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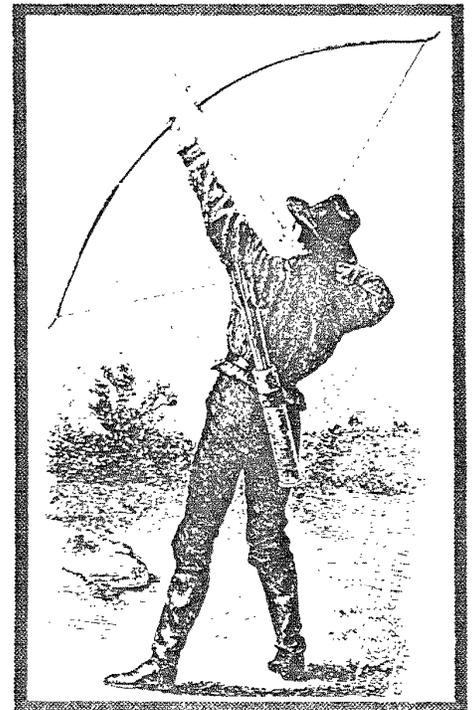
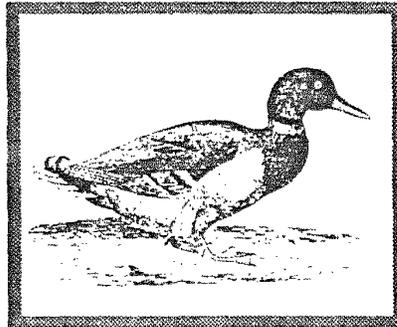
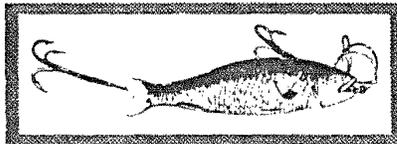
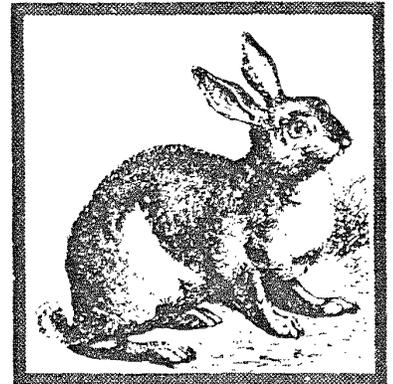
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Proceedings of the 1994 Northeastern Recreation Research Symposium

April 10-12, 1994
Saratoga Springs, New York



NORTHEASTERN RECREATION RESEARCH MEETING POLICY STATEMENT

The Northeastern Recreation Research meeting seeks to foster quality information exchange between recreation and travel resource managers and researchers throughout the Northeast. The forum provides opportunities for managers from different agencies and states, and from different governmental levels, to discuss current issues and problems in the field. Students and all those interested in continuing education in recreation and travel resource management are particularly welcome.



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The Steering Committee wishes to thank Mary Kate McCloud for all her behind-the-scenes work, especially during management transition at the New York State Parks Management and Research Institute.

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PROCEEDINGS of the 1994 NORTHEASTERN RECREATION RESEARCH SYMPOSIUM

**April 10-12, 1994
State Parks Management and Research Institute
Saratoga Springs, New York**



Compiled and Edited by:

Gail A. Vander Stoep, Michigan State University

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MISSING PAPERS

NOTE: If you are interested in getting additional information about any of the papers that were presented but were not submitted for publication, please contact the authors directly. A list of those papers is included here to assist you in identifying authors.

POSTER SESSION

Fees, Expectations and Behavior in Developed Campgrounds. Tom More, USDA Forest Service.

Spatial Inquiry, Analysis and Display of Site-specific Perceived Impacts to the Recreational Boating Experiences: A Comparison of GIS Software Packages and Procedures. John Confer, Jr., Alan Graefe, Pennsylvania State University; John Titre, U.S. Army Corps of Engineers.

OUTDOOR RECREATION MANAGEMENT

Visitor Impact Monitoring: Evaluating the Effectiveness of Management Actions. Jeff Marion, Virginia Tech, National Biological Survey.

Undergraduate Tourism Education in New Hampshire and Hungary: A Comparative Study of the Curriculum Development Process. Margit Mundruczo, Robert Robertson, University of New Hampshire.

The Gericke Farm Project. John Wood, Clay Pit Ponds State Park Preserve.

INTERPRETATION, EDUCATION AND OUTREACH

Evaluating the Effectiveness of Alternative Media Messages. James Petruzzi, Cinnamon Baldwin Foster, Jerry Vaske, Maureen Donnelly, Colorado State University.

"Public Outreach" Implications for Natural resource Recreation Management. William DeNegro, David Loomis, University of Massachusetts.

DEMOGRAPHICS

Demographics and Angler Diversity: Cohort-specific Analysis of Massachusetts Anglers. Al Ortiz, David Loomis, University of Massachusetts.

RECENT CHANGES IN FEDERAL AGENCY RECREATION RESEARCH AND TRAINING PROGRAMS

Recreation, Social Science and Human Dimensions--Fitting Together. Alan Watson, USDA Forest Service, Aldo Leopold Institute.

Future of Social Science in NPS and NBS. James Carroll, National Biological Survey, Washington, D.C.

OUTDOOR RECREATION: SATISFACTION AND CONFLICTS

The Hidden Public: Subculture Differences in Attitudes and Satisfaction. Rodney Zwick, Lyndon State College; David Tucker, Northeast Kingdom Community Action; Susan Bulmer, Vermont Department of Forests, Parks and Recreation.

ENVIRONMENTAL PERCEPTIONS AND ETHICS

State Park Stewardship Survey--1993 State of the Parks Report. Allison McLean, Wilbur LaPage, New Hampshire Division of Parks and Recreation; Rob Robertson, University of New Hampshire.

PLANNING AND G.I.S.

Boating Opportunities: A Geographical Analysis of Travel Patterns and Motivations. John Confer, Jr., Alan Graefe, Pennsylvania State University; John Titre, U.S. Army Corps of Engineers, WES.

The Moosalamoo Partnership: Using GIS and CPS for Composite Trail Maps. David Capen, Daniel Coker, University of Vermont; Mary-Jeanne Packer, Green Mountain National Forest.

*ENVIRONMENTAL PERCEPTIONS
AND ETHICS*



ENVIRONMENTAL ETHICS AND WILDERNESS

MANAGEMENT: AN EMPIRICAL STUDY

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The underlying hypothesis of this study is that environmental ethics influence public attitudes toward wilderness management. To study this hypothesis, environmental ethics were defined, categorized, and measured empirically. Additionally, attitudes toward selected wilderness management issues were measured. Associations were found between beliefs in selected environmental ethics and attitudes toward selected wilderness management policies. These findings support the study hypothesis and suggest that environmental ethics can be studied empirically and provide insights into the future direction of wilderness management.

Introduction

Over the last 25 to 30 years, issues of how wilderness areas should be managed have occupied a prominent place in the minds of wilderness managers and recreationists alike. Such issues as crowding, reintroduction of natural predator-prey relationships, allowing naturally caused fires to run their course, and visitor limits have been at times, controversial. Issues such as these raise fundamental questions about what recreationists value in wilderness, what managers ought to do when managing wilderness areas, to what degree human influences should be allowed to impact on the natural function of wilderness ecosystems, and what responsibility humans have toward these natural ecosystems. In short, these issues raise questions of values and ethics.

This study is an attempt to test the hypothesis that there are relationships between environmental ethics and visitor attitudes about wilderness management. For the purposes of this study, environmental ethics will be defined as intellectual ideas about the appropriate relationship between humans and the natural environment.

An empirical approach to environmental ethics could provide information about the extent to which certain ethical ideas about the environment are prevalent in a segment of society. This in turn, could lead to a better understanding of how environmental ethics influence attitudes toward environmental policy including wilderness management. However, an empirical treatment of environmental ethics has been lacking.

Values and ethics can shape attitudes, while attitudes in turn shape policy. Heberlein (1989) points out that environmental managers find attitude studies useful because they provide information about public support and beliefs, as well as information for setting standards and about current and future behaviors. As he also points out, public attitudes have direct influence on policy decisions by showing support for some plans and rousing opposition to others. The study of environmental ethics can begin to help managers understand why the public holds certain attitudes.

Numerous authors have described the theoretical relationship between environmental ethics and attitudes toward environmental policy. Sayer (1991) indicated that contemporary society must examine its values and its attitudes toward the environment in order to create policy solutions to adequately address environmental problems. Stone (1973) used ethical arguments to reach the conclusion that natural objects should have standing in courts of law which would give nature a voice in policy decisions. One specific policy which has become law, The Endangered Species Act of 1973, can be interpreted as giving certain animals moral and legal standing (Nash, 1989). However, the relationship between environmental ethics and attitudes toward wilderness management policy has not been studied.

Objectives

To test the study hypothesis, three study objectives were developed. First, environmental ethics were defined and categorized. Second, a series of scale items was developed to measure the extent to which wilderness visitors subscribe to these alternative environmental ethics. Third, a series of scale items was developed to measure attitudes toward selected wilderness management issues. These scale items were combined to derive a measure of desired wilderness purity. For the purposes of this study, wilderness purity is defined as the absence of visible human influence within wilderness boundaries.

Methods

Literature Review

Through literature review, 16 different environmental ethics were identified. We will present only a brief description of these 16 ideas here. For a more thorough review of the literature, refer to Valliere (1994). The 16 environmental ethics were categorized into 5 broader categories. While these categories are an attempt to further classify the environmental ethics, we do not suggest that these are groups of environmental ethics actually found in society. These categories merely represent groups of environmental ethics which appear to have some theoretical commonality.

Anti-environment. The first category is the anti-environment category. The first environmental ethic in this category is the "threat to survival" ethic which suggests that nature should not be protected because it contains elements and processes which threaten human survival and civilization. The second environmental ethic in this category is the "spiritual evil" ethic which suggests that nature should not be protected because some interpretations of religious teachings tell us that nature is a spiritual evil.

Benign indifference. The second category is the benign indifference category. The first environmental ethic in this category is the "storehouse of raw materials" ethic which suggests that nature is neither good nor bad, it simply provides humans a source of raw materials to be used as human needs and wants dictate. The second environmental ethic in this category, "religious dualism", suggests that nature is neither good nor bad, but that it is fundamentally different from and secondary to humans.

Utilitarian conservation. The third category is utilitarian conservation. The first environmental ethic in this category is "anthropocentric humanitarianism" which suggests that certain elements of nature, particularly domestic and work animals, be treated carefully and that cruelty to such animals makes us somehow less human and may lead to cruelty to other humans. The second environmental ethic in this category, "efficiency," suggests that elements in nature of material worth should be used wisely to ensure their continued availability. The third environmental ethic in this category, "quality of life" suggests that certain elements of nature should be treated carefully because their existence contributes to the quality of our lives in either a material or aesthetic sense. The final environmental ethic in this category, "ecological survival," suggests that certain elements of nature be treated carefully because human survival may ultimately depend on the integrity of basic ecological functions.

Stewardship. The fourth category is stewardship. The first environmental ethic in this category is "religious duty" which suggests that nature be treated carefully because some religious teachings instruct humans that this is their religious responsibility. The second environmental ethic in this category, "future generations", suggests that nature be treated carefully because it is a basic human responsibility to pass along nature to future generations of humans. The third environmental ethic in the stewardship category is "reverence for life -- God's creatures" which suggests that nature be treated carefully because nature and living things were created by God and are thus deserving of our respect and even reverence. The final environmental ethic in this category is "reverence for life -- mysticism" which suggests that nature be treated carefully because all living things represent the spiritual mystery of life and are thus deserving of respect and even reverence.

Radical environmentalism. The fifth and final category is radical environmentalism. The first environmental ethic in this category is "humanitarianism" which suggests that sentient animals should be protected from human-caused pain and suffering. The second environmental ethic in this category is "animism/organicism/pantheism" which suggests that nature should be protected from human-caused harm because all things in nature are connected through a spiritual quality and thus are sacred. The third environmental ethic in this category is "liberalism/natural rights -- evolutionary" which suggests that nature be protected as a function of continued human extension of moral, ethical, and/or legal rights throughout society based on the fundamental relationship of all living things through the process of evolution. The final environmental ethic in this category is "liberalism/natural rights -- ecological processes" which suggests that nature be protected as a function of continued human extension of moral, ethical, and/or legal rights throughout society based on the fundamental relationship of all living things through ecological processes.

Survey Methods

In order to achieve study objectives 2 and 3, a survey questionnaire was constructed and a random sample of visitors to the Breadloaf Wilderness, Vermont was obtained during July, August, September and October of 1992. A total sample size of 250 was obtained. Visitors were initially contacted in the Breadloaf Wilderness by a members of our research staff and

asked to participate in the study. If the visitors consented, their names and addresses were taken and the initial contact was completed.

A few days after the initial contact, participants were sent a copy of the survey questionnaire, which contained 62 statements to measure agreement or disagreement with the 16 environmental ethics and 15 statements to measure 12 areas of desired wilderness purity in the Breadloaf Wilderness. Participants also received a cover letter explaining the importance of each participant's response, and a postage-paid, self-addressed return envelope. One week after the initial mailing, a postcard reminder was sent to all study participants asking them to return the study questionnaire. Three weeks after the initial mailing, a second copy of the study questionnaire, a second cover letter imploring participants to return the questionnaire, and a second postage-paid, self-addressed return envelope were mailed to study participants who had not yet returned the questionnaire. This procedure prompted 196 study participants to return the questionnaire for a response rate of 78%.

Results

The results from the 62 environmental ethics statements were subjected to factor analysis to reduce the number of variables used in further analysis. This was accomplished through index creation guided by the factor analysis. Most of the environmental ethics remained the same. However, based on the factor analysis, some environmental ethics were combined while others were divided into two ideas. In the benign indifference category, "religious dualism" was divided into two concepts: "Intellectual Dualism" and "Humans have a right to use nature." In the stewardship category, "religious duty" and "reverence for life-- God's creatures" were combined into a general "religious stewardship" ethic. In the radical environmentalism category, "liberalism/natural rights -- evolution" and "liberalism/natural rights --ecological processes" combined and into one ethic and also produced another concept "humans are a part of nature".

The mean index scores for each of the environmental ethics are shown in Figure 1. It is apparent from these results that all of the environmental ethics in both the anti-environment and benign indifference categories were rejected by respondents. The remaining environmental ethics were accepted at varying degrees by respondents.

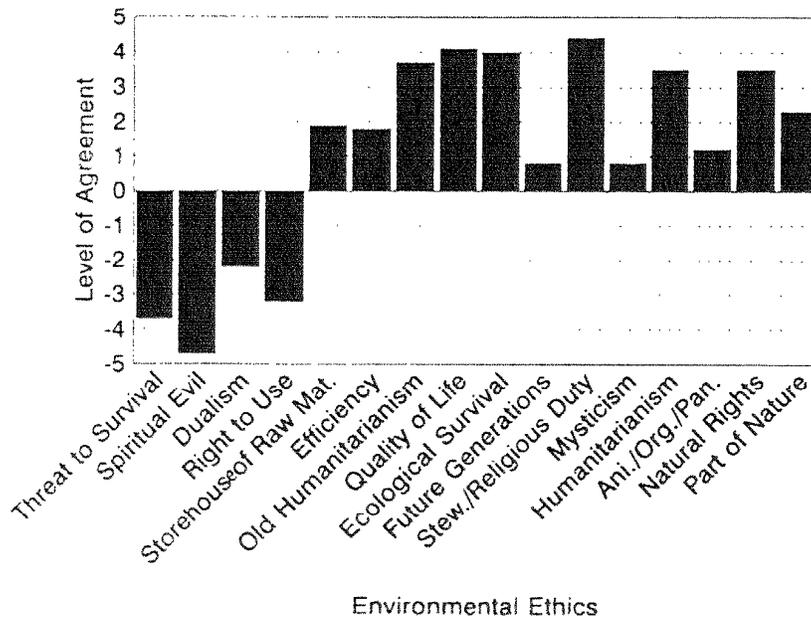


Figure 1. Mean index scores for environmental ethics.

Figure 2 shows the mean scores for each of the wilderness purity dimensions and the mean index score for overall wilderness purity. It is clear that while on some dimensions, visitors desired high degrees of wilderness purity, on average, they did not desire a pure wilderness experience. In fact, on three of the dimensions (trail signs, trail shelters, and responses to emergencies),

a decidedly non-purist attitude prevailed. The average overall wilderness purity score indicates that visitors to the Breadloaf Wilderness desire an experience which has some of the qualities of primitive or pure wilderness recreation and some qualities of more developed types of recreation.

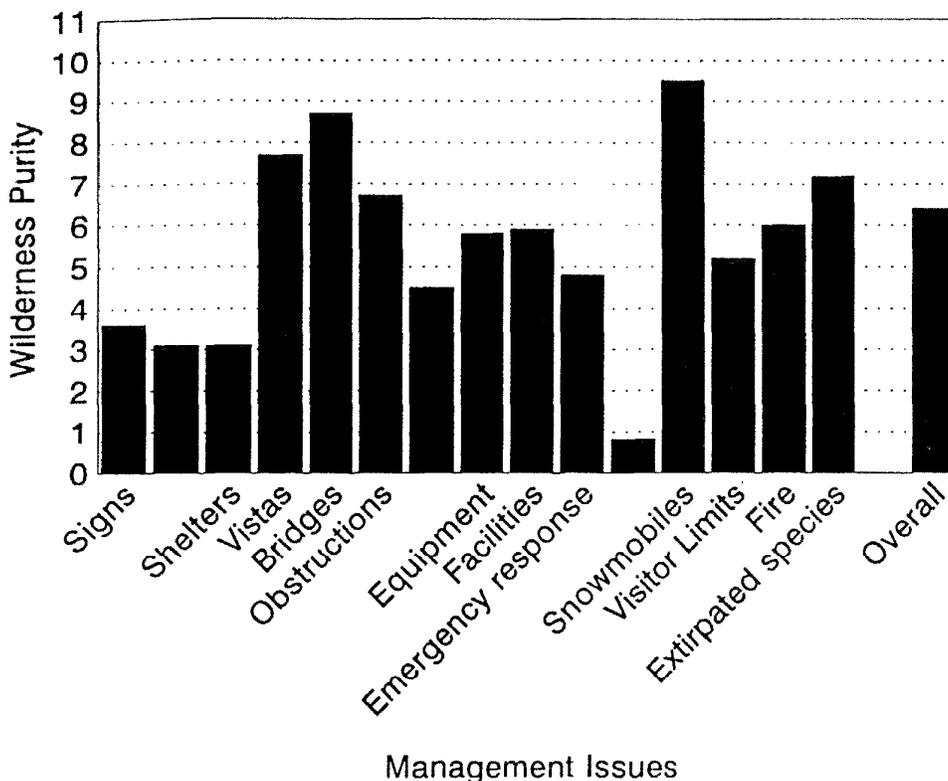


Figure 2. Mean wilderness purity scores.

To test the hypothesis that there are relationships between environmental ethics and attitudes toward wilderness management, multiple linear regression was used. The environmental ethics were used as independent variables while the index of wilderness purity was used as the dependent variable. Table 1 shows the results of this analysis. It is clear from these results that there are statistically significant relationships between some environmental ethics and visitor attitudes about wilderness management. Visitors who more strongly agreed with the "animism/organicism/pantheism" ethic, and who disagreed with the "religious stewardship," "stewardship for future generations" and "human right to use nature" ethics were more likely to desire a pure wilderness experience.

Table 1. Multiple regression results.

	Ani./Org./ Pan.	Rel. Stew	Fut. Gen.	Right to use
Regression Coefficient	0.42	-0.31	-0.19	-0.14
R Squared = .20				
F Ratio = 9.73 Significance = .000 (4,157) Degrees of Freedom				

Discussion and Implications

The results of this study have implications for wilderness managers. They indicate that wilderness visitors may not always be interested in a "pure" wilderness experience. There can be a number of reasons why this is the case. In the case of the Breadloaf Wilderness, many visitors are day hikers and may simply want to hike in an area that is convenient and natural, but not necessarily an area with only wilderness characteristics. The Breadloaf Wilderness meets these needs well. It is easily accessible from many Vermont towns and offers day hiking opportunities which range from very easy to extremely difficult, with panoramic views only short distances from trailheads.

The Breadloaf Wilderness is also bisected by Vermont's Long Trail which offers hikers developed campsites and shelters which are not consistent with a "purist" view of wilderness. However, Long Trail hikers may come to expect these facilities whether they occur in a wilderness area or not.

This study also associated visitor's environmental ethics with attitudes toward wilderness management. This is important from a scientific standpoint because it demonstrates that environmental ethics can be studied empirically, thus allowing such relationships to be demonstrated in other areas as well. However, the study of environmental ethics can also benefit natural resource managers. By understanding environmental ethics, managers can begin to understand not only what attitudes the public holds, but also why

they hold those attitudes. In the case of this study, it was apparent that persons who subscribe to environmental ethics which have a biocentric focus (animism/organicism/pantheism) tended to prefer a "pure" wilderness experience. This may be because they see wilderness not only as a place for human recreation, but also as a place for this ethical idea to be expressed. Likewise, those visitors who subscribe to ethics with an anthropocentric focus (humans have a right to use nature) might prefer a less "pure" wilderness because visible human influence in nature is ethically correct for these visitor.

Based on the results of this study, there are several implications for wilderness managers. Wilderness managers should take environmental ethics into account when managing wilderness areas. By taking environmental ethics into account, wilderness managers can better serve the public by understanding why certain attitudes are held. Additionally, by understanding environmental ethics, potential conflicts can be averted by better understanding the public. This study also indicates that visitor education may be necessary when wilderness purity is an issue. If a management intervention may change the perceived level of wilderness purity in either direction, some users may find the change unsettling. Education may tend to diffuse some negative feeling toward the action.

The results of this study also indicate that further research is necessary. A survey of wilderness managers may be helpful in identifying differences in environmental ethics and attitudes between managers and the public. Additionally, longitudinal study of environmental ethics could help to determine whether they are relatively stable concepts or whether they change over time and across various economic and social conditions.

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CONCERN WITH THE RURAL ENVIRONMENT: URBAN VIEWS ON THE USE OF AGRICULTURAL PESTICIDES AND CHEMICALS¹

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This paper explores the dimensions of agricultural chemical and pesticide concern, and its correlates. Concern was found to be broad, and not limited to food safety, environmentalism, or altruism. Social bases were found to be the best predictors of concern, followed by rural beliefs and attitudes, and rural visitation behavior.

Introduction

The use of agricultural pesticides and chemicals has been credited, in part, with the increasing productivity of the American farmer. These specific agricultural inputs have enabled grocery stores to stock large quantities of affordable and unblemished food stuffs (Sachs et al. 1987; Bunn et al. 1990). Nonetheless, the application of such products is associated with negative externalities including disruptions to the food chain, poisoning of wildlife, fish and birds, and groundwater, stream, and air pollution (Carson 1962; Rodgers et al. 1987). An expanding epidemiological literature suggests that acute and long-term effects can induce neural disorders, leukemias, organ failure, and various cancers (Headley 1967; Kitagawa and Hauser 1973; Rosenblatt and Moscovice 1982; Spindler 1983).

Pennsylvania's population of nearly 12 million people, includes a small minority, less than 2 percent, of farmers. Despite their small numbers, over 30 percent of the state's land base is in agricultural land use, and about 60 percent is forested. Many believe that farming is synonymous with rural areas (Swanson 1991). However, in Pennsylvania, the most rural counties are likely to be heavily forested, with much smaller percentages of farm land. In Pennsylvania, most urban centers are in close proximity to production land. The concern over agricultural chemicals and pesticides can be seen as a rural-urban interface issue, and the perceptions of these urban residents becomes a very important factor of influence within the state.

Farmers are a small minority, and great concern over their farming practices could impact their operations. In fact, regulations requiring certification of workers who handle these

Some exploration of the concern held by Pennsylvania's residents regarding pesticides and agricultural chemicals has occurred (Bealer and Willits 1968; Sachs et al. 1987; Weaver et al. 1991). These studies have suggested that concern over this issue is multidimensional. They have identified three areas of citizen concern: 1) food safety, 2) environmentalism, and 3) altruism.

Food Safety

Concern over agricultural pesticides has been primarily examined as a consumer food safety issue. This is especially true of pesticide residues. Surveys have shown that consumers are increasingly concerned about the occurrence of pesticides residues in food (Burbee and Kramer 1986; Sachs et al. 1987; Food Marketing Institute 1989; Bunn et al. 1990). Despite the high levels of reported concern regarding pesticide residues, most respondents still have confidence in the overall safety of the food supply (Food Marketing Institute 1989). However, recently Jussaume and Judson (1992) suggested that consumer confidence in food safety has eroded.

Environmentalism

Environmental awareness concerning the impact of pesticides and agricultural chemicals was heightened by Rachel Carson's *Silent Spring*. Soon after the publication of this work, Bealer and Willits (1968) conducted a survey to determine the level of concern with pesticides and agricultural chemicals in Pennsylvania. Two decades later a similar survey was conducted by Sachs et al. (1987) who determined that respondents' general concern with pesticides had increased greatly. They also found that the highest levels of concern being reported for the environment. Sachs et al. (1987) contribute much of this increase to an awareness among citizens that the environment is "an enduring social concern" (page 98).

Altruism

Sachs et al. (1987) determined that the highest levels of reported concern over the impact of pesticides was for the environment. However, the greatest percentage increase of concern over a two decade period was for farmers who handle pesticides. They suggest that this is partially due to increased consumer familiarity with pesticides and their application. Sachs et al. (1987) point out that many modern pesticides and herbicides have acute toxicity, but breakdown quickly leaving few residues. This places farmers, farm workers, and wildlife in the immediate area at greatest risk.

Weaver et al. (1991) suggest that concerns about pesticides could be grouped in two areas: 1) personal health risks and 2) impacts that go beyond the individual consumer. Personal health risks generally relate to food safety. The second set of concerns relate to all external impacts of pesticides. Weaver et al. (1991:13) list these concerns as "dangers to farm workers, wildlife, groundwater, and the environment." Though these items overlap with environmental concern, it is the thesis of Weaver et al. that they represent a more generalized concern to all aspects *external to the individual*, including the environment.

Research Objectives

Drawing upon measures of agricultural chemical and pesticide concern from past research (Bealer and Willits 1968; Sachs et al. 1987; Weaver et al. 1991), this analysis assesses the level and domains of this concern. Particular attention is given to the areas of food safety, environmentalism, and altruism. Determining the level and dimensions of pesticide concern for urban respondents would enable further analysis into why respondents hold such attitudes. Given the proximity of agricultural production to these respondents, their concerns are important, and may give insight into potential conflicts in the future.

¹ Support for this research was provided by grants from the Center for Rural Pennsylvania (CRP-CA-91-9) and from the Intercollege Research Competitive Grant Program of the College of Agricultural Sciences, Penn State University (Project 3208). inputs are placing more demands on their time. Further, current restrictions that have been placed on certain agricultural chemicals and pesticides are impacting the mode of agricultural production (Vandeman et al. 1992).

This paper has three interrelated objectives:

1. to explore the level and dimensions of pesticide concern held by urban residents;
2. to develop measures of such concerns and to identify social bases, attitudes, and behaviors that are related to pesticide concern; and
3. to develop a multivariate block model that establishes the strength of social bases, attitudes, and behaviors, while controlling for all variables.

Approach

A mail survey following the Dillman (1978) method was conducted seeking information on the level of concern for agricultural pesticide and chemical use of urban residents. A total of 3,611 residents of the nine cities in Pennsylvania with a population of 50,000 or more in 1990 were contacted. Completed questionnaires were returned by 1,524 respondents, representing a 42 percent response rate (Willits, et al. 1992).

Exploring the Dimensions of Pesticide Concern

The urban residents were asked a battery of six items concerning agricultural pesticide and chemical use (Table 1). The frequency of responses show great concern about the usage of these products. Many respondents strongly disagreed, or disagreed that food safety was *not* threatened by these inputs. However, of all these items, respondents were more likely to be undecided on these two issues. Majorities strongly agreed or agreed that agricultural sprays pollute the environment and that such pesticides threatened the safety of wild birds and animals. A majority of the urban respondents rejected the notion that chemical fertilizers pose *no* serious threat to the environment. The last item, farmers who handled pesticides are endangered, elicited a similarly high amount of concern. These six items were factor analyzed to see if the respondents conceptualized these differing threats from pesticides and chemicals as separate concerns (i.e. food safety, environmental, or altruism concern). It was hypothesized, on the basis of previous research, that items 1 and 2 would form a food safety factor, items 3, 4, and 5 would load together on a factor that would represent environmentalism, and that items 3, 4, 5, and 6 would also load together to represent an altruism domain.

Table 1. Responses of urban residents to questions about agricultural pesticide and chemical concerns.

Statements	Response				
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
	----- Percent -----				
It is safe for people to eat fruits and vegetables that have been sprayed or dusted with pesticides on the farm.*	2.7	26.3	31.4	28.6	10.9
Agricultural pesticides do not contaminate meat and poultry.*	1.2	11.3	38.4	36.7	12.5
Agricultural sprays used to control insects and weeds pollute the environment.	21.0	43.8	21.9	11.4	1.9
Chemical fertilizers in agriculture pose no serious environmental problem.*	2.0	11.2	22.5	44.8	19.5
The use of agricultural pesticides threatens the safety of wild birds and animals.	17.7	49.6	23.1	7.9	0.9
Farmers who handle pesticides place themselves in danger.	12.0	53.1	24.7	8.8	0.7

* These items were reverse coded for the analysis.

Surprisingly, despite support for multidimensional concerns, when the analysis was conducted only one factor was extracted. This single factor solution suggests that concern with pesticides is not limited to food safety, environmental, or altruism issues, but rather is conceptualized as a broader concern. This factor accounted for 51.7 percent of the variation within the model. The Eigenvalue was 3.2, all items had factor loadings of .650 or higher, and using Armor's (1974) theta reliability for factor scales, a coefficient of .86 was generated, indicating a high level of internal consistency ^{2,3}.

^{2/} Responses to the questions concerning agricultural pesticide and chemical uses were scored 1 to 5 with 1 = strongly disagree and 5 = strongly agree and scaled (with a range of 1 to 5). The items that rejected the possibility of safety threats were reverse-coded, so that for all items, a higher score reflected greater concern with the use of these items in agricultural production. The mean of the responses for the six items was derived for each respondent.

Correlates of Pesticide Concern

The three major groupings of *social bases*, *behaviors*, and *beliefs and attitudes* are expected to influence the level of general concern urban residents hold towards pesticides and agricultural chemicals. These specific variables, their hypothesis, and their operationalization follow.

Social Bases

More than a decade ago, Van Liere and Dunlap (1980) examined the social bases for environmental concern. They studied the major hypothesis regarding environmental concern and the variables age, income, education, sex, residence, party affiliation, and ideology. Van Liere and Dunlap's review was limited by several factors. First, they only reported bivariate correlations, and second, they focused only on the most commonly used variables. Despite these shortcomings, this article has been viewed as the best attempt to explain the relationship of these core variables to environmental concern (Scott and Willits 1992).

^{3/} The theta coefficient is interpreted similarly to Chronbach's alpha, and is used for factor scales because it does not assume that all items are weighted equally.

Following the work of Van Liere and Dunlap (1980), females and the young are expected to exhibit greater concern about the use of pesticides and chemicals. For income and education a positive relationship with concern is expected. Respondents raised in rural areas, were expected to be less concerned about the use of agricultural pesticides and chemicals. Those who identified themselves as Democrats and those who thought of themselves as liberals are expected to be more concerned.

Information about the respondents' personal attributes of age, educational level, income, and gender were obtained for each respondent. Age was coded into 3 categories: 1) 18-34; 2) 35-64; and 3) 65 years and over. Educational attainment was divided into four categories and coded 1 to 4 as follows: 1) less than high school graduation; 2) high school graduate, no further formal education; 3) some college; or 4) college graduate. Income level was measured in three categories coded 1 to 3: 1) less than \$15,000 per year; 2) \$15,000-44,999; and 3) 45,000 per year or over. Gender was coded so that females were 0 and males were 1. Party affiliation was coded so Republicans were 0 and Democrats were 1. Ideology was scored so conservatives were 1, moderates were 2, and liberals were 3. A question asking the respondents where they grew up as children was asked. These responses were coded so that those who responded in the countryside outside of a city or town were assigned a score of 1. Those raised in suburbs, towns, or cities were scored as 0.

Rural Visitation Behavior

Experience with rural areas gained through visitation was expected to relate to concern about agricultural chemicals and pesticides. Those who visit rural areas frequently to interact with the environment were expected to display more concern. This reflects the increased awareness of the environment that such respondents were thought to have developed. For those respondents who visit rural areas frequently for social reasons, less concern is expected, as these respondents may be more concerned about the importance of agricultural production to the rural economy.

Behavioral information was obtained on the respondents frequency of visits to rural areas for recreation, vacation, outdoor activities, to enjoy the natural environment, and to visit people.

The possible responses were assigned the following values for each question: 1) never, 2) seldom, 3) often, and 4) frequently. The scores were summed for each case to form a scale called Environmental Visits. The grand mean for this scale was 2.8. A similar series of questions were asked regarding frequency of visits to rural areas for Social Contacts. Respondents were asked if they went to rural areas to visit: friends, relatives, rural people, or to participate in rural lifestyles. The grand mean for this scale was 2.3. Alpha reliability for the two indices were .82 and .79 respectively.

Rural Beliefs and Attitudes

Perception and attitudes were also expected to relate to concern over agricultural pesticide and chemical use. A Positive Images scale was used to represent the "rural mystique" (Willits, 1993). The rural mystique, as measured through the Positive Images scale assess support for stereotypical rural attributes, including, friendly people, low crime, low stress, and satisfying lifestyle. The blanket association of rural things being good may reduce the concern one holds over chemical and pesticide issues.

One's position on rural development options could influence the level of concern about pesticides. Those favoring agriculture as a development tool, may be pro-agriculture, and are expected to be less concerned about agricultural pesticides and chemicals. Though all respondents are urban residents, those who wish to live in rural areas may be more concerned because of the future possibility of living in a polluted environment.

Responses to the Positive Images items were scored 1 to 5 with 1 = strongly disagree and 5 = strongly agree, with a mean of 3.6. The alpha reliability coefficient of this scale was .58. A specific question asked how respondents felt about the role of agricultural production in rural economic development policy. Those responding low priority were coded as 1, those assigning a middle priority were coded as 2, and the highest priority was coded as 3. One item asked where the respondent would most like to live. Responses were coded so that those who responded in the countryside outside of a city or town were assigned a score of 1. Those favoring suburbs, towns or cities were given a score of 0.

Table 2. Multivariate relationships for the agricultural chemical and pesticide concern index and the independent variables.

Variable	Model I	Model II	Model III	Complete Model
	B	B	B	
Social Bases				
Age	-.019		-.016	-.013
Income	-.067***		-.058***	-.065**
Sex	.220***		.205***	.225***
Education	.050*		.050*	.033
Party	.089***		.094**	.082**
Ideology	.104***		.101***	.102***
Childhood residence	-.225***		-.157**	-.186**
Rural Beliefs/Attitudes				
Positive images	.002	-.006		.000
Negative images	.030	.021		.020
Development options	-.058*	-.048		-.048
Desired residence	.099	.061		.089*
Visitation Behavior				
Environment visits		.124***	.148***	.121***
Social visits		-.172***	-.166***	-.136***
Constant	3.293***	3.486***	3.588***	3.310***
Adjusted R square	.13	.06	.11	.15

* significant at the .05 level
 ** significant at the .01 level
 *** significant at the .001 level

The Bivariate Models

The expected relationships with age, sex, party affiliation, and ideology were found (data not shown). Though Van Liere and Dunlap (1980) found strong differences by educational level, this relationship was not statistically significant in the bivariate model. Further, a weak negative relationship with income was found when a positive relationship was expected.

Younger respondents, females, and those with low or medium incomes, were more concerned about the impact of these products. Democrats, and those with liberal ideologies were also more concerned. If, as a child, the respondent lived in a rural area, they exhibited less concern.

Among the attitudinal items, the Positive Images scale and the Desired Residence variable did not produce significant differences. However, those who thought agriculture was a *poor* economic development strategy were more concerned about pesticide and chemical use.

For the Social Visitation scale, those who frequently visit were more concerned -- the opposite of the anticipated relationship. The Environmental Visitation scale did not produce any significant differences.

The Multivariate Model

Multiple linear regression was used to model the three correlates of pesticide concerns (social bases, attitudes and beliefs, and visitation behaviors). The social bases were found to be the strongest indicators of concern, as shown by the 9 percent decrease in explained variation (R^2), when these variables were excluded from the complete model (Table 2). The belief and attitude block and visitation behaviors block were roughly equal in explanative power. Income, sex, party affiliation, ideology, and childhood residence were the significant social bases variables. As income increases, concern decreased. Females, Democrats, liberals, and those raised in non-rural settings all displayed more concern. Those who visit rural areas for social reasons were more concerned. The traditional development options variable was significant in two of the partial models, but was insignificant when all variables were controlled for. Those wishing to move to rural areas, and those that visit rural areas to be in the environment displayed more concern. No relationship in the multivariate model changed from the bivariate model. However, frequency of environmental visits did become significant, influencing the level of concern.

Discussion

The availability of data from an urban sample of Pennsylvania residents, provided information on how concerned these respondents were about agricultural pesticide and chemical use. Their reported levels of concern were great. Moreover, this issue is not limited to consumer-food safety, but rather is viewed by the public as a more comprehensive threat. For the most part, this analysis affirms the social bases hypothesis discussed by Van Liere and Dunlap (1980), particularly at the bivariate level. The only major exception is that of education, which was only mildly related in two of the block models. In spite of the fact that many of these variables were statistically significant, their combined power is not overwhelming. In an attempt to extend the social/demographic analysis of the type done by Van Liere and Dunlap, attitudes, beliefs, and behaviors were included in the analysis. However, these variables did not add substantively to the model's explanation.

Implications Stemming from Agricultural Chemical and Pesticide Concern

These findings suggest that agricultural production in close proximity to suburban and urban areas will probably face new challenges in the years ahead. Concern for the environment, food safety, and farm workers may lead to significant restrictions on pesticide and chemical use. Although these challenges to farmers may seem daunting, they may initiate agricultural innovations that are more profitable, as well as reduce the environmental

impacts of these inputs. As the cost of agricultural chemicals and pesticides, training, and certification increases, the economic incentive to adopt alternative strategies will increase. Some of these innovations are well underway, and include: low input sustainable agriculture, use of beneficial insects, pest resistant hybrids, insecticidal soaps, and bacterial based insecticides (Musser 1990; Vandeman et al. 1992). In fact, many of these "alternative" methods are rapidly becoming accepted as conventional techniques. The level of concern shown in this study suggests that pursuing alternatives to chemicals and pesticides would be a prudent course of action, especially for those who farm on the rural-urban interface.

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THE 1992 VERMONT RECREATION SURVEY AND ENVIRONMENTAL INDEX: VERMONTERS' PERCEPTIONS OF RECREATIONAL AND ENVIRONMENTAL ISSUES IN VERMONT

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In 1992, Vermonters rated the state's recreational resources a "B-" with a corresponding grade of "B" for the quality of the state's environment. Scenic resources continued to be rated most highly as were state trails and commercial recreation establishments. Concern for water resource quality, solid and toxic waste disposal, acid rain, agricultural land loss, and increasing development, was discovered. Recreation greenways and the accommodation of bicyclists in road development was supported as was the development of lighted trails for night skiing. Perceived positive effects of tourism were matched by concerns about impacts on traffic conditions, costs of land and housing, and crime in Vermont.

Introduction

In developing the 1993 Vermont Recreation Plan, the Vermont Department of Forests, Parks and Recreation contracted the Center for Rural Studies and the School of Natural Resources at the University of Vermont to poll state residents' perceptions of recreational issues and environmental quality. The recreation plan identifies and addresses statewide recreation needs and issues and prioritizes them into legislative protections and resource allocations. The recreation plan assures that facilities and resource opportunities, planned and developed by local, state, and federal providers, correspond with the needs of citizens and maximize opportunities for the dollars spent. A final component of the study was the continuation of the Vermont Environmental Quality Index, a study begun by Dr. Robert Manning of the University of Vermont's School of Natural Resources. Since 1986, the Environmental Quality Index has focused on Vermonters' perceptions of the status of Vermont's rich and diverse natural resource base and their opinions regarding contemporary resource issues.

Methodology

From November 30, 1992, through December 5, 1992, attitudes and perceptions regarding recreation and environmental policy were gathered through a telephone survey of 510 Vermont adults. The survey response rate was 57.6%, with a refusal rate of 33.4% and a termination rate of 8.9%. Two factors were identified as possible influences on these rates: 1) the survey was conducted immediately following a major national election that had spawned numerous telephone polling activities throughout Vermont, and

2) the survey length averaged approximately 25 minutes and may have deterred some potential respondents from starting or completing the survey. The statistical confidence level of the survey results was 95% with a precision of $\pm 4\%$.

Survey responses were entered in D-BASE III+ and analyzed using the Statistical Package for the Social Sciences (SPSS-X). Simple frequencies were produced for all survey questions. T-Test analyses of mean responses and Kolmogorov-Smirnov analyses of median responses were conducted to compare survey results with the results of previous surveys conducted in 1988 and 1990 in which Vermonters were asked similar questions about recreation and the environment.

Recreational Resources

Survey respondents evaluated the quality of Vermont's recreation resources using letter grades of A, B, C, D, or F. Letter grades were converted to numerical equivalents (A=4, B=3, C=2, D=1, and F=0) in order to derive a "grade point average" (GPA). Recreation resource GPAs ranged from 2.369, a C+, for the quality of recreational services and facilities provided by local governments, both cities and towns, to 3.632, a B+, for the scenic quality of Vermont's landscape.

In addition to scenery, trails and commercial recreation establishments were ranked relatively highly in comparison to other resources. The quality of water resources for recreation--rivers, streams, lakes and ponds--along with the quality of local public recreation facilities, received relatively low grades compared to other recreation resources (Table 1).

T-Test analysis of mean survey responses for 1988 and 1992 revealed statistically significant changes in Vermonters' perceptions of the quality of recreation resources. Survey results reported significant improvement in the perceived quality of Vermont's scenery which continued to be rated rather highly in comparison to other resources in both 1988 and 1992. While the quality of local public recreation facilities remained at the bottom of the quality scale at both points in time, Vermonters reported a significant improvement in perceived quality in 1992. Significant declines in perceived quality were reported for two recreation resources: state and federal forests and parks, and Vermont's rivers and streams. While commercial recreation establishments received a lower grade of "B-" in 1992, this decline was not found to be statistically significant (Table 1).

Respondents were asked to evaluate a variety of recreational and environmental issues and potential problems, in terms of whether they were considered to be "big," "small," or "no" problems. At least half of the respondents considered each of the issues mentioned to be either big or small problems with the exception of two issues: the extent of government liability for injuries to recreationists and overcrowding of recreation trails and paths.

Looking specifically at "big" problem responses, more than half of the respondents indicated that nuisance aquatic plants were a "big" problem (56.9%), followed by the destruction of fish habitat (51.8%) and vandalism of public recreational areas (51.6%). When "big" and "small" problem responses were summed, vandalism of public recreational areas (91.0%) appeared at the top of the problem list, followed by lack of respect for private property by recreational users (87.8%), shoreland development (87.2%), and loss of Vermont's scenic landscape (82.6%). Destruction of habitat for wildlife (82.3%) and fish (81.6%) were also perceived to be problems, either big or small. At the other end of the spectrum, a substantial minority of respondents reported that the issue of crowded trails and paths was not a problem (40.9%), as well as the potential problems of posting of private land (35.3%) and lack of community outdoor recreational facilities (32.2%).

Table 1: Comparison of quality of recreation resources (1988 & 1992).

Recreation Resource	1988		1992		1988-1992 Trend ^c
	Avg. ^a	Grade ^b	Avg. ^a	Grade ^b	
Scenery	3.575	B+	3.632	B+	Improvement
Trails	3.149	B	3.142	B	No Change
Commercial Recreation Establishments	3.025	B	2.981	B-	No Change
State/Federal Forests and Parks	3.090	B	2.914	B-	Decline
Lakes and Ponds	2.906	B-	2.804	B-	No Change
Rivers and Streams	2.802	B-	2.724	B-	Decline
Local Public Recreation	2.362	C+	2.369	C+	Improvement

a/ Average refers to the mean score derived from the following coding system: A=4; B=3; C=2; D=1; F=0.
b/ Grades were assigned as follows: A (Excellent) = 4.0, A- = 3.67, B+ (Good) = 3.33, B = 3.00, B- = 2.67, C+ (Fair) = 2.33, C = 2.00, C- = 1.67, D+ (Poor) = 1.33, D = 1.00, D- = 0.67, and F (Failure) = 0.00.
c/ Trends include: Decline = statistically significant decrease (p ≤ .05); Improvement = statistically significant increase (p ≤ .05); and No Change = no statistically significant change (p > .05).

Issues surrounding liability for injuries to recreationists received the greatest number of "Don't Know" responses indicating that Vermonters responding to the survey were unaware or uncertain of how these issues affected government (31.8%), commercial establishments (29.2%), and private landowners (24.4%). Respondents also expressed uncertainty regarding the issue of regulation of boat moorings on lakes with 27.8% responding with "Don't Know."

Comparison of 1992 survey responses with data collected in 1988 revealed a number of shifts in Vermonter's perceptions of the importance of recreation-related issues (See Table 3). It should be noted here that these "shifts" are the result of changes in mean survey responses of 0.1 or greater--relatively small variations that are not necessarily indicative of dramatic changes in public opinion; however, analyses of median survey responses revealed some statistically significant changes in respondent perception.

In both the 1988 and 1992 surveys, Vermonters reported the vast majority of the issues in question to be problems, either big or small. From 1988 to 1992, statistically significant declines in levels of concern were discovered in a number of areas including: destruction of wildlife habitat; shoreland development; loss of Vermont's scenic landscape; inadequate design of commercial recreation areas; liability of commercial recreation areas for injuries to recreationists; overcrowding of trails; and posting of private land against public access. Other areas where there were declines in concern from 1988 to 1992, albeit not found to be statistically significant, included: fish habitat destruction; high cost of commercial recreation areas; and overcrowding of lakes and ponds.

Statistically significant increases in levels of public concern from 1988 to 1992 were discovered regarding the high cost for use of public or government-managed recreation areas and the lack of agency responsiveness to the recreation needs of Vermonters. Other areas of increased concern that were not found to statistically significant included: lack of public information on recreation issues and opportunities; lack of indoor recreation facilities; lack of recreation trails and greenways; conflicts among users of rivers and streams; and lack of organization of recreation user groups.

Future Recreation Directions

Respondents were surveyed regarding their level of agreement, or disagreement, with a number of recreation-related issue statements. Respondents indicated high levels of agreement with the concept of community greenways for pedestrians and bicyclists (91.6%) and for the inclusion of adequate shoulder for bicyclists in the development or improvement of roads and highways (87.6%).

Regarding ski industry issues, respondents agreed with the development of night skiing facilities (72.1%). Less than half of the

respondents (47.6%) agreed that expansion of ski areas in Vermont was a good idea, and even fewer (38.1%) supported water withdrawals from rivers and streams for snow-making activities.

In terms of recreation resource development, nearly two-thirds of the respondents (63.5%) agreed with government acquisition of more land in Vermont for recreation. Just more than half of the respondents (55.4%) supported using a portion of gas taxes to help fund recreation trails and paths. Less than half of the respondents (48.4%) supported using boater registration fees to increase boating access to Vermont's waters; however, one should note that a substantial number of respondents (12.0%) indicated they did not know, or were uncertain, whether they supported this concept.

Approximately half of the respondents agreed that government and private business in Vermont cooperated well in providing recreation opportunities, while a substantial minority (35.7%) disagreed with this statement. Finally, a majority of respondents (75.9%) voiced clear support with the statement that state government should do more to promote tourism in Vermont.

Comparison of 1992 and 1988 survey responses revealed statistically significant changes in Vermonters' attitudes toward selected recreation issues. Support increased significantly for more state promotion of tourism. The expansion of ski areas in Vermont, while supported by less than half of the survey respondents, was viewed significantly more favorably in 1992 than in 1988. Support declined significantly for the designation of all-terrain vehicle areas, the development of additional swimming areas, and more government acquisition of land. Support declined regarding the development of more marinas; however this change was not statistically significant.

Recreation Expenditures

Survey respondents were asked to prioritize various spending initiatives for developing recreational opportunities in Vermont. While there was clear support demonstrated for each initiative, the maintenance of existing recreation lands and facilities was at the top of the list with 40.6% of the respondents considering this to be "very important" and 53.3% considering it "important" (Table 2).

Comparison of survey responses from 1988 and 1992 indicated that Vermonters continued viewing all four types of recreation expenditures as being important. Overall, fewer Vermonters in 1992 identified expenditures as being "Very Important"--perhaps a reflection of the economic declines experienced by Vermont as well as the rest of the nation. The maintenance of existing resources--lands and facilities--was considered to be of high importance at both points in time relative to other spending priorities (Table 2).

Table 2. Attitude toward recreation expenditures (1988, 1992).

Recreation Expenditures	Level of Importance							
	Very Important		Important		Unimportant		Very Unimportant	
	1988	1992	1988	1992	1988	1992	1988	1992
	(Percent)							
Developing Additional Facilities	12.6	13.0	62.6	62.0	23.8	21.7	1.0	1.2
Developing Additional Programs	15.7	12.8	57.1	56.9	25.1	27.3	2.1	1.0
Maintaining Existing Lands and Facilities	46.0	40.6	52.0	53.3	2.1	4.9	0.0	0.0
Acquiring Additional Lands	18.0	12.2	54.7	55.5	25.8	27.4	1.5	3.0

The 1992 Environmental Quality Index

In two-year intervals since 1986, Vermonters have been polled regarding their opinions of the quality of Vermont's environment. In 1992, the highest grades were given to Vermont's scenery (3.756), woodlands and forests (3.304), and wildlife (3.209). The quality of Vermont's water resources--rivers and streams (2.674), drinking water (2.666), ground water (2.640), and lakes and ponds (2.437) received relatively low ratings compared to other components of the environment (Table 3).

Comparison of Vermonter's perceptions of environmental quality since 1986 illustrates several trends. At each point in time, the quality of Vermont's scenery received the highest marks in comparison to other components of the environment. While the

grade for scenery remained an A- from 1990 to 1992, statistical analysis revealed that the increase in grade point average was actually a significant improvement. Other components of the environment where there were statistically significant improvements in perceived quality from 1990 to 1992 included Vermont's woodlands and forests, wildlife, deer herd, and river and stream resources. Public perception of the quality of Vermont's state parks continued to decline with the change from 1990 to 1992 being significantly different. There were no significant changes in perception of the quality of air, fisheries, drinking water, ground water, lakes and ponds, and in Vermont's overall natural environment between 1990 and 1992 (see Table 3).

Table 3. Trends in perceived environmental quality (1986-1992).

Environment	Year				Trend ^a	Grade ^b
	1986	1988	1990	1992		
	(Average)					
Scenery	3.80	3.72	3.73	3.76	Improvement	A- to A-
Woodlands/Forests	3.26	3.22	3.21	3.30	Improvement	B to B+
Wildlife	3.05	2.97	2.84	3.21	Improvement	B to B+
Air Quality	3.20	3.17	2.96	3.20	No Change	A- to A-
Overall Quality of VT Environment	3.12	3.09	2.91	3.16	No Change	B- to B
State Parks	3.45	3.24	3.34	3.12	Decline	B+ to B
Deer Herd	2.55	2.42	2.57	3.08	Improvement	C+ to B+
Fisheries	2.82	2.84	2.66	2.82	No Change	C+ to B+
Rivers & Streams	2.69	2.58	2.48	2.67	Improvement	C+ to B-
Drinking Water	2.75	2.85	2.68	2.67	No Change	B to B
Ground Water	2.70	2.76	2.50	2.64	No Change	B- to B
Lakes & Ponds	2.61	2.46	2.23	2.44	No Change	C to C+

a/ Trends include: Decline = statistically significant decrease (p ≤ .05); Improvement = statistically significant increase (p ≤ .05); and No Change = no statistically significant change (p > .05).

b/ Grades were assigned as follows: A (Excellent) = 4.0, A- = 3.67, B+ (Good) = 3.33, B = 3.00, B- = 2.67, C+ (Fair) = 2.33, C = 2.00, C- = 1.67, D+ (Poor) = 1.33, D = 1.00, D- = 0.67, and F (Failure) = 0.00.

Tourism in Vermont

Tourism is generally recognized as one of the largest industries in Vermont and its impacts on the economy, development and the state's resources are important considerations for planning. Overall, survey respondents indicated that visitors and tourists had positive effects on a variety of aspects of life in Vermont. Opportunities for jobs (68.9%), cultural activities (66.7), shopping (63.6%), and recreation (59.4%), were reported to be "good effects" of visitors and tourists. The primary "bad effect" created by tourists was perceived to be traffic conditions (70.6%), with a majority of respondents also observing a negative effect on the costs of land and housing (55.5%) and crime (52.1%). (See Table 4.)

Comparison of survey responses from 1986, 1988, and 1992, indicated that Vermonters were more negative regarding the effects of tourism on the creation of jobs and recreational opportunities in the state. Vermonters increasingly were less negative regarding the impacts of tourists on the costs of land and housing, traffic conditions, agriculture and farming, and on environmental quality. Respondents were more positive about the

effects of tourists on Vermont's scenery, the state's values, customs, and traditions, and the overall quality of life in Vermont (Table 4). In the areas of shopping and cultural opportunities, crime, and the general cost of living, Vermonters reported relatively the same perceptions of the effects of tourists.

Statistical analysis of responses from 1988 and 1992 surveys, revealed an increasingly more positive attitude of Vermonters toward visitors to the state. Significantly fewer respondents reported negative perceptions of tourists' effects on the costs of land and housing, agriculture and farming, and environmental quality. Significantly more respondents from 1988 to 1992 reported perceived positive effects of tourists on Vermont's scenery and on the overall quality of life in the state (Table 4).

Table 4. Comparison of the perceptions of the effects of tourists (1986, 1988 & 1992)

Issue	Average ^a		
	1986	1988	1992
Job Opportunities	0.62	0.49	0.54
Costs of Land/Housing	-0.43	-0.61	-0.32 ^b
Traffic Conditions	-0.70	-0.69	-0.62
Recreational Opportunities	0.52	0.30	0.43
Cultural Opportunities	0.62	0.55	0.60
Crime	-0.51	-0.47	-0.50
Vermont's Scenery	-0.03	-0.11	0.17 ^b
Agriculture & Farming	-0.16	-0.22	-0.00 ^b
General Cost of Living	-0.16	-0.32	-0.16 ^b
Shopping Opportunities	0.56	0.46	0.51
Environmental Quality	-0.19	-0.30	-0.07 ^b
VT Values, Customs, & Traditions	0.00	-0.12	0.04 ^b
Overall Quality of Life	0.27	0.17	0.35 ^b

a/ Average refers to the mean score derived from the following coding system: Good Effect=1; No Effect=0; and Bad Effect=-1.

b/ 1992 response is significantly different from 1988 response (f prob. < .05).

Respondents were asked to agree or disagree with several statements about Vermont tourists. Vermonters' attitudes toward tourists were generally positive for each item. A substantial majority (72.4%) indicated that Vermont tourists were pleasant to deal with and a similar majority (74.4%) disagreed that there were too many tourists visiting Vermont. However, substantial minorities did not agree that Vermont tourists were considerate to the environment (42.0%), and that more tourism would raise the

standard of living in the state (42.1%). Comparison of responses from the 1986, 1988, and 1992 surveys revealed declining agreement with the statement that "Vermont tourists are pleasant to deal with." There was, however, more agreement with the statement that more tourism development would raise the standard of living in Vermont; this increase in agreement was found to be statistically significant from 1988 to 1992 (Table 5).

Table 5. Comparison of perceptions and attitudes about tourism (1986, 1988 & 1992).

Statement	Average ^a		
	1986	1988	1992
Vermont tourists are pleasant to deal with	0.61	0.61	0.50
Vermont tourists are considerate toward the environment	0.08	0.05	0.10
Vermont tourists are considerate toward Vermont residents	0.23	0.25	0.21
More tourism development will raise standard of living in Vermont	0.06	-0.12	0.15 ^b
There are too many tourists in Vermont	-0.54	-0.41	-0.56

a/ Average refers to the mean score derived from the following coding system: Strongly Agree=2; Agree=1; Disagree=-1; Strongly Disagree=-2.

b/ 1992 response is significantly different from 1988 response (f prob. < .05).

Conclusions

The 1992 Vermont Recreation Survey and Environmental Index offers a unique perspective on Vermonters' perceptions regarding recreational issues and the quality of Vermont's environment. In general, Vermonters have given the quality of the state's recreational resources an average grade of a B- and a slightly better average grade of B for the quality of Vermont's environment. Vermont's scenery, as both a recreational and environmental resource, continues to be perceived by Vermonters as the state's highest quality resource--a trend that's been measured since 1986.

The quality of Vermont's water resources, as both recreational and environmental amenities, appears to be an area of concern receiving the lowest grades on the Environmental Index. Comparison of Vermonters' opinions over time indicate that while there was a significant improvement in the perceived quality of rivers and streams between 1990 and 1992, there were no significant changes reported in the perceived quality of drinking water, ground water, and lakes and ponds.

Disposal of solid and toxic wastes, along with the loss of agricultural land, acid rain and the increasing development of Vermont, are perceived to be big environmental problems for the state. While considered to be "problems," availability of outdoor recreation opportunities, air quality, overcrowding of outdoor recreation areas and conflicts between different groups of outdoor

recreationists, were issues rated relatively lower in comparison to other potential environmental problems for the state.

A majority of Vermonters agreed that the state was doing well in the protection of the natural environment; however, they did not agree that future generations would enjoy a better quality environment. Vermonters indicated that they did not believe that the state's environmental laws were too strict and supported the idea that environmental protection and economic progress could go hand in hand.

In the area of recreation-related issues, Vermonters supported, relatively strongly, the concepts of community recreation paths or "greenways" for bicyclists and pedestrians, and the inclusion of adequate road shoulder in the development and improvement of roads and highways to accommodate bicyclists. Vermonters offered varying levels of support for ski industry initiatives--agreement with the development of lighted ski trails for night skiing, and disagreement with the expansion of ski areas and water withdrawal from Vermont's rivers and streams for snow-making.

Overall, Vermonters perceived the effects of visitors and tourists to the state to be positive with the creation of opportunities for jobs, cultural activities, shopping and recreation; however there was concern expressed for the impacts of tourists on traffic conditions, the costs of land and housing, and crime in Vermont.

PLANNING AND G.I.S.



**IDENTIFYING CRITERIA AND ESTABLISHING
PARAMETERS FOR FOREST-BASED
ECOTOURISM IN NORTHERN ONTARIO,
CANADA¹**

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This paper identifies the following criteria as indicators for ecotourism suitability within a Northern Ontario context: naturalness, wildlife, cultural heritage, landscape and community. A methodology is proposed which uses Geographical Information Systems (GIS) to identify ecotourism sites by linking criteria deemed important with actual landscape characteristics of Northern Ontario.

Introduction

Within the context of tourism in general, the ecotourism sector is reported to be the area experiencing the greatest growth over the past decade. Although ecotourism implies a form of tourism which fosters environmentally responsible principles, it appears that the economic benefits that can accrue from this activity have encouraged many nations to deliberately promote ecotourism within their borders. Established ecotourism destination areas are focused predominantly in the developing nations (Boo 1990; Dearden 1989; de Groot 1983; Fennell and Eagles 1990). The magnitude of the ecotourism industry is well illustrated by the reality that over 25 billion dollars are transferred from the northern to the southern hemisphere annually (Whelan 1991). Recently the growth in ecotourism has been broadened to include new destination areas in Australasia (Valentine 1992), and the remote landscapes of the polar regions (Marsh 1992). Expansion has also resulted in opportunities being sought in the less exotic temperate landscapes of the developed world, such as Northern Ontario, Canada. This latter trend has emerged in response to the potential that ecotourism may offer the economies of marginal areas, and also the realization that there may be a declining number of new exotic and rare landscapes available that can be marketed as ecotourism destination areas in the more established regions.

Early ecotourism destinations like Kenya (Olinda 1991), the Galapagos Islands (Kenchington 1989) and Thailand (Dearden and Harron 1992) have suffered extensive impacts as a result of increased numbers of tourists. In light of the above, it is

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imperative that only those areas which are suitable for ecotourism be developed and ensure that ecotourism criteria are matched with the resource base characteristics of the region. This paper describes a methodology to identify sites based on determining first the criteria and attributes of ecotourism and second by matching the value range of these criteria to the region's resource base inventory. The problems in defining ecotourism and identifying the linkages between ecotourism and other forms of tourism and related environmental management concepts are discussed in the context of explaining the difficulty in identifying appropriate ecotourism criteria. Next, the elements of ecotourism, suitable to Northern Ontario, are presented along with the criteria and the methodology. A final section addresses the implications of the methodology to resource managers and tourism operators.

Definition and Linkages

Ecotourism is a form of tourism which has been fraught with problems of definition. There is no unifying and generally accepted definition and many terms have been used to describe the same phenomenon. Examples include terms like nature travel (Laarman and Durst 1987), nature-oriented tourism (Durst and Ingram 1988) and special interest tourism (Inskeep 1987; Weiler and Hall 1992). Scace et al. (1992) identify over thirty-five terms that may be linked to ecotourism, such as sustainable tourism and alternative tourism. The dangers inherent in allowing definitions of ecotourism such scope, is that the term can fall prey to indiscriminate use as a catchall phrase for almost anything that links tourism with nature (Farrell and Runyan 1991).

Although there remains a lack of a universally agreed definition, the one most commonly cited is that stated by Hector Ceballos-Lascurain, who first coined the term "ecotourism" a decade ago. He defines ecotourism as "traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas" (Ceballos-Lascurain 1987, in Boo 1990). His definition suggests a form of tourism which is little different in effect from much of what has traditionally been regarded as wilderness recreation in North America. It says nothing about resource degradation, nothing about having positive impacts on the flora or fauna, nothing about economic impacts or benefits on local communities, and nothing about the nature of the experience or satisfaction. These ideological and value-laden attributes have been added to subsequent definitions of ecotourism, and have served to obscure rather than define the meaning of ecotourism. The abuse of the term, often for marketing purposes, has watered down its conciseness.

In light of the foregoing, it is necessary to see ecotourism as a dynamic and flexible concept, prone to change given the various settings in which it occurs (e.g. coastal regions, forested landscapes, national parks and protected areas, wildlife reserves, private land) and the range of experience sought by those traveling to such varied landscapes. In order to understand ecotourism, an adaptive approach is needed where it is understood that no one definition is suitable for all settings and that certain elements will have greater value than others given the environment that ecotourism is being promoted.

Ecotourism has been linked to many other types of tourism (e.g. sustainable tourism, alternative tourism) and ideas related to environmental management (e.g. sustainable development). There is a certain amount of similarity between ecotourism and adventure travel, the latter often viewed as a form of ecotourism that involves a higher degree of risk and possibly environmental impact. Ecotourism can be viewed as also fitting within what may be termed a sustainable development framework, addressing principles (e.g. equity, carrying capacity, conservation), planning (e.g. proactive, integrative and long term) and management (e.g. integrative, assigned responsibility). These linkages are discussed in greater detail elsewhere (Boyd and Butler 1993).

In the context of Northern Ontario, ecotourism will be fashioned by a predominantly forested setting with the presence of other

ecotourism within Northern Ontario, may be defined as "a responsible nature travel experience, that contributes to the conservation of the ecosystem while respecting the integrity of host communities and, where possible, ensuring that activities are complementary, or at least compatible, with existing resource-based uses present at the ecosystem level" (Boyd and Butler 1993: 13).

Northern Ontario as a Setting for Ecotourism

A review of the literature would suggest that the ecotourism population is, for the most part, well educated, affluent and mature. It would also appear to be sympathetic to what may be termed "green" principles, essentially those of sustainable development, small scale rather than large, traditional rather than modern resource development, non-consumptive rather than consumptive use of wildlife except by indigenous peoples, and especially in the areas they are visiting for ecotourism, protection of resources and the landscape, rather than exploitation of these features. These beliefs and attitudes, while held at varying strengths, may work against a perception of Northern Ontario as an area suitable for ecotourism to the global market, and certainly for the market in Canada and North America, which have some knowledge of Northern Ontario and its resource development history. The ecotourism population is also primarily urban in origin, and is attracted to areas which epitomize the opposite to home environment.

In many respects, Northern Ontario appears to have many of the attributes needed for the successful development of ecotourism. It is largely free from urban settlements, it has vast expanses of apparently untouched landscape, it has a rich vegetation cover, considerable wildlife, and an indigenous population which traditionally, and in some locations still does, lived off the land. As well, there has been recreational and tourist use of the area for a considerable time, and thus some basic facilities and infrastructure exist. Finally, there have been established a number of provincial parks, including waterway parks and one National park, which further the recreational-tourist presence and help to safeguard some of the natural features.

However, it should be readily apparent to a careful observer that the ecotourism in Northern Ontario will have to be somewhat different in form from that found, for example, in Latin America, Africa or Asia. While Northern Ontario does have the attributes noted above, in reality many of these factors create difficulties as well as present opportunities to the development of ecotourism. They are discussed briefly here in order to provide a background against which the identification of potential ecotourism sites can be conducted.

The urban settlement which does exist in Northern Ontario holds few attractions for the potential ecotourist. The resource development of Northern Ontario, basically forestry (and pulp/paper production), mining and trapping/hunting, are not activities which are viewed as attractive, or in the extreme cases, even as acceptable, by some ecotourists. The concept of clear cutting of forests, is not generally viewed with sympathy by the ecotourism population. As with other traditional resource activities in Northern Ontario, fur trapping does not rank high in attraction with ecotourists, even when practiced by indigenous peoples. The portrayal of the historic importance and development of this activity should be of interest, but present day trapping, limited though it is, is probably a feature to avoid in the context of ecotourism.

The recreational mix which presently occurs in Northern Ontario lends itself well to ecotourism, indeed some would argue much of it is ecotourism. Major exceptions are sport hunting and sport fishing which contribute significantly to the tourism revenue in the region. Hunting and fishing by indigenous peoples is viewed by some ecotourists as acceptable but within certain limits.

In many other regions which currently serve the ecotourism market, the indigenous population is portrayed and utilized as a major attraction to the visitors. They may be used as guides,

provide accommodation in traditional villages and houses, and produce and sell native artifacts. Above all perhaps, they are "sold" as exotic, primitive, different and desirable, however inaccurate biased or racist that may be. In general such a portrayal of Northern Ontario Indian band members would be unacceptable, inaccurate and possibly conflict with the legal system. Most Indian reserves and settlements in Northern Ontario do not have the exotic appeal or attraction to ecotourists that a Thai hill tribe village might. In many cases they may not be much different from other small northern urban communities.

The physical attributes and scale of the Northern Ontario landscape make the area a prime candidate for ecotourism, but lead at the same time to problems of access and seasonality. Distance between features and the attractions in this area may be vast at times, certainly compared to some tropical eco-tourism destinations, and great variety does not frequently exist within a few miles in Northern Ontario as for example, in Costa Rica. The flora and fauna of Northern Ontario is not comparable in variety, guaranteed visibility or accessibility to many other areas currently used for ecotourism, such as the tropical rain forest or cloud forest.

These points have been noted, not to disparage the appeal of Northern Ontario to ecotourism, but to clarify some of the issues to be faced. Forms of ecotourism already exist in Northern Ontario and can undoubtedly be developed further. What is important, however, is to note that ecotourism in this area, will, by necessity, be different in many aspects, from that found in more traditional areas. The attributes of Northern Ontario must be carefully matched to the attributes and demands of ecotourism, in sympathy with the needs and preferences of the local population.

Elements and Criteria of Ecotourism Suitable for Northern Ontario

Seven key attributes are suggested as having applicability, based on the literature and past experience. Ecotourism should be:

- (1) environmentally and socially responsible,
- (2) focused on elements of the natural environment,
- (3) managed in such a way as to have minimal environmental and social impacts,
- (4) non consumptive,
- (5) capable of providing desired economic benefits to local residents,
- (6) compatible with other resource uses in the area, and
- (7) appropriate in scale for conditions and environment.

A more detailed discussion is available elsewhere (Boyd and Butler 1993).

When defining indicators of ecotourism suitability for Northern Ontario, one major concern ought to be the "naturalness" or "pristineness" of the area under consideration. For that purpose, some recently developed ecological concepts, such as "ecosystem health" or "ecological integrity" (see Regier 1993) may be helpful. These notions are useful in attempts of operationalizing ecosystem management or sustainable resource management. In attempts towards operationalization of these concepts, several aspects need to be considered: (1) any standard for ecological integrity contains some underlying scientific assumptions and cultural biases; (2) the context of application; (3) methodological biases; (4) actual measures used (Steedman and Haider 1993). All these descriptions of ecosystem integrity point to the fact that it is a relative concept. First of all, constant changes in the natural environment make it impossible to define a correct starting point from a historic perspective. Also, only few areas remain that have not been impacted by human uses directly or indirectly, but a number of areas may exist in rather natural states, suggesting a continuum from pristine to more and more developed and altered environments. More important for resource management is the fact that several stable states can be defined along that continuum. The challenge for sustainable resource management in general, and ecotourism management in particular, is to devise strategies for maintaining such an ecological stable state while at the same time permitting tourism use in the area.

It can be argued that in Northern Ontario, only few "pristine" environments exist; also the region has been heavily logged, resource extraction is widespread, with the pervading influence of pollutants, emissions and possible man-induced climatic change on even those areas which have not been exposed to extractive activities. With respect to the area's "naturalness", the forest environment and the aquatic environment are important in terms of ecological integrity. Both are also important for tourism uses, albeit in rather different ways, depending on the type of activity. For instance, in the case of land-based activities, users/ecotourists will move through the forest and consequently be confronted with numerous detailed forest characteristics. Aquatic areas may provide important backdrops mostly in the form of scenery, but

subtle changes in quality may be of comparably lesser significance. Water based activities, on the other hand, reverses the situation with the forest merely providing the scenic backdrop for an ecotourism experience. The importance of this observation is that regardless of whether emphasis is placed on the forest or aquatic environment, the integrity of the desired setting will be much more apparent, allowing the other setting to be managed to reflect a healthier appearance. Although, "naturalness" is considered a key criterion to identify ecotourism sites, wildlife, cultural heritage, landscape and community are also suitable indicators. Table 1 lists characteristics and measures of the above mentioned criteria, where variation is expressed as absolutes or in the form of a continuum.

Table 1. Characteristics and measures of ecotourism criteria.

Characteristics	Measures	
NATURALNESS		
• Permanent settlement in area	Absent	Present
• Absence of cutting	> 10% red/white pine	>80% deciduous
• Undrained wetlands	Absence of dams	Dam
• Unmodified rivers (1)	Absence of dams	Dam
• Unmodified rivers (2)	Absence of bridges	Bridges
• Absence of intrusive sound	10 Km to near sound	1 Km
WILDLIFE		
• Suitable habitat	ARDA 1 Capability	ARDA 7
• Migration Route	On primary routeway	not on routeway
• Wintering site	Yes	No evidence
• Feeding site	Yes	No evidence
• Nature reserve	Nature reserve Provincial Park	Nat. Reserve zone Provincial Park
CULTURAL HERITAGE		
• Designated Historic Sites	Yes	None
• Historic Parks	Historical Provincial Park	Historical zone Provincial Park
• Historical Routes	Present	Absent
• Indian Reserve	Traditional desired	Modern not desired
LANDSCAPE		
• Significant feature	High relative relief >100 metres	No relief
• Viewpoints	Present	Absent
COMMUNITY		
• Not within site, but close enough to provide base, services and local population for economic benefit	5 Km	Over 20 Km
• Close enough for primary access to site(s)	Access features	No access

Source (Boyd and Butler 1993; 45-46)

Methodology

Geographical Information Systems (GIS) technology is employed in developing a three stage methodology to identify ecotourism sites. Stage one identifies those features of each criteria that can be recorded using GIS. Elements within a region can be recorded as points (e.g. mills, mines), polygons (e.g., areas of clear cut), or as lines (e.g., rivers, logging roads). Distance components involved with criteria are accommodated through placing buffers of a certain distance around features. For example, where noise may be a consideration and deterrent to ecotourism, a buffer of a certain distance (e.g., 10 kilometres) is placed around current extractive activities.

The second stage focuses in particular on determining an area's "naturalness." "Natural" here is defined to mean the present landscape which has adjusted to human interaction and modification, and given that this interaction with and modification of the landscape will vary spatially, it is also argued that there are different degrees of naturalness. An area's degree of naturalness is expressed in terms of the following seven

attributes: presence or absence of permanent settlement, bio-physical (vegetation) characteristics, extent of resource-related activity present, type of access, presence of wildlife, nature of recreational activity, landscape characteristics. An assumption is made here that the naturalness type found in areas is an important factor in determining what areas are best suited to different types of ecotourists and ecotourism experiences.

The methodology proposed in this stage is related to that used in similar research undertaken in Australia on the production of a national wilderness inventory, and on wilderness evaluation (Lesslie and Taylor 1985; Lesslie, Taylor and Maslen 1993; Lesslie, Mackey and Preece 1988). A value range is assigned to the various aspects of each attribute, from which an overall score can be determined. Table 2 shows an itemized list of possible scores for each attribute, a description of the various elements of each attribute and a measure to determine the score. It should be noted that not all attributes have a range from 5 to 1.

Table 2. Attribute list, scores and value range.

PRIMARY CHARACTERISTICS

Presence of Community

Score	Community Type	Population Size
5	absence of permanent settlement	0
3	unincorporated communities	1-1000
2	small towns	1001-10,000
1	urban settlements (industrial based)	>10,000

Resource-related Activity (forestry)

Score	Resource Type	% of "Area"
5	no presence of forestry activities	100 per cent
3	forestry practices I(cutover area)	<20 % cutover 30-40 yrs
2	forestry practices II	>20 % cutover 20-30 yrs
1	forestry practices III	>20 % cutover 10-20 yrs

Resource-related Activity (mining)

Score	Resource Type	% of "Area"
5	no presence of mining	100 per cent
3	mining practices I	abandoned mines present
1	mining practices II	operational mines present

Vegetation Coverage

Score	Vegetation Type	% of "Area"
5	mixed forest (type 1)	>50 % coniferous >10 % white & red pine
4	mixed forest (type 2)	> 50 % deciduous/coniferous, < 10 % white or red pine
3	dense coniferous forest	> 80 % jack pine, black spruce,
2	sparse coniferous forest burns and cutover i.e. all others except	> 80 % deciduous, > 10 years old
1	poorly vegetated areas, clearcuts, burns	shrub cover, < 10 years old

Access Characteristics

Score	Type	Value Range
5	access area I	areas outside of any buffers around all roads
3	access area II	areas within 2Km buffer around logging roads
2	access area III	areas within 5Km buffer around loose surface roads
1	access area IV	areas within 10 Km buffer around paved/major roads

Wildlife Setting

Score	Type	Value Range
5	wildlife setting I	ARDA class areas 1-2
3	wildlife setting II	ARDA class areas 3-5
1	wildlife setting III	ARDA class areas 6-7

SECONDARY CHARACTERISTICS

Landscape (Relative relief)

Score	Characteristic	Measure
5	high relative relief	> 25 metres
3	medium relative relief	10-25 metres
1	little relative relief	less than 10 metres

Landscape (Water content)

Score	Characteristic	% of "Area"
5	presence of water	5-20 %
3	presence of water	20-50 %
1	presence of water	0-5% or > 50 %

Source (Boyd and Butler 1994)

The absence of one or more units is used to illustrate the relative importance of a feature being absent or present, and to distinguish between aspects that are favorable to ecotourism and those which are not.

An area's type and degree of naturalness will be determined by the cumulative score it receives for all of the attributes/ biophysical characteristics present for respective areas.

The following scores are suggested for various types of naturalness.

Type of Naturalness	Score Range anticipated/accepted
I	31 to 35
II	21 to 30
III	15 to 20
IV	8 to 14
V	1 to 7

A veto system is employed in classifying areas. A type I area is not possible if a score of 3 is recorded for two or more attributes present within the area. Type II landscapes require that no more than two attributes/characteristics have a score less than three, with at least one attribute scoring a 5. A type III landscape is not possible if a score of lower than 2 is recorded for three or more attributes. A type IV is not possible if an area scores a 1 for more than three attributes.

The third stage of the methodology arranges the naturalness attributes in a hierarchical order, with vegetation cover representing the base layer. Separate overlays of the remaining attributes are added to this base layer in a sequence to generate areas where a mix of attributes are present that are suitable to ecotourism. The following order is suggested: resource-related activities, access, communities, wildlife, and landscape. If, when using this sequence, too few areas are found, the order of the thematic layers may be rearranged. Areas which receive a type I and II classification, which include components of cultural heritage could then be considered as the best option for ecotourism. The next best option areas would be those classed as a type III landscape, with some evidence of cultural features. It is also important that the areas that are identified are of a minimum size sufficient for ecotourism. An area of between 300 and 500 square kilometres is considered as suitable, allowing for several days travel to occur with a diversity of flora and fauna present. In areas where few areas of this size are identified, smaller areas may be considered as suitable for an ecotourism opportunity/experience which are offered as day excursions or with the added attraction of an overnight stay.

Conclusion and Implications

This paper has described a methodology to identify ecotourism sites within Northern Ontario. The nature of the methodology is such that, given the availability of GIS technology, it can be applied in other similar settings. Being able to identify areas by matching the characteristics of an area with those attributes most appropriate for ecotourism has major implications in general to tourism operators and recreation planners. As mentioned earlier, ecotourism by its very nature will have an impact on any environment. Limiting ecotourism, which has within it the potential to become mass tourism on a small scale, to such areas where the region's characteristics are most suited for ecotourism and which can best withstand such use, will to an extent reduce impacts compared to areas which are more fragile in nature.

It should, however, be pointed out that GIS is not a decision-making tool but rather provides information in a form from which decisions can be made. If areas which have high potential for ecotourism are to be developed, it will require co-operation and consultation between agencies, communities, and industry in order to make decisions which are based on the interests of the various groups involved and in line with the characteristics of the area itself. The methodology described in this paper identifies for decision-makers those areas which show the greatest potential and which then may be developed through fostering co-operative partnerships.

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BOATING OPPORTUNITIES:

A GEOGRAPHICAL ANALYSIS OF TRAVEL

PATTERNS AND MOTIVATIONS

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Pleasure boating is a major recreation activity today. In Massachusetts alone, there are more than 100,000 registered pleasure boats. Optimizing the availability of boating resources on inland and coastal waters is a major concern for recreation managers. The purpose of this paper is to explore where boating recreation may take place and the motivating factors that influence the destination choice.

Introduction

Pleasure boating is a major outdoor recreational activity in America today. It involves millions in the population across the country. In just Massachusetts alone there are nearly 150,000 boats registered. Recreation managers, as well as associated private-sector interests, are concerned with optimizing the availability of boating resources on inland and coastal waters. Knowledge of the travel behavior, site choice process, and preferred activities is key to better accommodating the needs of boaters.

The purpose of this study was to examine the boating destinations of a sample of representative pleasure boat owners in Massachusetts in order to better understand the typical travel patterns to boating sites, the factors influencing site choice, and the specific boating-related activities undertaken at different sites.

Literature Review

Boating is a very popular form of recreation. All recent nationwide and regional studies have shown an increase in participation (cf. Clawson and Van Doran 1984; USDI 1986; PCAO 1986; Kelly 1987; Warnick and Vander Stoep 1990). While Kelly (1987) and Warnick and Vander Stoep (1990) believe this growth to be dependent on the economy and demographics, Clawson and Van Doran (1984) found boating was highly dependent on fuel prices and therefore elastic. Yet today, since the fuel prices have stabilized, any visit to a water body during the summer will highlight the enormous use.

One primary issue for water based resource managers is that increased boating use may create conflicts on site. Therefore it is important to understand the factors that influence boating demand. Once identified, managers can administer resources in an efficient manner.

Recognizing the classic Lancaster (1966) approach to consumer behavior, recreation planners have sought to identify what factors influence choice behavior. Typically recreation demand models have considered socio-economic/ demographics and site characteristics to forecast recreation choice. Lately researchers have begun to define recreation choice as a function of activity (purpose of trip), travel patterns and lastly resource distribution and amenities. Each of these components will be discussed below.

It is quite obvious that boating requires water resources. The act of boating will often include a variety of secondary activities, since the boat serves as a mode of transport. These secondary activities may dictate the type of boat one utilizes, i.e., a high horsepower engine is required for water skiing, while not for an angler. Boating typically takes places within the confines of limited bodies of water, although coastal states have the added waters of oceans. This carrying capacity issue has been evaluated for similar coastal states like Maryland. Here the researchers found that the capacity of tidal waters was dependent on whether or not the boater utilized motors (Roy Mann 1976). That is, water skiers towed behind a boat need more space than someone merely swimming from a boat. Clearly boating activity takes on a variety of forms.

The travel for boating next needs to be considered. Regional planners need to evaluate system wide resources to efficiently allocate public expenditures (Cordell et al. 1983). Research at the regional scale has concentrated on boating participation at various park resources. For example, boaters have been thought of as individuals that tend to participate close to home. Stynes (1982) found that 50% of the Great Lakes residents traveled less than 30 minutes to boat. Graefe (1986), in his literature review for the President's Commission on Americans Outdoors found a similar trend in boating travel.

An earlier study by Lentnek et al. (1969) disaggregated this travel behavior further and found that sailors and water skiers had the greatest distance decay function, whereas anglers and non-specialized boaters sought more remote lakes to visit. This is a fairly important distinction since recreational boaters will have different purposes in mind when selecting a resource to visit.

Ditton and his colleagues concurred since "(fishing in a stream is quite unlike trolling in Lake Michigan..." (Ditton et al. 1975:292). Therefore, specific activities are found at specific resources which in turn, directs recreators to seek alternative destinations for alternative activities. Beyond biophysical resource characteristics, facilities nearby may prove to be significant attractants to participation (McCool 1978).

But as researchers have long known, it is not what is found at the resource, but rather what is perceived to be there that influences demand. Recreation choice can be a function of attitudes or motivations and was found to be a primary influence on recreation site selection (Murphy 1975). Linked obviously to site characteristics, motivations can direct the recreator to select one site over another.

While not directly explored, motivations can be measured in the Hernandez and Sanchez (1987) study of boating behavior in Puerto Rico. The authors found travel to be concentrated at a few primary lakes with some diversification at competing inland waters when the recreators sought some variety. Apparently, boating enthusiasts may be motivated to seek different destinations depending on these primary and secondary activities.

Research by Bristow, Klar and Warnick (1992) discovered that Massachusetts residents typically participated in a variety of activities. The activities chosen were found to influence the variety of destinations visited. When all boating activities were aggregated together (i.e., power boaters, canoe, sailing etc.) the sample evaluated indicated a propensity to diversify travel. Statewide the modal number of resources visited was three per year, indicating boaters in Massachusetts to exhibit variety seeking behavior. But when boaters were asked about other tourist travel and visiting parks, there was a tendency to repeatedly visit the same resource, indicating some level of resource dependency. Secondary activity selection apparently curtailed diversified travel, by perhaps narrowing the choice to fewer sites.

In a subsequent study, Bristow, Caron and Green (1993) more closely investigated the relationships between the demand for boating and the available supply characteristics for the activity. Certain areas in the Commonwealth were found to have an excess

supply of opportunities, while other regions failed to meet the local demand. Local demand was considered to be the most important factors since most boating takes place close to home. Areas where local demand exceeded local demand were found in the suburbs of Boston, much of Plymouth County and the Northern portion of the Connecticut River Valley. While this is important at the aggregate level, specific reasons for this behavior could only be speculated.

Questions arose, for example, when travel patterns were examined. First, since all boating was grouped together, subtle differences between different boaters could not be identified. Large boats obviously, were inappropriate on some smaller bodies of water. Second, other purposes of the trip or ancillary activities may influence the destinations selected. Anglers may seek their favorite fishing hole while a racer may select a wide open stretch of water. Third, specific site characteristics may motivate the boater to visit a particular lake.

Methodology

The survey instrument constructed for this study included roughly fifty separate data items. The procedure employed to write, pretest and evaluate the instrument followed Dillman's (1978) suggestions.

The first several items were background items dealing with boat characteristics such as boat type and engine horsepower; data for these initial items were provided together with boat owner names and addresses, courtesy of the Division of Law Enforcement, Commonwealth of Massachusetts. These background questions

were followed by the questions identifying boat use over the past year and boat mooring location.

The remaining questions, comprising the bulk of the survey instrument, dealt with boater evaluations of their three most visited boating sites over the past year. First, pleasure boaters were asked to identify the importance of each of six different factors potentially influencing their motivations to select each respective boating site. The six factors included here were "nearness to home," "water body size," "nearby facilities," "water cleanliness," "mooring/ramp fees," and "fishing quality."

Next, boaters were asked to identify the frequency with which they engaged in each of five different potential boating activities at each respective boating site. Specifically, the five identified boating activities were "fishing," "swimming," "skiing/boarding," "picnics/parties," and "sightseeing."

The final survey item was an open-ended question intended to solicit other comments, positive or negative, regarding boating in Massachusetts. A copy of the actual survey instrument is included in the Appendix.

Data Collection

The survey instrument described above was administered by telephone in November, 1993 to a stratified random sample of pleasure boat owners registered in the Commonwealth of Massachusetts. As previously noted, complete, current computer listing of registered boat owners was provided through the courtesy of the Division of Law Enforcement, Commonwealth of Massachusetts.

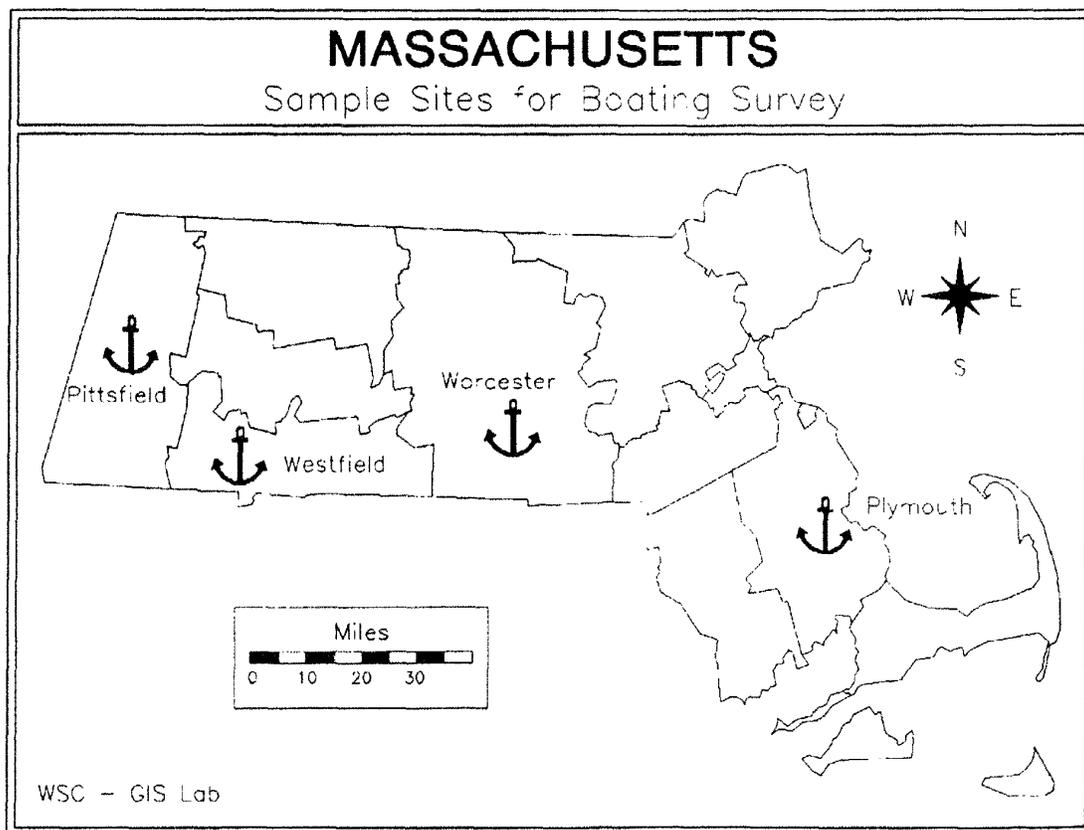


Figure 1. Locations of four sampled cities in Massachusetts.

In order to discern overall recreational boating use patterns as well as any potential city-to-city differences, boat owners from four cities spread across the state comprised the population for the study. The locations of the four targeted cities, Pittsfield, Westfield, Worcester, and Plymouth, are shown in Figure 1. Randomly-selected boat owners from each city were selected and interviewed, until a desired fifty-participant tally was reached for each of the four cities. As is typical with telephone surveys (Dillman 1978), there were difficulties contacting some boat owners because of unlisted phone numbers, telephone answering

machines, changes of residence, or simply refusal to participate. In sum, a respectable overall response rate of 21.2% (200/942) was achieved, and a good 59.2% rate of participation (200/338) was elicited from among the boat owners with whom phone contact was actually established, as shown in Table 1. It should be noted that no attempt was made in this study to explore the nature of the non-responding segment of the sample; this non-responsive group was not deemed a priority since boat owner demographics were not emphasized in the study.

Table 1. Boating Survey Responses.

	Pittsfield	Westfield	Worcester	Plymouth	Totals
Total Boats	1353	1321	2330	1584	144233
Total Checked on Random No List	214	222	288	218	942
Number of Different Numbers Called	93	137	136	128	494
Number of Owners Actually Contacted	68	84	87	99	338
Number of Surveys Actually Completed	50	50	50	50	200

The tabulation of the survey responses and the subsequent analyses of the data was done using SPSS/PC+.

Findings

Boat Type, size and Propulsion

Typically, the surveyed pleasure boaters were owners of relatively small, open, outboard-powered watercraft. Among all the participating boat owners, 82% reported their boat to be of the "open boat" type. The most commonly reported boat lengths were 14, 12, and 16-foot crafts which together accounted for 46.3% of the boats; similarly, the mean reported boat length was 16.34 feet. As one would expect, the overwhelming majority of these boats, (72%) were powered by outboard engines. Reported engine sizes varied widely but the most common were the 40-horsepower and the 10-horsepower sizes.

Boat Mooring

Boating issues involving location and travel were central to this study, and it was important to determine where boat owners tend to lodge their watercraft. On this item, 80.0% of the respondents reported that their boat was kept at home, while 19.5% of those surveyed noted that their boat was moored away from home.

Multiple Boating Sites

In the survey boat owners were asked to identify the three boating sites which they had used most frequently during the past year. Here, it was found that very few boat owners had visited three different launching sites during the past year, and less than one-half of owners had utilized even two different sites. Only 41.5% of the responding owners had launched their boat from a second site, and a scant 8.0% reported using a third boating site.

Distance Traveled

In general, pleasure boaters do not travel widely when seeking boating sites. The survey results showed that most boaters traveled only short to moderate distances to access their primary boating site, and they traveled only slightly farther typically when utilizing a secondary boating site. The median reported travel distance for trips to a primary boating site was 8 miles, while the median travel distance for trips to a secondary site was 10 miles.

Fully 37.7% of the owners identified their primary boating site as involving virtually no travel, i.e., being located in their home town. More than one-half of the survey group (52.3%) said they

traveled ten miles or less to reach their primary boating site, and 75.9% identified a primary boating site within twenty miles.

Home town sites involving little or no travel were identified as secondary sites by 21.6% of these respondents. Secondary site trips of ten miles or less were noted by 51.1% of the respondents, while secondary site travel of twenty miles or less accounted for 67.0% of the survey participants.

In short, hometown boating trips are quite common. In fact, the hometown is the most used boating site for more than one-third of Massachusetts boaters. The distances traveled to secondary boating sites are only slightly greater than the distances traveled to primary boating sites; furthermore, the increased distance for secondary sites is largely a reflection of the "occasional out-of-state" vacation boating trip.

Motivations for Choosing Boating Sites

Survey participants were asked to evaluate as "Not Important," "Somewhat Important," or "Very Important" each of a series of motivating factors thought to have potential importance in the choice of specific boating sites. The six examined factors were: nearness to home, water body size, availability of nearby facilities, water cleanliness, mooring or ramp fees, and fishing quality.

Primary Site Motivations

Looking first at these items for just the primary boating site, the issues which were most often ranked as "very important" by sizable percentages of the respondents were "Water Cleanliness" (68.0% of respondents), "Fishing Quality" (56.5%), and "Nearness to Home" (46.0%). A smaller portion of the survey participants, (29.5%), identified the "Water Body Size" factor as being "very important." Lastly, "Mooring or Ramp Fees" and "Availability of Nearby Facilities" were found to be of little consequence; on these respective items only 14.5% and 17.0% of the respondents cited them as "very important." The survey items are found in Table 2.

Secondary Site Motivations

Now focusing on the motivations influencing the choice of a secondary site, the items which were most often ranked as "very

important" by sizable percentages of the respondents were "Water Cleanliness" (64.0% of respondents), "Fishing Quality" (64.0% of respondents), and "Water Body Size" (37.1% of respondents). A smaller portion of the survey participants, (32.6%), identified the "Nearness to Home" factor as being "very important". Again, as before with the primary site criteria, "Mooring or Ramp Fees" and "Availability of Nearby Facilities" were found to be of little consequence; on these respective items only 18.0% and 27.0% of the respondents cited them as "very important".

Table 2. Percent of respondents citing "very important" motivations.

Motivations	At Primary Site	At Secondary Site
Water cleanliness	68.0%	64.0%
Fishing quality	56.5%	64.0%
Nearness to home	46.0%	32.6%
Water body size	29.5%	37.1%
Mooring/ramp fees	14.5%	18.0%
Nearby facilities	17.0%	27.0%

In short, when choosing their primary site the criteria of most importance to boaters were clean water, fishing quality, and proximity to home--in that order. These criteria changed only slightly when boaters sought an alternative site; here the important factors, in order, were clean water, fishing quality, and water body size.

Activities Associated with Primary and Secondary Sites

To explore the reasons people go boating, this study investigated activity selection (see Table 3). It was hypothesized that these secondary activities may have a great influence on site selection and should be identified.

Table 3. Percent of respondents reporting doing activity "often."

Activity	At Primary Site	At Secondary Site
Fishing	51.3%	64.0%
Swimming	23.5%	19.1%
Sightseeing	20.7%	26.1%
Picnics/Parties	17.6%	18.0%
Skiing/Boarding	14.6%	2.5%

By a wide margin, "Fishing" was the most popular activity associated with boating at the primary site. More than one-half (51.3%) of the boaters said they engaged in fishing "often" at their primary site. About one-fifth of the boaters reported swimming, sightseeing, and picnics and parties as activities done often at their primary boating site. Water skiing or boarding activity was reported as done often at the primary boating site by only 14.6% of the surveyed boaters.

Fishing remains popular for boaters seeking alternative sites for the experience. The other activities remained equally important to those identified with primary site selection. An interesting increase is observed in sightseeing, where a slight increase (26.1%) is observed. Could this be an indication of variety seeking behavior?

The relative overall importance of fishing discovered in the analysis led to the further disaggregation of the data. Here, the importance of site specific attributes of the primary boating site was separated for the anglers. Obviously anglers are more motivated by water and fishing factors. The issues which were most often ranked as "very important" by sizable percentages of the anglers were "Fishing Quality" (85.4%), "Water Cleanliness" (68.9%), and "Nearness to Home" (40.8%). A smaller portion of the anglers, (29.1%), identified the "Water Body Size" factor as

being "very important." Lastly, "Mooring or Ramp Fees" and "Availability of Nearby Facilities" were found to be of little consequence; on these respective items only 14.6% and 16.5% of the respondents cited them as "very important".

Lastly, the participation in other activities was summarized for the anglers. Of the anglers who indicated a propensity to fish often, sixty four percent never swam. A similar percentage was found for Picnic activities (65%). Water skiers were even less likely to fish often (82.5%), while pleasure use (or sightseeing) was never done by fifty four percent of the anglers. There is a distinct difference between the activities people participate while boating. The need for high horsepower engines is needed for water skiing, while perhaps unnecessary for a typical angler.

Implications to Managers

Recreation managers and in particular those with water resources are concerned with providing a safe and enjoyable environment for boaters. An understanding of motivations and client travel can aid in meeting those needs. Boating cannot be investigated unless the secondary activities are identified. Water quality is favored by all aquatic users, but more critical in the motivations of swimmers and anglers who may come in direct contact.

Proximity to the resource was found to be of less importance to boaters in Massachusetts, perhaps because the state enjoys an abundance of inland and coastal waters. Ramp fees and support facilities were also not important. The fees must be an accepted expense and the supporting infrastructure unnecessary for the angler who packs a cooler.

Massachusetts can expand the boating opportunities by opening up many of the reservoirs in the state that are closed to recreation use. This is an untapped resource that can reduce the impact on the existing resources.

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Figure 2. Copy of phone survey.

MASSACHUSETTS BOAT-OWNERS SURVEY

ID Code # _____ Name _____

Phone _____ Street & Town _____

Boat Type 1=Open Boat 2=Cabin Cruiser 3= Sailboat 4=other Boat Length _____ ft

Propulsion 0=None 1=Outboard 2=Inboard Motor Horsepower _____

Where is Boat Moored 1=at home 2=away...town name _____

Hello, my name is _____ and I'm calling from the Regional Planning Department at Westfield State College. We are conducting a telephone survey of registered boat owners in Massachusetts--to better understand the needs of boaters and to improve boating opportunities in the State. We would appreciate your responses to some questions about your own boating, particularly this past year...

1. During the past year did you use the boat described above? 1=Yes 2=No
2. Where do you generally keep this boat?
 1=at main residence 2=at cottage 3=at marina 4=other...where? _____

Now I have some questions about the places you went boating this past year.
 First, thinking of just this past year, what was the boat launching SITE USED MOST OFTEN?

3. Where Is the Site? _____ (Site & Town)
4. Number of Days Used This Past Year? _____ (Number) (Miles from Home: _____)

- When you chose this particular boating site, how important was--
- | | | | |
|----------------------|-----------------|----------------------|------------------|
| 5. Nearness to Home | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 6. Water Body Size | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 7. Nearby Facilities | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 8. Water Cleanliness | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 9. Mooring/Ramp Fees | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 10. Fishing Quality | 0=Not Important | 1=Somewhat Important | 2=Very Important |

- At this particular boating site, how often did you use your boat for--
- | | | | | |
|---------------------|---------|----------|----------------|---------|
| 11. Fishing | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 12. Swimming | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 13. Skiing/Boarding | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 14. Picnics/Parties | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 15. Sightseeing | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |

- Now, let's think about the boat launching SITE that you used 2nd MOST OFTEN this past year--
16. Where Is the Site? _____ (Site & Town)

17. Number of Days Used This Past Year? _____ (Number) (Miles from Home: _____)
- When you chose this particular boating site, how important was--
- | | | | |
|-----------------------|-----------------|----------------------|------------------|
| 18. Nearness to Home | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 19. Water Body Size | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 20. Nearby Facilities | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 21. Water Cleanliness | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 22. Mooring/Ramp Fees | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 23. Fishing Quality | 0=Not Important | 1=Somewhat Important | 2=Very Important |

- At this particular boating site, how often did you use your boat for--
- | | | | | |
|---------------------|---------|----------|----------------|---------|
| 24. Fishing | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 25. Swimming | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 26. Skiing/Boarding | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 27. Picnics/Parties | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 28. Sightseeing | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |

We are nearly done with the questions. Are there any other boat launching sites that you used this past year. If so, think of the SITE that you used 3rd MOST OFTEN this past year--

29. Where Is the Site? _____ (Site & Town)

30. Number of Days Used This Past Year? ____ (Number) (Miles from Home: ____)

When you chose this particular boating site, how important was--

- | | | | |
|-----------------------|-----------------|----------------------|------------------|
| 31. Nearness to Home | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 32. Water Body Size | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 33. Nearby Facilities | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 34. Water Cleanliness | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 35. Mooring/Ramp Fees | 0=Not Important | 1=Somewhat Important | 2=Very Important |
| 36. Fishing Quality | 0=Not Important | 1=Somewhat Important | 2=Very Important |

At this particular boating site, how often did you use your boat for--

- | | | | | |
|---------------------|---------|----------|----------------|---------|
| 37. Fishing | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 38. Swimming | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 39. Skiing/Boarding | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 40. Picnics/Parties | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |
| 41. Sightseeing | 0=Never | 1=Seldom | 2=Occasionally | 3=Often |

42. This survey has largely dealt with the places you boat most often. Are there any other comments that you would like to make about boating in Massachusetts? If so, what--

THANK YOU FOR YOUR VOLUNTARY PARTICIPATION IN THIS SURVEY.



PANEL DISCUSSIONS
PARTNERSHIPS
CHANGES IN FEDERAL AGENCIES



PARTNERSHIPS PANEL:

THE USE OF CONTRACTORS AND

PARTNERSHIPS IN PUBLIC FOREST

RECREATION: SOME CONSIDERATIONS

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This paper argues that short term competitive contracting and "partnerships" with low bidders cannot produce the quality or efficiency that highly socialized normatively guided career organizations, both public and private, can produce. High quality maximum efficiency production requires highly socialized primary group types of organizations, guided by a *moral* rather than a calculative or alienated involvement with the organization. Only an organization which gives the ownership of the work process to the workers, creating a sense of "family", can produce an occupational group which socializes both on and off the job. This type of social group can provide the pure moral or social moral involvement in the organization necessary to achieve both high quality and efficiency. The Japanese management style developed by W. Edward Deming's *Total Quality Management* is one of the best ways to develop work ownership by the occupational group, and provides the pure moral or social moral involvement in the organization necessary for both high quality and efficiency.

Introduction

Public recreation agencies must face smaller budgets yet greater demand for certain services, even some unique services. This has led to a reliance on more and more contracted for services provided by private business such as general contractors, concessionaires and more recently relationships called "partnerships." (Dulac USFS, 1987).

These private services, contracted for by federal and state recreation agencies, presumably supply a public recreation need at a cost less than that which would be incurred if the service was provided by career and seasonal government agency employees. Savings are said to be obtained by avoiding the costs of health insurance, retirement, end-of-the-fiscal-year spending sprees, classified salary scales, and so forth, by hiring contractors who bid competitively for the right to provide a service.

Selin has argued from a selected sample of three National Forest *partnerships*, that "successful" relationships were "...marked by the following characteristics: a shared vision; be realistic (sic); have the right people; have support from the boss; plan continuously; meet often; share information and ideas; never say die; give a little; and set new goals" (Chavez 1993). However, to this writer, conceiving of shared vision and goals between a government bureaucracy and an entrepreneurial firm is oxymoronic.

Motives of "Partners"

On the one hand, a "partner" is a private firm with a long term government contract, and thus is a temporary monopolist. This firm has no fear of competition until its contract is up for renewal. Therefore, it necessarily must seek to maximize its net worth constrained by the limits on its prices and services set by the contract. It can make a maximum profit only by charging as much as possible while providing the minimum service possible short of sanctions decided on by the government. (And those can often be avoided by bringing social or political pressure on the agency).

It has no incentive to produce quality other than the threat of penalties under the contract, and the threat of non-renewal of the contract (after the contract period of from sometimes ten to thirty years). And it is probably not operating under a performance bond, as required of most construction contractors doing work for the government. Furthermore, in order to help out or maintain the welfare of a financially weak contractor, or because of other types of collusion, the "partner" firm may even be allowed or encouraged, by the contracting agency, to deviate from applicable federal criminal law.

The firm under contract thus has considerable incentive to "meet often" with contract compliance inspectors, in order to develop personal relationships with them, and in order to apply social or political pressure to encourage the agency inspectors to be "realistic" and to "give a little."

Indeed, such a firm has an incentive not only to cut corners wherever possible (as shown recently in the timber theft and fraud cases in Oregon), it may begin to "stretch" the contract a little at first, and if not penalized by the agency, it may use its working relationship with the agency inspectors to illegally but significantly add to its profits. Of course, if the agency inspectors do become *that* "realistic" and continue to "give a little," the quality of public service provided by the contractor is bound to suffer. (see Turner, Charles H.; U.S. Attorney, Oregon [ret.], 1993)

Public Support

On the other hand, a government bureau is competing each year with other public agencies for Congressional appropriations, which hopefully constitute an increasing (but at least a stable) share of the public treasury. Thus, the bureau must maximize all possible public support *every* year. It cannot risk having one part of its clientele happy with its services and its other clientele unhappy. It cannot risk having its clientele numbers decline. And in order to avoid unhappiness and decline in its appropriations, staffing and authority, it must provide a unique, identifiable and memorable service or product to all its clientele publics. It can ill afford to share its political image and support with private firms acting on behalf of the agency.

However, the primary motivation of contractors with natural resource agencies is *not* public support. It is to make a profit on their investment (normally more than 10%). Quality service to agency publics (which might help the agency maximize public support) is a lower priority with a contractor. A contractor's profit often does require "cutting corners" on what is provided. And this is achieved many times by adhering to the *minimum* (or less) in contract established standards, by cost saving measures in the quality and quantity of personnel providing services, and by savings in product quantities and quality.

In addition, contractor personnel may be less than good ambassadors for the contracting government agency, and by not having the motivation for maximizing public support they may even behave so as to alienate potential agency supporters. This occurs not only because of different motivations, but because of a climate of fear created in the contracted for service organization. This fear stems from the contracted firm members' desires to protect their jobs by saving money, rather than providing complete production of the contracted services. And the problem of fear is compounded by employees who fear job loss because tenure or civil service fails to protect them from profit enhancing cutbacks by their firms. No matter, we have been told a "shared vision" between government officials and a contractor constitutes "success," and thus is both a possible and viable goal for each.

The Public Interest

In the Oregon experience with agency contractors mentioned above, the "shared vision" became one of seeing major fraud and theft of public property and funds as merely "mistakes" by contractors and agency officials. Rather than enforce the contract or the public law, the agency argued that "anyone can make a mistake" (Turner, Charles; U.S. Attorney, Oregon [ret.], Testimony before House Subcommittee on Civil Service, October

19, 1993.) There, one to one contracting relationships became more important than protecting the public welfare. According to Turner's testimony (further substantiated through a personal interview with the author 12/1/93), this kind of "shared vision" behavior on the part of federal agency contract inspectors (and their supervisors), being "realistic," having "the right people," and giving "a little" may not constitute success for the public welfare. On the contrary, it can lead to biasing agency management programs in favor of one particular clientele group (the contractors), violation of the public trust, and considerable loss of funds to the federal treasury.

And acknowledgment of this biasing does not even begin to deal with the problem created by fear within the contractor's organization.

Fear

The problem of fear in the loss of quality has been noted by total quality management specialist W. Edward Deming, who has observed that fear impairs performance and fear generates inaccurate data (see Walton, 1990). He observed that fear makes workers do what is necessary to protect their jobs, not what is in the organization's long term best interest or mission statement. Deming also noted that fear exists at all levels of such organizations, and may be greatest at the top of the management structure. He felt that fear in an organization that is trying to implement quality improvement is disastrous. Generating fear in an organization can cause executives to make the wrong choices based on erroneous data because employees are afraid to report the truth.

Absent or erroneous feedback from within an organization's management structure can obscure much about the quality of service an organization is producing. No one really knows what the current quality of service is except the clientele, and only the workers are in touch with them. The top management in an organization tends to make operational decisions by looking at profit or production data. If such decisions improve the quality of a system it is usually coincidental (Lyden 1992). Lyden observes that health care organizations still don't make decisions based on quality data. That kind of data, he points out, includes why former clients stopped using the organization's services, what jobs in the organization have the highest turnover and why; which work processes have the greatest amount of rework, delay and waste; what are the most frequent complaints of current customers; what aspects of the service that most clients would like to see improved; and how the organization's services compare to others providing the same service (1992). Hence, the importance of driving out fear in any service organization and giving the worker the ownership of the work process as part of driving out such fear.

Other Costs Of Contracting

Other costs of contracting that are not often considered include those of drafting detailed enough standards and provisions in the contract to insure that a minimum quality of service is prescribed and ensured. Ensuring contract compliance requires enforcement, regular inspections, shopping yourself, and immediate follow-up on user complaints. This policing requires costly numbers of well trained and well paid incorruptible inspectors, in order to assure that contract requirements are strictly complied with (Jubenville & Twight 1993). Contract inspectors must be highly loyal government employees who don't overlook deviations from compliance with specifications because of fear or favor. They must be well paid so that they have no incentive to accept bribes and they must be transferred at regular intervals so that personal relationships with contractors are not developed.

Turner points out the importance of contract inspectors and their supervisors not being residents of the communities depending on continued contracts with the government agency. He also points up the necessity of these personnel not having close personal relationships with members of the contractor firms, or any relationships founded on blood or marriage. Turner also discusses the conflicts of interest which occur when inspectors or their supervisors bowl with or attend church with contractor personnel

who may have incentives to behave in an unethical or criminal fashion (Turner 1993, 9-10).

Recent reports by the U.S. Office of Management and Budget have pointed out that a goodly number of private firms, contracted with to replace services formerly provided by career government employees, have paid for unauthorized and at times illegal expenses. These included "tickets to sporting events, lavish cruises, and excessive salaries for executives" (Schneider 1992). Such skimming of profits must have resulted in both poorer quality service to agency clientele and excessive charges to the government.

Reiterating again, even in existing agency operations, no one (except the customer) really knows what the current quality of service is. Senior management is generally making operational decisions based on financial or productivity data. As W. Edward Deming has pointed out, if these operational decisions improve the quality of a system, it is usually purely coincidental (Lyden 1992; Walton 1990).

Furthermore, a recent study in the New York City Parks and Recreation Department reports on the use of the Deming technique of giving ownership of the work process to the workers. In a test of that technique, allowing the workers (instead of managers and engineers) to develop the work flow chart, schedule, and manning requirements for the job, a tree removal project--for which contractors would have charged more than \$10,000.00, removal of 51 hazard trees cost the city only \$2,644.00, a savings of more than \$8000.00 (Janofsky 1992).

Finally, it is argued that career agency employees are better ambassadors for their agencies with the public than are contractors, because they are more service oriented. They see their profit in public good will, rather than as a bottom line on a low bid. This was exemplified in Glacier National Park in the mid- 1980's, where it was shown that career civil service maintenance personnel were more likely to contribute overtime services in emergency situations than were contractors. Contractors there were generally unavailable on nights or weekends and when they were available they routinely submitted requests for additional reimbursement through costly change orders (Sigler 1986).

Theory

The Glacier Park example above can be explained by the sociological studies of Etzioni (1975) who has shown that organizational involvement ranges in intensity from high to low. Etzioni refers to positive involvement as *commitment* and to negative involvement as *alienation*. Employees of any organization can be placed on an involvement continuum which ranges from an intense negative zone through mild negative and mild positive zones to a highly positive zone.

Strong Strong
 Alienation < -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 > Commitment

Figure 1. Levels of organizational involvement.

Etzioni describes three zones of the involvement continuum: *alienative*, for the high alienation zone (e.g. the disgruntled union member on strike, the prisoner of war and other inmates, enlisted soldiers in basic training, etc.); the *calculative*, for the two mild zones on either side of the midpoint of the commitment scale in Figure 1 (e.g. the clock watching 8 hour worker who goes home at 5 and forgets the job, who finds non-work ego rewards in other activities such as social organizations, church or civic clubs); and finally at the top of the commitment scale the *moral* (e.g. the parishioner in his church, the devoted member of a political party, and the loyal follower of his leader).

Alienative involvement designates an intense negative orientation; Etzioni states that it also exists among merchants in "adventure" capitalism, where trade is built on isolated acts of exchange, "each side trying to maximize immediate profit" (1975, 10). He says calculative involvement is either a mildly negative or mildly positive orientation. It has a low level of intensity.

Calculative orientations are predominant in relationships of merchants who have continuous business contacts. Attitudes of (and toward) permanent customers are often predominantly calculative, as are relationships among entrepreneurs in modern (rational) capitalism. (1975, 10).

Moral involvement is a high intensity positive orientation according to Etzioni. It is either pure or social in character.

Pure moral commitments are based on internalization of norms and identification with authority (Etzioni, 1975 11, 169).

Moral involvement or a high level of organizational commitment is an outcome of long term socialization, such as that described in professional career bureaucracies like the U.S. Forest Service (Kaufman, 1960). (Some of the effects of such socialization were substantiated empirically among Forest Service district rangers by Twight and Lyden in 1988). The effects of socialization in career bureaucracies is perhaps best illustrated by the military officer corps in the U.S., with the most refined American example being the line officers of the U.S. Navy (Mosher, 1982, 148). Noting the effects of socialization in hierarchies such as bureaucracies, Etzioni points out that pure moral involvement tends to develop in vertical relationships such as among leaders and followers.

Social moral involvement according to Etzioni, is of lesser intensity and tends to develop in horizontal relationships like those in various types of primary groups such as the family, and in various occupational communities which have social life both on and off the job (Etzioni, 171). Such social commitment rests on sensitivity to primary group pressures for loyalty to the organization and its welfare (Gawthrop, 1969, 134-40). Thus, even non-professional members of dominantly professional career organizations are influenced by integration with the professional staff and participation in the organizational socialization process. Long term socialization is even more effective in terms of efficiency and productivity, as noted earlier, when ownership of the work process is given to career skilled workers by the professional staff (Janofsky 1992; Moore 1973). In career organizations or occupational groups which socialize on and off the job, both means and ends of the organization are geared to the needs of the collectivity in serving its goals.

However, in a calculative involvement, such as with a business contract with the government, the goals of the contracted for individuals and their organization gain the loyalty of the employee only on what Etzioni calls a remunerative-calculative basis. And if the relationship with the contract administration, the recreation opportunity providing agency, is on a *coercive compliance* basis, as with the specifications policed by the contracting agency, then loyalty to the goals of the government agency is even lower.

This relationship tends toward *alienation* and Etzioni's work suggests that resistance to compliance with contract terms develops. Lower quality work is produced and even more costly inspections and policing become necessary to maintain even minimum quality standards. The more contract violations that are found through the increased inspections, the more the supervision costs of the contractor are increased, and the more the supervision the greater the alienation of contractor employees. Workers begin to leave or be fired and new ones hired. Training costs go up. And it is seldom that quality ever rises to the level of that produced by an organization which has morally involved and committed employees.

Indeed, Hirschman (1970) has forcefully demonstrated that as quality deteriorates, clientele and organizational members leave their relationships with the agency or firm. "Revenues drop, membership declines, and management is impelled to search for ways and means to correct whatever faults have led to exit" (1970, p.4). Further, the firm's clientele or the organization's members often "...express their dissatisfaction directly to management or to some other authority to which management is subordinate (e.g. Congress) or through general protest addressed to anyone who cares to listen..."

Conclusion

As W. Edward Deming (Walton, 1990) and his results from so-called Japanese management has shown, the highest quality of production is only attained in career organizations which retain their employees long term, socializing them to be part of a primary group or organizational "family." This type of organization, where fear has been driven out, develops the social moral involvement described by Etzioni. The costs, methods and effort necessary to produce such an effective organization have recently been demonstrated by General Motors in creating its Saturn Division under Deming's guidance.

Contractors or "partnerships," being outside organizations generally composed of personnel with alienative or calculative relationships with their organization and with a contracting agency, cannot develop the loyalty and moral commitment necessary for the highest quality and most efficient production. Only an organization which socializes its employees over several years, often promoting strictly up through the ranks and selecting only young relatively malleable entry level employees with a common background, can develop the moral commitment or loyalty necessary for maximum quality production and efficiency. Hence the first years of the Saturn Division were spent on developing the socialization and team spirit prescribed by Deming, and the pre-1960 U.S. Forest Service emphasized socialization, organizational identification, the Forest Service "family", moral norms, social interaction primarily within the agency, promotion only from within, and transfers every three or four years. Once integration of Forest Service personnel and ranger stations with local lumber communities began--in the name of public relations--and transfers and moral commitment to organizational norms declined, order began to break down. Calculative and alienative relationships with the agency developed and scandals (previously unheard of--Kaufman 1960) began to appear. Timber thefts increased, fraud occurred and moral deviations otherwise known as felony level crimes began to be described as "mistakes" and mere contract slip-ups (Turner 1993).

Building a cohesive team capable of producing a quality car such as the Saturn was found to require several years of socialization and careful attention to the building of an occupational primary group according to the long practiced "Japanese" management techniques developed by W. Edward Deming (Walton, 1990).

Short term contractors who hire calculative compliance oriented employees, those who are not socialized into a normatively guided organization, can never provide the same quality work as that produced by a supportive "family" career organization (the latter does not have to rely on fear and coercion to turn out quality workmanship). And given sufficient fear and coercion, many of those calculative employees will become alienated, leading to even lower quality work.

Providing employees a sense of ownership of their work, as the New York City Parks Department has shown, produces much higher levels of efficiency and quality. It prevents the corruption and "rip-offs" of the public and the government agencies inherent in competitive short term contracts with private entrepreneurs employing calculative and sometimes alienated staff members (Schneider 1992; Janofsky 1992). And we finally have learned from the Japanese that only by relying on Deming management will we really achieve both maximum productivity and the highest quality work for the consuming public.

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PARTNERSHIPS PANEL:

THE NEW JERSEY COASTAL HERITAGE

TRAIL ROUTE: A PARTNERSHIP IN ACTION

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The New Jersey Coastal Heritage Trail Route is a vehicular tourism route that is being developed to provide for public understanding and appreciation of significant natural and cultural sites associated with the coastal areas of New Jersey. Authorized by federal legislation in 1988, the Trail is a public/private partnership involving the National Park Service, state of New Jersey, units of local government, and public and private entities. The Trail region extends along nearly 300 miles of coastline. Trail themes will include Maritime History (the initial demonstration theme), Coastal Communities, Recreation and Inspiration, Wildlife Migration, and Coastal Habitats. This paper reviews the history and development of the Trail as a model for partnership efforts in managing and interpreting natural and cultural resources.

Introduction

The New Jersey Coastal Heritage Trail Route (hereafter Trail) was authorized by Congress in 1988 as a public/private partnership to provide for understanding and enjoyment of important sites associated with the coastal areas of New Jersey and to recognize their importance in the nation's history. The Trail region extends along nearly 300 miles of coastline from Perth Amboy on the Raritan Bay in the north to Cape May in the south and then northwest along the Delaware Bay shoreline to the Delaware Memorial Bridge in Deepwater (Salem County). Figure 1 shows the project area and five Trail regions.

The project exemplifies partnership programs that have become increasingly important in protecting significant natural and cultural resources. Goals of the Trail include increasing public awareness of the special coastal resources through interpretation and education, creating public advocacy for resource protection through expanded awareness of the coast's significance, and ensuring that resources are not threatened or adversely affected because of designation as part of the Trail.

The Trail is designed for vehicular touring. Because of the size and complexity of the project area, five geographic regions have been defined along the main access corridors of the Garden State Parkway which runs north and south and State Route 49 which runs east and west. Each region will eventually have a Regional Welcome Center that will act as an interpretive and informational hub. Highway directional signs will be installed to guide visitors to Trail destinations, and both Trail-wide and regional brochures will be developed. Individual sites will have interpretive exhibit panels to supplement on-site interpretation. The goal is to provide for visitor needs through existing facilities or, where none exist, through cooperating groups or agencies. The interpretive goal of the Trail is to provide opportunities for visitors to learn about and experience New Jersey's diverse coastal heritage, expand public awareness of the significance of the coast, and place New Jersey's natural and cultural heritage in a state, national, and international context. The Trail will interpret the New Jersey coast through five themes. The Maritime History theme was selected as a demonstration theme and opened to the public in September 1993.

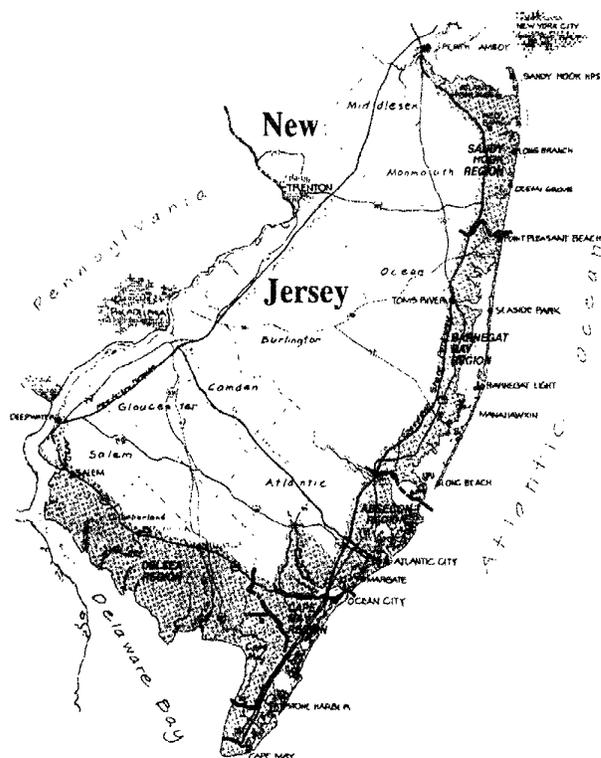


Figure 1. The New Jersey Coastal Heritage Trail Route project area showing the five Trail regions.

Participation in the Trail is voluntary. Site owners/managers submit applications to the state of New Jersey for review and determination of the site's level of significance. Selection is based on criteria for location, significance, interpretation, access, and management.

During the initial five-year implementation period, the state of New Jersey will cooperate with the National Park Service (hereafter NPS) in managing the Trail. At the end of the implementation period, the NPS and the state will assess the Trail and the state's ability to manage it. The NPS will provide long-term stability for the Trail by anchoring it in the north at the Sandy Hook unit of Gateway National Recreation Area. A special resource study of the Delaware Bay that is underway may recommend long-term NPS involvement in southern New Jersey and provide another Trail anchor.

Legislative History

The concept of the New Jersey Coastal Heritage Trail Route was introduced by Senator Bill Bradley of New Jersey who was concerned that the rich history of the New Jersey coast and the role it has played in the nation's history were not being adequately acknowledged. The organizational structure of the Trail idea was based on the premise that neither the federal nor state government could afford to protect and interpret all of the special places that can be found along the coastal region of New Jersey. Authorizing legislation (Public Law 100-515) sponsored by Bradley, Senator Frank Lautenberg, and by Congressmen William Hughes and James Saxton was passed by Congress in October 1988. The legislation directed the Secretary of the Interior acting through the Director of the NPS to designate a vehicular tour route along existing public roads linking such natural and cultural sites in New Jersey.

The legislation defined the Trail region and called for an inventory of all natural and cultural resources in the legislated project area. The inventory was to include the location and description of:

1. significant fish and wildlife habitat and other natural areas;
2. unique geographic or geologic features and significant landforms;
3. important cultural resources, including historical and archaeological resources; and
4. migration routes for raptors and other migratory birds, marine mammals, and other wildlife.

The legislation called for a general plan to include proposals for a comprehensive interpretive program and alternatives for appropriate levels of protection of significant resources. The resource inventory and general plan were to be prepared in consultation with other Federal agencies, the state of New Jersey, units of local governments, and public and private entities. Ample opportunities for public involvement were to be made available in the preparation of the inventory and interpretive plan. The Secretary of the Interior through the NPS was authorized to enter into cooperative agreements with federal, state, and local non-profit or private entities to provide technical assistance in the development of interpretive devices and conservation methods. In addition, the legislation gave the authority to erect road markers along the Trail in conjunction with the state or local entity having jurisdiction over the roads designated as part of the route. By working cooperatively--not only with other governmental agencies but also with local non-profits or private entities--the coast's unique stories could be highlighted for the traveling public.

Initial Research and Project Planning

In December 1988, the NPS began development of a resource inventory and general plan for interpreting and protecting selected resources. During the spring of 1989, the NPS study team held meetings with the New Jersey Department of Environmental Protection and Energy (hereafter DEPE) and researched resources in the project area. In April and June 1989, the project was officially launched with a series of public meetings. An inventory representing 267 entries and over 7,000 individual sites and structures was distributed for comment in November 1989.

The alternatives document was finalized as the "Study of Alternatives" and distributed in November 1990 along with the "Resource Inventory." A series of six workshops was held between November 1990 and February 1991 to gather public comments. A preferred alternative was presented to the NPS director in April 1991, and a decision was made to develop a final plan based on this alternative and to implement the project through the development of five trail themes.

Maritime History with its focus on aids to navigation, coastal defenses, fishing villages, maritime trade, and other aspects of the interdependence of people and the sea was selected as the demonstration theme. Subsequent themes will include two other historical subjects and two natural history themes. Coastal Communities will focus on the role of natural resources in shaping the economies of communities within the Trail region. Relaxation and Inspiration will address the traditions of the Jersey Shore as a destination for those seeking fun in the sun, a quiet rest, religious inspiration, and hunting and fishing activities. Coastal habitats will consider the variety of ecological habitats from sandy beaches and salt marshes to freshwater bogs and dense maritime forests that all support a wide variety of plant and animal life. Finally, Wildlife Migration will look at the international significance of the New Jersey coast as a vital stop in the global migration of many birds and sea mammals.

Workshops were held in 1991 to develop cultural and natural history themes and to develop site selection criteria. Those attending included natural and cultural resource staffs from federal, state, and local agencies and non-profit organizations. The planning team and representatives of several state agencies also reviewed formal agreements (memoranda of understanding)

for use between federal and state partners. Three types of sites will be included in the Trail--those that have national or state significance and offer a full range of visitor services (level 1 sites), those that have the national or state significance but offer only limited services (level 2 sites), and those that do not have national or state significance but provide information not available elsewhere on the Trail about one of the themes (associated sites.)

Level 1 sites must be fully operational and accessible, have the necessary services to support public use (including parking, restrooms, and water fountains), be staffed and open on a regular basis (at least five hours a day five days a week, including one weekend day), provide educational programs and information to the public, and protect site resources adequately.

Level 2 sites must meet the same significance and resource protection standards as level 1 sites, but do not provide all of the same support services. They may have restricted access, limited educational programs, and/or be open fewer hours. Managers of these sites will be encouraged to upgrade services to qualify for level 1 status.

Associated sites do not meet the significance standards but effectively explain information not available elsewhere on the Trail. They must provide the same kinds of educational programs, information, and level of services as level 1 or level 2 sites. Museums not in register-eligible facilities and with important collections relating to Trail themes would be likely candidates to be associated sites.

In addition, a category of Points of Interest has been established for destinations that are primarily scenic views or sites with limited or no staffing and services but that contribute significantly to one or more of the interpretive themes.

All Trail destinations will be evaluated in an application process that verifies location of the site within the project area boundaries; accessibility from public rights-of-way; relationship to at least one of the themes; availability of or plans to implement educational/interpretive programs relating to Trail themes; presence of adequate support facilities (including parking, restrooms, and water fountains) that meet local, state, and federal regulations for health safety and physical accessibility; and significance according to one of the following criteria:

1. listing or eligibility for listing on the National Register of Historic Places or New Jersey Register of Historic Places;
2. status or eligibility for status as a national or state natural resource protection area; and
3. determination that a site is critical in representing a particular aspect of a Trail theme.

In addition, site owners or managers are required to sign an official memorandum of understanding between the site owner/manager, state of New Jersey, and the NPS; agree to operate and maintain their trail facilities; and demonstrate community endorsement of their application through municipal, county, or other governing body approval. They must periodically review the condition of Trail signs, provide information for development of a Trail annual report, promote the Trail, distribute and install interpretive materials, attend interpretive training sessions conducted or approved by the state, and educate the public about the need for protection of natural and cultural resources.

Because the Trail project area covers nearly 300 miles of coastline, it has been divided into five regions to simplify touring and make it more convenient for visitors. A map/brochure will be developed for each region showing all of the Trail-related sites by theme. A Regional Welcome Center will be established within each region near the Garden State Parkway (hereafter GSP) or State Route 49 which delineate the Trail area. The Regional Welcome Centers will provide orientation to the entire Trail and to its themes, but will highlight destinations within the region. In addition, they will also offer in-depth interpretation of one or

more Trail themes. Regional Welcome Centers must meet specific criteria regarding access, location, public services, hours of operation, and space available for audiovisual presentations and exhibits. Currently, three Interim Regional Welcome Centers have been established with an orientation video about the Trail, orientation exhibits, and Trail literature available to visitors.

To supplement the Regional Welcome Centers, a series of Local Information Centers will augment information distribution efforts. These Local Information Centers will distribute general brochures on the entire Trail and regional brochures for the region in which the center is located. They will be located in facilities such as chambers of commerce and local visitor bureaus and should assist in stimulating local interest in Trail sites and resources. Participation as a Local Information Center is voluntary and is initiated by an application to the state Division of Travel and Tourism that will review qualifications and make recommendations to the NPS. Information centers will be approved for periods of three years at which time re-application will be required. All of the Regional Welcome Centers and Local Information Centers will be located in existing or already proposed facilities that are managed and staffed by others and demonstrate the ability to support Trail activities.

The Historic American Building Survey/Historic American Engineering Record (hereafter HABS/HAER) was contracted to write overview histories of the Trail project area as well as more specific maritime and agricultural histories. The first volume in the series entitled Historic Themes and Resources within the New Jersey Coastal Heritage Trail was released in 1991 as Southern New Jersey and the Delaware Bay: Cape May, Cumberland and Salem Counties. The second volume was published in 1992 as From Marsh to Farm: The Landscape Transformation of Coastal New Jersey. Additional volumes are in development on maritime history and on the Atlantic coast region.

A trailblazer (logo) received approval in November 1991 from the New Jersey Department of Transportation (hereafter NJDOT) for use on highway signs. The logo was then sent to all counties, the Garden State Parkway Commission, and the Atlantic City Expressway Commission for approval.

Trail office staff continued to meet with various agencies and the public during the fall of 1991 to review reaction to the development alternatives and proposed themes. A newsletter was published and a series of open houses was held. The congressional delegations were briefed, and meetings were held with the staff of NPS Harpers Ferry Center to discuss development of interpretive materials.

Developing Trail Partnerships

The top destinations nationwide for the escorted tour industry are national parks, natural areas, and historic sites. In New Jersey, tourism is the number two industry generating an estimated \$18 billion in travel expenditures. The state's travel industry supports 346,000 jobs and provides \$7.6 billion in payroll and \$2.6 billion in taxes. In 1993 there were 158.5 million trips made to or within New Jersey, of which 20 million were overnight trips.

As the Trail's planning began, two options became apparent. One was to consider the Trail as primarily a federal NPS activity that focused on existing nationally significant resources--perhaps 12-15 sites. The second option was to respond to initial public input by expanding the project to include sites of state and regional significance. This second option would require the establishment of a variety of partnerships. The goal was to look for groups already engaged in related activities that had similar or complementary agendas and for which participation would be to their advantage.

Some obvious potential partners quickly emerged. These partners were agencies already involved in tourism and the management of the state's natural and historic resources. They were the New Jersey Department of Commerce and Economic Development's Division of Travel and Tourism (hereafter T&T), the Pinelands

Commission (hereafter Pinelands) which oversees the Pinelands National Reserve, and the New Jersey Department of Environmental Protection and Energy's (hereafter DEPE) Division of Parks and Forestry (hereafter DPF) which was designated as the lead coalition partner.

A conscious decision was made to involve these agencies in planning and review from the beginning so that the resulting development plan became everyone's plan and not just that of the NPS. A formal memorandum of agreement was signed with the state of New Jersey designating the responsibilities of each partner.

The NPS agreed to provide the core staff for the initial project development; assist in the resource inventory and evaluation; produce wayside and visitor center exhibits, brochures, and other interpretive materials; seek financial assistance for DPF's management of day-to-day Trail operations; prepare final implementation documents; and make final determinations for site eligibility. The DEPE agreed to provide team members and input from DPF, New Jersey Historic Preservation Office, Division of Fish, Game, and Wildlife, Office of Green Acres, and Office of Natural Lands Management; explore potential joint use of visitor centers by DEPE and the Trail; assist in devising a long-term funding and management plan; solicit site applications and participate in field reviews; and review sites for National Register eligibility.

T&T also agreed to provide a staff representative for planning purposes, supply travel and economic statistical data, locate and evaluate potential Local Information Centers, and assist in development and distribution of Trail literature. The Pinelands was to designate a representative, identify areas of cooperation for interpretive programs and visitor centers, and assist with determinations of significance for Pinelands resources.

The state partners also provided access to other groups able to assist with the development or implementation of the Trail. The Governor's Recreational Travel Committee with representation from DPF, T&T, as well as NJDOT and county engineering departments expedited the process of obtaining official approval for the logo or trailblazer to be used on highway signs. Through this committee, contacts were made with NJDOT and individual counties regarding both the storage of highway sign inventories at two locations accessible to the six participating counties and subsequent sign installation. A series of meetings was held with representatives of the Trail, NJDOT, and individual counties to verify proposed locations for installation of road signs and to determine the party responsible for sign installation.

The partnership with T&T resulted in the Trail being the focus of state tourism conferences and an agreement to handle brochure distribution through the existing state contract to state parks and tourist information centers. In addition, T&T agreed to allow centralized storage of Trail literature at its Trenton, NJ, warehouse. Agreements were also reached for the installation of orientation wayside exhibits and distribution of brochures at most service areas on the Garden State Parkway (hereafter GSP.)

The three existing interim Trail Welcome Centers are located in facilities managed by others. Two are in state parks (Cheesequake and Fort Mott) operated by the DPF. The third is in a staffed tourist information center in the Ocean View Service Area (milepost 18.3) on the GSP. T&T operates the information center in a GSP facility leased to Marriott and Mobil. Recently Mobil gave up half of its office space for an expanded Trail Welcome Center, and GSP funded and made renovations to the new space. Options are also being explored at Double Trouble State Park for joint facilities to serve DPF, Pinelands, and the Trail as a Regional Welcome Center.

For all of these Interim Welcome Centers, the focus is building on existing systems, services, and infrastructure, not on creating new ones. The NPS brings technical assistance for exhibit design and installation, while the site provides the space and staffing. In

many instances, the NPS is able to provide technical assistance to improve the site's own exhibits in addition to the exhibits relating to the Trail.

The process of building and maintaining these partnerships extends to the individual sites participating as Trail destinations. In the agreement signed with sites, the NPS agrees to provide periodic interpretive training opportunities for site employees, to supply directional trailblazer signs, to accept requests for technical assistance in the areas of interpretation and conservation of resources, to provide trail-wide orientation brochures and regional brochures, and to develop interpretive/orientation exhibits on the Trail.

In return, the sites agree to the continuing preservation of the resource covered by the agreement, to provide employees with the opportunity to attend training offered by the NPS, to make space available for the distribution of Trail literature, to display Trail interpretive exhibits, to maintain directional and trailblazer signs for the site, to provide space for the distribution of other local area tour brochures, to supply information on visitor use and Trail-related activities for an annual report, and to obtain a statement of support from the local governing authority for participation in the Trail.

Future Development of the Trail

One effective tool in maintaining support for the Trail has been a conscious effort to keep the Trail project and its partners in the public eye and to maintain a sense of progress and success through such things as periodic newsletters, giving credit to the partners, and holding mini-events at the sites. The official ceremonies opening the Trail in September 1993 involved both recognition of--and participation by--representatives of the key partners at the federal, state, and local levels. Annual meetings have been held with the Trail's official partners to review progress and solicit input for future priorities and development. Partners are also encouraged to attend and participate in Trail briefings with Congressional staff. As the Trail continues to develop, the partners will play a central role in cooperatively defining the Trail's vision as well as the long-term role of each participant.

The NPS Trail staff is constantly alert to opportunities for using the partners as a network to reach out to other individuals and organizations that can contribute to the Trail's development. The partners have been critical in successful efforts to raise additional funds through the Intermodal Surface Transportation Efficiency Act (ISTEA) for interpretive wayside exhibits. The Trail has also received support from the New Jersey Historical Commission by applying for publication grant support through the non-profit support group for one of the Trail sites. The partnerships provide the Trail with essential credibility and legitimacy that is critical in efforts to generate additional financial and political support.

State and local organizations have also used the Trail as a means of leveraging support for their own projects. Participation in the Trail has affected priorities for both staffing and capital projects at Trail sites. Groups such as bed & breakfast associations, city redevelopment groups, and county development organizations have seen the potential of the Trail in supporting their own agendas including efforts to develop eco-tourism initiatives.

Summary and Implications

The success of the Trail and its future depend on the building and nurturing of a broad range of partnerships, some formal and many informal. Like volunteers, such partnerships require a good deal of time, effort, and a certain amount of money to maintain. However, the potential benefits from such relationships far exceed what would be possible if each agency acted independently. Part of the success comes from the realization that the project can only be effective if it is based on support from the bottom up rather than being a project imposed from above. It also depends on establishing a common agenda that addresses the self interests of the partners and keeps them involved.

The Trail is a new type of partnership venture for the National Park Service. It provides a mechanism for working within existing administrative structures to bring together a broad range of established facilities managed by a variety of groups throughout coastal areas of the state of New Jersey. Selection criteria and a formal review process for applicants guarantee a certain level of staffing, state and national significance, public access, and quality of facilities and exhibits. Assistance is provided to participants wishing to improve exhibits and other educational and interpretive efforts. The Trail's interpretive themes and statewide promotional effort provide broad recognition to each facility. At the same time, interpretive exhibits at each site relate one destination to others and provide a broader context than would be possible at an individual site.

From a statewide perspective, the Trail provides a framework for recognizing and bringing to public attention the significance of the natural and cultural resources that can be found along the coast of New Jersey. By providing tourism alternatives to traditional beach activities, the Trail provides a mechanism to extend the travel season, to provide rainy day activities, and to promote additional travel activities. At the same time, it is hoped that the Trail will encourage a broader awareness of the importance of protecting the natural and historic resources of the New Jersey coast and their context within nationally and internationally significant resources.

With only the first of five interpretive themes in place and still in its first year of being open to the public, the development of the Trail is far from complete. Nevertheless, the Trail is being watched as a possible model for similar partnership ventures proposed for other regions of the country. It recognizes the inability of any single agency to preserve, protect, and interpret a region's resources and provides a possible mechanism for successful partnership efforts that can be expected to become increasingly important in the future.

PARTNERSHIPS PANEL:

NATURAL RESOURCE PARTNERSHIPS:

LITERATURE SYNTHESIS AND

RESEARCH AGENDA

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This paper presents a summary of an annotated bibliography on natural resource partnerships. Resource areas and management functions addressed in the partnership literature are examined. Partnership research is summarized and broken into categories including: Partnership outcomes, assessing the potential for partnerships, characteristics of successful partnerships, constraints to partnership success, and stages of partnership development. A research agenda for future partnership research is offered.

Introduction

"Partnerships have become a way of life. You simply don't have any choice if you want to get things done."

Bureau of Land Management employee

In this era of reinventing government, many natural resource managers are turning to partnerships to stretch limited tax dollars while attempting to meet the expanding public demand for quality recreation opportunities. Managers entering the murky world of

Table 1. Resource areas addressed in the partnership literature.

Community Recreation (McLean 1993)	Rural Recreation (Long, Keiselbach 1987)
Cultural Resource Management (Heid 1990)	State Parks (LaPage 1994)
Fisheries (Lunn, Begalka 1990)	Timber Management (Lunn, Begalka 1990)
Historic Development (Heid 1990)	Trail Management (Jacobi 1983)
Interpretive Programs (Hoecker 1990)	Tourism Development (Wallace et al 1990)
National Parks (Reinhardt 1993)	Urban Parks (Tindel, Overstreet 1990)
Native American Policy (U.S. Forest Service 1990)	Wilderness (Tippets 1992)
Range Management (Tippets, Anderson 1991)	Wildlife (Nelson, Raml 1989)
Research Natural Areas (Greene 1985)	

Table 2. Management functions addressed in the partnership literature.

Administration (Hansen 1989)	Fundraising (Decker 1991)
Communication (McAvoy, Schatz, Lime 1991)	Marketing (Zeiger, Caneday, Baker 1992)
Compliance with new regulations (Kunert 1992)	Planning (Gordon 1988)
Conflict Resolution (McAvoy, Schatz, Lime 1991)	Public Affairs (Crowley 1988)
Customer Service (Longan 1988)	Public Involvement (Heid 1990)
Developed Recreation (Long, Kieselbach 1987)	Research (Bishop 1991)
Ecosystem Management (Mott 1985)	Resource Protection (Vento 1985)
Education (Bishop 1991)	Special Uses (Brown 1986)

Summary of Research: Partnership Outcomes

Predictably, a number of articles have attempted to document the advantages or benefits of partnerships to the participating agencies and interests. Fewer studies have isolated the disadvantages or costs of partnerships to the respective interests. Hansen (1990) described several partnerships initiated between

cooperative agreements, memorandums of understanding, and challenge-cost share arrangements usually navigate by instinct and gut feelings. But, help is on the way. An emerging body of literature in the natural resource management field as well as in the management sciences is beginning to establish some general principles and guidelines for initiating and sustaining effective partnerships. The following literature review is based on an annotated bibliography of partnership-related research and other professional writings on partnerships. While dominated by descriptive case studies, the partnership literature is expanding to include systematic research examining the dynamics of partnerships. A review of this literature is presented which first examines the resource areas and management functions addressed in this body of literature. Next, a summary of selected partnership research is presented. The paper concludes with a research agenda for future partnership research.

Resource Areas Addressed

Table 1 illustrates how pervasive partnerships have become in natural resource management. Clearly, partnerships are the means by which resource management agencies are responding to a host of non-traditional issues. From Native American policy to cultural resource management, agencies are developing and implementing policy through the use of partnerships. Partnerships have been used less often in managing timber resources on public lands.

Management Functions Addressed

Table 2 demonstrates how partnerships are being used by resource management agencies to accomplishing a number of management functions. One usually thinks of partnerships as a voluntary association of agencies and interests with a mutual interest in a common issue. However, it is interesting that, increasingly, partnerships are being mandated in federal legislation. For example, for a state to receive federal funds for a scenic byway project through the recent transportation bill (ISTEA), a strong local coalition must provide matching resources. Figure 2 illustrates how agencies are using partnerships to address both traditional and emerging management functions.

the USDA Forest Service, commercial outfitters, and other professionals in the Boundary Waters Canoe Area Wilderness. These partnerships involved contracted services for wilderness maintenance, public education, architectural planning, and law enforcement. In all cases, partnerships were touted as powerful management tools and providing significant cost savings to the

Forest Service. Other benefits cited included involving the maximum number of people in the "ownership" of the wilderness area and providing a better understanding of wilderness maintenance issues by all those parties involved. On the negative side, concerns were raised about the managers' ability to control the activity of the partners. Examples of these include verifying the performance of private contractors and substandard or even destructive work by well-meaning volunteers.

Kunert (1992) recently reported on his experience with partnerships on the Los Padres National Forest in California. A core group of Forest Service employees convened to form an Access Team (The 'A' Team) whose vision was to make the Los Padres National Forest accessible to all constituencies. With the battle cry, "how can we help you?", the 'A' Team has been the catalyst for initiating a number of partnerships that have designed and constructed accessible facilities. Summarizing the human payoffs of these partnerships, Kunert noted that understanding increases with participation and that partnerships create an expanding pool of resources, the most valuable of which is the partnership itself.

Assessing the Potential for Forming Partnerships

One line of partnership research has tried to assess the potential for forming partnerships. For example, Norman, Lime, and Roggenbuck (1990) conducted a survey of commercial river outfitters and National Park managers on three popular rafting rivers in the Eastern United States. The researchers had subjects rank the severity of different problems on the rivers and then rank potential solutions to those problems. The researchers concluded that, in many situations, partnerships were feasible because Park Service managers and commercial outfitters had similar views about the severity of problems and finding cooperative solutions. For example, both groups identified litter along riverbanks as a problem and agreed to sponsor an annual river clean-up day.

In another study, Jacobi and Wellman (1983) examined successful partnerships existing between hiking clubs and respective resource management agencies. The researchers explored managers' perceptions regarding performance, administrative considerations, cost-effectiveness, communication, and political considerations. Based on results from extended personal interviews, the researchers concluded that considerable potential existed for expanding partnerships between resource management agencies and the nonprofit sector and that these partnerships could help provide quality recreation opportunities in a time of government retrenchment.

Characteristics of Successful Partnerships

Another stream of emerging research is examining those structural characteristics that typify successful partnerships. A study by Selin and Chavez (1994) is representative of this work. The researchers examined three recreation partnerships--a community project in Eagle, Colorado to construct a visitor information center, an interagency effort in Utah to develop a state scenic byway system, and a community project in St. Maries, Idaho focusing on interpreting the logging history of the area. Key informant interviews were conducted with all the primary players in each partnership. Participants in the study attributed the success of their partnership to many factors including personality traits, ability to compromise, support from administration, and the importance of having a written plan of action. Characteristics of partnership success were grouped into four categories: personality, interpersonal, organizational, and operational.

In another study, Darrow, Vaske, Donnelley, and Dingman (1994) conducted a content analysis of 25 partnerships initiated or supported by the National Park Service. Based on their analysis, the researchers concluded that successful partnerships were characterized by broad-based participation, a written plan of action, identified partner roles, and a plan for involving the public in partnership activities.

Constraints to Partnership Success

With all the euphoria over the benefits of partnerships, less attention has been given to the causes of partnership failure. Yet, research has shown that partnerships are fragile and need to be nurtured at each stage of development. A number of potential constraints have been identified in the partnership literature. Selin and Chavez (1992), in their study of three community partnerships, identified several organizational and operational factors that constrained partnership success at various stages. Organizational factors mentioned by respondents included restrictive personnel and financial accounting policies and revolving door hiring practices that led to a lack of continuity in partnership support staff. Operational constraints identified included lack of a binding cooperative agreement and a loss of momentum when partnership tasks were delegated to people not on the steering committee. There was also a tendency for partnership steering committees to rest on their laurels once initial goals were achieved.

Stages of Development

Finally, research has shown that partnerships are not rigid sets of relationships among organizational interests. Rather, they are dynamic and evolving. Further, partnerships naturally evolve through sequential stages that can be identified. Selin and Chavez (1992) describe a number of economic, social, and political factors that typically lead to partnership initiation. These factors include existing networks, crisis, leadership, incentives, mandate, and a common vision. Once initiated, partnerships were observed to evolve through a problem-setting, direction-setting, and structuring stage of development. The implication for managers is that partnerships may require different facilitative skills at each stage of development. For example, the managerial skills needed to convene a group of strong-willed interests is quite different from those skills needed to maintain partnership momentum once initial objectives have been achieved.

Research Agenda

While descriptive case studies and exploratory research has started to unravel some of the complexities of partnerships, more empirical research is needed to develop general principles and guidelines for initiating and sustaining effective partnerships. Many research questions remain untested. For example, why do some partnerships fail? And, why are partnerships so fragile? How do we measure or define success in partnerships? What are the social, economic, and political factors leading to partnership initiation? What social and organizational factors facilitate partnership continuance and expansion? Research is needed to develop a model of the life cycle of partnerships and to develop a typology of partnerships. Finally, it has been suggested that by involving the public in partnership activities, resource management agencies may be creating a new constituency that will support agency policies in the political arena. Research is needed to test this hypothesis. How do partner attitudes towards the agency change over the course of their partnership involvement?

Empirical research on partnerships has been dominated by descriptive case studies and analysis. Other research designs and levels of analysis are needed. Longitudinal research is needed to examine the life cycle of partnerships and how partner attitudes towards the agency change across the life of the partnership. Our understanding of the dynamics of partnerships would also benefit from a combination of qualitative and quantitative designs. Partnerships should be empirically examined at several levels of analysis including the individual, the organization, and the network. Finally, interested scholars should be careful not to reinvent the wheel. Researchers from a number of social service fields, notably in organizational sociology and organizational behavior, are empirically examining partnerships. This rich body of literature should be consulted before selecting research topics and designs.

Conclusions

The rising tide of interest expressed by managers and academics in partnerships is encouraging. LaPage (1994) provided a lofty vision at the Northeast Recreation Research conference. Partnerships have the potential to "reconnect" our natural resource management agencies to the larger community. Partnerships offer a positive alternative to closures, reduced hours, and minimal staffing as an agency response to downsizing. And, partnerships not only allow agencies to improve service on a smaller budget, but move the agency towards greater control of its destiny. However, partnerships are not a panacea. Managers must do more than give lip service to partnerships. They must create an organizational environment where employees are encouraged, rewarded, and provided the time available to engage in partnership activities. Social science research can help illuminate this managerial path.

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**CHANGES IN FEDERAL AGENCIES PANEL:
HUMAN DIMENSIONS RESEARCH AND
ECOSYSTEM MANAGEMENT:
POLICY AND RESEARCH IMPLICATIONS
FOR RECREATION RESEARCH EFFORTS**

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With an increased emphasis being placed on ecosystem management, the importance of Human Dimension Research (HDR) efforts in management and policy formulation are becoming more important. Developing an understanding of the type of management questions and policy needs that can be addressed by human dimension research is becoming increasingly important and timely. This presentation describes some of the changes occurring in natural resource research efforts relative to human dimensions.

Introduction

In Lewis Carroll's *The Adventures of Alice in Wonderland*, Alice spies a strange-looking rabbit, follows it down a hole and ends up trying to get through a door that is much too small for her. In some ways we are faced with a similar analogy in natural resource management. We have been confronted with a creature called "heightened public awareness" in the management of our natural resources, and followed that creature along unfamiliar terrain (public involvement in decision-making) and have come to a door that is difficult for us to get through (actually integrating the social sciences into policy and decision-making).

At times it appears like the prime directive of natural resource agencies has shifted from "what can we do for the public" to "what can the public do to us?" From a national perspective, questions such as value (Brown, 1984; Bengston, 1993), the impact of attitudes on behavior (Vincent and Fazio, 1992), and the relationship between environment usage and the impact upon social structures (Force, Machlis, Zhang, and Kearney, 1993) are not always easy to ascertain from local-based public meetings and issues. Many of the problems society now faces in the management of its natural ecosystems transcend easy solutions because they are global in nature, represent a longevity of neglect, are cross-cutting in political boundaries and scientific disciplines, involve damage that, in some cases, is irreversible and will require long-term, expensive solutions. From an ecosystem perspective, reality suggests that while the goal of management may be to understand and maintain biodiversity at the genetic, species, and ecosystem levels the fact is that human populations are consuming the ecological capital of the world at ever increasing rates.

What is needed is a re-examination of how research involving the social sciences can be more effectively used to aid in the development of natural resource policy and ecosystem management. Accordingly, this paper will review some of the current issues surrounding science and ecosystem management, discuss some potential roles that the social sciences can play and propose some questions that Human Dimensions Research (HDR) can address that may aid natural resource management.

For this paper, Human Dimensions Research is defined as: "The scientific investigation of the physical, biological, sociological, psychological, cultural, and economic aspects of communities and individuals in relation to the use and appreciation of natural resources.

Current Issues

Botkin (1990) suggests that the various constituents in environmental policy-making play different roles. According to Botkin (1990), the most appropriate source of identifying what goals natural resource management should strive for are the citizens. On the other hand, experts can be used to identify what goals are possible and how these goals can be realized, given the characteristics of the specific natural systems. Government can best be used to ensure standards of knowledge and/or actions of the experts and in identifying and implementing the regulation of practices and policies that ultimately help realize the goals desired by the citizens.

Institutions and agencies of every kind have sometimes misconstrued this mandate by assuming that public involvement and awareness will automatically change public behavior and garner public support. However, it comes as no surprise to those in the social and human behavior sciences, that such reasoning often flies in the face of scientific findings and past history. In this case, science is unambiguous about the ambiguous nature of human behavior being shaped by a variety of internal and external factors (Brislin, et. al., 1986; Clark, 1992; Krahe, 1992)

Moreover, the demands being placed on science by management and policy-making needs are increasing and becoming more complex. Essentially, these demands include four general categories or demands: (1) prediction, (2) policy development, (3) impartial fact finding and (4) inventory and monitoring capabilities.

Given these conditions, what are some components that would constitute a successful Human Dimensions Research program? First and foremost, scientific credibility is of utmost importance. Without it, findings from Human Dimensions Research efforts will be regarded as based on opinion and "common sense" or in a worst case scenario, not even be considered in the policy and decision-making arena.

Other considerations include examining systems instead of focusing solely on the components of those systems, anticipating future events and issues that generate needs for research, developing research that is policy-relevant but not necessarily policy-driven and develop research efforts that are consistent and responsive to broad-based mandates such as those from Congress or scientific academies. In addition, because of the growing complexity and interconnectedness of many of the natural resource issues facing society, successful research programs will increasingly entail efforts that are multi-disciplinary and multi-scale as well as providing aids to decision-making in an adaptive management setting.

Barriers to Human Dimensions Research

There exist, however, a number of potential barriers that can potentially interfere with the development of successful research programs in Human Dimensions Research. At the national level, there is a lack of effective leadership and coordination. Great ambiguity exists concerning what Human Dimensions Research is and what it can contribute to policy development and decision making. Other barriers include the persistent belief that Human Dimensions Research and the social sciences, in general, are less important than the biological and physical sciences. When considering questions that have a social science application, there exists a preponderance of economic viewpoints and methodology. The broad range of other social sciences such as anthropology, social psychology, and political science are often not considered as useful in generating valuable information. Finally, funding levels have not been responsive to the growing

importance of human dimensions with much more funding being allocated to the physical and biological sciences instead of the social sciences. This is true, even though the questions being studied are often human-centered.

Failure to Implement

Failing to implement a comprehensive program in Human Dimensions Research will degrade the capability of the land management agencies and associated institutions from implementing a broad range of effective management strategies. Several of these impacts are listed in Table 1.

Table 1. Impacts from not having a human dimensions research program.

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- Lack of understanding public preferences, motivations, and desires
 - Decreasing ability to communicate with public
 - Reduced understanding of human/natural environment interactions
 - Reduced ability to anticipate and plan for future changes
 - Loss of full capability to develop strategies for environmental stewardship
 - Decreased effectiveness of multi-dimensional programs (e.g., T&E species)
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As can be seen from Table 1, the results of not instituting a Human Dimensions Program involve a wide variety of negative outcomes. There already exists a number of natural resource problems that have demonstrated a lack of attention paid to the human dimension. These issues include the Spotted Owl, anadromous fish, and public mistrust of government's willingness to safeguard the natural resource base.

Policy and Management Issues

Given these concerns what are some of the research issues that are related to human dimensions needs of specific policies and management decisions. A sample of these issues are listed in Table 2.

Table 2. Potential human dimensions research issues.

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- What is the nature of resource conflict?
 - How do people "perceive" and "value" natural resources?
 - What societal changes will impact resource management and how will these impacts be manifested?
 - What are the driving forces behind biodiversity loss and ecosystem destruction?
 - What are the costs and benefits of resource development from a multi-attribute standpoint?
 - How can human behavior be modified to mitigate impacts?
 - What are the effects of environmental degradation on human health and well-being?
 - How can distributive justice and procedural fairness be instituted?
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Bormann (1993) posits that concepts of the environment such as sustainability, forest health, biodiversity, and ecosystem management are essentially human constructs that serve as expressions of human values. Clark and Stankey (1994) suggest that agencies and institutions are poorly equipped to develop a thorough understanding of human dimensions issues. Machlis (1992) makes the observation that biologists, ecologists, and other natural science professionals are now faced with a hard reality: ultimate solutions to natural resource problems lie in social, cultural, economic and political systems; the very systems that are the focus of the social sciences. Holden (1988) has argued that:

The social sciences have lagged far behind in assessing the interactions between physical changes and human activities. Far more is known about the processes of global warming, deforestation, resource depletion, and pollution than about the processes of the human institutions that create these effects.

What is needed is a re-examination of the role the social sciences and Human Dimensions Research should assume in current and future natural resource management issues. How successful the natural resource community is at integrating the social sciences through a Human Dimensions Research program will determine, in large part, how effective any emerging long-term solutions to these various resource issues will be. Failing to include people into the natural resource equation spells problems for both society and the social science disciplines.

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