

Table of Contents

Keynote Address

Discipline and Chaos <i>Tom Goodale</i>	3
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Management and Planning

Recreational Leasing of Industrial Forestlands in New York State <i>Sergio Capozzi and Chad P. Dawson</i>	11
Environmental Attitude-Behavior Correspondence Between Different Types of Forest Recreationists <i>Brijesh Thapa and Alan Graefe</i>	20
Support for Recreational Trail Development and Community Attachment: A Case of the Soucook River Watershed <i>Jodi L. Michaud and Robert A. Robertson</i>	28
Human Territoriality: An Examination of a Construct <i>Thomas D. Wickham and Harry C. Zinn</i>	35
What's Happening in Our Parks? <i>G. Scott Place</i>	40
Open Space and Imagination <i>G. Scott Place and Bruce Hronek</i>	43

Economics of Outdoor Recreation and Tourism

Opinions of Elk Viewers on a Proposed Pennsylvania Elk Hunt <i>Bruce E. Lord, Charles H. Strauss, and Walter M. Tzilkowski</i>	49
The Role of Non Timber Forest Products: A Case Study of Gatherers in the Eastern United States <i>Siri Doble and Marla Emery</i>	53
Degraded Visibility and Visitor Behavior: The Case of New Hampshire's White Mountain National Forest <i>John M. Halstead, Wendy Harper, and L. Bruce Hill</i>	58
Estimating Relative Values for Multiple Objectives on Private Forests <i>Donald F. Dennis, Thomas H. Stevens, David B. Kittredge, and Mark G. Rickenbach</i>	64
Cost Consideration as a Factor Affecting Recreation Site Decisions <i>Allan Marsinko, John Dwyer, and Herb Schroeder</i>	68
Attendance Structure and Economic Impact of the National Road Festival <i>Charles H. Strauss and Bruce E. Lord</i>	74

Tourism

A Comparison of Tourists and Local Visitors to National Estuarine Research Reserve Sites <i>Allan Marsinko, William C. Norman, and Tiffany J. McClinton</i>	83
Individuals' Interpretation of Constraints: A New Perspective on Existing Theory <i>Po-Ju Chen, Deborah Kerstetter, and Linda Caldwell</i>	89
Culture, Heritage and Tourism Destination Choices <i>Achana Francis, Joseph T. O'Leary, and Alastair Morrison</i>	94

A Measurement of the Experience Preferences of Central Appalachian Mountain Bicyclists <i>Roy Ramthun and Jefferson D. Armistead</i>	104
Effect of Balanced Information on Attitudes Towards Open Ocean Aquaculture Development in New England <i>Robert A. Robertson and Erika L. Carlsen</i>	107
Characteristics of Outdoor Recreationists	
Use and Users of the Appalachian Trail: A Geographic Study <i>Robert E. Manning, William Valliere, Jim Bacon, Alan Graefe, Gerard Kyle, and Rita Hennessy</i>	115
A Comparison of Recreation Conflict Factors For Different Water-Based Recreational Activities <i>Cheng-Ping Wang and Chad P. Dawson</i>	121
SCUBA Diving & Underwater Cultural Resources: Differences in Environmental Beliefs, Ascriptions of Responsibility, and Management Preferences Based on Level of Development <i>Sharon L. Todd, Tiffany Cooper, and Alan R. Graefe</i>	131
Ethnicity and Culture	
Recreation Safety in Municipal Parks - Bloomington, Indiana and Tsukuba, Japan: A Comparison Study of Risk Management <i>Bruce Hronek</i>	143
The Meaning of Leisure: Conceptual Differences Between Americans and Koreans <i>Joohyun Lee, Sae-Sook Oh, and Jae-Myung Shim</i>	145
Universal Campsite Design: An Opportunity for Adaptive Management <i>Jason R. Biscoombe, Jeri E. Hall, and James F. Palmer</i>	150
A Life to Risk: Cultural Differences in Motivations to Climb Among Elite Male Mountaineers <i>Patrick T. Maher and Tom G. Potter</i>	155
Outdoor Recreation Behaviors and Preferences of Urban Racial/Ethnic Groups: An Example from the Chicago Area <i>John F. Dwyer and Susan C. Barro</i>	159
Methodological Issues	
Evaluating Multiple Dimensions of Visitors' Tradeoffs Between Access and Crowding at Arches National Park Using Indifference Curve Analysis <i>Steven R. Lawson and Robert E. Manning</i>	167
Effective Survey Automation <i>John Weisberg and Jay Beaman</i>	176
Weighting Issues in Recreation Research and in Identifying Support for Resource Conservation Management Alternatives <i>Amy L. Sheaffer, Jay Beaman, Joseph T. O'Leary, Rebecca L. Williams, and Doran M. Mason</i>	183
Intervention for the Collaborative Use of Geographic Information Systems by Private Forest Landowners: A Meaning-Centered Perspective <i>Kirk Sinclair and Barbara A Knuth</i>	187
Estimating Social Carrying Capacity Through Computer Simulation Modeling: An Application to Arches National Park, Utah <i>Benjamin Wang, Robert E. Manning, Steven R. Lawson, and William A. Valliere</i>	193
Does the Suggestion That Respondents Recall Events Chronologically Significantly Influence the Data Collected? <i>Andrew Hill, Jay Beaman, and Joseph O'Leary</i>	201

Marketing and Management in Outdoor Recreation and Tourism

Importance-Performance Analysis: An Application to Michigan's Natural Resources <i>Gloria Sanders, Erin White, and Lori Pennington-Gray</i>	207
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Poster Session

The Eastern States Exposition: An Exploration of Big E Tourist Expenditures <i>Robert S. Bristow and Heather Cantillon</i>	213
Sustainable Tourism Development: The Case Study of Antalya, Turkey <i>Latif Gurkan Kaya and Richard Smardon</i>	222
The Role of Avocational Archaeology and History in Managing Underwater Cultural Resources: A Michigan Case Study <i>Gail A. Vander Stoep</i>	228
Tornado Chasing: An Introduction to Risk Tourism Opportunities <i>Heather Cantillon and Robert Bristow</i>	234
Community Based Open Space Planning: Applications of a GIS <i>Christian Mettey, Brian Demers, Nicole Halper, Robert Bristow, and Stephanie Kelly</i>	240
A Spatial Analysis of Wilderness Campsites in Lyell Canyon, Yosemite National Park <i>Steven R. Lawson and Peter Newman</i>	245

Management Presentation

Interpretation Programming in the NYS Forest Preserve Campgrounds: Successful Consensus Building, Partnership, and Regional Management <i>W. Douglas Fitzgerald</i>	251
Don't Be Thru-Hiking; Start Uhiking <i>Kirk D. Sinclair</i>	256
Using Technology to Develop Connections Between Individuals, Natural Resources, and Recreation <i>Wen-Huei Chang, Carolyn H. Fisher, and Mark P. Gleason</i>	260
Monitoring Visitor Satisfaction: A Comparison of Comment Cards and More In-Depth Surveys <i>Alan R. Graefe, James D. Absher, and Robert C. Burns</i>	265

Roundtables

The Forest Service's Recreation Agenda: Comments on the Roles of Research and State and Private Forestry in the Northeast <i>Thomas A. More and Mark J. Twery</i>	273
Development of a Use Estimation Process at a Metropolitan Park District <i>Andrew J. Mowen</i>	276
Nature Speaks - An Exploratory Study of Nature as Inspiration <i>Will LaPage</i>	278
Great Gulf Wilderness Use Estimation: Comparisons from 1976, 1989, and 1999 <i>Chad P. Dawson, Mark Simon, Rebecca Oreskes, and Gary Davis</i>	283
New England's Travel & Tourism Markets: Trends in the Geographic Target Markets in the 90's <i>Rodeny B. Warnick</i>	289

Founder's Forum

Notes on My Trip Through Nebraska, or Some Alternative marketing Principles for Parks and Recreation

Alan R. Graefe301

Index of Authors307

Management & Planning

RECREATIONAL LEASING OF INDUSTRIAL FORESTLANDS IN NEW YORK STATE

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Abstract: An exploratory and descriptive study of recreational leasing of industrial forestlands in the state of New York was conducted to better understand lease programs and the lessees involved in these programs. During the summer of 1999, thirteen companies were sent mail surveys and 9 responded (response rate of 69%). Based on information provided by the companies, 540 industrial forestland leaseholders were sent mail surveys and 362 leaseholders responded (deliverable response rate of 68%). Leased forestlands for outdoor recreation accounted for nearly 75% of the total forestland area owned and managed by the companies who responded to the survey. General industrial forest company and leaseholder characteristics were described and specific relationships were tested. Industrial forest managers can use this type of information to better manage their lands for producing quality outdoor recreation experiences in addition to traditional commercial forest products.

Introduction

In the State of New York, 93% of all forestlands are privately owned. Non-industrial private forestland owners account for the majority of these lands. Industrial forest companies own only 8% of private forestlands in New York, approximately 1.2 million acres (Germain 1999). While this may seem like a small amount, it is important as large industrial owners provide the public with more contiguous acres of forestland than non-industrial owners (Owen 1990, Patterson and Patterson 1989). Most of these lands are open to the public either through free access or recreational leases. Nearly 70% of industrial forestlands are currently leased for recreation (Germain 1999).

A recreational lease is a legal contract transferring use of all or a portion of an industrial forest company's property to a leaseholder for outdoor recreation purposes during a specific period of time at an agreed upon fee. Both the company and the leaseholder have specific rights and responsibilities regarding the maintenance of the land and what types of activities are allowed. Industrial forest companies generate income from recreational lease programs typically to pay for the annual operational costs of owning and managing forestlands, but also benefit from having better control of access to their lands and from some labor assistance from lessees who can act as stewards of the

land. While lessees must pay for access to the land, they benefit from increased recreational opportunities and often exclusive use of the land, with less crowded experiences than at many public recreation areas.

Most research dealing with recreational leasing of industrial forestlands has focused on hunting and wildlife management and not on other aspects of the lease programs (Busch and Guynn 1988, Leopold 1930, Pope et al. 1984). This is due to the fact that hunting has traditionally been the primary activity on leased industrial forestlands (Decker and Brown 1979, Johnson 1995). In New York, hunting continues to be the primary recreation activity (Capozzi et al. 1999, Germain 1999). There is an increasing demand for more non-consumptive activities such as hiking, camping, observing wildlife, and general family use. Due to these emerging demands, there is the potential for increased outdoor recreational use of industrial forestlands.

While industrial forestlands have a high potential for outdoor recreation, little is known about the actual amount, types, and recreational use on these lands. Also, there is a lack of information regarding the leaseholders involved in recreational lease programs. The purpose of this exploratory and descriptive study is to develop an understanding of industrial forest company recreational lease programs and the participants in these programs. This type of information is extremely important to managing a successful lease program, as success is based on meeting the needs and wants of current and potential leaseholders while managing for commercial forest products.

Methods

Industrial forestland recreational leasing programs in the State of New York were studied in 1999 to better understand specific aspects of these programs. Both industrial forestland managers and leaseholders were surveyed through the use of a mail questionnaire. A modified Dillman mail survey technique was used with up to two reminders being sent to nonrespondents of the first mailing to ensure a high return rate (Salant and Dillman 1994). Thirteen companies were identified from previous research (Germain 1999) as having recreational lease programs and mailed an industrial forest manager survey. Nine companies responded, resulting in a response rate of 69%. Responding companies were requested to provide lists of their leaseholders in order to survey their use of industrial forestlands.

Due to the varying number of lessees involved with each company, some industrial forestland companies provided a census of their lessees while others provided simple random samples of lessees. In total, 540 lessees were mailed surveys and 362 responded, resulting in a deliverable response rate of 68%. Dolsen and Machlis (1991) have indicated that when surveying a relatively homogeneous population, a 65% respond rate should be adequate to rule out any substantial response bias. Brown and Wilkins (1978) have pointed out that even when surveying a specific audience in a specific resource area about specific issues, while the non-response bias may be

lower with a high response rate, it nonetheless can still exist.

In order to assess the possibility of a non-response bias in the leaseholder survey, four variables (age, education, income, and overall satisfaction) were tested. Nonresponse bias was tested by comparing the means of four variables during the three response periods (after the first mailing, after the first reminder, after the second reminder). It should not be assumed that late respondents, those responding to reminder letters, are representative of actual nonrespondents and some response bias may still exist using this method (Brown et al. 1981). However, given a specific recreation activity and location, a homogeneous population can be assumed if the response period means for specific key variables are similar. If a homogeneous population is assumed, then non-response bias can also be assumed to be low (Becker et al. 1987, Becker and Iliff 1983).

Data was entered and all statistical tests were conducted using the Statistical Package for the Social Sciences (SPSS version 10.0 for Windows). Analysis procedures included chi-square, correlation, and independent sample t-tests. Additionally, an exploratory factor analysis using orthogonal varimax rotation was conducted on the lessee motivation statements to reduce the motivation statements

into meaningful factors. The criteria established for inclusion in a factor were: (1) motivation statement factor loadings had to be 0.40 or greater to be included and (2) Eigenvalues had to be 1.0 or greater to retain a factor (factors were not forced). The internal reliability of each factor was tested and retained if its Cronbach's alpha was 0.60 or greater because each factor should explain at least 60% of the total variance.

Results and Discussion

Nonresponse Bias

Using a Chi-square test, no significant differences were found between return period and age, income, and overall satisfaction (Table 1). There was a statistical difference between return period and education. Past studies have theorized that respondents with higher educations were more likely to respond to surveys (Wellman et al. 1980). A Spearman's rho correlation coefficient of -0.13 (significant at $p < 0.01$) was found between return period and education indicating a weak linear relationship between these two variables. Due to the weak nature of this correlation and the lack of statistically significant differences in the other three variables, it will be assumed that the respondents are a generally homogeneous population and nonresponse bias will not be considered significant for this study.

Table 1. Chi-square tests comparing mail survey return period with age, education, income, and overall satisfaction of respondents.

Variable over Return Period Comparison	Pearson's Chi-Square Value	N	Degrees of Freedom	P
Age	3.56	337	4	0.469
Education	12.78	335	6	0.047 ^a
Income	9.87	304	12	0.627
Overall Satisfaction	6.65	339	4	0.156

^a Chi-square statistic significant at $p < 0.05$.

Industrial Forestland Company Survey

The total number of industrial forest acres involved in the study was 646,672. Of the total acres, recreational leases cover 558,048 acres, 65,573 acres are open to the public without fee, and 18,101 are opened by easements. Additionally, 45,975 acres of the total acreage in the study are completely closed to public access (Table 2). These

amounts exceed the 646,672 total acres because some companies have land that is both leased non-exclusively and is also open to the public for no fee. In general, companies have 75% of their land in recreational leases, 27% open to the public without fee, 14% completely closed to public use, and 5% covered by easements (Table 2).

Table 2. Total acres per access category^a, mean acres per company per access category^a, and mean percentage per industrial forest company.

Access Category	Total Acres in Study	Mean Acres per Company	Mean Percentage per Company
Recreational Lease	558,048	62,005	75%
Open without Fee	65,573	7,286	27%
Easement	18,101	2,011	5%
Closed	45,975	5,108	14%
Total Acres	646,672	71,852	-

^a Categories add to more than total acres due to acres being classified as non-exclusive leases and open without fee.

The relationship between total acres owned by a company and the number of acres that are recreationally leased (Pearson correlation coefficient of 0.991, significant at $p < 0.01$) was a strong positive linear relationship. While not as strong, the relationships between total acres and acres

open without fee and total acres and acres closed to public access were also found to have positive linear relationships (Pearson correlation coefficients of 0.752 and 0.751 respectively, significant at $p < 0.01$). In all three cases, acres in each recreational access category (recreational lease,

open without fee, and closed) increased as the number of acres owned by the company increased. The only access category in which this was not the case was with easements.

A 6-point Likert-type scale was used to question companies about their perception of problems and the actual frequency of problems associated with recreational leasing. The response categories ranged from 0 = "not a problem" to 5 = "very serious problem" for the perception scale and from 0

= "never" to 5 = "very frequently" for the frequency scale. The average perception ratings for illegal construction, trespassing, and road damage were highest (1.67, 1.44, and 1.11). The average frequency ratings for trespassing, lessee interference with logging activities, and illegal construction were highest (1.89, 1.44, and 1.44). None of the 12 variables scored very high perception or frequency ratings indicating that traditional problems associated with public use of private lands may not be issues of contention in recreational lease programs (Table 3).

Table 3. The average perceived problem ratings, frequency of problem ratings, and multiplied ratings for industrial forestland manager perceived and frequency responses.

Variable	Perceived Problem Rating Mean (P)	Frequency of Problem Rating Mean (F)	Multiplied Mean (P * F)
Litter	.78	1.33	1.04 ^b
Illegal Firewood Cutting	.56	.89	0.50 ^a
Road Damage	1.11	1.22	1.35 ^a
Forest or Brush Fires	.00	.11	0.00
Timber Damage	.44	.78	0.34 ^b
Trespassing	1.44	1.89	2.72 ^b
Lessee Interference with Logging Activities	.78	1.44	1.12 ^a
Timber Theft	.11	.44	0.05
Illegal Construction	1.67	1.44	2.40 ^b
Personal Liability	1.00	.67	0.67 ^b
Equipment Damage	.44	.56	0.25 ^b
Vandalism	1.00	1.22	1.22 ^a

^a Correlation is significant at $p < 0.05$ level (2-tailed).

^b Correlation is significant at $p < 0.01$ level (2-tailed).

Due to the small sample size of companies participating in the study ($n=9$), determining if there was a correlation between a company's perception and the actual frequency of the problem was difficult. Spearman's rho correlation coefficients were determined based on the categorical nature of the data and most variables were found to have positive linear associations with varying degrees of strength. Perceived problem means and problem frequency means were also multiplied to provide an exponential scale in which the magnitude of problems could be compared. Multiplied means could range from 0 to 25 (Table 3). Trespassing, illegal construction, and road damage had the highest multiplied mean ratings (2.72, 2.40, and 1.35). These mean ratings are relatively low considering the results could range from 0 to 25, but do indicate that of the related problems, these three are considered possible points of contention for recreational lease programs. Forest or brush fires, timber theft, and equipment damage had the smallest multiplied mean ratings (Table 3). The low mean ratings indicate these problems may not be issues companies must deal with in their recreational lease programs. It appears that the traditional problems associated with public recreational use of private lands are

not large problems in the recreational lease programs involved in this study.

In regard to problems associated with public use of private lands, industrial forest managers were asked about their satisfaction with New York State private property rights legislation. Most industrial forestland companies were not satisfied with current state legislation. The five response categories and response percentages were as follows: very satisfied (0%), satisfied (11%), neutral (33%), dissatisfied (45%), and very dissatisfied (11%). When asked specifically what area of state legislation needed the most improvement, 45% of industrial forestland managers responded landowner liability laws. Twenty-two percent of respondents felt that trespass laws needed improvement and another 22% felt that property tax laws needed improvement. While these are concerns for industrial forestland owners, they do not seem to hinder the recreational lease programs involved in this study, but the situation could prove problematic in the future if company concern increases.

When questioned about the future of public use of private lands, all companies believe public recreational use of

industrial forestlands in New York will increase. Over 55% of responding companies felt that family use of leased lands would increase in the future. In terms of public access to industrial forestlands, 67% believe there will be an increase in the number of easements and 56% think recreational leasing will increase (Table 4). The fairly large percentage of companies who believe there will be an increase in easements may stem in part from specific events that have happened in New York (e.g., recent easements purchased by the state from industrial forest landowners). Over half of the responding companies indicated that they believe free access will decrease in the future. This is especially important when considering the segment of society that cannot afford a recreational lease. A decrease in the amount of available land for free access will translate to a loss in recreational opportunities for those people who

cannot afford leasing and may further the economic argument that recreational leasing only makes land available for those who can afford the lease costs, not the public in general (Heberlein and Davis 1987).

Industrial forestland companies were asked to identify the number of organizations (e.g., hunt and other outdoor recreation clubs) and individuals holding leases on their lands. A total of 470 organizations and 336 individuals were indicated to be recreational leaseholders. This is consistent with the literature that states more industrial forest leaseholders are clubs as opposed to individuals (Busch and Guynn 1988, Jordan and Workman 1989). This is due, in part, to club members, as opposed to individual leaseholders, being able to share the cost of the lease.

Table 4. Percentage of companies surveyed who indicated an increase, decrease, or no change for recreational leases, easements, and free access in the future on industrial forestland in NYS.

Access Category	Decrease	Remain the Same	Increase
Recreational leases	0%	44%	56%
Easements	0%	33%	67%
Free Access	56%	22%	22%

Industrial Forest Leaseholder Survey

Due to the possibility that lessees surveyed could either lease land as an individual or as a club representative, lessees were asked to indicate which they were. Of the 362 lessee respondents, 94 responded as individuals, 254 responded as a club representative, and 4 lessees did not answer the question. Independent sample t-tests were performed to test for any differences between lessees responding as individuals and as clubs. There were no statistically significant differences when the means for age, income, education, and overall lease satisfaction were compared. Additionally, when responding as a club representative, lessees were asked to indicate the number of members in their club. Clubs ranged in size from 2 to 220 members, with a mean membership of 18 members, and a study total of 4,623 members.

Based on responses to demographic questions, a typical lessee is male, between the ages of 34-64, with at least a high school diploma, employed, and earning over \$40,000 per year. By far, the majority of respondents were men (99%) and most fit into one of three age categories, 34-44 (24%), 45-54 (35%), and 55-64 (21%). Approximately 40% of respondents had completed high school, 19% had some college experience, and an additional 22% were college graduates. Seventy-seven percent of lessees are employed, another 21% are retired, and roughly 75% of respondents make over \$40,000 per year. This type of demographic information is useful to managers to better understand lessee populations and to tailor marketing strategies to elicit new leaseholders.

Lessees involved in this study were primarily from New York (94%) and most came from communities of less than 25,000 people. More importantly, the majority of lessees

live under 150 miles from the land they lease. Only about 13% of respondents live more than 150 miles from the land they lease. This supports the claim in the literature that industrial forestland leasing is considered a local phenomenon, with local being defined as approximately 2 hours driving time from the leased land (Busch and Guynn 1988, Yoho 1981). Additionally, a Spearman's rho correlation coefficient of -0.253 was found between lessee distance from leased land and days spent on leased land. While not very strong, the negative linear relationship is nonetheless significant at the $p < 0.01$ level, indicating use of leased lands decreases as distance from the leased lands increases.

Due to different policies by the companies involved in this study, the duration of a typical lease of industrial forestland ranged from a 1 to 6 month lease (1%) to multiple year leases (99%). The most common leases were of a duration of 1 year (18%), 3 years (40%), and 5 years (23%). The majority of respondents had been involved in industrial forestland recreational leasing for more than 2 to 5 years (Table 5). Overall lease satisfaction ratings varied across the number of years involved in recreational leasing category, with the largest percentage of very satisfied lessees in the 2 to 5 year category (Table 5). Interestingly, a weak negative relationship was found between years involved in leasing and overall lease satisfaction (Spearman's rho correlation coefficient of -0.198, significant at $p < 0.01$). In general, overall lessee satisfaction was high with over 49% of lessees indicating they were satisfied and an additional 36% indicating they were very satisfied with recreational leasing of industrial forestlands. Due to the very low percentage of respondents who indicated they were very dissatisfied (3%), dissatisfied (4%), and neutral (8%), these three response categories

were lumped together into one category to facilitate statistical analysis.

Table 5. Reported satisfaction by lessees in 1999 and number of years involved in recreational leasing on industrial forestlands.

Satisfaction Rating ^a	Years Involved in Leasing					
	1 Year or Less (n = 22)	2-5 Years (n = 107)	6-10 Years (n = 68)	11-15 Years (n = 38)	16-19 Years (n = 18)	20 Years or More (n = 81)
0	1.5%	3.0%	2.4%	3.0%	0.9%	3.6%
1	2.1%	12.0%	12.6%	5.4%	2.4%	15.0%
2	3.0%	17.1%	5.4%	3.0%	2.1%	5.7%

^a The combined satisfaction rating categories were: 0 = very dissatisfied to neutral, 1 = satisfied, 2 = very satisfied.

The high percentage of respondents who were generally satisfied with their recreational lease of industrial forestlands in 1999 may be due, in part, to the management programs of these lands. Given the fact that many of their leaseholders were hunters, many industrial forest companies implemented wildlife management programs. Of the companies surveyed, 78% responded that they not only have a wildlife management program, but also employ a wildlife biologist either full or part time. Furthermore, 78% of responding companies indicated that they employ a recreation specialist on a full or part time basis. This type of attention to the recreational needs of their users may partially explain why most industrial forestland lessees are satisfied with their leasing experiences.

Lessees were asked to describe their main reasons for recreating on leased forestlands to determine if there was something that specifically distinguished industrial forestlands from other lands. The top three reasons and response percentages were "It is a good place to do the outdoor activities I enjoy" (84%), "I enjoy the exclusive use of this land" (77%), and "I enjoy the place itself" (75%). While enjoying the place itself does not specifically distinguish leased lands from free public lands, exclusive use of the land and being a good place to enjoy outdoor activities are distinguishing features of leased lands. Exclusive use is different from public lands that must be shared. Certain outdoor activities are not allowed or are limited to certain areas of public outdoor recreation destinations, also making leasing of commercial forestlands more attractive.

Recreational leaseholders were asked to rank 14 motivational statements based on their importance for

recreating on leased forestland. A 6-point scale was used, ranging from 0 = not important to 5 = extremely important. When ranked according to their mean importance, the three most important items are related to enjoyment and relaxation (Table 6). For enjoyment (4.47), to get away from daily routines (4.12), and for relaxation and rest (4.09) are the top three items while for physical challenge (1.95), to use recreational equipment (2.41), and to improve outdoor activity skills (2.46) were the lowest rated items. The factor analysis of the 14 motivation items produced four factors (Table 6). A lack of other studies surveying recreational leaseholder motivations did not allow for comparisons, but knowing the reason why people participate in specific types of recreation gives outdoor recreation managers an understanding of what people want from recreation and insight into how they can provide recreational opportunities that might benefit these people (Manfredo et al. 1996).

The Enjoyment and Relaxation factor includes six items, including the three highest ranked items (Table 6). The items in this factor indicate that industrial forest lessees seek enjoyable, relaxing, and even introspective outdoor experiences while on their leased lands. The Social factor, the second highest factor, was comprised of three items, and indicates that lessees derive enjoyment from sharing their experiences on leased forestlands with friends and family. These two factors suggest that having the leased land to recreate on and sharing social time with family and friends is as or more important to lessees than the actual activities participated in on leased forestlands. This is supported by the lower factor means for both the Stimulation/Physical Fitness and Equipment/Skill factors.

Table 6. Means and factor analysis for motivations of recreational leaseholders in 1999.

Factors and Motivation Items	Factor Loadings	Mean Ratings	Factor Mean	Factor (Cronbach's) Alpha Value
Enjoyment and Relaxation				
For enjoyment	0.55	4.47	3.87	0.83
For relaxation and rest	0.82	4.09		
To get away from daily routines	0.83	4.12		
To experience peace and quiet	0.78	3.98		
To reflect	0.54	2.59		
To spend time in a natural environment	0.56	3.98		
Social				
To be with family	0.65	3.25	3.67	0.72
To be with friends	0.68	3.56		
To be with people with similar values	0.50	3.29		
Stimulation/Physical Fitness				
For excitement	0.46	2.60	2.52	0.69
For exercise	0.82	2.97		
For physical challenge	0.80	1.95		
Equipment/Skills				
To use recreational equipment	0.81	2.41	2.44	0.59
To improve outdoor activity skills	0.59	2.46		

Activities as Indicated by Companies and Leaseholders

Both industrial forestland companies and lessees were asked to rank the most frequently occurring outdoor recreation activities on leased lands. Managers of industrial forestlands ranked big game hunting and snowmobiling as the top two activities and small game hunting, fishing, and cross-country skiing tied as the third most often occurring activities on leased forestlands (Figure 1). Lessees ranked big game hunting, small game hunting, observing wildlife, ATV use, and fishing as the top five activities (Figure 2). Hunting, snowmobiling, and fishing were in the top five activities reported in past studies on recreational use of industrial forestlands in the state of New York (Capozzi et al.1999, Germain 1999). By far, big game hunting eclipsed all other activities as the number one activity on leased forestlands. One hundred percent of managers and 62% of lessees indicated big game hunting as the primary activity. An additional 32% of lessees indicated they participated in big game hunting on leased forestlands, but it was not their primary activity. Accordingly, over 65% of lessee use of leased lands occurs during the fall. While the literature suggests recreational use of industrial forestlands may be shifting towards non-consumptive activities (Capozzi et al.1999, Germain 1999, Patterson and Patterson 1989), these results indicate that the traditional consumptive activities of hunting and fishing still play a major role in the recreational use of these lands.

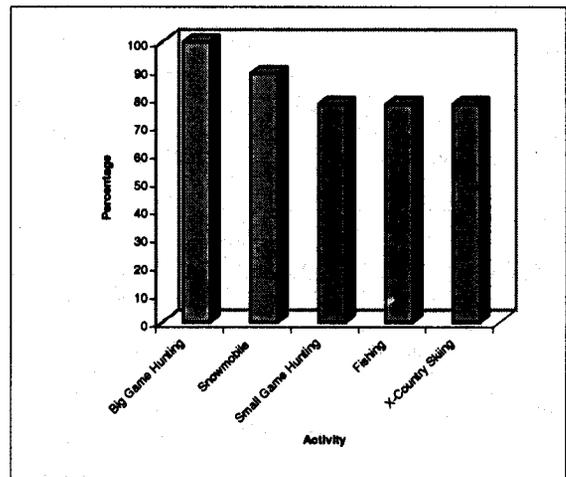


Figure 1. Top five occurring recreational activities according to industrial forestland managers.

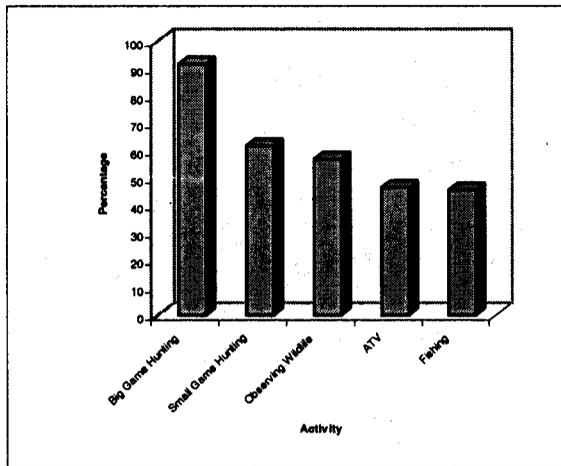


Figure 2. Top five occurring recreational activities according to industrial forestland lessees.

Conclusions

This study was undertaken to provide an understanding of industrial forest company lease programs, the lessees involved in these programs, and the overall satisfaction leaseholders derive from their experience on leased forestlands in New York State. Prior to this research, many recreational lease studies focused entirely on industrial forestlands in the southeastern United States, making generalizations to the Northeast difficult because of the different silvicultural practices in these areas. Additionally, past studies concentrated only on the company side of the lease programs. By adding the leaseholder perspective, this study broadened the base of information available for industrial forest managers to use when developing and managing existing recreational lease programs.

The industrial forest companies involved in this study lease approximately 75% of their total land for recreation, similar to past study results (Marsinko et al. 1997, Stuckey et al. 1992). While recreational access problems (i.e., road damage and illegal timber cutting) can often hinder public use of industrial lands, the analysis of problems associated with recreational leasing, as reported by managers, indicates public use problems do not seem to deter the companies involved in this study from providing recreational leases. Liability is a major concern for industrial forest companies as evident by nearly half of the respondents indicating their dissatisfaction with current landowner liability laws. This concern is similar to that voiced in other studies of recreational leasing of industrial forestlands (Kaiser and Wright 1985, Owen 1990).

While the number of leaseholders varied by company, in general, industrial forest companies in New York tend to lease to a higher percentage of clubs than individual leaseholders and this is consistent with past research (Marsinko et al. 1997, Stuckey et al. 1992). Hunting clubs traditionally were and still are the primary leaseholders of industrial forestlands.

Most leaseholders live less than 150 miles from their leased land, which is similar to past research that has indicated recreational leasing is a local phenomenon (Busch and Guynn 1988, Yoho 1981). The negative linear correlation between distance from lessee's residence to leased land and total days spent on the land, while weak, indicates that as distance from the leased land increases, the number of days the lessee spends on the land decreases. This is an important consideration for possible lessees as their decision to lease land may be predicated on their distance from the leased land and, correspondingly, the time they are able to spend there.

Similar to past research involving recreational leasing of industrial forestlands, the companies and leaseholders involved in this study indicated that big game hunting was the primary activity occurring on leased forestlands (Capozzi et al. 1999, Germain 1999). While non-consumptive activities may be becoming more important on leased lands, hunting is still the main activity, as industrial forestlands provide safe, relatively un-crowded areas to hunt. The similar recreation activity rankings of managers and lessees indicates that industrial forest managers have a good understanding of the activities their lessees are participating in while on their lands.

Leaseholder satisfaction was generally high for the overall lease experience. While this is consistent with past studies that found satisfaction levels for public amenities (i.e., parks) and recreational activities receive high performance ratings (Hollenhorst and Gardner 1994, Manning 1999), it was nonetheless not expected to be as high in this study. A fee must be paid for recreational leasing, whereas other outdoor amenities and activities are generally free or low cost. Considering the cost associated with leasing, it was expected that industrial forest leaseholders would be more critical in their satisfaction ratings and correspondingly satisfaction would be lower than in past studies. The high level of satisfaction was a very positive finding and an indication that industrial forest managers are producing the opportunity for satisfying outdoor recreational experiences on their lands. However, while satisfaction levels were generally high, this could be partially attributed to the fact that highly dissatisfied lessees may have been displaced and not captured in this study (i.e., only satisfied leaseholders continue to lease).

Current management strategies regarding leasing on industrial forestlands seem to be successful. Lessees are primarily satisfied with their experience, possibly due to the fact that many companies specifically employ wildlife and recreation specialists to direct management decisions. Contact with lessees and monitoring their changing preferences and needs should be a priority to companies who want to ensure that lessees of industrial forestlands remain satisfied with their experience.

Further Management Considerations

While recreational leasing appears to be a mutually beneficial venture for both industrial forest companies and leaseholders, two issues provide possible areas for future research. First, given the fact that a fee must be paid when

leasing land, recreational leasing of industrial forestlands is only an option for those people who can afford to pay the fee (Libby 1998, Messmer et al. 1998). A person's ability to pay recreational lease fees is associated with their socioeconomic status (Heberlein and Davis 1987). Given these facts, lease programs make land available for the segment of society that can afford the lease fees. If lease fees increase further, more people will be unable to afford the cost, forcing those who cannot pay to seek a more affordable lease or to use public lands.

A second issue surrounding recreational leasing of industrial forestlands is the willingness of the public to pay recreational lease fees. In general, given the fact that hunters and anglers are accustomed to paying fees for their activities, they have shown a willingness to pay for access to forestlands. Non-consumptive recreationists, on the other hand, have generally not shown this same willingness to pay (Heberlein and Davis 1987). This is especially pertinent to industrial forest lease programs as there has been an overall decrease in the number of people participating in consumptive outdoor activities and an increase in those participating in non-consumptive activities in the U.S. (Cordell et al. 1998). As the number of lessees involved in non-consumptive outdoor recreation increases, industrial forest companies may have to re-evaluate their lease programs and marketing strategies in order to satisfy current lessees and attract new ones.

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ENVIRONMENTAL ATTITUDE-BEHAVIOR CORRESPONDENCE BETWEEN DIFFERENT TYPES OF FOREST RECREATIONISTS

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Abstract: The purpose of this study was to examine the association of participation in outdoor recreation activities and the environmental attitude-behavior correspondence among forest recreationists. Environmental attitudes were operationalized with the revised New Ecological Paradigm (NEP) scale, and behaviors were operationalized using a series of proenvironmental behaviors that were derived from the literature. Outdoor recreation participation represented the respondents' most important activity. Data were collected at Bald Eagle State Forest, located in central Pennsylvania from June 12th 1999- March 11th, 2000. Bivariate correlations (Pearson's *r*) between attitudes and behaviors for appreciative, consumptive and motorized activities were conducted. Those involved with motorized activities showed the highest attitude-behavior contingency for ecocentric, and the lowest for technocentric attitudes. Those involved with appreciative activities generally had higher attitude-behavior consistency than those involved with consumptive activities for all three attitudinal indexes.

Introduction

The 1990s witnessed the highest level of environmentalism in regard to public attitudes; however, environmentally responsible behaviors did not simultaneously increase (Tarrant & Cordell, 1997). Why do people fail to practice environmentally responsible behaviors while, at the same time, expressing attitudes that are supportive of environmental protection? There are a plethora of studies about environmental attitudes and a substantial number that deal with responsible behaviors. However, we have only limited understanding of the causal connection between environmental attitudes and environmentally responsible behaviors. Previous studies have generally found weak or modest relationships between these variables (see Borden & Schettino, 1979; Dunlap & Van Liere, 1978; Gamba & Oskamp, 1994; Gigliotti, 1992; Guagnano, Stern & Dietz, 1995; Hines, Hungerford & Tomera, 1987; Jewell, 1978; Maloney & Ward, 1973; Ostman & Parker, 1987; Oskamp, Harrington, Edwards, Sherwood, Okuda & Swanson, 1991; Scott & Willits, 1994; Tarrant & Cordell, 1997; Thapa, 1999; Van Liere & Dunlap, 1981; Vogel, 1996).

Since outdoor recreationists are in 'direct contact with nature,' it is assumed that their environmental concern and awareness should increase. Furthermore, upon visitation to

the natural environment, outdoor recreationists are exposed to informational and educational programs about environmental issues, which may generate environmental concern and empathy (Dunlap & Heffernan, 1975). However, empirical research has offered somewhat mixed or weak support for the association of participation in outdoor recreation activities and proenvironmental attitudes (Dunlap & Heffernan, 1975; Geisler, Martinson & Wilkening, 1977; Jackson, 1986; Pinhey & Grimes, 1979; Van Liere & Noe, 1981). Nevertheless, two studies show fairly strong support for the association of outdoor recreation and proenvironmental behaviors (Nord et. al., 1998; Theodori et. al., 1998). As a result, some researchers argue that proenvironmental behaviors are a 'better measure' than environmental attitudes in assessing the association or influence of participation in outdoor recreation activities and environmentalism (Nord et. al., 1998; Theodori et. al., 1998). Furthermore, Tarrant and Green (1999) explored the effect of participation in appreciative, consumptive and motorized recreation activities on environmental attitude-behavior correspondence. A mediating effect was demonstrated, in which participation in only appreciative activities (day hiking, backpacking, nature/bird viewing) mediated the environmental attitude-behavior relationship.

Some suggest that the inconsistencies in findings regarding the association of outdoor recreation and proenvironmental attitudes/behaviors are largely due to weak operationalization of key variables and other methodological issues. There is a need for 'better' conceptualization and operationalization of outdoor recreation, environmental attitudes, and other variables. The purpose of this study was to examine the association of participation in outdoor recreation activities and the environmental attitude-behavior correspondence among forest recreationists (appreciative, consumptive and motorized). Appreciative activities represent a preservationist ideology that includes enjoyment of the natural environment without altering it. Consumptive activities refer to a utilitarian ideology that includes taking something from the environment. Motorized activities employ the use of motorized or mechanized equipment during the process of recreation. A research question representing the effect of participation in outdoor recreation activities on environmental attitude-behavior correspondence was formulated:

Is there a difference in environmental attitude-behavior correspondence between different types of forest recreationists (appreciative, consumptive and motorized)?

Methods

This study was conducted at Bald Eagle State Forest, encompassing 195,624 acres within five counties (Clinton, Centre, Mifflin, Snyder and Union) in central Pennsylvania. Due to multiple entry and exit points, the Forest was demarcated into eight zones based upon natural or man-made features. Between 1-3 sampling sites per zone were identified. There were a total of 13 sites, 2 of which were

picnic areas while the others were located on various State Forest roads and intersection points. A combination of survey methods was used to collect the data (on-site interviews and windshield surveys). On-site interviews were conducted from June 12th - October 24th, 1999, while windshield surveys were conducted from October 2nd - March 11th, 2000.

Operationalization of Variables

Environmental attitudes were operationalized with the revised New Ecological Paradigm (NEP) scale, which consisted of 15 items tied to a 5-point Likert Scale format, ranging from Strongly Disagree (1) to Strongly Agree (5) (Dunlap, Van Liere, Mertig, Catton & Howell, 1992). Environmentally Responsible Behaviors were operationalized using a series of proenvironmental behaviors (15 items) juxtaposed in a 5-point Likert Scale format, ranging from Rarely (1) to Usually (5). The items were general items that were derived from the literature (see Scott & Willits, 1994; Smith-Sebasto, 1995). Outdoor recreation participation was not limited to a yes/no

dichotomy (activity participation) but rather included the respondents' "most important activity."

Results

Profile of Participants

Collectively, the usable sample from both sampling methods was 522 respondents. Males comprised about 87% of the total sample while 13% were females. The age distribution was skewed towards the ages of 41-50, which represented about 28% of the total sample. However, about 21% represented the 60 and over category. Respondents were extremely homogeneous in terms of ethnicity (99% Caucasian). About 40% indicated that they currently reside in rural areas. Similarly, about 52% reported having a high school education or less, while 35% indicated they have some form of college education (technical/vocational or up to 4 yrs). About 27% reported a combined household income of under \$30,000, while 43% indicated over \$50,000 (see Table 1).

TABLE 1. Profile of Respondents

Characteristics	Frequency	Percentage (%)
Gender (n=522)		
Male	453	87
Female	69	13
Age (n=513)		
Under 30	67	13
31-40	116	22
41-50	142	28
51-60	82	16
60+	106	21
Ethnicity (n=522)		
Caucasian	518	99
Other	4	01
Residence (n=403)		
Farm, ranch, rural area	161	40
Small Town (under 9,999)	168	42
Large town (10,000-49,999)	43	11
Small/Large city/Metropolitan area	31	07
Highest Education Level (n=517)		
High School or less	266	52
4 year College/Technical School	182	35
Graduate School or more	69	13
Annual Household Income (n=468)		
Under \$19,999	40	08
\$20,000 - \$29,999	85	18
\$30,000 - \$49,999	143	31
\$50,000 - \$79,999	130	28
\$80,000+	70	15

Note: The valid percentages have been rounded to equal 100%

Respondents were asked to identify their *most important activity* from all the activities that they had participated in at Bald Eagle State Forest and elsewhere. The activity identified as the most important activity was used as the variable to delineate type of participation in outdoor recreation activity. Hunting, fishing and snowmobiling

were the most popular activities. The activities were recoded in the appreciative-consumptive-motorized activity orientation framework. Appreciative activities accounted for about 34%, while consumptive activities were strongly represented at 51%, and the motorized activity category was the least represented at 15% (see Table 2).

TABLE 2. Activity Orientation and Frequency of Participation of Respondents

Most Important Activity	Frequency	Percentage
Appreciative Activities	168	33.9
Viewing scenery	39	7.9
Walking/day hiking	39	7.9
Camping	28	5.7
Wildlife watching/feeding	16	3.2
Swimming	15	3.0
Picnicking	9	1.8
Mountain biking	8	1.6
Horseback riding	6	1.2
Backpacking	2	0.4
Canoeing	2	0.4
Photography	2	0.4
Jogging/trail running	1	0.2
Hang-gliding	1	0.2
Consumptive Activities	251	50.7
Hunting	173	34.9
Fishing	75	15.2
Insect collection	1	0.2
Target shooting	1	0.2
Cutting firewood	1	0.2
Motorized Activities	76	15.4
Snowmobiling	64	12.9
Off-road vehicles	7	1.4
Motorboating	5	1.0

Environmental Attitudes and Behaviors

The revised 15-item New Ecological Paradigm scale was subjected to a principal components analysis using varimax rotation. However, prior to the factor analysis, 2 of the 15 items were reverse coded to maintain the consistent directionality of the items. Overall, almost 51% of the total

variance was explained. The first factor (Ecocentric) registered 6 items with a Cronbach's alpha reliability of .81, and the second factor (Dualcentric) had 4 items with a reliability score of .58. The third factor (Technocentric) had 5 items and recorded a reliability score of .70 (see Table 3).

TABLE 3. Reliability Analysis for Respondents' Environmental Attitudes

Questionnaire Statements	Mean	SD ^a	Corrected Item Total Correlation	Alpha If Item Deleted
Ecocentric				
The earth is like a spaceship with very limited room & resources	3.44	1.2	.56	.77
If things continue on their present course we will soon experience a major catastrophe	3.25	1.1	.62	.76
We are approaching the limit of the number of people that the earth can support	3.44	1.2	.53	.78
The balance of nature is very delicate and easily upset	3.87	1.0	.58	.77
When humans interfere with nature, it often produces disastrous consequences	3.76	1.2	.48	.79
Humans are severely abusing the environment	3.93	1.1	.61	.76
Overall Index (N=498)	3.62	4.9		.81
Dualcentric				
Humans were meant to rule over the rest of nature*	3.44	1.4	.46	.44
Plants and animals have as much right as humans to exist	3.94	1.2	.46	.44
Humans have the right to modify the natural environment to suit their needs*	3.73	1.2	.33	.55
Despite our special abilities humans are still subject to the laws of nature	4.38	0.8	.26	.59
Overall Index (N=502)	3.87	3.1		.58
Technocentric				
Human ingenuity will insure that we do not make the earth Unlivable	3.08	1.2	.50	.63
Humans will eventually learn enough about how nature works to be able to control it	3.82	1.1	.39	.67
The earth has plenty of natural resources if we just learn how to develop them	2.43	1.2	.44	.66
The balance of nature is strong enough to cope with the impacts of modern industrial nations	3.84	1.1	.47	.64
The so-called ecological crisis facing humankind has been greatly exaggerated	3.22	1.2	.47	.65
Overall Index (N=498)	3.28	3.9		.70

*Items reverse coded

^aStandard Deviation

The 15 proenvironmental behavior items were also subjected to a principal components analysis using varimax rotation. Five factors were identified explaining approximately 70% of the total variance. The first factor (Political Activism) registered 4 items with a Cronbach's alpha reliability of .78; the second factor (Recycling) had 3 items with a reliability score of .84, and the third factor (Educational) had 2 items and recorded a reliability score

of .79. Similarly, the fourth (Green Consumerism) and fifth factors (Community Activism) registered 3 items each with Cronbach's alpha reliability of .73 and .66, respectively (see Table 4). The mean values of the items within each factor for environmental attitudes and behaviors were computed to devise a single index score for each factor.

TABLE 4. Reliability Analysis for Respondents' Environmentally Responsible Behaviors

Questionnaire Statements	Mean	SD ^a	Corrected Item Total Correlation	Alpha If Item Deleted
Political Activism				
Written to your elected officials expressing your opinions on environmental issues	1.67	1.0	.58	.73
Subscribed to environmental publications	1.95	1.1	.60	.71
Voted for a public official due to his/her record on protecting the environment	2.52	1.4	.56	.73
Donated money or paid membership dues to an environmental/conservation organization	2.56	1.4	.60	.71
Overall Index (N=498)	2.18	3.8		.78
Recycling				
Recycled glass bottles or jars or aluminum cans	4.26	1.0	.72	.75
Sorted your trash to separate non-recyclable from recyclable materials	3.87	1.4	.69	.76
Recycled old newspapers	4.00	1.3	.67	.78
Overall Index (N=509)	4.04	3.2		.84
Educational				
Watched TV programs about the environment	3.68	1.1	.65	-
Read books/magazines about the environment	3.30	1.2	.65	-
Overall Index (N=510)	3.49	2.0		.79
Green Consumerism				
Taken into account the amount of packaging on goods you buy	2.68	1.2	.65	.54
Switched products because of environmental reasons	2.62	1.1	.64	.56
Bought products made from recycled materials	3.60	0.9	.43	.79
Overall Index (N=511)	2.97	2.7		.73
Community Activism				
Car pooled or used public transportation to work	1.95	1.4	.39	.67
Attended meetings on environmental/conservation issues	1.80	1.1	.55	.46
Joined in community cleanup efforts	2.31	1.2	.47	.54
Overall Index (N=485)	2.02	2.8		.66

^aStandard Deviation

Bivariate correlations (Pearson's *r*) between environmental attitudes and environmentally responsible behaviors for appreciative, consumptive and motorized activities were conducted, with significance measured at the .05 level. Upon analysis, the pattern of findings of the correlation coefficients was identified. Those involved with motorized activities showed the highest attitude-behavior contingency for ecocentric, and the lowest for technocentric attitudes. But there were no significant correlations between technocentric attitudes and proenvironmental behaviors for

those involved with motorized activities. Those involved with appreciative activities generally had higher attitude-behavior consistency than those involved with consumptive activities for all three attitudinal indexes (13 out of 15 correlations). Also, those who were involved with appreciative and consumptive activities and harbored technocentric attitudes were least likely to participate in proenvironmental behaviors, as shown by negative attitude-behavior correlations (see Table 5).

TABLE 5. Bivariate Correlations Between Environmental Attitudes and Environmentally Responsible Behaviors for Appreciative, Consumptive and Motorized Activities

Environmental Attitudinal Indexes	Environmentally Responsible Behavioral Indexes				
	Political Activism	Recycling	Educational	Green Consumerism	Community Activism
Ecocentric					
Appreciative	.23**	.15*	.22**	.32**	.18*
Consumptive	.23**	.08	.18**	.23**	.12*
Motorized	.39**	.18	.36**	.53**	.19*
Dualcentric					
Appreciative	.25**	.14	.28**	.27**	.17*
Consumptive	.17**	.03	.24**	.31**	.07
Motorized	.29*	.08	.31**	.38**	.13
Technocentric					
Appreciative	-.36**	-.18*	-.32**	-.27**	-.21**
Consumptive	-.16**	-.03	-.18**	-.18**	-.07
Motorized	.09	.13	-.11	.05	.07

*significant at .05 level (2-tail significance)

**significant at .01 level (2-tail significance)

Discussion

The fact that motorized activities showed the highest attitude-behavior contingency for ecocentric, and the lowest for technocentric attitudes, came as a surprise. In this sample, a sizeable majority of motorized recreationists (86% were snowmobilers) were from rural and small town localities, had a high school or some college education, and also had a lower income when compared with other activity groups. This finding was consistent with the literature (Jackson & Wong, 1982; Knopp & Tyger, 1973). Furthermore, Knopp and Tyger (1973) found that although snowmobilers resonated an 'environmentalist value' theme, it was concluded that based on their level of education, "the snowmobiler may be less aware of the implications of his stated position. He may value the environment, but he may not appreciate what it takes to protect it" (p. 12). Previous research shows level of education does have a relationship with environmental concern and proenvironmental behaviors. Those who are more educated are more likely to support environmental issues (Roper Organization, 1990; Wall, 1995).

Additionally, machine oriented recreationists express more desire for environmental dominance. Such individuals tend to ignore the results caused by their machines; however, these individuals do not hold negative attitudes towards the environment because their drive for dominance supersedes their actions. Consequently their activities take first priority (Bury, Holland & McEwen, 1983). Motorized recreationists (snowmobiles and offroad vehicles) have often been blamed for environmental degradation as well as recreation conflict with competing user groups. Currently, snowmobilers are facing opposition from other competing users in the backcountry, notably heli-skiers, snowcat skiers, backcountry skiers/snowboarders and Nordic skiers (Shelton, 1999). Additionally, they face being permanently banned in federally designated areas such as National Parks (e.g. Yellowstone National Park). Due to such issues, snowmobilers in this sample may be more aware of their

consequences, and hence are more attuned to the environment and uphold favorable attitudes that predispose responsible behavior. Additionally, national and local snowmobiling associations have also stepped up their campaign to promote responsible riding. Conversely, snowmobilers may be responding to questionnaires based on social desirability, in which they respond to questions in a manner that does not depict them in an unfavorable light.

On the comparison between the appreciative and consumptive groups, the results made intuitive sense in that those involved with appreciative activities (which represent a preservationist ideology that includes enjoyment of the natural environment without altering it) generally had higher attitude-behavior correspondence than those involved with consumptive activities for all three attitudinal indexes.

This study introduced several improvements to the literature. Outdoor recreation participation was not limited to a yes/no dichotomy as in most past studies, but rather focused on the respondents' "most important activity." Such an operationalization was a new way of combating the mutually exclusivity issue. Secondly, environmental attitudes (NEP Scale) and environmentally responsible behaviors were analyzed as multidimensional constructs. The multidimensionality of environmental attitudes and behaviors has largely been ignored in the literature. This study combined many activities into an activity orientation rather than examining the activities individually. Future research should account for each activity rather than using the appreciative-consumptive-motorized orientation framework. Analyzing each activity group offers a comprehensive outlook towards that specific activity rather than a generalization of the activity cluster. Also, this study was based on a preliminary analysis and hence was limited to bivariate analysis. For a more detailed and comprehensive account, the reader is referred to Thapa (2000).

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**SUPPORT FOR RECREATIONAL TRAIL
DEVELOPMENT AND COMMUNITY
ATTACHMENT: A CASE OF THE SOUHOOK
RIVER WATERSHED**

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Abstract: This study was conducted as part of a larger multi-community needs assessment. Data from this study allows for the determination of support for a multiple-use trail system linking communities within the Souhook River Watershed Region in New Hampshire. This study also examines the relationship between support for trail development and community attachment. The results provide evidence that the level and direction of support for trail development depends on the measures that are used to determine such support, highlighting the need for continued research regarding appropriate measures of trail support and community attachment. This study will also provide practical information to land-use and recreation planners that will help them to more effectively communicate with local residents and community leaders regarding trail development.

Introduction

Support for Trail Development

Trails serve as an important connection between people and the land and between conservation and economic development (Flink & Searns, 1993). As more open space and rural land is lost to development, there is an increased interest and need to protect lands for recreational opportunities. Trails are often created in order to enhance or protect a community's natural and cultural resources. The benefits of trails are numerous and have been well documented. Some of the environmental benefits associated with trails include protecting plant and animal habitat, air and water quality, native plant restoration and environmental education and awareness. In terms of economic benefits, trails offer the potential for positive economic impacts by providing many desired amenities (recreation, open space, attractive views) which have been shown to increase the value of property in close proximity to trails (Correll, Lillydahl & Singell, 1978).

While there have been many studies quantifying the benefits of recreational trails, there is a lack of research that seeks to understand the factors that influence support for recreational trail development. Recent studies regarding trails have focused on landowner attitudes and satisfaction with existing trails (Moore, Graefe & Gitelson, 1994;

Parker & Moore, 1998). A notable research implication from the 1998 study suggested further research regarding what factors affect landowner attitudes toward proposed trails, citing that landowners surveyed for the study may have been influenced by attachment to community, among other factors. Understanding support for trail development is crucial in the planning process and to the overall success of trail development. Gaining support and approval from the public—regardless of whether or not every supporter intends to use the trail—is necessary in order to secure funding required for trail development and maintenance. A better understanding of what factors tend to influence support will allow planners to more effectively communicate trail proposals. This study seeks to determine factors that may influence support for trail development using various measures of support and attachment, and whether there is a relationship between trail support and community attachment.

Community Attachment

Attachment to community has been deemed important in terms of the overall wellbeing of a community. Stronger attachment encourages people to be more involved in their communities and to work toward common goals; i.e., safe neighborhoods, good schools, viable town centers (Fischer, et al., 1977). Attachment to community is best viewed as a complex construct that refers to an individual's commitment to one's place of residence. It can be in the form of social ties and subjective feelings toward place of residence, which is often referred to as "sense of community" (Liu, Ryan, Aurbach & Besser, 1998). Attachment can occur in different ways and depends on a variety of factors including personal needs, opportunities and resources, and on the characteristics of people and places.

Community attachment has been used as a measure of support on various issues, although the results of such research have proved inconsistent. Some research suggests that stronger community attachment leads to stronger support for a variety of community improvement initiatives. In terms of economic activity, people with stronger community attachment tend to purchase goods and services locally (Cowell and Green, 1994). Other research suggests that, with specific types of recreation and tourism development, the stronger the community attachment, the more likely they are to oppose change. This study allows us to empirically examine whether people with stronger attachment to their communities tend to be more supportive of trails.

Study Objectives

There are three main objectives of this study. The first objective is to measure support for trail development using a scale variable and a direct question of support. Second, this study will measure community attachment of residents who live within the communities surrounding the proposed trail using eight common measures and four alternative measures of attachment. And, third, the study examines the relationship between the various common and alternative

measures of attachment and support and whether the direction of these relationships is consistent.

Methods

The Research Setting

The Soucook River Watershed is located in the Upper Merrimac River Basin in New Hampshire. The area has a rural character with urban development present but confined to the immediate area surrounding the major roadway, Route 106. The Watershed includes approximately 97 square miles in eight communities. Town populations range from 1,771 in Canterbury to 37,850 in Concord. Total population of all the communities that include at least one square mile of the watershed is about 48,845. The towns in the watershed employ between 12 and 15 percent of the total population within each community, with the exception of Concord, which employs 68 percent of its residents.

Data Collection

The research instrument was a mail questionnaire sent to a sample of New Hampshire residents in the Greater Soucook Watershed Region during the summer of 1998. The sample was purchased from Survey Sampling, Inc., of Fairfield, CT. The survey was distributed to a stratified random sample of households within each of the communities that had over one square mile of land within the watershed. The number of households from each community included in the sample was determined by the proportion of square miles of land in the watershed and the total population of the town. A conservative formula was used to establish the number of completed surveys needed to allow for representation of watershed communities. It was calculated that 372 completed questionnaires were required to achieve a 95 percent confidence level.

Response Rates

The questionnaire was distributed to 1,700 households within the watershed. Problems associated with the mailing list and sample selection resulted in 214 questionnaires being returned as undeliverable, resulting in a revised sample size of 1,486. The utilization of a modified version of Dillman's (1985) Total Design Method (i.e., postage paid return envelope, postcard reminder, replacement questionnaire with letter, and second postcard reminder) resulted in the completion of 536 mail questionnaires for a total response rate of 36 percent.

Measurement

Support for Trail Development

Support for trail development can be measured in different ways, including monetary, social, time, and quality of life dimensions. The first measure of support consisted of a direct question about whether or not the respondent would support a multiple-use trail system. Another measure of trail support was accomplished with a series of eight statements that focused on various aspects of and potential benefits from trail development (See Table 1). The respondents were asked to respond to the eight statements

designed to measure support on a five-point scale from strongly disagree to strongly agree.

Community Attachment

There are various measures of community attachment. Historically, community attachment has been measured in terms of social bonds and local sentiment (Kasarda & Janowitz, 1974). Statements designed to measure community attachment include whether someone "feels at home" in their community, and whether one would "be sorry to leave" their community (Kasarda & Janowitz, 1974). The extent of social and kinship networks within the community has been shown to have a significant influence on community attachment, and that length of residence is a key factor in the development of these social bonds (Kasarda & Janowitz, 1974). Apart from casual interactions, social bonds arise out of employment, consumption and recreation (Fischer, et al., 1977). Having school-aged children has been shown to encourage the introduction and maintenance of relationships within the community, so that people with children tend to be more strongly attached to their community (Fischer, et al., 1977).

This study uses a cross-section of different measures, including measures of peer networks, having school-aged children and leadership positions. The watershed residents were provided eight specific statements that have been shown to measure the extent to which individuals are attached to their community (See Table 2). Another section of the questionnaire had a general question dealing with attachment using a strongly disagree to strongly agree scale.

One-way analysis of variance was used to assess the relationship between trail support and community attachment. The various statements of support listed in Table 1 were combined to create an index variable with an alpha coefficient of .92.

Findings

Measures of Trail Support

Using a direct question to measure support, given the statement "I support building a multiple use trail system near the Soucook River", 74 percent of the sample supported trail development by responding "yes". Only 8 percent of the sample indicated that they would not support development of the trail, and nearly 18 percent were unsure if they would support or oppose trail development. This would suggest that an overwhelming majority of residents within the watershed support trail development.

Table 1 illustrates the responses to a series of eight statements designed to measure trail support. The responses were measured on a five-point Likert scale, ranging from strongly disagree to strongly agree. The mean scores on the right-hand side of the table represent the overall mean score for all responses combined for each statement, weighted 1 through 5. The highest mean scores correspond with the statements that a trail system "would improve the quality of life for residents" (mean = 3.77) and that building a trail is a "good use of money" (mean =

3.75). These results suggest that respondents make the connection between trail development and improved quality of life. The lowest mean scores correspond with statements regarding funding through support of a bond issue for trail development (mean = 3.15) and a donation of time for trail maintenance (mean = 2.92). These results indicate that while there is a majority of support for trail development, residents are unsure about how to pay for trail development and maintenance.

Measures of Community Attachment

Table 2 provides a summary of percentages for responses to statements that were selected on the basis of the literature review as common measures of community attachment. Eighty-five percent of the sample indicated that they "definitely feel at home in the community", and 69 percent said they "would be very sorry to have to move away from the community". Nine percent indicated that they had "held an elected position in the community" and 15 percent indicated that they had "held an appointed position".

Regarding the general question of attachment, residents were asked to respond on a five-point scale to the community attachment statement of "I feel very attached to my local community". This attachment statement elicited a 15 percent response to strongly agree, 43 percent agreed, and 30 percent neither agreed nor disagreed with the statement. The results would suggest that residents of the watershed are somewhat attached to their local communities.

Trail Support and Community Attachment

This section provides the results for a series of one-way analyses of variance that seek to determine the relationship between trail support and community attachment using the various measures of support and attachment. Table 3 illustrates the relationship between the eight statements that make up the specific measures of community attachment and an index variable of support for trail development. The columns represent the results for two groups, those who responded no and those who responded yes to the listed attachment statements. The mean scores reflect a value associated with the index variable of support, weighted 1 through 5 from strongly disagree to strongly agree. The overall F test revealed the significant factors to be whether the respondent had held an elected position in the community (*sig.* = .001) or had held an appointed position

(*sig.* = .006). These findings suggest that persons who had held such leadership positions within the community were less supportive of trail development than those who had not held such a position within the community. Also notable was whether or not the respondent had school-aged children, revealing that respondents with children of school age were more likely to support trail development (*sig.* = .071).

When measuring support using the same direct measure of support, "I support building a multiple-use trail system near the Soucook River", and the general measure of attachment to community (*sig.* = .019), this measure proved significant. Responses to the attachment statements corresponded to a five-point scale ranging from strongly disagree to strongly agree. Regarding attachment to the local community, those who support trail development had a mean score of 3.6 while those who did not support development had a mean score of 3.3. This suggests that those who feel more strongly attached to their community are more likely to support trail development.

Discussion

This study reveals that, overall, there is considerable support for trail development. When measured in terms of community attachment, the level and direction of support depends on how attachment is measured. Determining support using specific measures of attachment indicated that persons who had held an elected or appointed position in the community were less likely to support trail development. Financial considerations may be an important factor among local officials in determining support for recreational trails. Local officials may think of recreational trails as a financial burden on their community (development and maintenance costs) rather than a desired amenity that has the potential to create positive economic impacts for the community. In efforts to establish support, trail planners may want to present their local officials with economic impact studies that highlight the benefits of trails on communities. This study also revealed that those persons who have school-aged children tended to have stronger levels of community attachment and were also more likely to support trail development. Knowing this will help planners to establish an initial support base among this group as they work toward garnering a broader base of support from the overall community.

Table 1

Frequency counts, (percentages), and central tendency statistics for responses to statement of trail support

Statement*	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
I think building a multiple-use trail system within the SRWR is a good use of money. (n=502)	33 (7)	24 (5)	108 (22)	206 (41)	131 (26)	3.75	1.1
I think a trail system would facilitate collaboration between the communities within the SRWR. (n=501)	28 (6)	40 (8)	138 (28)	213 (42)	82 (16)	3.56	1.0
I would make a small donation for the maintenance and upkeep of a trail system. (n=497)	50 (10)	57 (11)	135 (27)	193 (39)	62 (12)	3.32	1.1
I would support a multi-community bond issue to develop a trail system. (n=495)	69 (14)	61 (12)	144 (29)	167 (34)	54 (11)	3.15	1.2
Trail maintenance expenses should be shared by each of the communities in the SRWR. (n=494)	39 (8)	23 (5)	73 (15)	248 (50)	111 (22)	3.75	1.1
I would donate my time to the operation and maintenance of a trail system. (n=490)	78 (16)	73 (15)	173 (35)	141 (29)	25 (5)	2.92	1.1
A trail system in the SRWR would improve the quality of life for residents. (n=496)	32 (6)	22 (4)	107 (22)	205 (41)	130 (26)	3.77	1.1
Building a biking or walking trail should be a priority for my community. (n=506)	21 (4)	55 (11)	171 (34)	160 (32)	99 (20)	3.5	1.0

*Responses weighted 1 through 5 from strongly disagree to strongly agree

Table 2. Summary of Percentages for Responses to Statements of Community Attachment

<u>Statement</u>	<u>n</u>	<u>Answered No Percent</u>	<u>Answered Yes Percent</u>
• I definitely feel at home in the community.	520	15	85
• I would be very sorry to have to move away from the community.	521	31	69
• I have school-aged children who live in the community.	525	62	38
• Most or all of my close personal adult friends live in the community.	523	79	21
• I know most or all of the adults in the community.	520	84	16
• I have held an appointed position in the community.	418	85	15
• Most or all of my relatives live in the community.	524	89	11
• I have held an elected position in the community.	525	91	9

Table 3
ANOVA Results for the Relationship Between Measures of Community Attachment and a Scale Variable of Support

Statement	n	Answered No		Answered Yes		F Value		
		Percent	Mean	Standard Error	Percent		Mean	Standard Error
• I definitely feel at home in the community.	520	15	3.55	.118	85	3.60	.046	.196
• I would be very sorry to have to move away from the community.	521	31	3.54	.08	69	3.63	.051	.943
• I have school-aged children who live in the community.	525	62	3.53	.056	38	3.69	.064	3.29
• Most or all of my close personal adult friends live in the community.	523	79	3.61	.047	21	3.52	.101	.741
• I know most or all of the adults in the community.	520	84	3.61	.045	16	3.52	.123	.533
• I have held an appointed position in the community.	418	85	3.64	.05	15	3.24	.152	7.55*
• Most or all of my relatives live in the community.	524	89	3.61	.044	11	3.45	.145	1.33
• I have held an elected position in the community.	525	91	3.64	.043	9	3.13	.182	11.2**

* Significant at the .05 level ** Significant at the .001 level
Mean scores reflect value on an index variable of trail support, weighted 1 through 5 from strongly disagree to strongly agree.

Implications

This study has important implications for recreation planners and trail advocates. The results indicate that there is considerable support for trail development, which follows the current trend of the increasing need and demand for recreational opportunities. This study provides a better understanding of support for trail development that will help planners and trail advocates more effectively communicate trail proposals as a way to help encourage public participation in the planning process. Such public participation will allow for further exploration into what may be influencing opposition to trail development, providing an opportunity to address the needs and concerns of community residents to better ensure that trail development reflects the needs of the community.

Also, trail designers and developers should consider the importance of trails as conduits for social interaction. In our current shift to a more "global" society, there is a new focus on the "local" society and the importance of attachment to place. Earlier research has suggested creating opportunities for residents to meet as a way to strengthen attachment (Liu, Ryan, Aurbach & Besser, 1998). Recreational trails would be one way to increase opportunities for social interaction while reinforcing existing social networks.

This study shows that while there is considerable support for trail development, that level of support depends on how we measure community attachment. How we choose to measure attachment makes a difference in the strength and direction of support for trail development. Further analysis should be conducted to investigate the relationship between support for trail development and community attachment.

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HUMAN TERRITORIALITY: AN EXAMINATION OF A CONSTRUCT

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Abstract: Human territory research has generally been focused in a variety of settings including urban neighborhoods, libraries, mall parking lots, and areas around phones in public places. It refers to an intertwined system of emotions, beliefs, and behaviors that are place specific, socially and culturally influenced, and are linked to person-place transactions dealing with issues of setting management, maintenance, and expressiveness. A better understanding of human territoriality and its application in outdoor recreation settings has the potential to contribute to a more comprehensive understanding of recreation experience and conflict. Thus, the purpose of this study is to explore the nature of human territoriality and develop the construct in the context of outdoor recreation. Territoriality has been studied primarily in urban settings. In that context, territorial behaviors attempt to control not only the activities of others, but their access to a particular area. Territorial beliefs include an individual's perceptions or belief that they can control who enters a site, what goes on at the site, who should take care of a site, or the types of activities that are allowed to take place. Territorial emotions include: a positive emotional bond to a place and the condition of that site as well as the type of user that should be there, and negative emotional reactions to possible changes in conditions and users in an area. Because many of the studies on human territoriality have been in neighborhoods or other public areas like libraries or dormitories, traditional measures of territoriality have been modified in order to interpret its meaning in a natural resource environment. To test this construct in the context of outdoor recreation, we will be using data from an angler study conducted in New England. In order to determine if the construct holds together as predicted, we have used descriptive statistics for all items in the construct, inter-item correlations matrices for the scales in this study, item-total correlations testing each item against totals of each dimension, and reliability analysis using Cronbach's alpha. We have used the results of the item analysis as well as factor analysis to assess the dimensions of the construct and compare results to the conceptual structure of territoriality as developed in past research. Lastly, we have examined the territoriality construct to determine if it differs from a conceptually similar construct, place attachment, in order to test for discriminant validity.

Introduction

Human territoriality is defined as the impetus of humans to establish permanent or temporary control over physical spaces (Malmberg, 1980). Human territoriality refers to an intertwined system of emotions, beliefs, and behaviors that are very place specific, socially and culturally influenced, and are linked to person-place transactions dealing with issues of setting management, maintenance, and expressiveness (Taylor, 1988). "Territoriality" is also seen as a way of examining human behavior rather than describing an actual type of behavior (Schefflen & Ashcraft, 1976). Human territoriality research has generally been conducted within the following settings: urban neighborhoods, libraries, mall parking lots and areas around phones in public places.

Human territoriality may be associated with a variety of situations in the natural environment, including conflict. Because recreation sites are often symbolic and have deep personal meaning for people, territorial models, like crowding and conflict models, stress an individual's perceived control as an important part of a satisfying experience (Zinn, 1992). Territorial functioning may cause conflict between users and managers as well as between different or similar recreational user groups. A better understanding of human territoriality and its application in outdoor recreation settings has the potential to contribute to a more comprehensive understanding of resource conflict and provide better information to deal with and manage situations as they arise (Zinn, 1992). With this knowledge and understanding, it may be possible for managers to provide a more satisfying experience.

Human territory is believed to consist of three dimensions known as territorial cognition, emotion, and behavior (Taylor, 1988). Territorial behaviors are an attempt on the individual's part to control not only the activities of others, but their access to a particular area. Specific territorial behaviors in previous research might include painting, planting shrubbery, fixing up a home, and keeping a well-maintained lawn (Taylor, 1988). An individual taking part in such activities is considered to be "marking" an area that holds a certain value to the person. Territorial beliefs include an individual's perceptions or belief of who should enter a site, what goes on at the site, who should take care of a site or the types of activities that are allowed to take place at a site (Taylor, 1988). Territorial emotions include a positive emotional bond for a place and the condition of that site as well as the type of person that should use the area, and negative emotional reactions to possible changes in conditions and users in that very same area.

In this study, human territoriality has been conceptualized as a person's attitude towards a specific place. For instance, a person will develop an attitude towards their home or perhaps (in the context of this study) a special lake where they grew up fishing with their grandfather. Researchers suggest human territoriality will exhibit a tripartite structural characteristic, consistent with many definitions of attitudes (Eagly & Chaiken, 1993; Thompson, Zanna, & Griffin, 1995). In other words, it will

be made up of cognitive (beliefs), affective (emotions), and behavioral (or behavioral tendencies) components. Another expectation from this line of research is human territoriality will function like an attitude in that a territorial response is an overall or summary evaluation of an important place. Basically, a territorial response organizes one's beliefs, emotions, and behavioral tendencies into a coherent appraisal of a special place (Eagly & Chaiken, 1993; Greenwald, 1989). This in turn includes what might be considered beliefs towards what should and should not occur in a valued place.

The purpose of this study was to explore the human territoriality construct in the context of outdoor recreation. It is postulated that territoriality may contribute to a more comprehensive understanding of recreation resource issues such as conflict, crowding and satisfaction.

Methodology

The data for this study were obtained from a study focusing on anglers in the New England District of the U.S. Army Corps of Engineers. Anglers were specifically asked about the lakes they fish most frequently and the last lake they fished. The New England District of the U.S. Army Corps of Engineers indicated an interest in measuring the levels of importance and satisfaction concerning customer service-related issues. Their interest was driven by the desire to meet the mandate set forth by Executive Order 12962 "the Recreational Fisheries Executive Order." The executive order requires federal agencies "to the extent permitted by law and where practicable, and in cooperation with States and Tribes, improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities." With this in

mind, the overall study's intended purpose was to explore the nature of service quality indicators as predictors of customer satisfaction for anglers in the New England District.

Data Collection Procedures

A multiple-method approach was used for data collection to obtain a diverse sample of anglers from the New England region. The project offices of the Corps of Engineers provided the names of groups and club representatives for Penn State researchers to contact by phone. A total of eight groups agreed to participate in a mail-out survey. Individual anglers that have participated in youth angling days (day to teach young children about fishing) and volunteered to clean up the shoreline also had their names and addresses provided to Penn State researchers. A modified Dillman multiple-mailing process was used to sample possible survey respondents. Two state bass federation organizations were also contacted and agreed to distribute surveys to club members to complete and return to Penn State University. The total sample size for this study was 176.

Measurement

For the territoriality construct, traditional measures had to be modified for use in natural resource settings. A total of 12 items were tested to measure territoriality (Table 1). The items used in this study were developed to measure recreationists' emotions, beliefs, and behaviors towards a specific place. The items use a five-point scale with responses ranging from "strongly disagree" to "strongly agree."

Table 1. Items Used to Measure Human Territoriality

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Belief					
Everyone should be able to use this place	1	2	3	4	5
People should be free to do whatever they want at this place	1	2	3	4	5
People who have used this place longest should have priority using it	1	2	3	4	5
Managers need to restrict use at this place	1	2	3	4	5
Emotion					
I have a lot of fond memories about this place	1	2	3	4	5
This place means more to me than any other place I can think of	1	2	3	4	5
I have a special connection to this place and the people that use it	1	2	3	4	5
For me, lots of other places could substitute for this one	1	2	3	4	5
Behavior					
I know this place better than the people who run it	1	2	3	4	5
I treat this place better than most other people that come here	1	2	3	4	5
I will (or do) bring my children to this place	1	2	3	4	5
I don't tell many people about this place	1	2	3	4	5

Analysis

Factor analysis and Cronbach's coefficient alpha were used to test the internal dimensions of the territoriality construct in an outdoor recreation setting. The territoriality construct

was tested as a possible predictor variable of satisfaction. Lastly, the relationship between territoriality and place attachment, two similar constructs, was examined by conducting a factor analysis on items from both constructs.

All analyses were measured for significance at the .05 level.

Results

An initial factor analysis of the 12 items in the construct identified three factors that corresponded to the hypothesized dimensions of territoriality and two items that loaded separately (Table 2). The three dimensions that factor analysis identified included territorial beliefs, emotions and behaviors. The first dimension, territorial emotions, retained all four items originally hypothesized to represent the dimension (Eigenvalue=2.67; Variance=22.26; Reliability=.69). The second dimension

representing territorial behaviors retained three of the four items predicted to represent this dimension (Eigenvalue=1.93; Variance=16.07; Reliability=.52). Lastly, the third factor determined through principle component analysis was territorial beliefs. As with the dimension representing territorial behaviors, territorial beliefs retained three of the four predicted items (Eigenvalue=1.23; Variance=10.23; Reliability=.55). The third item in factor 3 loaded high on both factors 3 and 4. Because this item is conceptually hypothesized to be in the territorial behaviors dimension and the score on factor 4 was only slightly stronger, it was believed that the item should remain in its conceptualized dimension.

Table 2. Factor Analysis (Human Territoriality, N=176)

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1 'Territorial Emotions'					
This place means more to me than any other place I can think of	.737	.145	-.028	-.260	.002
I have a special connection to this place and the people that use it	.723	.237	-.098	-.006	-.002
For me, lots of other places could substitute for this one ¹	.687	-.353	.289	.151	.295
I have a lot of fond memories about this place	.668	.258	-.195	.347	-.001
Factor 2 'Territorial Beliefs'					
I know this place better than the people who run it	.333	.674	-.132	-.009	.146
I treat this place better than most other people that come here	.236	.671	.193	.181	-.124
I don't tell many people about this place	-.137	.605	.178	-.295	.289
Factor 3 'Territorial Behaviors'					
Everyone should be able to use this place ¹	-.155	-.015	.873	-.002	-.005
Managers need to restrict use at this place	.141	.471	.579	.102	-.135
People who have used this place longest should have priority using it	-.029	.159	.501	-.508	.207
People should be free to do whatever they want at this place* ¹	-.083	.024	.120	.770	.232
I will (or do) bring my children to this place*	.076	.078	-.089	.119	.863
Eigenvalue	2.671	1.929	1.227	1.145	1.013
Percentage of Total Variance	22.262	16.073	10.226	9.539	8.444
Reliability (Cronbach alpha)	.689	.518	.545	-----	-----

Factor 1 Scale Mean = 3.32

Factor 2 Scale Mean = 3.09

Factor 3 Scale Mean = 2.51

*Item in original construct not used in further analysis because of low Reliability Analysis and did not load on the final three factors in bold.

¹Item reverse coded prior to analysis.

While the reliability scores for the three dimensions revealed through factor analysis were moderate to low, principle component analysis with varimax rotation found the three factors initially conceptualized in the initial model to factor together. Because territoriality is exploratory in this study, its use may provide insight into how peoples' relationships with places impact customer satisfaction and other important issues in outdoor recreation. Therefore, it is believed that testing the construct is warranted. All of these dimensions represent the pool of human territorial dimensions previously predicted to represent human territoriality.

Two items failed to load on the three hypothesized factors. These items were "People should be free to do whatever

they want at this place" and "I will (or do) bring my children to this place." Because each of these items loaded alone on a single-item factor, unrelated to the hypothesized dimensions, they were not tested as predictors of satisfaction.

Because it is theorized that territoriality research may offer a new perspective on old problems in outdoor recreation research, the next step in the analysis was to test the ability of the territoriality dimensions to predict overall satisfaction with the fishing experience (Table 3). The three dimensions (emotions, beliefs, behaviors) were tested for their relationship with overall satisfaction with the fishing experience using multiple regression analysis. The strongest predictor of overall satisfaction with the fishing

experience was territorial emotions ($B = .385$; $p < .001$) followed by territorial beliefs ($B = -.148$; $p < .05$). For the

third dimension of territoriality, territorial behaviors, the relationship was not significant.

Table 3. Results of Multiple Regression of Human Territory Dimensions on Overall Satisfaction with Fishing Experience.

Independent Variable	Overall Satisfaction	
	r	Beta
Territorial Belief	-.181*	-.148*
Territorial Emotion	.354**	.385***
Territorial Behavior	-.039	-.104
<i>R² Territorial Dimensions Belief, Emotion, and Behavior</i>		.167***

*** Significant at .001

** Significant at .01

* Significant at .05

The final step in the analysis included an examination of the relationship between territoriality and place attachment. This was accomplished by testing all items within the place attachment (8 items) and territoriality constructs (12 items) using factor analysis (Table 4). Factor analysis revealed that the four territorial emotion items and the eight place attachment items loaded together on the first factor (Eigenvalue = 6.15; Variance = 30.76; Reliability = .90), evidence that territorial emotions and place attachment may be related psychological constructs. Three territorial belief items (Eigenvalue = 1.65; Variance = 8.27; Reliability = .55) and three territorial behavior items (Eigenvalue = 2.07; Variance = 10.37; Reliability = .55) factored separately from the first factor and each other. Factors 4 and 5 both were comprised of single items, the same items that failed to load as expected when tested with only human territoriality items. This test of discriminant validity suggests that human territoriality and place attachment may overlap at the affective level, but provides evidence that territorial beliefs and behaviors are distinct from place attachment.

Conclusions and Implications

The results of the study suggest that further investigation of the human territoriality construct is warranted. Analysis supported the hypothesized three-dimensional structure of human territoriality (emotions, beliefs, and behavior). This result is consistent with past research conducted in urban settings by environmental psychologists (Taylor, 1988). However, the moderate to low reliability scores for the three territorial dimensions indicate that the three dimensions will have to be reexamined and additional items

developed and tested to improve the reliability of the dimensions in the context of outdoor recreation.

The prediction of overall satisfaction with the fishing experience by territorial emotions and beliefs suggests that increasing our understanding human territorial responses in the context of outdoor recreation may improve our understanding of the outcomes of recreation experiences. As the territorial construct is refined in the future, it should be tested further as a predictor of overall satisfaction, as well as other dependant variables, such as crowding, conflict and willingness to pay.

The relationship between human territoriality and place attachment will require additional investigation. Both territorial beliefs and territorial behaviors factored separately in this analysis, indicating that there is some discriminant validity between the variables place attachment and territoriality. In contrast, territorial emotion items factored with place attachment items, suggesting they are closely related. This result, perhaps, indicates that overlap between the two constructs occurs primarily at the affective level. Additional research will be needed to refine the human territorial emotions dimension and test its relationship to place attachment.

Overall, the results of this exploratory study support additional research into the role of territoriality in outdoor recreation. The territoriality construct has the potential to help managers and researchers advance our understanding of recreationists and their outdoor experiences. Future investigations of territoriality should include the analysis of both qualitative data and quantitative data, as well as data from other settings.

Table 4. Factor Analysis for Human Territoriality (HT) and Place Attachment (PA)

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I get more satisfaction out of visiting this lake than from visiting any other lake (PA)	.844	.008	.004	-.009	.001
Fishing here is more important than fishing in any other place (PA)	.821	.005	.001	-.118	-.102
I enjoy fishing here more than any other lake (PA)	.790	.005	.006	-.001	.003
I am very attached to this lake (PA)	.755	.259	.001	.110	.154
This place means more to me than any other place I can think of (PA)	.709	.271	-.007	-.194	-.005
I wouldn't substitute any other lake for the type fishing I can do here (PA)	.691	-.002	.003	-.101	-.007
I identify strongly with this lake (PA)	.655	.328	.002	.182	.186
For me, lots of other places could substitute for this one (HT)	.630	-.148	.009	.372	.140
This lake means a lot to me (PA)	.579	.253	-.154	.222	.308
I have a special connection to this place and the people that use it (HT)	.529	.429	-.205	.001	-.003
I feel no commitment to this lake (PA)	.504	.009	-.008	.478	.130
I know this place better than the people that run it	.146	.711	-.008	-.009	.202
I treat this place better than the most other people that come here (HT)	.115	.706	.162	.006	-.009
I have a lot of fond memories about this place (HT)	.347	.493	-.364	.359	.001
I don't tell many people about this place (HT)	-.007	.434	.348	-.316	.357
Everyone should be able to use this place (HT)	-.001	-.005	.870	.157	-.141
People who have used this place longest should have priority using it (HT)	.007	.007	.608	-.362	.201
Managers need to restrict use at this place (HT)	.008	.520	.531	.008	-.129
People should be free to do whatever they want at this place (HT)*	-.176	.004	.003	.767	.008
I do (or would bring my children to this place)*	.007	.001	-.004	.124	.848
Eigenvalue	6.151	2.073	1.654	1.342	1.033
Percentage of Total Variance	30.755	10.366	8.272	6.711	5.164
Reliability (Cronbach alpha)	.898	.545	.545	-----	-----

Factor 1 Scale Mean = 3.39

Factor 2 Scale Mean = 3.33

Factor 3 Scale Mean = 2.51

*Item in original construct not used in further analysis because of low Reliability Analysis and did not load on the final three factors shown.

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WHAT'S HAPPENING IN OUR PARKS?

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Abstract: Facilities allow children and adults to adapt, improvise, create, and contribute significantly to the mental and physical well-being of the park users. Parks across the continent contain facilities designed for the enjoyment of the consumer. However, are facilities really used as designed and used to the intended level making them worth the cost of development? An observational study was performed on various urban, suburban, and rural park settings to examine the usage of facilities provided.

Facilities allow children and adults to adapt, improvise, and create, contribute significantly to the mental and physical well-being of the park users. What is the prevailing attitude if, as an example, a tennis court was used for dancing or crafts, the baseball field for bocce ball or soccer, and the playground for adult socialization? Can tennis nets be easily removed, is there a place where bocce ball can be played, are their benches in or adjacent to playgrounds that foster conversation among parents? Do park administrators condone or encourage non-traditional use of facilities?

During the summer months extensive research was conducted in Indianapolis and Bloomington Indiana area as well as in Angling Lake Ontario, a remote Native American village in the northern part of the Province. The purpose was to observe how parks were used, specifically, if the park facilities were used in a manner consistent with the purposes they were designed. Parks across the continent contain facilities designed for the enjoyment of the consumer. These facilities can include costly accommodations such as ball fields, tennis courts, basketball courts, and pools to relatively costly facilities such as picnic shelters and playgrounds. In addition, parks often contain picnic tables and benches in the open areas for purposes of relaxation. Most recreation planners and designers believe that increasing the amount of facilities will increase the enjoyment of the consumer. Are specially designed facilities, specifically aimed at a single activity, really worth the money spent to provide that leisure experience? In other words, are facilities really used as designed and used to the intended level making them worth the cost of development?

The observation areas were classified into three categories for sake of comparison. Angling Lake represents a rural park experience, Bryan Park (Bloomington), Ellenberger (Indianapolis) and Broad Ripple (Indianapolis) represent suburban Parks and three Indianapolis parks (Brookside, Christian and Riverside) represent Urban Parks. The distinction of suburban and urban was based on the number of residents in the Zip Code area of the park. Those less than 40,000 were classified as suburban and those more than

40,000 were classified as urban. In addition the urban parks represent those parks which are closer in proximity to the city center of a major metropolitan area. These parks were chosen for comparisons because they were similar in size (medium sized City Park) and contained similar facilities. Facilities, observed in the various parks, included playgrounds, picnic tables in the open areas, picnic shelters, sports fields, tennis courts, pools, jogging trails, and basketball courts.

A playground area that includes swings and other play apparatus is designed to be used for child play and exercise and thus, enhances a child's physical and mental health. Parents usually accompany their younger children to playgrounds to insure their safety. In this observation, playgrounds (with equipment such as swings and slides) were used as designed by the children under the age of seven who made up sixty-three percent (63%) of the users¹. Parents and/or guardians also used the playground area for socialization as their children were playing on the equipment. Adults generally would spend a moment socializing with friends or reading a book as their child played on the equipment provided. The social contact among adults may be as important to parents as the physical activity and play is to the child.

Data Application: the substantial number of supervising adults, particularly, in the urban and suburban parks and denotes a need by park officials to provide seating areas in the playground areas for the adults to use.

All surveyed suburban and urban parks had picnic tables that were designed for outdoor picnics (eating.) Seventy-one percent (71%) of the people in the urban areas used the picnic tables for meals while only fifty-six (56%) of the suburban table users were picnicking². The non-picnic use of the tables (defined as not involving food) included relaxation, work breaks, socializing, reading, and working outdoors. The "working outdoors" category comprised of activities such as student homework, knitting, board games and other activities where people are seeking an outdoor setting to some work that would normally be done at home.

Data Application: In the suburban area many of the picnic tables in the open could be replaced with less costly benches and provide the same usage. Picnic shelters were in high demand, especially in the urban parks, on the weekends. In addition, picnic shelters were highly used in the weekday evenings in the urban parks. The increase in demand for picnic shelters in the urban areas could be the result of

¹ There was no significant difference between people using the playground as designed and people using the playground as non-designed [$\chi^2(2, N=3)=1.56, p < .05$]

² There was a significant difference between urban and suburban usage of the picnic tables in the open space [$\chi^2(1, N=2)=10.7, p < .05$] and in picnic shelters [$\chi^2(1, N=2)=4.39, p < .05$].

cultural differences between the urban and suburban communities and should be a need that is addressed by park officials, particularly in the urban settings.

Parks included a number of baseball/softball fields. Seventy-two percent (72%) of those using the ball fields in suburban parks were playing softball or baseball while only forty-nine percent (49%) of those in the urban parks were using the field for baseball or softball³. There were a large number of people attending the ball games in the urban parks as observers and non-players. Males were dominant as players and females were dominant as spectators. There was no usage of the baseball/softball field in the rural community during the two-week period of observation.

Data Application: The observers created a substantial need for seating at the facilities, but very few of the parks had accommodations for spectators. Many spectators improvised by bringing their own lawn chairs or blankets to sit on.

Suburban and Urban parks contained a number of tennis courts. In the urban parks seventy-two percent (72%) of those near the tennis courts were playing tennis compared to ninety-seven percent (97%) in the suburban parks (the rural park had no tennis courts)⁴. The difference in usage was largely due to the urban park tennis courts being used for tournaments during a couple of the observations. The tournament situation increased the number of observers. Approximately seventy-seven percent (77%) of tennis courts users were male. There was very little non-tennis play in the tennis courts with only one observation noting a couple children playing with a ball. In the forty-eight observations there were 196 people playing tennis compared to 794 using playgrounds and 1770 using ball fields.

Data Application: The question arises whether the cost of putting in tennis courts is cost-effective. During a number of observations the tennis courts remained empty and did not appear to be economically viable.

On the other hand, swimming appeared to be a popular activity. While some of the parks included pools, the rural community used a lake for their swimming enjoyment. Seventy percent (70%) of the pool users in the suburban and rural settings used the pool for swimming while eighty-five percent (85%) of the urban pool users were swimming⁵. The

³ There was shown to be a significant difference in the usage of ball fields between the urban and suburban areas [$\chi^2(1, N=2)=36.06, p < .05$].

⁴ There was a significant difference in tennis court usage between urban and suburban parks [$\chi^2(1, N=2)=13.4, p < .05$].

⁵ There was a significant difference between the urban parks and the suburban parks [$\chi^2(1, N=2)=54.7, p < .05$], between the urban parks and Angling Lake [$\chi^2(1, N=2)=11.09, p < .05$], but not between the suburban parks and Angling lake [χ^2

remainder of the people used the pool area for socializing, relaxing, and sunbathing and in the case of the rural community for fishing and playing. The increase in non-swimmers in the suburban area could be explained partially due to the ethnic make up of the communities (for example: sunbathing being primarily an Euro-American activity). The suburban parks were eighty-three percent (83%) Euro-American and the urban parks were seventy-seven percent (77%) African American. In the twenty-five observations at suburban parks there were 640 people using the pool area for activities other than swimming.

Data Application: the areas open to those wishing to socialize, relax, or sunbathe was inadequate at the suburban parks. The number of people using the pool area for non-swimming leisure demonstrates a considerable need for space for those wishing to relax and enjoy the pool area.

Walking and Jogging is becoming a highly desired activity in our communities. Suburban parks noted 5.12 walkers and joggers using the trails provided per observation. In the urban park there were 1.52 walkers and joggers per observation. Further study would be needed to understand the reason for the increase in popularity among suburban parks over urban parks. The reason could be a perceived sense of safety as well as cultural with half of the walkers in the urban parks being Euro-American in parks predominately used by African Americans. In the suburban parks ninety-two percent (92%) of walkers and joggers were Euro-American. In urban parks the activity seems to be more of a family social activity with fifty-seven percent (57%) being adults and the remainder being predominately children with their parents. In contrast, walking and jogging in the suburban park seemed to be an individual fitness or peer related activity with seventy-four percent (74%) of suburban users being more than twenty-one.

Data Application: Trail use is an attractive and favorite pastimes for those using the parks, especially in the suburban setting where there may be a greater sense of safety. Parks should monitor usage of the trails to determine if trails need to be expanded. There was not enough usage of trails by bicycles to warrant development of bike trails in the parks observed.

Basketball is an activity common in all parks observed. Those not using the basketball area for basketball were observers and others waiting for a chance to participate. In the suburban and urban parks ninety-three percent (93%) of users were male with only difference being ethnic background of users. The largest age group represented in the suburban parks were those between the ages of fifteen and twenty-one (79%) probably due to the number of Indiana University students who use Bryant Park. The same age group in the urban parks represented forty-five (45%) percent of users with the more than twenty-one age group representing 35 percent of users. **Data Application:** In the urban and suburban parks the courts were actively used and seem to be a positive usage of

(1, $N=2$) = .412, $p < .05$] in the use of the swimming area.

recreation funds. In the Native American community there was no usage of the basketball court for basketball largely due to the activity of choice in this community being volleyball (court serves a dual purpose).

The urban parks were the only parks observed containing soccer fields. This was an interesting finding with the popularity of soccer today. However, soccer fields are located outside the observed parks in the suburban communities. In the urban parks only four percent (4%) of those using the soccer fields used them for soccer. The soccer fields at Riverside were predominately used for playing and observing rugby (92%), which was interesting as the majority of rugby players were Euro-American (88%) in a predominately African American community. The remaining four percent (4%) of those using the soccer fields at Riverside were preparing for a softball game. At Christian Park the soccer field was used for playing and observing baseball. Baseball fields are in high demand at Christian Park forcing the usage of the soccer field for baseball.

There was a strong sense of encouragement gleaned from the observations in that the facilities were appropriate and used for positive recreation opportunities. There was no 'purple recreation' (recreation of a destructive nature) observed in the observations of urban and suburban parks. The need for park officials is to occasionally assess the park facilities and to plan for changes in recreational activities. For example, if there is a growth in the number of people who enjoy socializing and sunbathing near a pool then space needs to be added or planned for in future construction. If the community that the park services is not one that shows interest in tennis then perhaps the space should be used for other activities or left as open space. In addition, if there is a trend in the decrease in boys baseball, an increase in girls softball, and an increase in the interest in soccer, perhaps the space designated for one activity needs to be redesigned for another activity. In general, these communities seem to enjoy the park and the facilities available and with some alterations there will continue to be full and complete enjoyment of the various parks observed and in other parks across the country.

OPEN SPACE AND IMAGINATION

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Abstract: Open space is a necessary tool in our park system for fostering creativity and allowing for relaxation. In addition, open space areas allow people to exercise, find self-worth, and to use their imagination. This manuscript addresses the issue of what is happening in open space provided in several park settings. Do residents use open space as a place where they can play games, enjoy the grass, play with their dog, build community with one another, and more importantly exercise their imagination? Observational research was conducted to determine how open space was utilized in several communities to determine how the open space provided the public was being utilized.

Often those living in a large city begin to feel the city 'close in' on them. Traffic jams, exhaust, and the lack of a clear view of the sunset or sunrise can all have an effect on the urban dweller. One of the urban dweller's needs is to have and experience what is simply called "open space." Open space is "all areas of the city that are open to the sky and can therefore include parks, private gardens, school grounds, vacant land, parking lots, flat rooftop, streets, and so on" (Lavery, 1974, p.120). An apparent concern in today's society is a generation that lacks imagination in their play. As an example, many parents recognize that young children would rather play with basic household items than with structured apparatus or toys designed specifically for children. Older children are often attracted to simple activities such as climbing dirt piles and trees, playing in the water, and watching animals. The enjoyment children derive from such activities as playing tag or hide-and-seek consume endless hours and do not require a developed facility or structured environment.

The differences between the designs of parks and how they are actually used is significant for both social and economic reasons. Most parks provide an atmosphere that suggests freedom and open spaces, thus fostering creativity and relaxation. This open space context is sometimes limited by what appears in many locations as the planner's and landscape architect's need to provide structure or specific purpose to all park functions - activity zoning so to speak. While many recreation activities require facilities with specifications (i.e., swimming pools, playground equipment, basketball standards etc.) most informal sports and outdoor recreation pursuits need only space, adaptation, and imagination. Economically, many parks

contain facilities that get very little use or are used in ways not intended by the structure (softball field used for soccer) suggesting that perhaps our finances are better spent providing space that can be used for a variety of activities by the general public.

The need for open space to encourage creativity and imagination is also recognized as television and computers consume more and more of our children's leisure time. While television and computers are considered a necessity in our contemporary society, they can certainly detract from interaction with others, physical health, and social development. Fortunately, public parks with open space provide an outlet for social interaction and physical health.

To fully understand the purpose of open space it is important to understand the origin of the need for open space. With the growth of cities (due to industrialization) there began to appear in 1845, large Victorian parks on the edge or borders of cities and towns in Great Britain (Lavery, 1974). People realized that the industrialization of cities provided very little open space unless it was demanded and planned for. With the Victorian Era came a desire for improvement in the area of physical and spiritual growth among the urban dwellers (Theobald, 1984). The battle was set for designating large open space in our cities as increasing demands for housing resulted in fewer large parks and more smaller open spaces. (Lavery, 1974).

Open space management has five goals (Shivers & Hjelte, 1971). The first goal is the prevention of overcrowding of the land from congestion and structures. Open space offers breaks, edges, and open areas of different size and shape for the city. One objective would be to have unobstructed space in three directions. This unobstructed space would allow city dwellers an open view of topography in and around the city. Many of our larger cities have this possibility for very scenic views due to their development near oceans, lakes, rivers, or mountains. For example, land adjacent to these expanses of water can provide for open space with unobstructed views and need to be in public ownership. Likewise, the distant view of hills and mountains can play a similar role of open space. Thus, views of the hills and mountains need to remain unobstructed and be provided for urban dwellers, to obtain a sense of an open environment and to have a scenic view.

A second goal for open space management was for the conservation of land and water areas to protect the natural environment. Open space, lessens the impact of pollutants so common in an industrial area. Open spaces, in an urban situation, can be used to teach the urban dweller an appreciation and hopefully a respect for the natural environment. One objective of protecting open space is "to preserve geological, horticultural, and historical features of sentimental, educational, and cultural interest" (Shivers et al., 1971, p. 243). It could be argued that many of our cities would have less open space was it not for the legally mandated protection provided for historical features. As an example, our nation's Capitol Washington, D.C., provides many educational, historical, and cultural features that enhance its attractiveness and are magnets for tourists.

The next goal is to provide an aesthetically pleasing area that can be enjoyed by all. The skyline of a city and the view within a city needs to contain breaks and gaps provided for by open space. If all our cities have are continuous' buildings with no areas "to breathe" then there will be an increase in psychological stress among the urban dwellers. The need for open space "is based on our biological need to have contact with the natural environment in an urban setting and our psychological need for contrast and change in spatial surroundings and activities that most indoor environments do not provide" (Gold, 1985, p. 110).

The final goal is to provide space for outdoor recreation. Since ninety percent of our national parks are located in rural areas our urban dwellers, which have the greatest need, are limited in their ability to take advantage of them (Gold, 1985). "For the city poor, the nation's outstanding recreation resources - national parks and seashores, scenic rivers and wilderness areas - are light years away, and many state and local recreation areas also are beyond their reach. Many slum children, by the age of thirteen, have never been 800 meters from home" (Collins, Duffield, & Rodgers, 1975, p.99). The result is that the vast majority of those living in an urban area spend their leisure time in those urban areas. Simply stated each individual should be able to utilize the park's natural assets to their personal interests and needs as long as that adaptation does not deteriorate the environment or detract from the enjoyment of others. However, if the national park (and it's open space) is outside the urban dweller's reach then we need to bring open space to them.

The question remains: What is happening in Open Space provided in a park setting? During the summer months extensive research was conducted in Indianapolis and Bloomington Indiana area as well as in Angling Lake Ontario, a remote Native American village in the northern part of the Province. The purpose was to observe how the open space in various parks was used. The observations were classified into three categories or representative areas: Angling Lake represents a rural park experience, Bryan Park (Bloomington), Ellenberger (Indianapolis) and Broad Ripple (Indianapolis) represent suburban Parks and three Indianapolis parks (Brookside, Christian and Riverside) represent Urban Parks. The distinction of suburban and urban was based on the number of residents in the Zip Code area of the park. Those under 40,000 were classified as suburban and those over 40,000 were classified as urban. In addition the urban parks represent those parks, which are closer in proximity to the city center of a major metropolitan area. These parks were chosen for comparisons because they were similar in size (medium sized City Park) and were similar in the amount of space provided. There were two users of open space per observation in the rural areas (31 people/ 16 observations), 17 users per observation in suburban parks (422 people/25 observations), and nine users of open space per observation in urban parks (199 people/23 observations).

Open Space activities consisted of fishing, riding bicycles, relaxing on a park bench, relaxing on the lawn, playing games, frisbee, walking, walking the dog, and sun bathing (see Table 1).

Table 1: Comparisons of urban, suburban, and rural observations: Total numbers and Gender by activity engaged in.

Activity:	Rural			Suburban			Urban		
	Total #	Male	Female	Total #	Male	Female	Total #	Male	Female
Sun-Bathing				52	17	35			
Walking				67	35	32	52	28	24
Walking the Dog				64	33	31	5	3	2
Biking	14	7	7	6	5	1	14	11	3
Lawn Picnic				2	1	1	2	2	
Frisbee				13	10	3	25	25	
Playing	13	8	5	126	63	63	77	60	17
Relaxing				76	37	39	4	1	3
Park Bench				16	5	11	11	5	6
Fishing	4	4					9	7	2

Additionally, open space users of the urban parks were fifty-five percent (55%) African American, open space users in the suburban park were eighty-nine percent (89%)

Euro-American, and open space users in the rural park were all Native American (see Table 2).

Table 2: Comparisons of urban, suburban, and rural observations: Ethnicity (All rural participants were Native American.

Activity:	Suburban			Urban	
	Caucasian	African American	Other	Caucasian	African American
Sun-Bathing	52				
Walking	57	10		14	38
Walking the Dog	58	5	1	2	3
Biking	6			6	8
Lawn Picnic	2				2
Frisbee	13			23	2
Playing	124	2		35	42
Relaxing	53	23		1	3
Park Bench	12	4		7	4
Fishing				1	8

Data was also broken down by age (see table 3) of participants noting the activities that were found to be predominately young people (playing and relaxing in the

park), activities that were predominately young adults (sunbathing and frisbee), and those activities that were predominately adults (walking).

Table 3: Comparisons of urban, suburban, and rural observations: Age of participants by activity

Activity:	Rural		Suburban				Urban			
	0-7	7-14	0-7	7-14	15-21	21+	0-7	7-14	15-21	21+
Sun-Bathing					52					
Walking			6	8	16	37	6	10	14	22
Walking the Dog			2	4	20	38	1			4
Biking	7	7			1	5	4	5	5	
Lawn Picnic						2				2
Frisbee					11	2			11	14
Playing	8	5	39	41	23	23	21	32	4	20
Relaxing			29	7	8	32	3			1
Park Bench			1	1	2	12	1			10
Fishing	4						1	3	2	3

Fishing was an activity that was percentage wise (compared to population of park use) more common in the rural area. Many of the parks did not have an area for fishing and the youth of the Native American community grow up accustomed to fishing. Riding bicycles in the Open area seemed to be more common in larger parks where crossing the park to get to the other side or to the pool made riding 'cross country' quickest route. Children in all the areas used their bikes as a transportation mode.

Relaxing on a park bench was a common activity in the suburban and urban parks. This apparently served as a method of relaxation for workers in the mid-afternoon taking a break from work (i.e. UPS drivers). Relaxing on the lawn was an activity most common to the suburban area. Eighteen percent (18%) of open space recreators in suburban parks used the lawn for relaxation compared to two percent (2%) in urban areas. This could be the result of area residents feeling a higher sense of safety in suburban parks.

Playing various games in the open space was an activity common to all the environments of the study. This included

youth playing softball, soccer, rugby, or other games with friends, especially when there was a shortage of ball fields during the time they wanted to play. Additionally, users of the suburban parks and urban parks used the park for frisbee, whether in the form of a game or between two individuals for fun. Furthermore, walking around and through the park was common to all park settings. This activity seemed to be for personal time of reflection or socializing for friends. Those seeking walking as a form of exercise appeared to take advantage of the trails available in the parks.

Two activities common to the suburban parks were walking a dog and sunbathing. On a warm summer afternoon, the lawn at suburban parks, especially Bryant Park, was filled with people enjoying the sun. This possibly reflects the ethnic differences of the suburban and urban parks observed. This finding shows the need for suburban parks to provide open sunny areas for use by park residents for sunbathing and possible partitioning off an area for walking the dog as the two activities sometimes do not mix.

Overall the open space in all areas was utilized and apparently valued by the park visitor. It is also important to note that time of day did not seem to play a factor in the utilization of the open space in the parks. While activities (softball leagues) flourished in the evening hours the open space seemed to be used by individuals at all hours of the day. During the day, individuals would stop in the park to enjoy lunch or allow their little children a mid-day break and the evening would see an increase in the number of individual's walking or exercising. Without interviewing the open space user this researcher can only share his opinion that the open space seemed to be a valuable tool in all areas for instilling creativity, relaxation, self-worth, and community building. The outdoors is an amazing tool both at giving a sense of wonder and a sense of peace. This environment of outdoor space can contribute significantly to the welfare of the citizens of a community. The need for open recreation space is a valuable and necessary tool in allowing residents of all areas a place where they can play games, enjoy the grass, play with their dog, build community with one another, but more importantly exercise their imagination.

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