LTAs contain the most campsites, while people apparently show little inclination to pitch their tents in the peatlands and ancient lakeplains. The test reinforces many conclusions from existing landscape preference research, such as people's preference for water bodies (Kaplan & Kaplan, 1989; Herzog, 1985; USDA, 1974; Ellsworth, 1982). The findings also indicate that landscape scale management of visual resources using Ecological Classification and Inventory units may be appropriate and that LTAs could be used as a forest planning unit that "links" the social and natural environment.

Introduction

Patterns in human preference for different landscapes in the Forest Service *Scenery Management* and *Visual Management Systems* are established through criteria of landform, rock-form, vegetation types, and bodies of water. Although descriptions or analysis of characteristic succession or disturbance patterns, and associated visual changes to the landscape, are not discussed at length in the systems, the criteria used to identify the most visually scenic landscapes are very similar to the criteria used to inventory and classify ecological units in the Ecological Classification and Inventory System (USDA, 1974; 1996).

Predictable Human Adaptation to Environments

Anthropologists have long recognized a connection between human cultural adaptations and the biophysical environment. In 1911, for example, Church described the vast area of steppes and deserts extending across Europe and Asia and the associated diverse ethnic groups of Negroes, Hamites, Semites, Indo-Europeans, and Mongolians, who all developed the behavioral adaptation for nomadic herding as their main occupation. People tend to take customs, social organization structures, and economic tendencies with them when migrating (Church, 1911) and, as described by Alfred Crosby in his description of the European Colonial invasion of the Americas, they will modify the composition, structure and function of a newly encountered ecosystem to create landscapes with which they are familiar (1992). Those ecosystems in the Eastern United States which failed to support the European, agrarian model fell into public ownership; hence most eastern National Forests share common features of non-arable land such as steep topography, infertile soils, cold climate, or a high proportion of wetlands.

Studies in visual perception by environmental psychologists such as Steve and Rachel Kaplan, also indicate that human response may be psychologically or physiologically affected by adaptation to the environment (1989). Humans tend to prefer the environments in which their survival is most likely or those that include features or characteristics that meet certain psychological needs, such as "making sense, stimulation, and complexity". They believe that the more "regular" and predictable patterns in human visual preference are the psychological perceptions of landscapes they have identified through their research (Kaplan, 1979).

The Purpose for a Dispersed Campsite Analysis on the Chippewa National Forest

Land management agencies are increasingly adopting ecologically based methods for planning and carrying out management activities such as timber harvesting. But how well do systems developed for the biophysical environment relate to forest resources such as recreation and scenery, which are more human-focused and perceptual in nature? Landscape architects, recreation planners, and other personnel within these agencies who address people-forest interactions face the question of how to best incorporate ecological classification systems into existing recreational and visual planning systems, like the Scenery Management System. Research and past planning experience as described above supports the relationship between people's preferences for landscapes and the presence of certain biophysical features. If this relationship could be shown to occur in patterns, and extended to ecological classification units like landtype associations, then landscape architects and recreation planners could link their planning systems with ecological classification systems to provide a common foundation and language for resource planning.

Forest Plan revision efforts for the Chippewa National Forest adopted landtype associations as planning units for new management prescriptions. Landscape architects involved in the project decided to inventory, analyze, and set draft visual management goals for the forest using landtype associations as the planning unit to improve consistency and integration with other resources. After completing the inventory stage of the process, they wanted to "test" whether or not they might be "on the right track," in terms of whether or not people show a preference for landscape scale areas on the Chippewa Forest. The following statistical analysis of dispersed campsite locations by landtype associations was conducted to determine whether or not a pattern existed in campsite locations (indicating a preference of some landtype associations over others) or if people preferred all landtype associations equally for dispersed camping.

Methods and Materials

Why Use Dispersed Campsite Locations?

USDA Forest Service camping regulations allow "free choice" camping outside designated, developed campgrounds. People may choose where they would like to camp, within specified distances from roads, trails, rivers and lakes, unless the management prescription for an area (e.g., a Research Natural Area) specifically prohibits camping. This activity is called "dispersed camping." Forest Service personnel monitor where people choose to camp, and sometimes, like on the Chippewa Forest, they will note the locations where repeated use occurs. Since the general public, or at least those that engage in dispersed camping, choose where they want to camp based on their own likes and dislikes, the locations of the dispersed campsites give some indication of environmental preference. As managers, Forest Service personnel do not know whether or not the choice is based on visual, access (closeness to road, etc.), activity association, or some other factor; however, the locations, and any *patterns* in the locations, do give some indication of the landscapes in which people like to camp.

Gathering Data and Setting Up the Test

The boundaries of the Chippewa Forest landtype associations (LTAs) were established prior to the dispersed campsite test by a team of ecologists, soil scientists, and other personnel in cooperation with scientists from other agencies and forests. 405 dispersed campsites were located on the Chippewa National Forest using a global positioning system. Two of the dispersed campsites occurred next to Leech Lake and fell within the Leech Lake LTA. Given the extreme size of Leech Lake (87,644 acres) and that the lake comprises almost the entire landtype association, the Leech Lake LTA (and the two dispersed campsites) were excluded from further analysis. The Cass Lake (15,900 acres) and Lake Winnibigoshish (56,764 acres) were also excluded from the test, again, due to the extreme sizes of the lakes and that the LTA boundaries followed the lakeshore boundaries and did not include dry land on which dispersed camping could occur.

Results

The Kolmogorov-Smirnov Goodness of Fit test was used to determine whether or not a pattern existed in dispersed campsite locations. H_o, the null hypothesis, was that people prefer all landtype associations equally; the number of dispersed campsites within a LTA related to the percent area of the forest the LTA comprised. For example, if a LTA comprised fifty percent of the forest area under consideration, then fifty percent of the dispersed campsites were found within the LTA. H_o, the suggested alternative hypothesis, was that the number of dispersed campsites within an LTA did not relate to the proportional area of the Forest an LTA comprises and people do not prefer all ecosystems equally for dispersed camping. Table 1 shows the data used in the test and Table 2 indicates the results of the test.

The largest value in /Sx-Fx/ (16.72) is greater than T.95 (7.2) and therefore H_o is rejected; people do not prefer all landtype associations equally for dispersed camping and some sort of pattern exists in the locations. The bar graph in Figure 1 illustrates the differences between the actual and expected number of dispersed campsites. The Bemidji sand Plain shows the greatest difference between expected and actual numbers of dispersed campsites. The Marcell Moraine shows the next highest difference between expected and actual numbers with *more* than the expected number of dispersed campsites. The Black Duck Till Plain and Bena Dunes and Peatlands also have high differences with *less* than expected numbers of dispersed campsites. The Itasca and Sugar Hills moraines have slightly more than the expected number of sites while the other Till Plains (Hill City and Guthrie) have slightly less than expected. Far less than the expected number of campsites also occur within the Deer River Peatland and Agassiz Lake Plain.

Discussion

The patterns in dispersed campsite locations, and the characteristics of the associated LTAs, are generally consistent with what could be expected based on results from existing research in visual preference and perception. The landtype associations with more than the expected number of dispersed campsites have characteristic hydrologic patterns and vegetation that people typically rate highly in visual preference and perception studies. LTAs with both rolling and nearly level terrain have more than the expected number of campsites, which mirrors the mixed results for topographic preference in several studies. And, while some studies that indicate preference for characteristic community structure and disturbance patterns do exist, Forest Service management techniques, such as harvesting timber and wildfire prevention, make connections between the study results and existing research problematic. Ultimately, however, the results of the dispersed campsite analysis generally support the use of landtype associations as a planning unit for scenery management and encourage the use of multiple scales of ecological classification units in land management planning for both the natural and social environment.

Table 1. Data for Kolmogorov-Smirnov Goodness of Fit Test for Dispersed Campsite Locations on the Chippewa National Forest by Landtype Association

H_o: People prefer all ecosystems equally; the number of dispersed camping sites relates to the percent area of a forest an LTA comprises.

H_1: People do not prefer all ecosystems equally; the number of dispersed sites does not relate to the area of a forest and LTA comprises.

Landtype Association	Acres	% Land Base	No. Dispersed Sites	Expected % (FX)	Sample % (SX)	/Sx-Fx/
Agassiz Lake Plain	75,295	5.24%	1	0.25	5.24	4.99
Bena Dunes/Peatland	200,413	13.95%	9	2.47	19.19	16.72
Bemidji Sand Plain	93,009	6.47%	102	27.65	25.66	-1.99
Black Duck Till Plain	283,018	19.70%	36	36.54	45.36	8.81
Deer River Peatland	57,660	4.01%	0	36.54	49.37	12.83
Guthrie Till Plain	72,874	5.07%	17	40.74	54.44	13.70
Hill City Till Plain	47,892	3.33%	4	41.73	57.77	16.05
Itasca Morain	186,142	12.95%	59	56.30	70.73	14.43
Marcell Morain	142,450	9.91%	110	83.46	80.64	-2.81
Rosie Lake Plain	227,368	15.82%	49	95.56	96.47	0.91
Sugar Hills Morain	50,776	3.53%	18	100.0	100.0	0.0
Total No. of Sites			405			

TO = 16.72 > T95 = 7.2

Reject H_o

Table 2. Actual vs. Expected Numbers of Dispersed Campsites on the Chippewa National Forest by Landtype Association

Landtype Association	Expected No. of Campsites	Actual No. of Campsites	Difference
Agassiz Lake Plain	0.05240111	0.002469136	-0.049931976
Bena Dunes/Peatland	0.13947625	0.022222222	-0.117254024
Bemidji Sand Plain	0.06472907	0.251851852	0.187122786
Black Duck Till Plain	0.19696471	0.088888889	-0.10807582
Deer River Peatland	0.04012814	0	-0.040128137
Guthrie Till Plain	0.05071623	0.041975309	-0.008740922
Hill City Till Plain	0.03333016	0.009876543	-0.023453612
Itasca Morain	0.12954443	0.145679012	0.016134584
Marcell Morain	0.09913724	0.271604938	0.1724677
Rosie Lake Plain	0.15823542	0.120987654	-0.037247765
Sugar Hills Morain	0.03533726	0.044444444	0.009107186

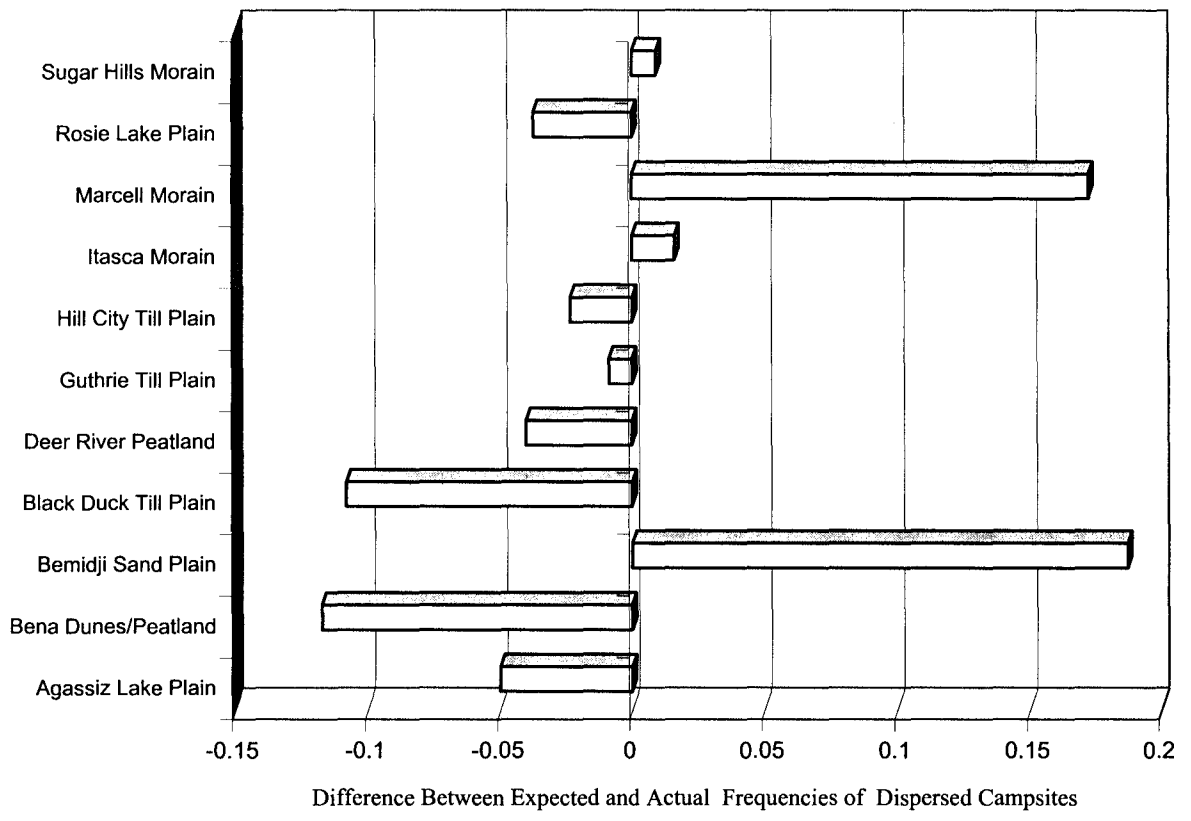

Figure 1. Expected vs. Actual Dispersed Campsite Locations on the Chippewa National Forest by Landtype Association

Hydrologic Features

The results of the dispersed campsite location analysis on the Chippewa National Forest indicate that the single largest determinant in campsite locations may be the "recreation quality," quantity, and distribution of hydrologic features. Kaplan and Kaplan (1989) state that, from their experience with visual perception research, the presence of water so greatly influences visual preference and perception studies, that images with hydrologic features are not used unless the study focuses specifically on water bodies. People show such an overwhelming desire to look at, and possibly be near, water, that the use of images with hydrologic features skews research results unless *all* the images in the study include water features. The results of the dispersed campsite study support the Kaplan's assertion given that the campsite distances from hydrologic features range between 4 meters to 20 meters.

In addition, the results of the dispersed campsite study, and the patterns in campsite locations, also support existing research on the types of hydrologic features people prefer. Herzog found that people most preferred hydrologic features in mountainous settings followed by large lakes, rivers and then swamps (in Kaplan & Kaplan, 1989). Ellsworth and Hammit looked at differences in preference for rivers, marshes, and bogs, and found that images of open water bodies with clear, reflective surfaces rated highly (in Kaplan & Kaplan, 1989). Characteristic hydrologic features occur in patterns and vary between landtype associations on the Chippewa Forest. For example, very large, clear lakes that are distributed widely across the landscape are more common in the end moraine, sand plain, and till plain landtype associations. Sand plains also tend to have sandy beaches and lake bottoms that people could find more favorable for swimming and sun bathing. Sport fisheries for walleye and other species are also best in these lakes. Lakes occur less frequently in peatlands and lake plains and are more likely to have "encroaching" wetland vegetation surrounding the perimeter and mucky bottoms. These characteristics could discourage swimming, sun bathing, and other recreation activities along the lakeshore.

Generally, those LTAs with more than the expected number of campsites (Bemidji Sand Plain and Marcell Moraine) contain hydrologic features that provide great fishing and shoreline recreation opportunities. Those LTAs with less than the expected number of campsites, like the Black Duck Till Plain and Bena Dunes and Peatlands, have relatively fewer lakes, lakes with less favorable fishing opportunities, and larger scale wetlands and forested wetlands. Dispersed campsites in these LTAs tend to occur along rivers.

Topographic and Geologic Features

The conclusions from studies in visual preference and perception of landforms appear somewhat variable. Brush (1981) found that people prefer more mountainous landscapes. In 1987, Herzog found that people prefer mountains, canyons, and desert rock formations equally (in Kaplan & Kaplan, 1989). The results of the dispersed campsite analysis also show preference for different terrain and geologic features. The Chippewa Forest is relatively flat. More than the expected number of dispersed campsites occurred in the more rolling terrain of the Marcell Moraine and the more level terrain of the Bemidji Sand Plain.

Characteristic Flora

Forest composition may affect preference ratings due to people's expectations for what should occur in the landscape (Yarrow, 1966 in Ribe, 1989). Several studies indicate a higher preference for hardwood species over conifers (e.g., Ribe, 1989.) Klukas and Duncan in 1967 found that people in Minnesota prefer mature pines to a deciduous forest (in Ribe, 1989). During the development of the current Forest Land and Resource Management Plan for the Chippewa Forest, people voiced a concern for maintaining and promoting the "North Woods" character of the landscape. This character was defined, in part, by the presence of large white pine, red pine, and northern hardwood forests (USDA, 1986).

Overstory and ground flora composition also occurs in patterns between different landtype associations (LTAs). Red and white pine forests, with large diameter "character trees," characterize the Bemidji Sand Plain landtype association. Northern hardwoods forests are typical for the end moraine LTAs, such as the Marcell, Itasca, and Sugar Hills associations. In general, the results of the dispersed campsite study are consistent with existing research and public comments during the development of the current Forest Plan; those LTAs with more than the expected number of campsites have characteristic vegetation patterns that coincide with what people describe as the desired "North Woods" character for the landscape.

Community Structure

Community structure, in the following discussion, refers to both the vertical structure of a forest and the age structure of the community. Several studies indicate that people prefer mature forests with large diameter trees (e.g., Brush, 1979). Kaplan and Kaplan (1989) attribute the apparent dislike of younger forests to a "blocked" appearance. They assert that people like to feel as if they can negotiate freely throughout a space and the multitude of stems in a young stand appears restricting and possibly dangerous.
Timber management activities within the National Forest and cutover logging make correlations between the results of the dispersed campsite analysis and community structure somewhat problematic. Characteristically, without management by people, some forest communities may have a more "blocked" appearance than others. For example, jack pine trees tend to have relatively small diameter trunks and grow in dense "thickets" following catastrophic crown fires. In Michigan expansive outwash plains covered by primarily jack pine forests are classified as one landtype association (USDA, 1993). Cedar, tamarack, or other forested wetland areas on the Chippewa Forest currently have the dense or "visually impenetrable" appearance that people may not like due to logging practices early in the last century; these areas are not typically managed for timber currently, however they have not developed the "large tree character" people prefer. Forested wetlands are characteristic of several landtype associations that have less than the expected number of campsites, such as the Deer River Peatland and Rosy Lake Plain. Over time, the community structure of these landtype associations, and their appearance, may change.

Disturbance Patterns

Fire repression efforts and timber harvesting practices make any connections between dispersed campsite locations and characteristic disturbance patterns difficult. Regardless of the type of disturbance causing the event, the presence of downed woody debris negatively affects visual preference ratings (Ribe, 1989). People do not like the appearance of a burned landscape (e.g., Brush, 1979, and Ribe, 1989). However, studies also show that people like the appearance of some landscapes after ground cover recovery (USDA, 1994). Studies by Buhyoff and Leuschner (1978), Buyoff, Wellman, and Daniel (1982), and Buyoff, Leuscher, and Wellman (1979) found that the visual results of insect infestations decreased visual preference.

The Bemidji Sand Plain, with more than the expected number of dispersed campsites, is a fire-dependent community, although large-scale, catastrophic crown fires may not be common. Currently wildfires are suppressed and the timber is managed for conifer saw logs (USDA, 1986). Many of the landtype associations with less than the expected number of campsites, like the Deer River Peatland and Agassiz Lake Plain, are primarily forested and open wetlands that could experience flooding, insect infestations, windthrow, and possibly some fires. These areas are typically not managed for timber production due to their wetland character.

Conclusion

The landtype associations on the Chippewa National Forest with more than the expected number of dispersed campsites (end moraines and sand plains) have characteristic hydrologic and vegetation patterns that typically rate highly in visual preference and perception studies. Those landtype associations with less than the expected number of dispersed sites are characterized by large-scale wetlands and relatively few lakes. Systems like the Forest Service Scenery Management System use similar criteria to evaluate landscapes as those used in ecological classification systems (ECS). Human uses occur in patterns, such as dispersed campsite locations, that relate to ecological boundaries like landtype associations. Ecological classification can be used to inventory, analyze, and manage social environment factors and provide a "link" between humans and other species.

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Roundtable Discussions

CREATING RECREATION PARTNERSHIPS ON PRIVATE AGRICULTURAL AND FOREST LAND IN THE URBAN NORTHEAST: A CASE STUDY FROM THE GREAT MEADOWS OF THE CONNECTICUT RIVER

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Abstract: This paper explores the premise that privately owned open space is vital for meeting future recreation demands in the urban Northeast. A case study in the Great Meadows of the Connecticut River in the Hartford, Connecticut metropolitan area is used to illustrate the challenges in promoting recreational access and open space preservation in a privately-owned held farming and riparian forest landscape. This case study includes a survey of local landowners about allowing recreation on their land. The conclusion of this paper reports on the discussion generated by the presentation of this paper at an NERR roundtable session.

Introduction

The Northeastern United States is becoming increasingly urbanized. In fact, this increase in developed land area has far outpaced regional population gains, causing a precipitous loss in farmland in the region (USDA Agricultural Census, 1997). This urban sprawl development has also taken its toll on the recreation opportunities previously afforded by nearby natural areas. At the same time, recreation demands have increased on remaining public facilities.

In many traditional rural landscapes in the Northeast, recreation opportunities such as hunting, fishing and hiking were provided by informal arrangements with private farm and forest land owners. For example, in Massachusetts many of the regional trails including the Metacomet-Monadnock trail are primarily located on private land. Unfortunately, as increased residential development divides large forest and farms into smaller home-sites, these informal recreation agreements are no longer honored. While purchasing land for public recreation use is one solution to this dilemma, the fact remains that funding for these purchases is increasingly limited and unable to keep up with the demand for open space preservation in urbanizing areas.

The premise of this paper is that privately owned open space land will become increasingly important for meeting future recreation demands in the Northeast. Recreation planning will require innovative strategies for promoting open space preservation and recreation access to private agricultural and forest lands. This paper will focus on generating ideas for developing the public-private partnerships that are necessary for recreation collaboratives to work. In particular, participants at an NERR roundtable discussion were asked to bring their own experiences and ideas to address the following questions:

- What role, if any, does recreation development play in preserving working farms and forests in the urban Northeast?
- What cooperative agreements among private landowners might foster public access and recreation development?
- What organizational structure appears most beneficial for recreation partnerships?
- What is the role of the recreation manager or planner in developing recreation partnerships on private land?

In order to further the dialogue about these issues, a case study will be presented of the Great Meadows of the Connecticut River, a unique natural and cultural resource in the heart of the Hartford, Connecticut metropolitan area. According to planner, William H. Whyte (1968) in his book Last Landscape, *"The most beautiful expanse of open space in New England is the Glastonbury Meadows, a natural expanse of park-like pasture land bordering the Connecticut River, complete with white steeples in the background. Here, only six miles from downtown Hartford, is the epitome of what the New England landscape should look like."* Unfortunately, the Meadows continue to be threatened by encroaching development and conversion of farming to more incompatible uses. This case study describes an effort to promote recreational access and open space preservation in this privately-owned farming and riparian forest landscape.

Great Meadows Case Study

Introduction

The research for this case study is based on two projects conducted by graduate students in the Department of Landscape Architecture and Regional Planning under the direction of Professor Robert Ryan. Initially, seven students conducted an inventory and analysis for *The Great Meadows Study*. This report was initiated and funded by the Great Meadows Conservation Trust, a local land trust devoted to protection of the Great Meadows. The study provided an overview of the resources and existing land uses, and included some recommendations for future management and protection of the Meadows. Following the Great Meadow Study, masters student Juliet Hansel conducted an independent survey of local farmers to understand attitudes about land use and protection in the Great Meadows as part of her masters thesis, Understanding Farmer Attitudes about Farmland Preservation in the Urban Fringe (Hansel, 2001). Some of the preliminary results of this thesis are presented here.

The Great Meadows are located on the banks of the Connecticut River within the towns of Glastonbury, Wethersfield, and Rocky Hill just south of Hartford (Figure 1). Within easy commuting distance to the heart of Hartford, these towns are examples of communities on the urban fringe. As some of the oldest towns in Connecticut and because of their location within the fertile Connecticut River Valley, they also have a strong agricultural heritage. Development in these areas creates conflict over the remaining open spaces, such as the Great Meadows. Decline of farmland, growing demand for recreational land, and the scenic and cultural value of open spaces are concerns held by many members of the Great Meadows Conservation Trust as well as other community members. One of continuing struggles for these communities is to determine how to balance a variety of community needs while still protecting the valuable natural resources of the Meadows.

The Great Meadows consist of approximately 4,000 acres of floodplain and represent some of the largest tidal wetlands in Connecticut (Figure 2). The Meadows are comprised of three main types of habitat – floodplain meadows, wetlands, and wooded riparian zones. The majority of the land is in private ownership and approximately 40% is farmland, which is the dominant land use; approximately 1600 acres are farmed by 25 local farmers. Thirteen-hundred acres are tilled for a variety of vegetable crops and 300 acres are used for pasture or hay.

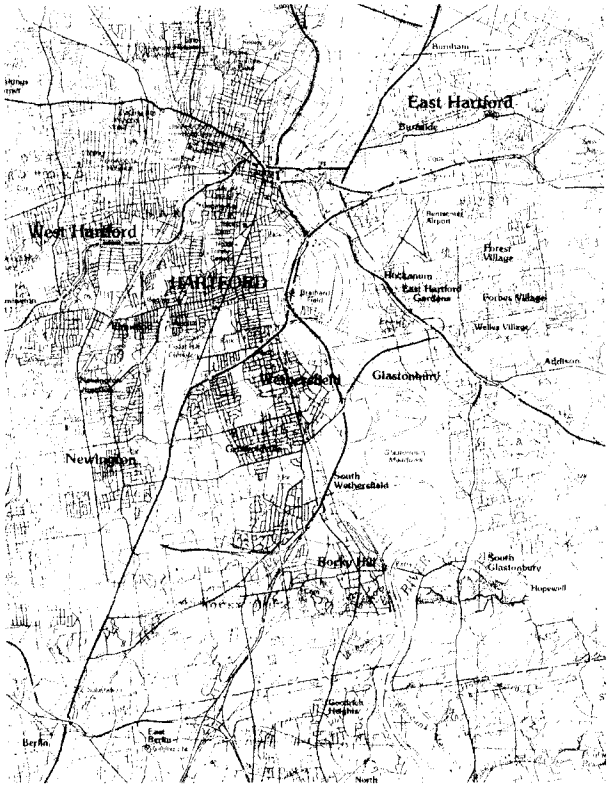

Figure 1. Greater Hartford Metropolitan Region
Source: U.S. Geological Survey, 1994

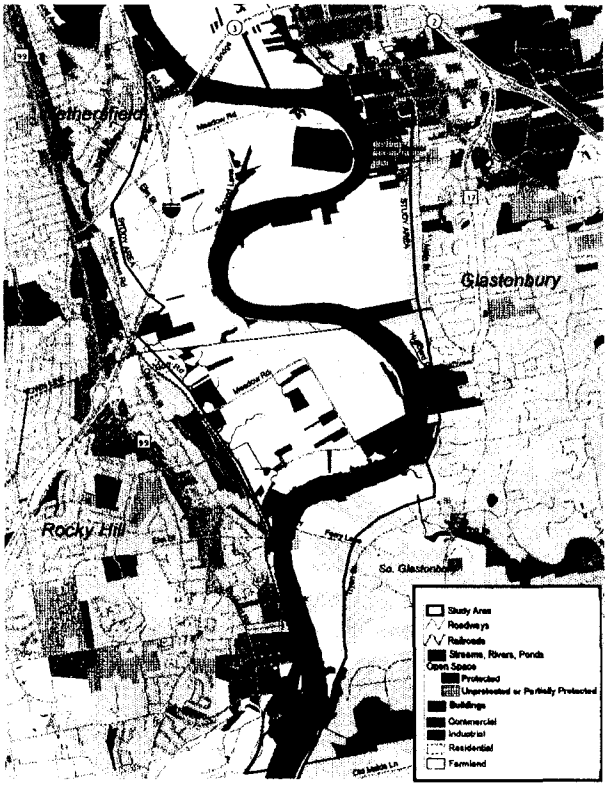

Figure 2. Great Meadows of the Connecticut River
Source: Great Meadows Study, 2001

In this rapidly urbanizing area the future of farming is a major concern. Statewide, Connecticut is losing 8,000 acres (approximately 80 farms) a year. Regionally, the Hartford area continues to grow and the surrounding towns continue to develop into traditionally farming areas. Locally, these three towns have witnessed fewer farms as older farmers sell to developers and new and younger farmers move elsewhere or do not continue to farm. There are few protective measures in these three towns to promote farmland preservation and enrollment in state and federal farmland protection programs is low, as well. The economic viability of farming is closely linked to the availability of farmland and therefore closely tied to management and protection of the Meadows, which as a whole represents one of the last large open spaces and viable farmland in the area.

Public access to the Meadows overall is limited by physical barriers, such as Interstate 91, and there are few public entry points (Figure 3). Periodic flooding also inhibits access to many areas. However, despite these restrictions and the fact that much of the land in the Meadows is privately owned, a variety of low-impact recreational activities occur with the permission of the landowners. The

Figure 3. Farmland and Public Access Area in the Great Meadows

types of activities that occur in the Meadows include hunting, fishing, and birdwatching on private property. Local sporting clubs have arrangements with property owners that allow them to hunt and fish on private land. Hiking, biking, and horseback riding occur on the existing public roads and in a few small parks on the periphery. In addition, there are a few public boat launches for canoes and small powerboats.

Suggestions to increase public access to the Meadows for recreation have met with resistance from local farmers, other landowners, sporting club members, as well as members of the Great Meadows Conservation Trust. They express concerns that increasing access will not only interfere with existing farming activities, but will also pose safety concerns for hunting, and could be detrimental to the wildlife habitat and natural ecosystems of the Meadows. At present the informal arrangements that exist between landowners and users in the Great Meadows are considered to be preferable to formalized trail networks, which have been proposed in the town master plans. However, with growing residential populations and declining open land these communities are recognizing an increased public demand for protected open spaces and recreational opportunities. Such demands may include more trails for biking and hiking, expanded access for motorized vehicles, recreational fields, public facilities, and boat launches.

Landowner Study

The recent University of Massachusetts studies of the Meadows considered the impacts of existing uses as well as how future trends may influence the recreation uses of this area. The research conducted by graduate student Juliet Hansel included a survey of farmers in the Meadows. The main objectives of the survey research were to understand farmer attitudes about land protection, research current practices, and determine farmers' willingness to collaborate with other community groups. The survey tool was a written self-administered questionnaire. In addition, the research was supplemented by some site visits and phone interviews with farmers. With a total of 24 eligible farmers, the response rate was approximately 75%. Of those responding, 50% were part-time farmers. Most managed their farm by themselves or with assistance from other family members. Of the respondents, 44% were between the ages of 30 and 49, 33% were 50 to 69 years old, and 22% were over 70.

Survey Results

Although the survey included questions about a variety of issues relating to farm viability and farmland protection, the information on farmer attitudes about recreational activities and access to private farmland were the most useful for the topic of this workshop. The survey asked respondents to provide information about their attitudes toward public use and access of the Meadows as a whole as well as for their own policies about recreational activities and access on their private farmland. The survey questions were a combination of scaled responses, open-ended questions, and multiple response options. Using a 5-point Likert scale, respondents were asked to indicate to what extent they agreed or disagreed with a series of statements. Respondents as a whole tended to strongly agree that increasing access to the Meadows would threaten farming practices (Table 1). They were more neutral on whether existing recreational uses of the Meadows would interfere with their ability to farm effectively.

A comparison of the types of activities allowed on Meadows farmland with landowners' permission revealed that farmers appear to approve of activities which can occur on existing roads such as hiking and biking, and were less willing to allow access for skiing and horseback riding (Table 2). Written comments and interviews did not reveal why this distinction, but one explanation may be that the nature of skiing and riding allow for coverage of greater distances than hiking and can occur on more diverse terrain than biking and therefore may pose a greater threat to crops. These differences may explain reluctance on the part of farmers to allow activities that may encourage deeper penetration to untracked portions of their land. On the other hand, a high degree of willingness to permit hunting and fishing can be explained by existing partnerships between local sporting clubs and farmers.

Table 1. Farmers' Attitudes about Recreation and Public Access on Private Farmland

Survey Statement	Mean[a]	SD[b]
Increasing public access to the Meadows would threaten current farming practices.	**4.61**	.85
Hunting and fishing activities have interfered with your ability to farm effectively in the Great Meadows.	**1.67**	.77
Other recreational activities have interfered with your ability to farm effectively in the Meadows.	**2.83**	1.20

[a]Scale: 1=strongly disagree, 2 = somewhat disagree, 3= neutral, 4 = somewhat agree, 5=strongly agree
[b]SD: Standard Deviation

Table 2. Recreation Activities Allowed on Private Farmland

Activity*	Number Permitting	Percentage of Total
Hunting and Fishing	14	77.8%
Hiking	11	61.1%
Biking	10	55.6%
Skiing and Horseback Riding	9	50.0%
Motorized Vehicles	3	16.7%
Number of Recreational Activities Allowed		
None	3	16.7%
1 to 2	5	27.8%
3 to 4	3	16.7%
5 or more	7	38.9%

*Activities listed represent only the most popular uses permitted in the study area.

Survey results regarding who could access private farmland suggested that there might be a tendency to allow access by groups with whom landowners have a personal relationship and less willing to allow those with whom no such bond exists (Table 3). Family, friends and other farmers rated high on the list. Local fish and game clubs were allowed by many farmers (again due to existing agreements), and local residents were allowed by less than half. People who are unfamiliar to the survey respondents, such as members of other clubs and tourists were not generally welcomed. The survey did not list "neighbors" as an option, but it would be interesting to explore through further research whether this response would be different from the response to "local residents." Due to the changing nature of these communities with recent increases in population growth and development, local residents may be just as unfamiliar to local landowners as non-residents.

In general, for questions relating to opinions about land protection and collaboration, farmers appear to be supportive of land protection efforts and willing to work with most community groups (Table 4). Overall, farmers placed high priority on land protection and personally supported farmland protection efforts. The majority with regard to collaboration, farmers were more willing to work with other farmers than any other group. The results suggested that they were somewhat willing to work with the Trust, the town, and state agencies to protect farmland, as well. However, other community members and conservation organizations were ranked the lowest for potential collaboration.

Table 3. Groups Permitted Access to Private Farmland

Who	Number Permitting	Percentage of Total
Family	15	83.3%
Other Farmers	14	77.8%
Hunters and Fishermen	10	55.6%
Local Residents	8	44.4%
Other Clubs or Tourists	3	16.7%
Number of Groups Permitted Access		
None	3	16.7%
1 to 2	4	22.2%
3 to 4	8	44.4%
5 or more	3	16.7%

Table 4. Attitudes about Collaboration and Land Protection

	Mean[a]	SD[b]
Willingness to collaborate for farmland protection	**3.96**	.66
1 = very unwilling, 2= somewhat unwilling, 3= neutral, 4= somewhat willing, 5=very willing		
Willingness to work with local community groups	**3.00**	1.27
Willingness to work with other farmers	**4.71**	.73
Willingness to work with the Trust	**3.29**	1.27
Willingness to work with other conservation organizations	**3.36**	1.15
Willingness to work with town government	**3.43**	1.40
Willingness to work with state and federal agencies	**3.64**	1.28
1 =strongly disagree, 2=somewhat disagree, 3=neutral, 4=somewhat agree, 5 = strongly agree		
Farmland protection is a priority for the Meadows	**4.21**	1.48
Personal support of farmland protection efforts	**4.93**	.27
Conservation easements are a good way to protect farmland	**4.21**	.80

[a]Scale: 1=strongly disagree, 2 = somewhat disagree, 3= neutral, 4 = somewhat agree, 5=strongly agree
[b]SD: Standard Deviation

In interviews and written comments, respondents revealed that many tended to approve of a combination of private ownership with public policies to protect farmland. A farmer in Glastonbury wrote that town ownership of Meadow land was problematic, "the Meadows and uplands should be owned by farmers, but preserved against development." Another farmer in Wethersfield agreed strongly that farmland protection is best left in the hands of farmers, but also approved of a recent purchase of land by the Great Meadows Conservation Trust. The same farmer did not approve of certain types of recreation on private land because of his concern about the recent town approval to allow motorbike events on a neighboring farm.

Opportunities

In light of these responses, this study considered some of the opportunities for balancing public interest in increasing access to the Meadows while reducing conflicts with existing farming and hunting activities. Increased cooperation between local parks and recreation departments and farmers to monitor access to the Meadows was offered as a way to reduce concerns about illegal access and vandalism to crops. Local governments might consider financial incentives such as tax breaks to private landowners who are willing to allow public access to their land or who allow certain recreational activities to occur on their land. Another proposal was considered to offer seasonal access to property to reduce conflicts with farming activities or hunting seasons or to allow special access for specific events.

Efforts to keep farming economically viable in these communities could include establishing a community supported farm on town-owned farmland or with the cooperation of a local farmer. Community supported farms operate with the support of a group of community shareholders who financially support the farm and, in return, get a share of the farm products. Such farms often include recreational and educational components, as well and could be a good way to promote farming and help raise awareness about protection of the Meadows.

The existing relationships between farmers and sporting clubs could possibly be replicated with other community groups who may be interested in accessing the Meadows for organized activities such as hiking, birdwatching, or boating. Working through organized groups help reduce the likelihood of abuse by the users and can control frequency of access. Finally, improving signage and implementing an access permit program might be considered for allowing limited public access that alerts users of proper conduct and permitted uses in the Meadows.

Discussion

This workshop asked attendees to consider some of the solutions proposed by the researchers in these studies and to offer their own insight from their own research or observations. The discussion focused on the following general topics:

1) What is the role of recreation in preserving farmland and forests?
2) What are some examples of cooperative agreements that have allowed recreation on private land?
3) What organizational structures are effective for managing and maintaining recreational activities that occur on private land?
4) What is the role of recreation planners and managers in facilitating or organizing recreation partnerships with private landowners?

There seemed to be general consensus between workshop attendees that encouraging recreation on private land was a difficult endeavor. Participants agreed that allowing recreation to occur along with other activities such as farming and forestry would be difficult to manage and such a solution should probably be avoided where conflicts are likely. Some proposed that the best solution was to purchase the land outright for recreation. Others warned that introducing too many different uses in areas such as the Great Meadows could invite conflict between users.

With these caveats, participants did offer some examples of areas where recreation on private land had succeeded. Examples mentioned included the northern Maine woods and a cross country ski program in Jackson, NH. In the Maine woods, the land is owned by private timber corporations and the public is allowed to recreate in certain locations. In Jackson, NH, a group of property owners has an arrangement that maintains a system of cross country trails on their private land. Users buy a ski trail pass at locations in the town and the money goes to support the maintenance of the trail system. By developing an extensive ski trail network, the local government is able to market the area widely and draw a large tourist base to bolster the local economy.

Participants in the discussion suggested that having a special group or organization that can oversee the management of such agreements is an effective way to establish a partnership of this sort. For example, in the Great Meadows the farmers are willing to work with the sporting club groups but would be reluctant to have to deal with multiple members of the public. The proposal to charge users a fee has problems is often a hassle for the landowners and, depending on state laws, can make the landowner liable for injuries or accidents that might occur. However, participants seemed to think that other financial incentives or a collection of fees administered by the town or other group might be worth considering, such as purchasing trail easements from private landowners.

As for the role of the recreation planner or manager in these arrangements, participants in the discussion recommended that it might be helpful to work with the individual landowners to come up with management plans for their private property. They could discuss strategies to incorporate a variety of uses might occur in a way that works best for the landowner. Another role for recreation planners may be to help develop a comprehensive system of trails that responds to individual landowner concerns.

Conclusion

As urbanization in the Northeastern United States continues, protection and management of open spaces continue to be a concern for many communities such as those represented in this case study. Recreational planners and managers will have to find ways to balance protection of these remaining natural areas with a growing demand for public access. Faced with the limited availability of land for these uses, planners in these areas should consider the potential for privately owned open spaces to help meet these demands. Recreation planning may require innovative strategies to develop public-private partnerships for use of private agricultural and forest lands. This discussion provided insight into some of the potential obstacles to this approach as well as examples of some collaborative efforts that have been successful. Continued discussion on this issue will be useful for determining the future of recreation and open space protection in the Northeast.

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APPLIED RESEARCH OPPORTUNITIES IN DEVELOPED CAMPGROUNDS

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Abstract: Developed area camping is an important recreational activity in terms of both participation and as a source of revenue for public agencies. A major challenge for administrators in the public sector is how to increase revenues on limited budgets without sacrificing customer satisfaction. Applied research could make a valuable contribution to decision making, but not much current research has been published. Over fifty potential research subjects were recently identified and ranked in order to encourage further study.

Introduction

Camping is a popular recreational activity. According to a recent national assessment of demand (Cordell, 1999), 21% of the population camped at a developed facility within the previous year. According to this survey, camping is more popular than backpacking (7% participation) and is nearly as popular as hiking (24% participation). Campgrounds also make a significant contribution to revenues in the public sector. In fact, campgrounds are the largest single source of revenue for state parks (McLean, 1997). This is especially important at a time when both state and federal outdoor recreation management agencies are trying to offset operating costs with revenues (Leal & Fretwell, 1997).

Applied Research is Scarce

Since developed area camping is such an important aspect of outdoor recreation, considerable research on the subject might be expected. Surprisingly, this does not appear to be the case. According to a recent textbook (Hultsman, Cottrell & Hultsman, 1998), most university research related to campground issues has little or no relevance to practitioners. Larger federal agencies with research staffs have also missed the mark according to the authors. This situation is blamed on poor communication between researchers, managers and administrators.

A review of the past proceedings from the Northeast Recreation Research Symposium (NERRS) supports the contention that applied campground research is limited. The Symposium provides an annual forum for both researchers and public and private recreation managers and administrators. There are thousands of public and private campgrounds in the northeast. Yet between 1987 and 2000, only 37 (5.5%) out of 658 topics at NERRS had a direct application to campground management issues. In the past five years, this has dropped to 2.5%! The lack of applied research may be reflected by the limited participation by campground managers and administrators in NERRS. In a recent survey of a dozen state park managers and administrators in the northeast, most were aware of NERRS. However, only a third had ever attended the symposium, and only half indicated they found the proceedings useful.

Million Dollar Decisions in the Public Sector

Public campground managers face a number of challenges - not the least of which is how to increase revenues on limited budgets (Alexander, 1996). To meet this challenge, the choices often come down to increasing income and attendance while reducing costs. Accomplishing this successfully means making sound decisions on aspects as varied as pet policies, reservation policies, use fees, opening and closing dates, alcohol use, recreational activities, volunteer programs, advertising and marketing efforts, etc. etc. Since current research is usually not available, most decisions are made without benefit of a research component. The following three examples from New York State are offered to show how applied research could contribute to our understanding and improve management decisions.

Campsite Reservations

Technology is changing the camping business. Thirty years ago camping reservation services were not widely used. If reservations were taken, they were often done at the park. Today, most state and federal campsites can be reserved through a centralized reservation service of some type. There are several private vendors in this business under contract with public agencies. Campers at New York State campgrounds currently spend about $2,000,000 annually on reservation service fees. This represents a significant percentage of the total cost of camping. Sound decisions with respect to the reservation service system are critical in order to provide campers the best value. Poor decisions mean higher costs and/or poorer service.

Five years ago, New York State was in the market for a new campsite reservation service vendor. These are some of the questions that needed answers:

- How do reservations, versus camping on a walk-up basis, effect camping attendance and revenue?
- How do the costs of reservations through a private service vendor compare with doing the work with public employees?
- How do Internet reservations compare to call center reservations with respect to cost, reliability, customer satisfaction, and access?
- What types of reservation systems are currently used by other state and federal agencies?
- What information is there to rate and/or compare private reservation service vendors and related software?
- What are the optimum hours, days, and seasons of call center operation which provide the best service at a reasonable cost?
- How far in advance should reservations be taken in order to optimize camper satisfaction and operating costs?

- How do one, two, three or more night minimum reservation length policies affect attendance, revenue and customer satisfaction?
- How do site specific campsite reservations effect revenue, attendance & satisfaction?
- What is the effect of billing reservation fees separately from camping fees on customer satisfaction and use of the service?

When New York State was making decisions on a new reservation service, there was no published research information to help answer these questions.

The Access Pass

State park user fees have been a subject for some debate. The current trend is to make parks financially self sufficient, supported by those who use them (Leal & Fretwell, 1997) and fees are an obvious source of revenue. However, others are concerned that fees may exclude low-income people which raises questions about the purpose of public recreation facilities (More & Stevens, 2000). These philosophical differences are often reflected in fee policies. For example, New York State offers free use of any state park for those who have a disability and who have an Access Pass. Approximately $2.4 million dollars in free services are currently provided to Access Pass holders. However, New York, like many other states, relies on fees to support park maintenance and operations. Although most state park and campground facilities meet ADA standards, large capital investments are necessary to maintain infrastructure and to improve access. Part of the capital budget in the Office of Parks and Recreation is supported by user fees. In spite of the revenue generated from fees, capital funds are extremely limited in comparison to the infrastructure needs.

In an effort to try and supplement the state parks infrastructure budget, a proposal has been discussed which would require Access Pass holders to pay 50% of the fees that are now free. This change would require legislation, but could generate an additional million dollars annually dedicated to access improvement projects. When the proposal became public, advocacy groups protested. They contended that people with disabilities are often also economically disadvantaged and therefore cannot afford to pay fees, no matter how low. But some administrators believe that accessible facilities would be a better way to serve people than free use. The fundamental question is this; which will benefit people with disabilities more, lower fees or more accessible facilities? More information provided by independent research might help to resolve the issue. Answers to the following questions would be especially useful at this time:

- To what extent are user fees exclusionary to Access Pass holders?
- To what extent are park facilities currently inaccessible?
- How do Access Pass holders answer the question?
- How would partial fees effect use by Access Pass holders?
- How do other states and federal agencies handle this issue?

Utility Hook-ups in Forever Wild Campgrounds

There are 44 campgrounds in the Adirondacks with 5,344 campsites. The operating budget for these campgrounds is based on the revenues that they generate. In 2000 campground revenues were approximately $4,000,000. Campground developments in the Adirondack Park is guided by the State Land Master Plan. The Plan specifically prohibits utility hook-ups in campgrounds in order to maintain a rustic character. However, this restriction may not have accomplished the intended goal.

The lack of utility hookups is a disincentive to campers, particularly those with recreational vehicles, who want the convenience of utilities at their campsite. Since RV owners make up an estimated one third of the camping public (Cordell, 1999), it seems likely that Adirondack campgrounds are losing potential campers and revenue. Any loss of revenue is significant because the operating budget is based on revenue. If utility hookups increased attendance by 10%, revenues would increase by at least $400,000 annually. This additional money could be used to offset inflation or provide better services.

Since power is not provided, campers who want electricity often run a generator. This creates noise and exhaust fumes which can be disruptive to others. As a consequence, the hours of generator operation are limited. This in turn generates complaints from campers who require some type of mechanical device for a disability such as sleep apnea or refrigerated medications.

Research could help develop better information about the compatibility of campgrounds and utilities in the Adirondack Park. Some potential topics include the following:

- To what extent are tent campers and RV campers compatible?
- What campground characteristics either enhance or detract from the wild forest experience?
- Do generators detract from the camping experience?
- Do electric utility hookups either enhance or detract from the camping experience?
- How does the lack of utility hookups affect attendance and revenue?
- How would a total prohibition against use of generators effect attendance and satisfaction?

Opportunities for Applied Research

Two dozen campground managers and administrators from the northeast were mailed a survey in 2001 to determine their interest in applied research subjects. Each manager was asked to review a list of 49 potential research topics and to indicate a level of interest - high medium or low. The responses were scored on the following scale: 3 - high interest, 2 - medium, and 1 - low. The objective was to identify potential applied research subjects and to identify the level of interest. The following is the result of that survey:

High Interest Topics (>2.5)

- Demographics of campers in the northeast.
- Camping preferences of the various types or categories of campers.
- Camping attendance trends in the northeast by camper type.
- The most important factors which determine length of stay.
- How well do public campgrounds promote better understanding of conservation and the environment?
- Identification & ranking of the most important campground characteristics related to visitor satisfaction.
- The effectiveness of volunteer campground hosts on visitor satisfaction.
- A survey of public & private camping fees in the northeast by campsite type.
- How does the availability of a reservation service effect attendance?
- Comparison of site specific versus site standard reservations on attendance?
- How do unprotected beaches effect attendance, safety and satisfaction?
- The effect of alcohol prohibition on visitor satisfaction and attendance.
- Comparison of pets allowed and pet free campgrounds on visitor satisfaction and attendance.
- The effect of recreation programs on attendance & visitor satisfaction.
- The economic impact of a public campground on local economies.
- Identification and ranking of the most effective campground advertising venues.
- Factors which determine where campers decide to camp.

Medium Interest Topics (1.5 - 2.4)

- A classification system that identifies different types or categories of campers.
- Is there regional variability in the expectations of campers?
- Factors influencing satisfaction of people with disabilities who camp.
- Analysis of compatibility between RV campers and tent campers.
- Differences of environmental attitudes between RV and tent campers.
- A classification system that identifies different types or categories of campgrounds.
- What is the optimum campsite shade density?
- What is the optimum campsite density in campgrounds?
- Evaluation of fireplace design by cost, life expectancy and user satisfaction.
- Evaluation of picnic table designs by cost, life expectancy and user satisfaction.
- National or regional survey of the ways volunteers are being used in campgrounds.
- Comparison of attitudes between paid staff and volunteer hosts.
- Fee strategy comparison - should camping fees and reservation fees be separate or combined?
- Characteristics of public campground reservation services currently used in the US.
- A "consumer reports" type rating of reservation service vendors in the US.
- What are optimum quiet hours?
- Evaluation of generator use policies in campgrounds.
- How recreational use of personal water craft effects camper satisfaction and attendance.
- Evaluation of campground environmental education programs.
- The economic contribution made by campers to the region or state.
- The economic impact of a public campground on local private campgrounds.
- A survey of sources of injuries in campgrounds.
- A survey of hazard tree risk experience and management policies.
- A survey of playground risk experience and management policies.
- Relationship between camper density & soils on campsite erosion & vegetation health.
- Relationship between soil types and vehicle use on erosion & campsite vegetation health.
- Analysis of mitigation measures to control erosion and protect vegetation.
- Effectiveness of camping shows as a marketing opportunity.

Low Interest Topics (<1.5)

- A formula for establishing camping fees.
- Cost effectiveness of coin operated showers

Other Topics Suggested in Survey Response

- Costs of running campground recreational activity.
- Why people do not camp, what would get them interested in a camping experience.
- Distribution of ethnic type among the various types of campgrounds.
- The top 10 reasons people camp.
- How many do it for what reason.
- What physical characteristics are viewed as desirable or necessary for visitor satisfaction by ethnic group.
- Camping support elements (grocery, laundry, entertainment) as they pertain to the quality of a camping experience.
- Are education and training needs of staff being met?

Conclusion & Recommendations

Applied research for campground managers could improve decision making and the viability of campgrounds. In the private sector, and increasingly in the public sector, revenue is an important consideration. Applied research has the potential to make a substantial contribution to the decision making process. Four criteria have been identified to improve the value of research to managers and administrators (Hultsman, Cottrell & Hultsman, 1998). These are: research should be related to real applied professional needs. The emphasis should be placed on helping managers. Results should be written in language managers can understand. Finally, research papers should include tangible and applicable recommendations based on the findings.

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ADAPTING THE RECREATION OPPORTUNITY SPECTRUM (ROS) FOR STATES LANDS PLANNING

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Abstract: The huge population increases anticipated over the next century make the problem of identifying and conserving open space critical. While the Recreation Opportunity Spectrum is undoubtedly the most sophisticated recreation inventory system established to date, it was designed for, and is best suited to, the large tracts of public lands in the western U.S. In this paper, we detail the results of a task force that sought to extend the original ROS to include both federal and state lands planning in the Northeast, using Vermont as an example.

Introduction

The problem of conserving scarce open space and its associated recreational opportunities is about to become critical, as the U.S. population doubles by 2050 (U.S. Census Bureau, 2001). While a doubling of the population may sound abstract to some, its effects will be material indeed. Not only will more people need more houses, apartment buildings, subdivisions and the roads to connect them, but also more office buildings, convenience stores, movie theaters, doctors' offices, and other supporting infrastructure. Imagine Los Angeles or New York doubling! What will be left of, say, rural Ohio if Cleveland, Columbus, Cincinnati, Akron, Dayton, and Toledo all double? Even imagining this underscores the urgency of efforts to conserve open space. Unfortunately, the conservation effort may actually be impeded by the very multiplicity of federal, state, and local agencies involved as well as not-for-profits, each of which has its own mandates, goals and objectives, and system of operations. Clearly there is a need for a coordinated conservation effort that crosses agency and jurisdictional lines.

The first step in conserving recreational resources is undoubtedly an inventory of existing resources. Perhaps the most sophisticated recreation lands inventory tool developed to date is the recreation opportunity spectrum (ROS) developed by the USDA Forest Service in the late 1970s (Clark & Stankey, 1979). The ROS recognizes the need to maintain a spectrum of opportunities that support a wide variety of experiences. The key term is "experiences," and the crucial assumption is that different kinds of land (or landscapes) can support different kinds of experiences. The original ROS classified lands as primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, and urban (wilderness is a special, legally designated category that can cross classes). At the primitive end of the scale are landscapes that support wilderness-like experiences. However, such experiences are actually fragile fantasies easily intruded upon by human activity, so evidence of people became the key factor differentiating the classes. This was generally operationalized for mapping purposes as distance from different types of roads. Using this criterion, Forest Service recreation planners were able to develop maps of the different categories for inventory purposes (much like a timber-type map). These maps provided baseline information for professionals and the public alike to assess the implications of proposed management actions. For example, if a proposed management action required building a road in a particular location, the road's impact on the distribution of land across categories could be easily assessed.

In general, the ROS system proved to be very robust and was quickly adopted by other federal land management agencies. Over time, however, a number of problems emerged. Most importantly, the ROS was, understandably, primarily a western concept, well suited to applications on the vast public lands of the American West. It is not as well adapted to the East, with its smaller scale and more intimate landscapes. Consequently, in 1985, the Forest Service issued an Eastern Regional Supplement to facilitate ROS application on eastern national forests (USDA, Forest Service, n.d.).

Lynch and Nelson (1996) identified three major difficulties with the Eastern Regional Supplement:

1. Vague, poorly defined standards that are not specific, measurable parameters
2. Direct inconsistencies and contradictions
3. Selected recreation facilities lacking standards and guidelines.

These difficulties can lead to ambiguous opportunity settings that fail to meet user expectations, resulting in conflict between managers and the public.

A second, related problem is that the ROS system is well suited to the needs of the large federal land management agencies. It is less well adapted to the needs of states, counties, and municipalities where properties tend to be smaller and more diverse in function, and may be located close to, if not within, major metropolitan areas. Another

related difficulty is that the ROS is perhaps more finely differentiated at the primitive end than at the urban end. There is, we believe, greater diversity on a variety of dimensions at the urban end of the spectrum, and there is a need for more finite categories.

All these difficulties are understandable given the needs and interests of the Forest Service as the agency originating the concept. Unfortunately, however, despite its revisions, the present form of the ROS is still unsuited to multi-agency, cross-jurisdictional planning. Imagine standing at the very center of one of our major cities looking outward. What opportunities would you find available, ranging from the pocket park around the corner to the wilderness area on the distant horizon? How can we construct an inventory system that takes all these into account, that reveals deficits in particular categories, and that identifies potential opportunities that could be conserved? In this paper we address these questions indirectly by describing the results of an interagency effort to extend the existing recreation opportunity spectrum to include both federal and state lands planning in the Northeast. While our effort centered on Vermont state lands, the results may be useful to other northeastern states and, eventually (with further revision), to county and municipal-level planning as well.

The ROS: Old and New

The original ROS (and the one that is currently in place for federal land management agencies) is an inventory system that embodies six classes of lands: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban. Each of the six classes is described by a "typical" setting based upon factors such as sizes, naturalness, and the presence or absence of motorized vehicles and other sights and sounds of humans. The different settings prompt particular experiences that range from a sense of isolation, self-reliance, and closeness to nature at the primitive end of the scale to social experiences in highly structured environments at the urban end. A complete description of both the setting and experience scales associated with each ROS class is provided in the ROS Users Guide (USDA, Forest Service, n.d.).

Operationally, the ROS produces a set of inventory maps based upon multiple criteria including remoteness, area size, evidence of humans, and the social and managerial settings. With the remoteness criterion, for example, primitive lands must be at least 3 miles from all roads, railroads, etc.; roaded natural lands are within one-half mile of roads that are better than primitive; and there is no distance criterion for rural or urban lands. Similarly, for the size criterion, primitive lands must generally exceed 5,000 acres; semi-primitive motorized lands must be greater than 2,500 acres, and there is no size criterion for roaded natural, rural, or urban lands. As before, each of these criteria is fully described in the ROS Users Guide.

As noted, these criteria are combined in the production of inventory maps. The maps provide a useful tool in the forest planning process by organizing baseline information which can be used to assess the potential effects of future management and policy alternatives.

This, then, is a brief description of the system we wanted to adapt to state lands planning in Vermont. Inevitably, adapting any technique to a new situation engenders changes. Initially, the USDA Forest Service participants in the process were concerned about retaining the integrity of the original ROS system so that existing federal inventories would remain valid. At the same time, when different people with different needs view a tool like the ROS, questions and problems arise that necessitate modification.

The changes we made fell into five general categories. First, we tried to clarify the language of the existing ROS, fixing any of the contradictions we found in order to make the guidelines easier to understand and implement. For example, the experience character of the rural class in the original ROS states that the "probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities." This was re-worked to: "Encounters with other individuals and groups are common. Site and activity access is convenient." With such changes, our goal was to simplify and clarify the intent.

Second, we also added language to clarify some of the more general or vague guidelines. We have called these management or implementation guidelines. We hope these will increase the consistency of interpretations by answering some of the basic questions managers will have when trying to interpret the guidelines. For example, the primitive setting guidelines state that the area appears to be an essentially unmodified natural environment relatively large in size. Because we anticipated that managers would have difficulty interpreting which management actions were consistent with an area that is an "essentially unmodified natural setting," we added a clarification that simply states: "Timber harvesting is not compatible with this class."

Along these same lines, we attempted to include uses that were not mentioned in the original ROS such as mechanized uses including mountain bikes (cf., Lynch & Nelson, 1996). Instead of leaving it up to managers to attempt to interpret where these uses are appropriate, we added language to clarify when and where mechanized uses are appropriate within the spectrum.

Third, the original ROS allows for modifications to some guidelines (like remoteness and size criteria) during implementation based on site-specific features. For example, while remoteness criteria states that a primitive area is at least 3 miles from all roads, railroads, and trails with motorized use, it allows for modification to conform to natural barriers, screening, topography, and vegetative cover. While we did not change the original remoteness criteria, we added language to clarify how conditions in New England could be accounted for in modifications. For example, in the case of primitive remoteness, we added the statement: "In New England, a 2-mile distance may be appropriate due to the nature of topography and other features."

Fourth, the most obvious change came in the renaming of some of the classes. As we discussed the various

categories, we got stuck on conundrums like: "Can there be rural areas in a city?" Eventually we realized that what we were dealing with was actually a continuum of development or a range of naturalness, so we renamed the classes accordingly:

- Roaded natural became semi-developed natural
- Rural became developed natural
- Urban became highly developed

Note, however, that the basic content of each class remained unaltered.

Fifth, the most exciting change is the addition of characterizations and guidelines for what was the urban class and is now called the highly developed class. Since ROS was designed for large blocks of forestland such as those managed by the USDA Forest Service, the urban end of the spectrum was not given much attention initially. One of our primary goals in starting this project was to make ROS useful in classifying all lands in Vermont and, potentially, in New England. To do so, we had to accurately capture the experience characteristics for people using highly developed areas for recreation. Highly developed recreation experiences are as wide-ranging as the settings in which they occur. For example, we discussed the variety of experiences supported by a large park like New York City's Central Park as compared to small "pocket" parks or athletic fields devoted to facilities like ball fields or tennis courts. Each of these entailed obvious differences in settings, user motivations, and the nature of the experience provided. For example, it is much easier to experience a limited sense of solitude in a large park where the street is out of view than in a small park where the surrounding city is constantly in evidence. Clearly there are obvious differences in setting, and we identified differences in user motivation and experience as well. We captured these differences by subdividing the urban classification into two main categories.

- Settings in which the facilities are dominant and exist to support the activity. Here the experience is about the activity.
- Settings that are naturalistic and are not developed to meet the needs of a particular activity. The experience here is about escaping an urban landscape to participate in unstructured activities. The naturalistic category was divided into two subcategories--large (greater than 15 acres) and small--since we anticipated that each category would sustain different kinds of experiences.

These changes led us to retain a 6-class ROS, with the "Highly Developed" category containing three subclasses. In this way, we were able to preserve the content of the original ROS so that existing inventories would not be compromised, while offering finer differentiation at the urban end of the spectrum. The setting characteristics of each class are described in Table 1.

Applying the ROS to State Lands Management Planning in Vermont

Although Vermont is a relatively small state, more than 20% (nearly 1.2 million acres) of its land base is conserved. Of this total, 7.2% is federally owned, mostly in the Green Mountain National Forest (396,000 acres) concentrated in southern Vermont along the spine of the Green Mountains. Another 7.8% (469,589 fee and non-fee acres) is in state ownership, while municipal lands account for 0.6% (36,000 acres), and there are 290,000 acres (4.9%) of privately conserved lands. The state lands are scattered throughout the state and range in size from very small areas to the largest parcel, Mt. Mansfield State Forest (41,092 acres). Obviously, there is great diversity to these lands and this diversity represents the key challenge we faced in adapting the ROS to state lands management planning.

Recreation planners at both the state and federal levels have long recognized the interconnected role that each plays in the delivery of recreation services, as well as the fact that, in Vermont, both federal and state facilities draw from the same market areas (other New England and Mid-Atlantic states). Additionally, many of the issues and problems the agencies face are similar, ranging from uneven use distribution to the protection of rare and endangered species. However, the state and federal agencies often have differing management goals, policies, directives, etc. to deal with these issues. These differences can frustrate the public, which frequently fails to recognize the difference between state and federal land; people simply understand that they are on public land and expect the same rules and regulations to apply.

Both the State of Vermont and the USDA Forest Service are deeply committed to the land management planning process, but the planning processes differ, each having its own mandates and constraints. While the Green Mountain National Forest has a single management plan, most of the State's 320 separate units have their own plans. State lands are divided into five districts, with each district responsible for planning and managing its lands. State forests, state parks, and wildlife management areas are purchased and funded from different sources and, in some cases, operate under different policies and missions. Historically, land management plans have been developed by Vermont Agency of Natural Resource employees trained in traditional forestry, with little formal training in recreation resource planning and management. Consequently, the focus of the recreation sections of the land management plans was on existing recreational uses, facilities, and activities. When requests for additional or new recreational activities and uses came before district staff, most were accommodated as long as there were no conflicts with other resources.

Over the past decade, the state has acquired a significant amount of additional public land without a concomitant addition of staff. These and other challenges make it increasingly difficult for state land managers to determine where land uses may best occur.

Table 1. Modified ROS Setting Classes for New England

Recreation Opportunity Spectrum (ROS) Classes for New England							
Primitive				Developed			
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Semi-Developed Natural	Developed Natural	Highly Developed		
					Large Natural	Small Natural	Facilities
Area appears to be an essentially unmodified natural environment of relatively large size. It may contain evidence of past human activities and historical-cultural sites, but these are subordinate to its natural state.	Area appears to be predominantly natural or natural-appearing environment of relatively medium to large size.	Area appears to be predominantly medium to large sized natural or natural-appearing environment.	Area is a natural-appearing environment. Evidences of the sights and sounds of people are moderate. Such evidences usually harmonize with the natural environment.	Area is substantially modified natural environment. Resource modification and utilization practices enhance specific recreation activities and maintain vegetative cover and soil. Sights and sounds of people are readily evident.	The setting contrasts with the surrounding cityscape, but urban elements are common and readily apparent. Vegetation is often exotic and manicured. The design enables users to choose among solitude and social experiences in a naturalistic setting. E.g., there may be footpaths, benches, and social focal points.	The setting contrasts with the surrounding cityscape, but urban elements are common and readily apparent. Sights and sounds of people are expected and desired.	Area is characterized by a substantially developed environment. The setting is highly structured to fit the activity being provided.
Interaction between users is very low, and evidence of other users is minimal.	Interaction between users is low, but there is often evidence of other users.	Interaction between users is low, but there is often evidence of other users.	Interaction between users may be low to moderate, but evidence of other users is prevalent.	Interaction between users is often moderate to high.	Large numbers of users can be expected, both on-site and in nearby areas.		Social encounters are expected and often programmed.
The area is essentially free from evidence of management restrictions and controls.	The area is managed so that minimum on-site controls and restrictions, if needed, are subtle.	The area is managed so that minimum on-site controls and restrictions, if needed, are subtle.					
Motorized or mechanized use is not permitted.	Non-mechanized uses predominate. Mechanized uses may be permitted. Motorized use is not permitted.	Mechanized uses may be permitted.	Resource modification and utilization practices are evident, but harmonize with the natural environment. Construction standards and facility design accommodate conventional motorized and mechanized uses.	Many facilities are designed for use by a large number of people. Density levels decline with increasing distance from developed sites. Facilities are often provided for special activities. Facilities for intensified motorized and mechanized uses and parking are available.	Facilities are designed to serve individuals or small groups but can accommodate high use. Facilities accommodate access by a variety of means including pedestrian, motorized, mechanized, and mass transit.	The design facilitates social encounters in a naturalistic setting.	Design is dictated by the requirements of the particular activities involved. Facilities are designed for large groups typical of sports and special events.

The ROS will assist state lands managers in the following ways:

- The ROS is a holistic approach that examines the recreational experience based on the evidence of humans and their impact to the natural environment without just focusing on activities.
- The ROS provides a rational and consistent basis for land management decisions, whether it is for timber management, wildlife enhancements, or development of a recreational facility. It identifies where appropriate locations for certain uses could be allowed without degrading the type of recreational experience for that area.
- Implementing the ROS can bring recreation inventory information up to the same level of other natural communities/resources inventories in the land management planning and decision making process.
- The ROS enables individual areas (i.e., state land units) to be put into a broader, regional perspective and can help to protect rare primitive lands in the larger region (i.e., Northeast).
- The ROS helps to identify supply shortfalls and excesses in various categories that can be useful in setting acquisition priorities, or changing management directions on a certain area of public lands.
- The ROS can help determine "niche" opportunities in relation to what others provide, facilitating interagency cooperation. For example, Vermont state lands do not provide many opportunities for primitive recreation experiences due to the size of each land unit (usually smaller in size) and distances from roads, while the Green Mountain National Forest is a larger land mass that provides primitive opportunities. Looking outside the state, the northern part of New Hampshire, Maine, and the Adirondack Park in New York may provide more opportunities for primitive experiences and opportunities.

Conclusion

If the U.S. population doubles by 2050 as expected, substantially increasing public demand will necessitate interagency and cross-jurisdictional planning to preserve increasingly scarce recreation opportunities. The inventory process is basic to such planning and the ROS represents one of the most powerful recreation inventory tools ever devised. As presently formulated, it is best applied on the large tract public lands of the West; to apply it to state lands in the East necessitated a number of modifications. These included language clarification, the addition of management/implementation guidelines, special adaptations to fit the New England landscape, renaming some of the classes, and developing the urban category more completely. We anticipate publishing our revised version of the ROS later in 2001. In the meantime, we hope other states will be interested in adopting the ROS for inventory and planning on their lands. The problems we encountered are hardly unique to Vermont, and the goal of broad-based, integrated planning is in the general public interest.

The ROS also must be considered as a work in progress. Our extension of the application to state lands planning necessitated a number of changes, but we do not doubt that more changes will be required as we delve further into the urban end of the spectrum. Moreover, there are questions about the public's ability to discriminate across classes at the primitive end of the spectrum (Dawson et al., 2001) as well as questions about the experiential basis of the technique. Those questions aside, however, the ROS represents the best available inventory technology for planning a very problematic future. It is increasingly important to apply it across the full spectrum of governmental levels.

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IT'S TIME TO PUT THE C.A.R.T. BEFORE THE H.O.R.S.E. OR PUTTING CRITICAL, ANALYTICAL, AND REFLECTIVE THINKING BEFORE "HANDYMAN" ORIENTED RECREATION STUDENT EDUCATION

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Abstract: Higher education is the target of criticism for, among other things, the failure to teach students how to think--critically, analytically, and reflectively--and for placing too much emphasis on career preparation or professional education. While a number of external factors have, perhaps, led to such criticism being warranted, faculty--including those in Recreation and Leisure curricula--are the only ones who can meet the demand for emerging professionals who are professionally competent, can think, make decisions, and solve problems. Additionally, in order for Recreation and Leisure faculty to address the concerns of those outside the academy and to strengthen their positions of respect amongst their liberal arts and sciences and fine arts colleagues it may be necessary to increase the emphasis on thinking critically, analytically, and reflectively and to reconsider their emphasis on career preparation in the marketing of academic programs. At the same time, respect may be enhanced by further eliminating the "handyman" or vocational perceptions that often result from programs of professional credentialing, particularly curricular accreditation. This may be accomplished by revising accreditation standards to reflect significant emphasis on classroom activities that require students to make decisions, solve problems, and thing critically, analytically, and reflectively.

Introduction

Higher education has recently been the focus of critical review, and of the call for increased accountability. Institutions are frequently accused of granting undergraduate degrees to individuals who lack the ability to effectively communicate, to work cooperatively, and to "think on their feet." While there may be a tendency to focus on the minority of cases, the mystical nature of academe makes it an even more savory target. It is human nature to be more critical of those individuals or institutions that are foreign or remote. Nevertheless, some of the criticism may be warranted. Insiders have known for some time that 1) entering freshmen are often inadequately prepared for college-level work, 2) many schools value excellence in teaching less than the generation of grant funds and scholarship, and 3) a terminal degree does not necessarily prepare an individual to enter the classroom as a member of the professorate.

The enrollment driven funding of academic institutions may, likewise, contribute to the criticism. Most institutions, particularly those receiving state support, are funded on the basis of enrollment rather than on the basis of quality. In fact, state legislatures may have no other reliable criteria available. Higher education is still conflicted within its ranks as to what constitutes good teaching, student competency, good scholarship, and the importance of service. Until these issues are resolved those controlling the flow of funds to individual campuses may have little choice but to base critical decisions on student "head count" or on the perceived economic return of the investment to the community. The prevalence of the "head count" criterion has resulted in some campuses adjusting admission standards, increasing freshman class sizes, and spending an increasing amount for remedial services and less time on college-level work.

None of the aforementioned realities lessens the responsibility of faculty to address the criticisms identified; they simply make the task more difficult. In spite of these realities, plus the pressures to comply with curriculum accreditation and professional certification standards, faculty are the only ones who can meet the responsibilities to the students, future employers, and service recipients.

Of the shortcomings of today's graduates mentioned, the third may well be the most difficult to rectify. It may be the most discomforting for faculty and students and the task is the most difficult to define. While communication skills may be addressed in composition and speech classes and working cooperatively can be fostered by requiring students to participate in group processes, teaching students critical (C), analytical (A), and reflective (R) thinking (T) is substantially more difficult. It is very likely the academic mission for which many faculty are the least prepared.

Defining the Problem

"Everyone agrees that students learn in college, but whether they learn to think is more controversial" (McKeachie, 1992, p. 3). This statement introduces the controversy confronting higher education today. Bannon (1981, p. 3) was more to the point when he wrote, "Ask any educator, employer, or recent graduate what is lacking in education today. Their answer probably would be practical skills in how to read, write, and think. Such skills are considered so fundamental that they are simply overlooked, especially on the college level. Most students are unaware that they lack them; employers, on the other hand, expect to have to train employees anyway." In the same work (p. 4) Bannon further defined the task facing faculty when he stated, "These problems are not solved solely by many years of education. They also require an ability to think clearly and logically, to judge, to select, and to predict outcomes. Most importantly, they require an ability to make decisions and to transform them into successful solutions."

There are some other reasons for dedicating our curricula to the pursuit of C.A.R.T. These reasons relate to the status of such curricula on individual campuses. Demonstrating that students are acquiring these skills may offset perceptions by the liberal arts disciplines (English, History, Philosophy, Anthropology, and others) that our curricula are comprised

of nothing other than vocational education, or that they prepare students to work in a career field that few of the aforementioned faculty have little understanding of as to its breadth, complexity, or relevance. The true eclectic nature of Recreation and Leisure education and its relevance to the educational mission of the academy is often overshadowed by the emphasis on professional education or the marketing and recruitment emphasis on enabling a student to gain entry into therapeutic recreation, tourism management, municipal recreation, outdoor recreation, or into the myriad of other areas of professional endeavor. Perhaps it is this emphasis on professional education that has resulted in curricula and their faculty being perceived as less academic, and less capable of contributing to the liberal arts based general education component of the educational mission. The relevance to that mission may likely be measured by criteria other than numbers of majors and FTE (full-time equivalencies) generated or whether or not the curriculum is approved by its Council for Higher Education Accreditation (CHEA) approved accrediting body. It may be as much an issue of the academic credibility or of the perceived academic rigor. This is to say whether or not the curriculum is perceived as one that requires its students to think and solve problems may be the essential ingredient in determining the curriculum's centrality to the academic mission. The point being, whether or not a program of professional education continues to exist may rely heavily upon its willingness to put the C.A.R.T. before the H.O.R.S.E. or "Handyman" Oriented Recreation Student Education.

The Components and Their Characteristics

Critical thinking today is unfortunately a foreign concept to many entering students, and the traditional venue for teaching such has become less attractive to the American college student. Perhaps Kinney said it best when he wrote, "Liberal arts courses are no longer at the center of the institution, and what they teach is perceived tangential to the work going on in the colleges of business, agriculture, engineering, medicine, and law or in the career-education technical programs. Today's students have never known colleges and universities to be different. It is hardly surprising, then, that many students shrug off background clatter about critical thinking as not only irrelevant but alien. Their job, they feel, is to get the training necessary for entry into a promising career, not to waste time learning how to think critically..." (Young, 1980, p. 4). Most faculty today will likely agree that little has changed since Kinney first penned his observations. It would then seem logical to assume if students are spending less time in the tradition venue (liberal arts) for imparting critical thinking skills that those faculty in the professional areas have an obligation to incorporate such in their curricula.

Perhaps one of the better definitions of critical thinking is offered by Bandman and Bandman. They view it as the " 'rational examination of ideas, inferences, assumptions, principles, arguments, conclusions, issues, statements, beliefs and actions' " (van Hooft, Gillam & Byrnes, 1995, p. 5). Halpern (1996, p. 5) provides further insights. According to Halpern, "The 'critical' part of thinking denotes an evaluation component. Sometimes the word *critical* is used to convey something negative, as when we say, "She was critical of the movie.' But, evaluation can or should be a constructive reflection of positive and negative attributes. When we think critically, we are evaluating the outcomes of our thought processes--how good a decision is or how well a problem has been solved. Critical thinking also involves evaluating the thinking process--the reasoning that went into a conclusion we've arrived at or the kinds of factors considered in making a decision. Critical thinking is sometimes called direct thinking because it focuses on obtaining a desired outcome." Earlier she provided further clarification by stating, "The term critical thinking is used to describe thinking that is purposeful, reasoned, and goal directed. It is the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions" (1989, p. 5). Though there are a number of variations with respect to just what is meant by critical thinking there does seem to be a consensus that thinking critically involves the objective attempt to judge the merits and faults of a decision, issue, situation, proposal, or an individual.

When viewing critical thinking as the skill of identifying merits and faults, the faculty should take measures to develop the skill in the context of proactive as well as reactive thinking. Critical thinking is a skill to exercise prior to as well as after the implementation of an action. Across the curricula courses (most or all) should require students to identify alternative actions and the scope of consequences of each. When a faculty member inquires of a student what she or he would do in a specific situation the follow-up questions should always be "Why?" and "What are possible alternative actions and their consequences?" Students should be expected to do more than simply make decisions; they should be required to justify their decisions, demonstrate awareness of the scope of possibilities, and to express an awareness of the merits and faults of each--even those which may appear to be less popular or even "politically incorrect". The scope of possibilities should extend to the agency, the consumer, the community, and the profession. It goes without saying that the critical thinking process should be framed by the mission of the agency, the needs of the consumer, the welfare of the community as a whole, the capabilities of the providers, and the values of all concerned. Faculty must impart to the future professionals that critical thinking applied only in hindsight is of limited value and of little comfort to those negatively effected by its tardy application. The key is for faculty to focus less on the product and more on the process when it comes to making decisions and solving problems.

Analytical thinking is that process that engages the student in determining why or how something happened, whether the outcome be positive or negative, and from a proactive perspective it engages the student in determining the steps necessary for the successful completion of a task. Perhaps it is analytical thinking that is the most painful or the one which requires the thinker to be the most introspective. It also requires the individual to disengage from the mindset of problem-based thinking, a mode of thinking that suggests that one needs only to engage in analytical

thinking when something is less successful than desired. A truly analytical thinker does not take success for granted and dedicates as much energy to determining why something was successful or even far exceeded expectations as to determining why something was less successful. Such an individual demonstrates and advocates for proactive thinking and the prevention of problems as much as for the solution of problems. To produce such analytical thinkers the faculty member has the task of convincing students of the value of honest self-assessment and of the need to first look inward when searching for those factors that led to a particular outcome. Doing so may be made easier if the faculty member demonstrates such a willingness by accepting blame when appropriate.

Whether analyzing outcomes for which the individual was totally, partially, or not at all responsible, an effective outcome of the exercise is dependent upon two elements. First, the individual must possess a clear understanding of the desired outcomes. Not only of the stated goals, but of the relationship of goals to the stated mission and vision of the agency. Time spent analyzing the failure to achieve a goal that was not central to the mission of the agency expends energy that may well be spent in other endeavors.

The second element is a thorough understanding of the specific tasks required for a successful outcome. The individual thinking analytically must frame the process around the specific measures taken to assess the need for the program (the desires and needs of the service recipients and the mission of the agency), the specific elements of planning, the steps taken to implement the program, and means by which the evaluation process itself was developed and administered. These phases should be familiar to all students who have been enrolled in a curriculum's programming course. However, whether the individual is planning a program of activities or developing a long-range plan for the entire agency the development of a successful action plan is dependent upon the individual's ability to think analytically. Both endeavors require the identification of desired outcomes and of the specific actions necessary to attain the stated outcomes. Ideally all courses within the core curriculum should require students to develop such action plans; if not all, at least those courses where the primary focus is either programming or administration.

The action plan will both guide the programmer and administrator in answering the "How" and Why" of the decision-making and problem-solving endeavors. Before the fact, the process of analytical thinking should serve as a guide for attaining an outcome. After the fact, the process will enable the individual to determine why an outcome was or was not realized or what additional steps could be taken to assure future or additional success. Leaders of dynamic or successful agencies are characteristically never satisfied. They not only endeavor to determine "how" something can be achieved and "why" something happened the way it did, but "what" can be done to make it even more successful.

Whether from the planning or evaluation perspectives faculty must address the issue of ego if they are to successfully foster analytical thinking. While most have little difficulty taking credit for success, there are a number that find it more difficult to assume responsibility for outcomes that are less successful than hoped. Faculty should pursue learning activities which involve students in making difficult decisions or solving difficult problems for which answers may not be easily found in the literature. Situations should be selected which place the burden on the student, or situations where the student has few options for abdication of decisions and actions. Faculty must force the student to first look inward or to his or her own actions, whether the results are successful or unsuccessful. Other students in the class should be instructed to analyze the presenting student's actions and to share their findings or opinions in a helpful, honest, and nonconfrontational manner. To develop truly analytical thinkers faculty must convey the essence of such thinking; namely, it begins with the self.

Reflective thinking was the focus of the educational philosopher John Dewey. In 1910 he defined it as the "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the future conclusions to which it tends" (Dewey, 1910, p. 9). It is, also, the process which makes information useful. Without it knowledge prepares us for little other than Trivial Pursuit and we become hostages to those who are able to sort out facts or see their relevance to issues at hand or to the future. Those who do not think reflectively when armed with knowledge are responsible for the adage, "History repeats itself." Had the political leaders of the U. S. been thinking reflectively they may have been able to forecast and plan for the consequences of the demise of the Soviet Union, a confederation that had constrained ethnic hatreds in Eastern Europe. So what is reflective thinking? It is the ability to understand the implications of decisions and actions or to draw from the wells of knowledge that information which will enable us to act successfully. It is that thinking process which truly frees us. Contrary to the adage that "knowledge is freedom" it is thinking reflectively about that knowledge that gives us freedom. Hitler knew that in order to succeed he had to control or destroy the intelligensia of Germany or those individuals capable of thinking reflectively about his actions and his tenets espoused in *Mein Kampf*. The first concentration camps were for the reflective thinkers, not for the Jews.

Reflective thinking enables students to use knowledge to be proactive thinkers by drawing from their past experiences and field of knowledge. Simply put, it is the ability to see the relevance of A to Z or to understand the implications of today's decision on future events. It is what the faculty member is encouraging when students are required to search the literature outside the major. Hopefully it is reflective thinking that the National Council on Therapeutic Recreation Certification is encouraging when it requires students to take coursework outside of the major (Sociology, Psychology, Anatomy and Physiology, etc.).

With respect to what faculty can do to promote reflective thinking on the part of their students, King and Kitchener offer some suggestions. Among these are:

- Show respect for students as people regardless of the developmental level(s) they may be exhibiting.
- Create opportunities and provide encouragement for students to make judgements and to explain what they believe.
- Create multiple opportunities for students to examine different points of view on a topic reflectively.
- Understand that students differ in regard to their epistemic assumptions (assumptions about knowledge).
- Provide both challenges and support in interactions with students.
- Recognize that challenges and supports can be grounded emotionally as well as cognitively.
- Familiarize students with ill-structured problems within your own discipline or areas of expertise. (1994, pp. 230-248)

Finally, faculty, while being supportive and challenging, must require students to reach to the depth and width of their personal experiences, the professional literature, the literature of related areas, and human resources available to them to develop an understanding that each decision and action has a consequence and that in human services events around them do have consequences on the what, how, when, and why they do things. They must be led to the realization that their actions reflect beyond the immediate concern. Students must, also, be made to realize that while creativity is essential to successful recreation programming, that creativity in the absence of reflective thinking is as likely to be destructive to those we serve as it is to be positive or constructive.

Thinking, Credentialing, and Marketing

Today's Recreation and Leisure Studies or Parks, Recreation, and Tourism educator is confronted by a number of opposing forces. There is the pressure to maintain enrollments, to maintain the curriculum's accredited status, to assure the student's eligibility for professional certifications, and to respond to the needs of the professional community. Also, there is the pressure from the academic community to demonstrate centrality to its mission. The third force emanates from the general community and its expectations that all college graduates think--critically, analytically, and reflectively. To satisfy all parties faculty may need to reconfigure the image many have on their campuses, while at the same time requiring students to think and obtain skills necessary to adequately provide for the needs of their consumers.

It may be beneficial to reconsider the emphasis on credentialing. Perhaps one of the things faculty should be the most proud of may be one of the obstacles to being considered "academic" by the typically largest faculty body on campus--the liberal arts and sciences. Frequently the term "accreditation" relates specifically to programs preparing students to enter a specific career. Furthermore, a review of the *Standards and Evaluation Criteria for Baccalaureate Programs in Recreation, Park Resources and Leisure Services* of the NRPA/AALR Council on Accreditation may well support the assumption that such programs do not place adequate emphasis on the development and application of thinking skills. The "handyman" or vocational education perception could well be strengthened by the repeated reference to the faculty's obligation to demonstrate that students have a "Knowledge of..." and an "Understanding of..." with reference to specific competencies. Within the section pertaining to the core curriculum's competencies only six of the forty-one standards are students required to demonstrate the "Ability to...", and of these six three refer to the application of technical skills. Furthermore, in only one standard is specific reference made to decision-making (1999). Nowhere is specific reference made to problem-solving or to thinking. Maybe curricular leaders should petition for more demanding standards with respect to emphasis in the core on activities requiring students to think or reason and to reach beyond the boundries of discipline-specific literature or resources. Perhaps Karabell is correct when he states, "In an ideal world, education and credentializing would be compatible, but in the world of higher education today, they are often at odds" (Karabell, 1998, p. 2).

Perhaps curricular leaders should place less emphasis on professional education in the marketing of programs. It may be more beneficial to emphasize the essence of our curricula; namely, the emphasis on programming, facilities development; the significance of play; ethics; the needs of individuals with disabilities; writing goals and objectives; techniques of budgeting; concepts of organizational behavior; use of communication tools; computer applications; understanding of legal concepts; and the development of appropriate interpersonal skills. Few would argue that these are skills that will benefit all individuals, regardless of chosen fields of endeavor. If remarketing or de-emphasizing the professional or "handyman" nature of recreation, leisure, and parks programs the respectability being sought from the liberal arts (and fine arts) community will not be attained unless programs can also demonstrate an emphasis on thinking by classroom rigor and, if necessary, by accreditation standards that specifically address acquisition of such skills.

Conclusion

We may find inspiration for accomplishing this task of putting C.A.R.T. in the forefront by frequently reminding ourselves of the challenge facing American higher education today. "In the final analysis, the real challenge of college, for students and faculty members alike, is empowering individuals to know that the world is far more complex than it first appears, and that they must make interpretive arguments and decision-judgements that entail real consequences for which they must take responsibility and from which they may not flee by disclaiming expertise" (The challenge of connecting learning, 1991, pp. 16-17). The aforementioned challenge is likewise the responsibility of contemporary faculty, regardless of

curricular affiliation. The responsibility cannot simply be delegated or abdicated to other members of the academy.

Finally, the professorate may do well to remember the words of David Porter in the June 30, 2000 edition of the *Chronicle of Higher Education*. He reminds us that "The academy exists to discover new ideas, explore new directions, see the familiar afresh. It is the teacher or president willing to take chances who best awakes that potential, whether in the lab or classroom, the staff meeting or boardroom." Furthermore, he states, "The qualities that I've mentioned as essential to both teachers and administrators are also what we try to teach our students: to be passionate and witty advocates, imaginative liaisons and interpreters, leaders and learners who complement meticulous preparation with the daring to plunge into the unknown" (p. A60). Perhaps he is reminding those of us in professional preparation academic programs to reconsider our priorities and that we should be the dogs, not the tails.

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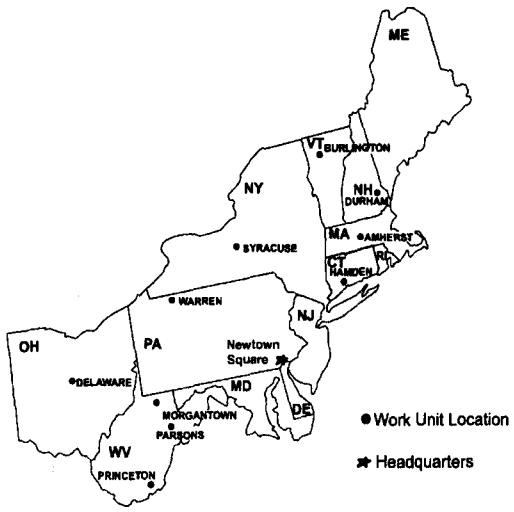

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