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Northeastern Recreation Research Symposium Policy Statement

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

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Proceedings **2003 Northeastern Recreation Research Symposium**

April 6 – 8, 2003



On Lake George in Bolton Landing, New York

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Planning Issues

THE IMPLICATIONS OF DEMOGRAPHIC CHANGE IN METROPOLITAN AREAS FOR THE USE OF RECREATION SITES

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Abstract: This paper reports on a study of outdoor recreation preferences and behavior of 618 (non-Hispanic) White, 647 African American, and 346 Hispanic Americans in Cook County, Illinois. Respondents were contacted by a phone survey using random digit dialing and a quota for each group. Binary logistic regression models were estimated to explain the use of 19 sites in and near the Chicago Metropolitan Area and one distant site. These models are used to help explain the implications of demographic change for participation at individual recreation sites. Suggestions are made for improving subsequent modeling efforts aimed at explaining the use of recreation sites in and near Metropolitan areas.

Introduction

Demographic change in metropolitan areas can significantly influence the demands placed on recreation resources. Important demographic changes include increasing racial/ethnic diversity, the aging of the population, and the shift of the population and particular groups from place to place across the metropolitan landscape. These changes have implications for the use of existing resources, revenues generated to support existing resources, and political support for efforts focusing on existing and future resources. As a first step in exploring the implications of demographic changes for the use and support of recreation resources by residents in the Chicago Metropolitan area, we

estimated binary logistic regression models to explain use of 19 sites across the Chicago area and one site in Southern Illinois by residents of Cook County, Illinois. These explanatory models allow us to explore the implications of selected demographic changes on site use while holding other variables constant.

The models are estimated from data generated by a survey of Cook County residents conducted by telephone. We established a sampling quota by racial ethnic group to assure significant minority representation. The results were: African Americans = 647, Non-Hispanic White Americans = 618, and Hispanic Americans = 346. The 20 study sites about which respondents were asked (shown in Figure 1.) include city parks, county forest preserves, state and federal parks, zoos, museums, an arboretum, a botanic garden, conservatories, and the Shawnee National Forest in southern Illinois. Participation was measured by whether respondents reported that they visited or had not visited the site in the previous 12 months. A separate model was estimated for each of the 20 sites. Explanatory variables in the model included distance from the individual's home to the site, race/ethnicity (three categories), age (five categories), area of residence (five areas in Cook County), education (seven categories), annual household income (six categories), household size, and gender (two categories) (Table 1). Travel distance and area in the county where respondents live were calculated from the zip code of residence provided by respondents. Six of the eight explanatory variables were represented as categorical variables. For each of these categorical variables the statistical significance of each category was evaluated relative to one designated reference category (Table 1).

Interpretation of the Models

Sixteen of the 20 models were significant at the .05 level (chi square test). The variance explained by the models, based on the Nagelkerke R square, varied from a low of .034 to a high of .203. The relatively low explanatory power of these models was not unexpected given that the decision of what sites to visit during a 12-month period is the result of a complex choice process that includes many considerations. Despite the low predictive power of some of the models, there were some interesting and informative patterns in the coefficients that are

Table 1. — Coefficients for Binary Logistic Regression Models Estimated to Predict Participation at 20 Recreation Sites In and Near the Chicago Metropolitan Area, by Residents of Cook County, IL

	Grant Park	Museum Science Industry	Field Museum	Shedd Aquarium	Brookfield Zoo	Lincoln Park Cons.	Lincoln Park Cons.	Garfield Park Village	North Park	Montrose Point	Indiana Dunes St. PK.	Illinois Beach St. PK.	Chain-O-Lakes St. PK.	Ryerson Woods St. PK.	Moraine Hills	Shawnee Nat. For. Prairie	Goose Lake	Morton Arb. Garden	Chicago Botanic	Midwin NTP
Constant	-0.323	.151	-.465	-.565	.140	-1.204**	-2.495**	-3.462**	-2.272**	-1.896**	-.289	-1.049	.330	-4.117**	-1.565	2.852	-1.686	-2.007**	-1.510**	-2.808
Distance	-0.013	-0.30*	-0.21	-0.10	-0.047**	-.005	-.034*	-.037*	-.074*	-.027	-.026*	-.023	-.037**	.012	-.028	-0.019	-.033	-.031	-.028*	-.007
Race																				
White	.466**	.106	.119	.201	-.093	.419**	.214	1.633**	.250	-.167	-.164	.013	-1.357**	-.432	.065	-.337	-.138	-1.096**	.177	1.212**
Black	-.315	-.424*	-.007	.121	-.452**	.386*	.364	.044	-.171	.152	-.091	-.139	-1.462**	-1.338	-.176	-.460	-.264	-.721**	.220	.364
Hispanic																				
Age																				
17-25	-.231	-.482*	-.205	-.236	-.214	-.013	.053	.064	-.262	.074	-.215	-.070	.770*	-.147	-.511	-.727	-.547	-.065	-.391	-.577
26-39	-.530*	-.597**	-.246	-.354	-.383*	-.179	.485*	.433	.415	.104	-.301	.137	1.203**	.285	-.211	-.0425	-.078	.341	.061	-.442
40-55	-.567*	-.784**	-.335	-.443*	-.488*	-.466*	.565*	.710*	.690	-.227	-.278	.065	1.171**	.069	-1.428*	.0291	.469	.446	.172	-.526
56-65	-.974**	-.902**	-.529*	-.712**	-.587*	-.566*	.339	.456	.084	-.332	-.510	-.100	.746	.151	-.016	-.0519	-.129	.593	.057	-1.038
66-91																				
Residence																				
North Suburbs	.128	-.232	.002	-.057	.286	-.177	.060	.297	.277	.238	.083	.530	.373	-.336	.594	.729	.404	.041	-.165	-.612
South Suburbs	.652**	-.335	-.172	-.227	-.371*	.684**	.398	.307	.528	.772*	-.322	.005	-.280	-.930	-.440	.884	.869	-.249	-.159	-.065
North Chicago	.436	-.283	-.226	.062	-.158	.309	.128	.229	.393	.520	-.263	.078	-.211	-.015	-.495	.930	.469	.097	-.016	-.307
Central Chicago	.713**	-.289	-.006	.006	-.061	.009	-.105	.049	.168	.173	-.220	.367	.123	-.439	.124	.425	.623	-.102	-.258	-.926
South Chicago																				
Education																				
<HS																				
HS	.514**	.734**	.439*	.477**	.206	.411*	.531*	.608*	1.380*	.615*	.011	.565	-.340	.776	.981	.577	-.038	.675	.574*	.379
Trade or Voc	1.012**	.215	.372	.684**	.092	.063	.640*	.867*	1.265	1.003**	.692*	.683	-.013	-.194	2.046**	1.220	.281	.619	.583	.671
Some Coll	.992**	.781**	.582**	.482**	.152	.296	.759**	.752**	1.378**	.784**	.320	.568	-.167	1.154	.851	.664	-.344	.723*	.768**	-.288
Col Grad	1.579**	1.064**	.905**	.929**	.166	.684**	.984**	.759*	1.686**	.900**	.716**	.676*	-.341	1.174	1.721*	1.185*	.240	1.091**	1.211**	.304
Some Graduate	1.756**	.787*	.750*	.640	.258	.681	1.100**	1.256**	1.663*	1.389**	1.018**	.845	-.766	1.978*	1.247	1.012	1.047	1.546**	.891*	-.137
Graduate/Prof. Deg	1.522**	1.019**	1.018**	.891**	-.048	.765**	1.075**	1.210**	1.512*	1.046**	.686**	.556	-.735*	1.098	.860	.726	-.256	1.374**	1.258**	.277
Income																				
<15																				
15-26	.293	.255	.076	.057	.143	.198	.126	.187	.135	.628*	.192	.247	.412	-.012	-.512	-.029	-.159	-.122	-.020	-.151
26-40	.560**	.307	.255	.195	.486*	.517**	.255	.445	.324	.842**	.188	.078	.322	.617	-.358	.657	.035	.036	.506*	.427
40-60	.810**	.428*	.339	.008	.711**	.568**	.147	.324	.375	.670*	.372	.272	.956*	.243	-.025	.525	.336	.203	.436	.562
60-80	1.050**	.246	.341	.063	.310	.304	.487	.581	.056	1.222**	.258	.150	.759	.747	-.246	.490	.391	.660	.647*	.574
80-100	.405	.668*	.584*	.286	.375	.474	.509	.504	-.666	.776	.301	.232	.543	-.526	-.343	.781	.663	.571	.661*	-.020
100+	.528	.194	.212	.135	.344	.120	.110	.233	-.239	.208	.648*	.168	.834	.881	-.438	-.5926	-.862	.034	.485	.241
Number in household	.018	.130**	.078*	.108**	.236**	.108**	.134**	.006	.048	-.093*	.085*	-.015	.054	.122	.021	-.020	.092	-.038	.032	-.0016
Gender																				
Male	-.305**	-.072	-.021	-.016	-.039	.045	.034	.053	-.508*	-.494**	-.093	-.406*	-.636**	-.509	.582*	-.688**	-.457	.127	.028	-.270
% correct	69.5	62.6	60.3	59	61.8	62.8	73.9	81	94.9	82.3	76.1	87.8	88.1	97	96.3	95.5	96.8	87.4	74.1	96.9
r squared	0.203	0.111	0.067	0.071	0.11	0.118	0.091	0.179	0.112	0.131	0.067	0.034	0.203	0.099	0.102	0.113	0.061	0.145	0.098	0.064
Number reporting visitation																				
White	388	324	299	278	312	227	153	65	38	125	156	88	142	26	30	37	23	137	183	12
Black	463	383	330	333	337	340	163	212	29	90	155	77	36	19	22	26	20	44	157	29
Hispanic	173	155	157	172	177	207	106	31	15	69	72	33	19	3	8	10	9	23	80	9
Significance of equation	S	S	S	S	S	S	S	S	S	S	S	NS	S	NS	S	S	NS	S	S	NS

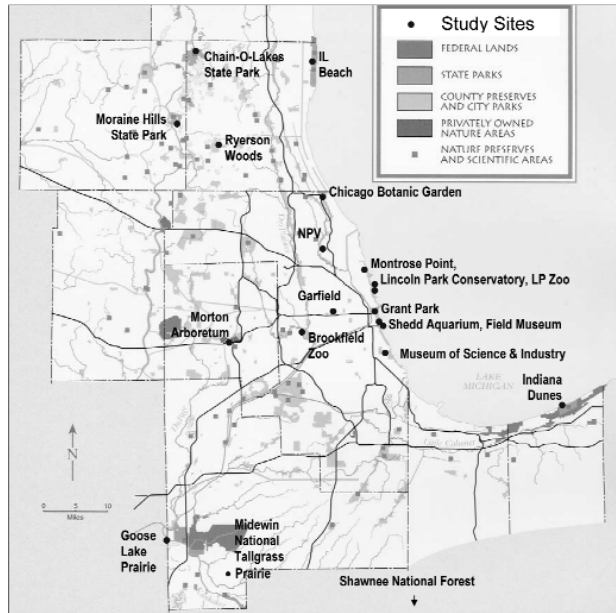


Figure 1: Chicago Area Study Sites

discussed below. The individual coefficients for each variable indicate the association of that variable with site participation, provided that all other variables in the model are held constant. Ways to improve these models are discussed later in the paper.

Distance — As might be expected, increasing distance from an individual's residence to a site was associated with lower levels of participation for 19 of the 20 study sites. The coefficient for distance was significantly different from zero for eight sites, suggesting some important declines in participation with travel distance. The percent that participated dropped from well above 90 percent to as low as 2 percent across the eight sites over a distance of 1 to 50 miles. The one site with the positive coefficient for distance (not significant) was Ryerson Woods, which was the site with the lowest number of participants with which to estimate the model (Table 1. - bottom). The 20 study sites are major resources that draw visitors from across Cook County and beyond, and it is likely that other variables in the model are correlated with travel distance to the sites. Consequently it is not surprising that for some sites participation might not drop significantly with distance from home across Cook County. The largest coefficient (negative) for distance was for North Park Village Nature Center, a relatively new site that most likely does not have as widespread a

reputation as the other sites. This site also has a low number of users in the sample.

Race/Ethnicity — The race/ethnicity coefficients estimate the difference in participation for Black or Hispanic respondents as compared to White respondents. The coefficients for Black and Hispanic were positive in nearly half of the instances across the 20 models (12 sites for Black, 7 sites for Hispanic) and negative in slightly more than half of the instances. This offers little support for reported "underparticipation" by Blacks and Hispanics in outdoor recreation. Coefficients for Black were significant in the models for six sites, and coefficients for Hispanic were significant in the models for five sites. With one site, Lincoln Park Zoo, the model estimates that Blacks and Hispanics were significantly more likely than Whites to report visiting the site (Blacks and Hispanics were each 1.5 times as likely as Whites to participate). This pattern may be attributable to the central location of this site just north of downtown Chicago and the relatively high accessibility of the site, including by mass transit, from neighborhoods with large numbers of Blacks and Hispanics as compared to other sites. Whites, regardless of whether they reported that they visited the site or not, had the longest estimated average travel distance to Lincoln Park Zoo, and Blacks and Hispanics had the shortest. With Chain-O-Lakes State Park and the Morton Arboretum, the models estimate that Black and Hispanic respondents were significantly less likely than White respondents to report visiting these sites (with Morton Arboretum, Blacks were .33 times as likely to participate as Whites, and Hispanics were .49 times as likely to participate, while with Chain-O-Lakes State Park, Blacks were .26 times as likely to participate as Whites and Hispanics were .23 times as likely to participate as Whites). This pattern is most likely a function of the types of outdoor experiences offered and the location of these sites north (Chain-O-Lakes) and west (Morton Arboretum) of Chicago, distant from Black and Hispanic populations. Of the individual respondents in the study, Blacks had a longer estimated travel distance to each of these two sites than Whites. Past studies and an earlier analysis of the data used in this study (Dwyer and Barro 2000) have suggested that Black and Hispanic residents tend to prefer sites where there is a significant amount of development over those that are "natural" or "undeveloped." With

Garfield Park Conservatory and Grant Park, Blacks were significantly more likely than Whites to report that they had visited the site (with Garfield Park Conservatory, Blacks were 5.1 times as likely to participate as Whites, and with Grant Park, Blacks were 1.6 times as likely as Whites to participate). This is likely a function of site accessibility to Black populations, particularly with Garfield Park Conservatory, which is located in an area of the city with a large Black population. Both sites had a shorter travel distance for Black respondents than White respondents. With Brookfield Zoo and the Museum of Science and Industry, the models estimate that Hispanics are significantly less likely than Whites to report that they have visited (at Brookfield Zoo, Hispanics were .64 times as likely as Whites to participate, while at the Museum of Science and Industry, Hispanics were .65 times as likely as Whites to participate). This difference in participation between Hispanics and Whites does not seem to be attributable to distance, since Hispanics in the sample have a shorter estimated average travel distance to the sites than Whites.

Age — The age coefficients reflect the difference in participation by age group with reference to the youngest age group of 17-25 years. The models for half of the sites indicate that participation is highest with the lowest age group. These sites include zoos (Brookfield and Lincoln Park Zoos), museums (Science and Industry, Shedd Aquarium, Field Museum), and Grant Park that is at the center of downtown Chicago on the lakefront. They also include more distant sites such as the Shawnee National Forest, Moraine Hills State Park, Indiana Dunes National Lakeshore, and the Midewin National Tallgrass Prairie. With these sites, participation often drops off to less than half across all age groups. Significantly higher participation with age is suggested by the model for Chain-O-Lakes State Park, which is north of Chicago (for example, respondents age 40-65 years are three times more likely to report participation than those age 17-25 years). This may be a reflection of the available outdoor activities such as power boating. The coefficients for age are not significant, and there is not a clear pattern in the coefficients across age classes at Ryerson Woods, Goose Lake Prairie, and Illinois Beach State Park, three other quite “natural” sites that are on the periphery of the population concentration in Cook

County. This is also the case at Montrose Point. Significant increases in participation with age are reflected in the models for the Garfield Park Conservatory and the Lincoln Park Conservatory, where the focus is on rare and unusual plants - the appreciation for and interest in which may come with age (at Lincoln Park Conservatory, respondents age 40-55 years are 1.6 times more likely to participate than those age 17-25 years, and those 56-65 years of age are 1.8 times more likely to participate than those age 17-25 years). Patterns of participation with age are similar for Garfield Park Conservatory. While the coefficients were not significant, the models for Morton Arboretum and North Park Village Nature Center, which also focus on unique plants, also suggest increased participation with age. Surprisingly, the model for the Chicago Botanic Garden, a site that has a similar focus on special plants, suggested relatively little variation in participation with age. This may be due to the easy access of the Chicago Botanic Garden to bicyclists, who would tend to be a younger group.

Area of Residence — The patterns of coefficients for the area of Cook County where the respondent lived were not always intuitively obvious in that in several instances they suggested the highest participation for areas distant from a site. This may be attributable to interactions between the area and distance variables. Furthermore, very few of the coefficients for area are statistically significant. This may, in part, be due to correlations between area and other variables in the models, such as distance, race, education, and income. Area was a significant explanatory variable in the models for four sites. Residents of North Chicago were significantly more likely than residents of the North Suburbs to report that they had visited three sites, Montrose Point (2.2 times), Lincoln Park Zoo (2.0 times), and Grant Park (1.9 times) - all sites where residents of North Chicago are likely to be closer to the sites than residents of the North Suburbs. However, coefficients for area suggest that residents of North Chicago are significantly less likely than residents of the North Suburbs to visit Brookfield Zoo (0.69 times). The reason for this does not seem to be related to distance, since residents of North Chicago are likely to be closer to Brookfield Zoo than are the residents of the North Suburbs. One possibility, explored later in the paper, may be due to the availability of a substitute site in the

area, the Lincoln Park Zoo, which may be perceived as providing a similar recreation experience to the Brookfield Zoo. Perhaps public transportation is also a factor here as Chicago residents are less likely to own cars than suburbanites. Residents of South Chicago were significantly more likely than those who live in the North Suburbs to report visiting Grant Park, most likely because they are closer to that site.

Education — Models for nearly all of the sites indicate that individuals with higher levels of education were more likely to report that they had visited a site than those with lower levels of education. The exceptions were Chain-O-Lakes State Park where coefficients suggested significantly lower participation with higher levels of education; and Brookfield Zoo, Goose Lake Prairie, and Midewin National Tallgrass Prairie where there was no clear association between education and participation. Increasing likelihood of participation with increasing education was particularly prominent with the sites that provide for the viewing and study of rare and unusual plants. These included North Park Village Nature Center, Morton Arboretum, Chicago Botanic Garden, Garfield Park Conservatory, and Lincoln Park Conservatory. Higher levels of education were also associated with participation at Grant Park, Montrose Point, and Lincoln Park Zoo. All three of these sites are in relatively close proximity to other sites that provide for the study of rare and unusual plants, and may be a part of trips by individuals who visit those other sites to study plants. As might be expected, participation at museums increased significantly with education (Museum of Science and Industry, Field Museum, Shedd Aquarium). This might have some interesting implications for support for endangered species.

Income — The general pattern for all sites was for higher levels of participation with higher levels of income. Peak participation tended to be found in one of three mid to upper categories of income, \$40-60,000, \$60-80,000, and \$80-100,000 per year. In no cases was there a significant negative coefficient for higher levels of income in the models. The sites with significantly higher participation with higher income include Montrose Point, Grant Park, Chicago Botanic Garden, Brookfield Zoo, Lincoln Park Zoo, Chain-O-Lakes

State Park, Indiana Dunes National Lakeshore, Field Museum, and the Museum of Science and Industry. These were not necessarily sites where there is a high cost of travel, entry, or participation - or were they necessarily located close to areas with a concentration of high-income residents. One possibility is that higher levels of income may afford higher amounts of discretionary time, making visitation easier and more likely. There are correlations between education and income that complicate interpretation of the coefficients for each.

Household Size — Household size had both positive (14 sites) and negative (6 sites) associations with participation in the models for the 20 sites. In seven instances the coefficients were significant and positive, indicating that individuals from larger households were more likely to participate. These included sites that are popular with children and are frequently the focus of family outings, including Brookfield Zoo, the Museum of Science and Industry, Lincoln Park Conservatory, Lincoln Park Zoo, Shedd Aquarium, Field Museum, and Indiana Dunes National Lakeshore. In some instances the models suggest that a household with five members is three to five times as likely to visit a site as a family of one. The one significant negative coefficient for household size was in the model for Montrose Point, which includes large areas in Lincoln Park on the Chicago Lakefront that provide a wide range of opportunities. Perhaps this is a somewhat less constrained site than most others, and management of the members of a large household could be a challenge, particularly with the lakefront and lagoons.

Gender — The models suggest a general tendency towards males being more likely to report participation at sites (15 out of 20 sites). A higher participation for males is significant in seven sites; Shawnee National Forest, Chain-O-Lakes State Park, North Park Village Nature Center, Montrose Point, Moraine Hills State Park, Illinois Beach State Park, and Grant Park. Some of these are quite distant and popular for hunting and fishing such as the Shawnee National Forest, while others such as Grant Park are local sites that cater to families and other groups. With the Shawnee National Forest, male respondents were more than twice as likely as female respondents to report visiting the site. With the other sites it is not entirely clear what factors

are operating here with respect to the association between gender and participation. Perhaps security is an issue at or on the route to some sites. It should be noted that in the survey an effort was made to alternate between interviewing male and female heads of households.

Implications for Planning and Management

Demographic change has implications for the management of settings for recreation activities. Research suggests that important demographic changes that are likely to influence recreation participation in the years ahead include shifts in the locations across the landscape where people live, increased racial/ethnic diversity, and aging of the population (Dwyer 1994). Subsequent discussion uses the results of the binary logistic regression models developed in this study to help explore the possible implications of these demographic changes for use of the 20 study sites.

Location —The binary logistic regression models suggest that the likelihood of visiting a site increases with decreasing distance from the site. The coefficient for distance was negative in the models for 19 of the 20 sites. Some examples of the kinds of shifts in the location of the population that may influence the use of particular sites include growth of suburban areas and change in the population of inner-city areas.

Growth of the suburbs increases the population that is located relatively close to suburban sites such as Chain-O-Lakes State Park, Ryerson Woods, Moraine Hills State Park, Goose Lake Prairie, Illinois Beach State Park, Indiana Dunes National Lakeshore, Morton Arboretum, Midewin National Tallgrass Prairie, and Chicago Botanic Garden. This is likely to increase participation at these sites. While the present study looked only at residents of Cook County, the suburbs of Chicago extend to a number of counties in northeastern Illinois, southeastern Wisconsin, and northwestern Indiana. Growth in these areas may influence the future use of a number of sites in suburban areas such as those listed above.

Population losses in inner city areas can reduce the participation at sites located nearby. This may influence participation at sites such as Grant Park, Lincoln Park Conservatory, Montrose Point, Garfield Park Conservatory, Field Museum of

Natural History, Museum of Science and Industry, Shedd Aquarium, and Lincoln Park Zoo. At the same time, revitalization of inner city areas may help to slow decline in population and actually bring increases in population and increase use of nearby sites. In some instances, fairly affluent individuals and households, as well as tourists, may be attracted to inner city areas and influence the use of nearby sites. At the same time, enhancing recreation attractions may be a significant part of programs to revitalize inner-city areas and stabilize or increase their populations, and attract more tourists.

Race/Ethnicity — The binary logistic regression models suggest that increases in the Black and Hispanic populations relative to Whites are likely to increase the use of some sites more than others. Coefficients for Blacks in the models suggest that with a relative increase in the Black population (all else held constant) we will see a significantly greater increase in participants at Garfield Park Conservatory, Grant Park, Midewin National Tallgrass Prairie, and Lincoln Park Zoo; as compared to Morton Arboretum and the Chain-O-Lakes State Park. Similarly, coefficients for Hispanics suggest that a relative increase in the Hispanic population (all else held constant) will bring significantly more participants to Lincoln Park Zoo than to Morton Arboretum, Ryerson Woods, Museum of Science and Industry, Chain-O-Lakes State Park, and Brookfield Zoo. However, as with all interpretations of coefficients in the models, these predictions assume that all other variables in the model remain constant, which may not be the case. Perhaps additional Black and Hispanic residents of Cook County will live in different parts of the County than is currently the case for these groups. For example, there may be more Blacks and Hispanics in the suburbs. They may also be more affluent than current members of these groups. There may also be changes in the age structure of Black and Hispanic populations, which may significantly influence participation patterns of those groups. And perhaps the managers of some sites will increase their efforts to market their sites to Blacks and Hispanics, possibly increasing their participation at these sites.

Age — Coefficients in the binary logistic regression models suggest that, with all else held constant, aging of the population will increase

participation at some sites relative to others. With aging, relatively smaller increases are likely to occur at sites that have relatively high participation rates by the younger age classes, such as Brookfield Zoo, Shawnee National Forest, Grant Park, Moraine Hills State Park, Indiana Dunes National Lakeshore, Field Museum of Natural History, Museum of Science and Industry, Shedd Aquarium, Midewin National Tallgrass Prairie, and Lincoln Park Zoo. With aging, increases are likely to occur at sites with relatively high participation rates for older residents, such as Chain-O-Lakes State Park, Lincoln Park Conservatory, Garfield Park Conservatory, and Morton Arboretum.

Once again these predictions assume that other variables and circumstances remain the same, which may not be the case. Increased aging may be concentrated in particular locations such as inner city areas, while large numbers of younger people may go to the suburbs. The rate of aging may differ between racial/ethnic groups as compared to Whites. Site managers may market their programs to older individuals and thereby change the participation rates of these groups. These and other changes may influence the future participation by Cook County residents at the study sites.

Future Improvements in Modeling

While the models presented here are a useful start for exploring the association between demographic change and use of outdoor recreation sites, a number of suggestions are provided for improving future modeling efforts.

Sample Size — Despite a strong effort to sample heavily in Black and Hispanic populations, the sample size is small enough and the study sites sufficiently diverse that we did not have a large number of individuals in total, or in some racial/ethnic groups, who reported that they visited a particular site. This resulted in the models for four sites not being significant, and relatively few variables being significant in some models, particularly for sites where few respondents reported that they had visited. Thus it is likely that our models would have had greater explanatory power if we had a larger sample size or concentrated on more popular sites.

Awareness — It is not entirely clear whether all respondents were aware of each of the 20 study

sites or knew where they were located. Many reported that they “had never heard of” particular sites (Dwyer and Barro 2001). It is possible that individuals had visited sites but were unaware of their official names, or thought that they have visited sites that they had not actually visited. This latter situation appears likely with the Midewin National Tallgrass Prairie, where a number of individuals reported that they had visited the site, despite the limited access policy for the site and a locked fence. With Chicago Botanic Garden there were a fairly large number of Black and Hispanic respondents who reported that they had visited the site. This seems unlikely given the location and characteristics of the site. Perhaps some respondents confused it with another “Botanic Garden” or had participated in one of the numerous outreach programs of the Chicago Botanic Garden. In any case, it is possible that there may be a number of errors in responses concerning which sites they had visited, and this would introduce some errors into the models. A possible solution to this problem in the future is to clarify and possibly test for knowledge of the location and character of the sites during data collection.

Participant Groups — A number of the sites are popular with children and are often the site of household outings. However, number of children in the household was not included in the model, and it was not clear in what size groups individual respondents participated in for each site. Information on family structure might have improved the explanatory power of the models for some sites. Furthermore it might be useful to learn more about the type of group in which trips to individual sites are made. A general question on visitation behavior by type of social group was part of the questionnaire; but it was not tied to any particular site or group of sites.

Origin of Trip — By using estimated distance from the respondent’s place of residence to the site as a variable in the model, the assumption is made that individuals travel from their homes to the site. However, many of the study sites are in close proximity to each other and several could be visited on one trip. At the same time, some of these sites could be visited on a trip that started at work or school, rather than at home. Group outings sponsored by churches or other social organizations

may also be an important means of visiting some of the sites. Lack of information on these aspects of site choice and participation behavior, to include multiple destinations and non-home origins, may have reduced the explanatory power of some models.

Alternative Destinations — The proximity of alternative destinations to an individual may influence their use of particular sites. Some sites may substitute for other sites while some may complement others. With substitute sites an individual is likely to choose one over another, while with sites that are complements they are likely to choose both. An initial test of models for the two conservatories and two zoos suggested that the alternative site in each category tended to serve as a substitute for the other site in the model. That is, individuals that live close to one site (e.g., the Lincoln Park Zoo) tended to be less likely to visit the other site in that category (the Brookfield Zoo).

Trip Purposes — It was not clear why individuals visited each site. All of the sites provide a wide range of experiences; but we were unaware of the purpose or reason why individuals visited each site. This information would help us better understand the substitutability and complementarity among sites. Perhaps something can be learned by looking at the recreation activities participated in by individuals who use each of the sites.

Characteristics of Origins — Models for predicting trips to a site often include characteristics of the neighborhood in which the individual lives, assuming that with the absence of certain experiences in a neighborhood the individual would be more likely to seek those experiences elsewhere. No such variables were included in this study. It might be possible to include these considerations by reformulating the model to predict the number of individuals from each zip code origin who would visit a site, and use characteristics of those origins as the explanatory variables in the model. A map of characteristics by zip code might help explain origin-destination patterns and correlations of distance with these variables.

Multicollinearity — A significant problem in the model is that many of the variables are correlated with each other. Multicollinearity does not affect

the explanatory power of the model; but it can make it difficult to interpret the sign, magnitude, and significance of the coefficients in the model. This most likely had an effect on some coefficients in the models, particularly race. It may be desirable to estimate separate site use models by race; but our preliminary efforts to do that were hampered by small numbers of site participants by race.

Summary and Conclusions

While the future patterns of participation at the 20 study sites are not entirely clear, the results of the site participation models in conjunction with expected demographic shifts, such as increased racial/ethnic diversity, an aging population, and geographic/location shifts from place to place, suggest significant implications for changing participation at sites across the landscape. This argues that managers, planners, and marketers monitor the situation and trends with respect to the use and users of the sites and be prepared to respond to changes. The policies, programs, and facilities that they implement are likely to help shape the influence of demographic change on site use in the years ahead.

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CONSIDERATION OF PROPERTY RISK REDUCTION AT THE TIME OF HOME PURCHASE BY WILDLAND-URBAN INTERFACE (WUI) HOMEOWNERS

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Abstract: The purpose of this paper is to understand home purchase decision making in wildland-urban interface areas. The research examined the level of consideration homeowners place on structure and property features, as well as the location of past wildland fires. ANOVA testing with eleven home or property features on state location (CA, CO, FL), residency type, and purchase methods revealed significant patterns. Implications for community and resource fire managers are discussed.

Introduction

The wildland fires of the late 20th century and early 21st century encountered homes of many types across the landscape. Some wildland fires destroyed homes that were in vulnerable areas, while other homes didn't have the "right stuff" to survive the nearby sparks and ravaging flames. Recent efforts by local, state and federal fire departments, planning departments of governments, and resource managers are initiating FireWise programs and other types of efforts to educate existing and future homeowners about the risks and preventative measures for living in the wildland-urban interface. Monroe (2002) states that wildland fire is perhaps the greatest challenge of the wildland-urban interface. Both loss of life and the tremendous resources needed to prevent or manage wildland fires in the WUI are critical issues that these growing areas face.

A key stakeholder in the wildland-urban interface is the land or home-owner. These households have made a financial investment and may live in

the area because of job opportunities or quality of life. Households moving into the wildland-urban interface may include young families looking for affordable housing, retirees, or households desiring a county or vacation home. These households may come to the wildland-urban interface with different levels of experience and understanding of wildland fire and subsequently view house buying differently. Studies by urban planners have documented why households move into suburban areas and the type of home or neighborhood they desire (Varady, 1990) with top considerations being schools and large lots or yards for those seeking suburban areas. Studies have also been done examining purchase behaviors of households searching for a seasonal or vacation home to purchase (Stewart and Stynes, 1994). Studies on wildland fire and homeowners have documented that urban residents (San Bernardino County, CA) had low initial awareness of fire severity, rated the likelihood of wildland fire occurring to be low, and preferred policies that required intervention from resource agencies that altered the wildland landscape to make it more suitable and risk-free for homeowners (Gardner, Cortner, and Widaman, 1987). Winter and Fried (2000) found homeowners believed wildland fires could occur, however that they were inherently uncontrollable and the resulting damage essentially random. They also reported that homeowners held low levels of support for investing in firefighting infrastructure or house or property features to safeguard their own properties. Few research studies have examined the home buying process in relation to wildland fire risks and the availability of fire protection available to residents in interface areas.

The purpose of this study is to further examine the views of homeowners living in the wildland-urban interface using decision making criterion to evaluate the level of best practices employed in the search to buy a home in the WUI. Specifically, a set of home and property features often used as the best practices for safeguarding a home from a wildland fire were administered to permanent and seasonal homeowners in three states in selected WUI areas. This research is intended to help communities and resource managers develop and maintain safer residential living.

Table 1 . — Response rates

State and National Forest	Type of residency	Sample Size	Bad Addresses	Net Sample Size	Returned	Returned, Reclassified into homeowner types	Response Rate
California study area -San Bernardino NF	Permanent	362	74	288	97	119	41%
	Seasonal	638	117	521	206	176	34%
Colorado study area -GMUG NF	Permanent	566	20	546	271	254	47%
	Seasonal	215	14	201	72	66	33%
Florida study area -Apalachicola NF	Permanent	711	33	678	244	268	40%
	Seasonal	289	23	266	92	56	21%
Total		2,781	281	2,500	982	939	38%

Note: 43 surveys were not classified as permanent or seasonal homeowners and omitted from the analysis.

Methods

The study began by identifying the National Forests or wildland-urban interface areas at risk for wildland fires and active at reducing fuels near residential areas. Three study sites were selected -- San Bernardino National Forest, CA; Grand Mesa, Uncompahgre and Gunnison (GMUG) National Forests/Bureau of Land Management, CO; and Apalachicola National Forests, FL. Specifically, the California study site was located near Los Angeles and included the communities of Arrowhead and Big Bear Lake, located in San Bernardino county. The Colorado study site was located between Durango and Grand Junction in southwest Colorado, specifically Ouray, Montrose and Delta counties. The Florida study site was located west of Tallahassee in the panhandle area of the state and included Leon, Liberty and Wakulla counties.

Trips to the area allowed the researchers (Vogt and Charles Nelson) to meet with local fire managers from the USDA Forest Service and state and local fire departments. During these visits, specific study areas were identified so that homeowner lists could be obtained through local tax assessment offices. In California, two communities/neighborhoods --Running Springs (a community west of Big Bear Lake), and Sugarloaf (a large neighborhood east of Big Bear Lake) were selected.

In Colorado and Florida, numerous residential areas were selected in the three counties and did not encompass any one entire community. In most cases a proportion sample of permanent and seasonal homeowners were drawn from a larger population list. In Florida, all seasonal homes on the provided lists were included to ensure that largest possible group of these homeowners.

Data on homeowners were collected with a mail questionnaire sent to both permanent and seasonal homeowners in the selected WUI areas. A total of 2,781 households were sampled and mailed an eight-page questionnaire using a modified Dillman (1978) procedure where each household received a personalized letter, a prepaid business reply envelope, and a pre-numbered questionnaire. A reminder or thank you postcard was mailed approximately one week after the first mailing. After three weeks those households who had not responded were mailed another questionnaire. For first and second questionnaire mailings, press releases to local newspapers were mailed with follow-up phone calls to the editor to try to increase awareness of the study, particularly with permanent home owners. Data collection occurred in fall 2001 overlapping the events of September 11th, 2001 and the anthrax scare. Questionnaires were mailed to the address a tax bill would be

Table 2. — Means of acquiring home in wildland-urban interface settings

How did you acquire your home in this area?	California study area - San Bernardino NF		Colorado study area - GMUG NF		Florida study area - Apalachicola NF	
	Permanent Home- owners	Seasonal Home- owners	Permanent Home- owners	Seasonal Home- owners	Permanent Home- owners	Seasonal Home- owners
Property was purchased with the help of a realtor or sales office	74%	70%	60%	63%	34%	18%
Property was purchased directly from previous owner	18	17	26	26	40	56
Another way (mostly buying land and then building)	6	6	6	3	4	0
Property was handed down or purchased from within the family	2	7	8	8	22	26
Total	100	100	100	100	100	100

mailed to which meant that seasonal home owners most likely received their questionnaire at their permanent home. The letter included an incentive offer whereby one out of 250 households could be selected for a \$25 gift certificate to either Walmart or Lowe's.

Response rates ranged from 21 to 47 percent (table 1) with a composite response rate of 38 percent. In total, 2,781 home owners were sampled and 281 bad addresses were identified, for an effective sample size of 2,500. Across the three study sites, 939 surveys were returned, completed, and correctly classified as either a permanent or seasonal homeowner. In all three study sites, permanent home owners responded at a higher rate than seasonal home owners, which could be explained by the press releases in local papers or possibly greater interest in fire by permanent residents. Bad addresses were the highest in California even though the tax records had just been updated (note: San Bernardino is a large urban-rural county with a population of 1.7 million and a half of a million households). Nonresponse bias was checked by comparing demographic characteristics of permanent home owners to the available census data (1990). In all three study areas, the respondents tended to be better educated, reported higher levels of income, and were more likely to be male in comparison to the general population.

Measurement for the variables of interest occurred in a series of questions. To measure home and property features that home buyers might consider, particularly those seeking a house in the wildland-urban interface, a list of eleven items were developed in consultation with fire managers and by referencing checklists that the Forest Service often uses with special use cabins. A seven-point scale ranging from "0" labeled as not at all a consideration to "6" labeled as a very strong consideration was employed. The question was asked with the following framing "what level of consideration was given to the following when you purchased your house in the (insert area name)?" The explanatory variables of state and residency type were established with the tax assessor information and then validated in a question in the survey. Purchase method was measured with three categories (i.e., realtor, directly from previous owner, family) and an open-ended option with respondents selecting one response.

Results

Demographic profile. In California, the respondents were more often men than women with 53% of permanent homeowners and 61% of seasonal homeowners being men. For permanent homeowners, the largest income group was \$40,000 to \$79,999 annual household income before taxes. For seasonal homeowners, the largest income groups was \$80,000 or more. The highest

Table 3.— Length of home ownership

Owned for:	California study area - San Bernardino NF		Colorado study area - GMUG NF		Florida study area - Apalachicola NF	
	Permanent Home- owners	Seasonal Home- owners	Permanent Home- owners	Seasonal Home- owners	Permanent Home- owners	Seasonal Home- owners
Up to last 5 years (1997-2002)	19%	30%	35%	36%	23%	24%
6 to 10 years (1992-1996)	22	12	28	18	16	24
11 to 20 years (1982- 1991)	32	24	20	27	22	24
21 to 50 years (1952-1981)	27	34	15	16	37	24
51 years or longer (before 1952)	0	0	2	3	2	4
Total	100	100	100	100	100	100

level of education was college for most permanent homeowners (61%) and seasonal homeowners (52%). Most of the respondents claimed California as their primary state of residency with 98% of permanent homeowners and 97% of seasonal homeowners. Most respondents were either employed full or part time or were retired. The greatest percentage (23%) of permanent homeowners lived most of their lives in a medium sized city, in comparison to the greatest percentage of seasonal homeowners (45%) lived most of their lives in a major city. The majority of California respondents hold the perception that their home is serviced by a fire department and that there are fire hydrant located near their homes. For example, 93% of permanent homeowners and 96% of seasonal homeowners believe there are hydrant in their neighborhoods. Approximately one out of every four households includes an individual that suffers from respiratory or breathing problems.

In Colorado, the permanent (76%) and seasonal (68%) homeowner respondents were more often men than women. For permanent homeowners, the largest income group was \$40,000 to \$79,999 annual household income before taxes. For seasonal homeowners, the largest income group was \$80,000 or more. College was the highest level of educational experience for most permanent homeowners (44%) and seasonal homeowners (47%). Colorado was claimed as the primary state of residence by 98% of permanent homeowners and 49% of seasonal homeowners (residencies also

included California, Texas, and Florida). Slightly more respondents were retired in comparison to employed full or part time. The greatest percentage (37%) of permanent homeowners lived most of their lives in the country or a very small town, in comparison to the greatest percentage (30%) of seasonal homeowners lived most of their lives in a major city. The majority of Colorado respondents' perceive that there are fire hydrant located near their homes with 63% of permanent homeowners and 87% of seasonal homeowners holding this perception. Approximately one out of every five households includes an individual that suffers from respiratory or breathing problems.

In Florida, the respondents were more often men than women with 70% of permanent homeowners and 79% of seasonal homeowners being men. The largest income bracket was from \$40,000 to \$79,999 for permanent homeowners in comparison to \$80,000 or more for seasonal homeowners. Junior high school or high school was the highest level of educational experience for most permanent homeowners (44%) in comparison to graduate school (38%) for most seasonal homeowners. Florida was claimed as the primary state of residence by 98% of permanent homeowners and 59% of seasonal homeowners (residencies also included Georgia and Alabama). Approximately half (52%) of permanent homeowners were employed full or part time and only 33% were retired, in comparison to 46% of seasonal homeowners were retired and 45% were

Table 4. — Consideration of structure and property features when house was purchased by wildland urban interface residents

Features.....	California study area - San Bernardino NF		Colorado study area - GMUG NF		Florida study area - Apalachicola NF	
	Permanent Home- owners	Seasonal Home- owners	Permanent Home- owners	Seasonal Home- owners	Permanent Home- owners	Seasonal Home- owners
Fire protection service (firefighters, fire trucks)	4.5 ^a	4.3	4.0	4.0	3.7	3.2
Fire hydrant in the neighborhood	4.5	3.9	3.3	3.2	2.7	2.1
Heated by source other than a wood burning stove	4.3	4.3	3.7	3.6	3.1	2.7
Nonflammable roofing materials	4.3	4.0	4.1	4.2	1.9	1.9
Trees/vegetation cleared 30 ft around home	3.7	3.3	3.8	3.3	2.6	2.2
Adequate street signs and address labeling for locating home in a fire	3.7	3.5	3.6	3.0	3.1	2.7
Wide roads and driveways to facilitate easy access for emergency vehicles	3.6	3.3	3.8	3.1	2.5	2.7
Location of home in relation to past fires	2.6	2.3	2.1	2.0	1.3	1.2
Lot had relatively few highly flammable trees	2.6	2.5	2.6	2.0	1.6	1.6
Exterior propane tank at least 10 ft from home	1.7	2.3	3.9	3.7	1.8	2.0
Pipe system that can draw water from lake	1.2	1.6	1.5	1.3	1.3	1.3

^aMeans with a scale where “0” labeled as not at all a consideration to “6” labeled as a very strong consideration.

employed full or part time. The greatest percentage (36%) of permanent homeowners have lived most of their lives in the country or a very small town in comparison to the greatest percentage (21%) of seasonal homeowners lived most of their lives in a medium sized city. Nine of out ten households believe their home is serviced by a fire department; and half of the households indicated hydrant are present in their neighborhood. Three out of ten households include an individual that suffers from respiratory or breathing problems.

Purchase method and home tenure. Respondents were asked how they purchased their home near the forest. Homeowners in California were most likely to purchase their home with the help of a realtor or sales office (table 2). Less than twenty percent purchased directly from the previous owner and few households had the property handed down through the family or purchased it from a family member. Homeowners in Colorado had similar results with realtor assistance being the most

common. Florida home transactions were quite different than California or Colorado. Seasonal homes in the Florida study area were most likely purchased directly from previous owners, followed by property being handed down in the family. Permanent homes in the Florida study area were also most likely to be purchased from previous owners, followed by assistance from a realtor.

Respondents in all three study areas had fairly long home tenure (table 3). Over 50 percent of California permanent and seasonal homeowners lived in the WUI for 11 or more years. Colorado homeowners were most likely to live in the area for five years or less. Permanent Florida homeowners held the highest tenure with 39 percent living in the WUI for 21 years or longer.

Home and property features. Across all three study areas, fire protection service in the form of firefighters and fire trucks was the most highly rated consideration when the WUI home was

purchased (table 4). Mean scores ranged from a high of 4.5 (with 6.0 being the highest level of consideration) with permanent homeowners in the California study area to a low of 3.2 with seasonal homeowners in the Florida study area. Fire hydrant in the neighborhood and a home heating system other than a wood burning stove were additional top considerations by California homeowners. Respondents in California and Colorado also showed strong consideration for nonflammable roofing materials, however homeowners in Florida did not. The existence of a pipe system that could draw water from a nearby lake or river was the lowest rated consideration possibly because only a few homes were near these types of water resources. Location of the home in relation to any past fires was not a strong consideration by many homeowners.

In separate analysis of variance tests, state and residency type were examined as explanatory variables to the home and property features. Given that these samples were not drawn in the same ways, these statistical difference tests should be used with some caution. In a series of ANOVAs where state was considered as an explanatory variable, ten of the eleven features were rated significantly different by respondents from the three states. The only feature that was rated similarly was the lowest rated feature - a pipe system that could draw water. On several items such as nonflammable roofing materials, trees cleared 30 ft. away from the house, wide roads and driveways to facilitate easy access for emergency vehicles, adequate street signs and address labeling for locating home in a fire, and lot with few highly flammable trees, California and Colorado respondents had similar answers and Florida respondents rated the consideration significantly lower. Colorado respondents were significantly more concerned about propane tanks being distant from the home than homeowners of the other states. California respondents were significantly more concerned about heating systems other than wood burning stoves than the other homeowners studied. In a similar analysis where residency type was tested as the only explanatory variable, two features were considered at a higher level by seasonal homeowners than permanent homeowners. These features were nonflammable roofing materials and the home heating system being something other than wood burning.

A final analysis examined whether the method of finding and purchasing a home influenced the consideration of home and property features. For 7 of the 11 features, homeowners that were studied in the three states who had purchased their home with the assistance of a realtor were more concerned than homeowners who purchased directly from the previous owner or acquired the home from a family member. These features included: nonflammable roofing materials, heating system, road and driveway access, street signs and address labeling, fire protection services, fire hydrant, and location of past wildland fires.

Discussion

This study examined the type and level of home and property features wildland-urban interface homeowners consider when they purchase a home. The results are based on a wide range of home tenure lengths. Respondents were asked to recall what they were considering when they were searching for a home to purchase. The researcher recognizes that recent homebuyer are more likely to have lower recall stress and inaccuracy than less recent homebuyer so some caution is needed in interpreting these results.

The geographic location of the wildland urban interface areas appears to be the most significant predictor of home and property features. Using the midpoint of the scale to interpret the results, the California homeowners studied considered the most features when purchasing a home in the WUI, whereas the Florida homeowners studied considered the fewest features. Colorado homeowners were most like California respondents than they were Florida respondents. The top concerned features were public services in the form of firefighters, fire trucks, and fire hydrant. These results suggest that many who move in the wildland-urban interface believe that "city-level" public services will be available to them in their "rural" home. Almost all of the respondents perceived that a fire department would service their home if a fire (house or wildfire) were to occur.

The findings on purchase method are fairly compelling that home buyers who held higher consideration of certain features were more likely to be working with a real estate agent. Further examination is needed to determine whether these strong considerations lead a buyer to use a realtor

or a realtor points these features out as considerations for home buying in the WUI. Interesting, the two features involving vegetation (trees cleared near home, nonflammable trees/vegetation on lot) did not differ across purchase methods.

Few differences on feature consideration were found in the analysis of residency type. A closer examination of residency type, controlling for state, shows one instance (trees/vegetation cleared 30 ft. from home) where permanent homeowners showed more consideration for property features than seasonal homeowners.

These findings can be applied in four areas. The first area is insurance. This study didn't ask directly about insurance policies or homeowner's views of holding insurance protection to reduce or eliminate risks, however, the data suggests that selected home buyers are knowledgeable and show consideration for ways of reducing risks associated with wildland fires. Some homeowners indicated that insurance companies should reward reduced risks with lower premiums. The second and related area is housing development. New or remodeled homes could provide additional FireWise features if homeowners demanded or builders provided these features. The third application of these findings is defensible space ordinances or practices. The eleven items studied are generally accepted design features that homeowners should be encouraged (if not mandated) to follow to reduce risks. The final application is for education materials that explain the importance of these home and property features in reducing risks. Particularly in the areas studied in California and Colorado, real estate agents appear to have a strong market with new homebuyer and would be an efficient distribution channel. Materials can also be distributed in demonstration homes and in local newspapers to make homebuyer and owners more aware of best practices for living in the wildland-urban interface.

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COMPUTER SIMULATION AS A TOOL FOR DEVELOPING ALTERNATIVES FOR MANAGING CROWDING AT WILDERNESS CAMPSITES ON ISLE ROYALE

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Abstract: This study uses computer simulation modeling to develop descriptive information on backcountry camping at Isle Royale, including. This information includes the relationship between number and spatio-temporal distribution of camping groups and amount of campsite sharing, as well as the potential effectiveness of alternative management practices designed to reduce campsite sharing. Findings from this study were used to identify a set of feasible, realistic alternatives for managing backcountry camping at the Park. The study results suggest that under the Park's current management approach, an average of about 9% of groups are required to share campsites per night during July and August, with 24% sharing during the busiest two weeks of this period. Further, the results suggest that the Park would need to reduce visitor use during July and August by nearly 25% to ensure that an average of no more than 5% of groups share campsites per night. The results of several other management simulations are presented and discussed in the paper, including fixed itineraries, campsite construction and spatial and temporal redistribution of visitor use. The computer simulation model developed in this study provides park managers with a tool to assess the effectiveness and consequences of management alternatives in a manner that may be more cost-effective, less labor-intensive, more comprehensive, and less politically risky than on-the-ground, trial-and-error approaches.

Introduction

Since the establishment of the National Wilderness Preservation System in 1964, recreation use of wilderness has grown steadily and continues to be on the rise today, particularly in the National Parks (Cole, 1996). In the face of burgeoning public demand for outdoor recreation, national park and wilderness managers must make decisions that integrate a broad array of public values. For example, wilderness recreationists value, to varying degrees, opportunities for solitude, pristine resource conditions, and recreation opportunities unconstrained by management restrictions. Decisions about how to integrate these diverse values are complex and involve tradeoffs among potentially competing values (Lawson & Manning, 2002b).

This study uses computer simulation modeling to quantify tradeoffs associated with management options for improving backcountry camping conditions at Isle Royale National Park. The results of this study are assisting park managers in understanding current crowding-related conditions in campgrounds, comparing current conditions to proposed standards of quality for camping-related indicators, testing the effectiveness and implications of alternative management strategies, and informing the public about the implications of various management alternatives.

Isle Royale National Park

Isle Royale National Park is located in the northwest corner of Lake Superior, approximately 75 miles from Houghton, Michigan and 20 miles from Grand Portage, Minnesota. Approximately 99% of the park's land base is designated wilderness. The park has a system of 36 campgrounds, with a total of 244 designated tent and shelter sites dispersed along lakeshores and a network of 165 miles of trails. Primary recreation activities at the park, which is open to visitors from mid-April until the end of October, include hiking and camping. During the 1990's, visitation to Isle Royale National Park grew at a rate of 4-5% annually, and, on a per acre basis, the park has one of the highest number of backcountry overnight stays in the National Park System (Farrell & Marion, 1998).

Visitors interested in backcountry camping at Isle Royale National Park are required to obtain a

permit. As part of the permitting process, visitors are asked to report their anticipated itinerary, identifying the number of nights they plan to be in the park and the campground they intend to stay at each night of their camping trip. However, visitors are not required to follow their proposed itinerary and there are no restrictions on the number of permits issued for camping in the park. While visitors do have the option to obtain special permits for off-trail hiking and camping, the vast majority choose to camp at the designated campground sites (Farrell & Marion, 1998).

Isle Royale National Park's approach to backcountry camping management is designed to maximize public access to the park and to maintain visitors' sense of spontaneity and freedom. However, recent research suggests that this management approach, coupled with increased backcountry visitation at the park, has resulted in campground capacities commonly being exceeded during peak periods of the visitor use season. Campers who arrive in full campgrounds are asked to share campsites with other groups, and most campers surveyed indicated that having to double-up with other camping groups detracted from the quality of their experience (Pierskalla, Anderson, & Lime, 1996, 1997).

Park managers have decided to address this backcountry camping issue by formulating a standard for campsite sharing (Manning, 1999). As park staff attempt to identify an appropriate and feasible standard for campsite sharing, they are faced with a number of difficult questions. For example, to what extent would use limits or fixed itineraries need to be imposed in order to reduce sharing to achieve alternative standards? Could efforts to provide public access, visitor freedoms, and reduced campground crowding be optimized by redistributing use temporally and/or spatially? Could alternative standards for campsite sharing be achieved by adding new campsites to the park, rather than by limiting use? If so, how many additional campsites would be needed, and where would they need to be located? Embedded in all of these questions are tradeoffs among visitor freedoms, spontaneity of visitor experiences, public access, facility development, natural resource protection, and opportunities for camping solitude. This study uses computer simulation modeling to assist managers in answering these and related questions.

Methods

Computer Travel Simulation Model

The travel simulation model developed in this study was built using Extend software (Extend, 1996; Lawson & Manning, in press; Lawson et al., in press; Wang & Manning, 1999). The structure of the simulation model consists of objects called hierarchical blocks that simulate various aspects of the Park's camping system. Entrance blocks generate simulated visitor groups and assign values for a set of attributes to groups (e.g., group size, camping itinerary) designed to direct their travel through the simulated backcountry camping trip. The model contains entrance blocks for each of the primary entry points to the Park. Entrance blocks allow the user to control the simulated amount and spatio-temporal distribution of backcountry camping use by specifying the simulated average daily number of trips starting from each of these locations. Routing blocks direct simulated visitor groups to the next (or first) campground on their itineraries, at the beginning of each simulated day, and direct groups that have completed their itineraries to exit the park. Campground blocks record the number of groups camping at each campground and the number of groups sharing campsites on each night throughout the simulation period.

Data Collection

Backcountry camping permits issued by park staff during the 2001 season provided the primary source of data needed to construct the travel simulation model. Information from the permits concerning the starting and ending date of each group's trip, camping itinerary, and group size were used as inputs to the simulation model. Data needed to test whether the simulation model outputs are valid estimates of on the ground conditions were gathered through a series of campground occupancy observations conducted throughout the park's 2001 visitor use season. For a more detailed discussion of the data collection and validation processes see Lawson and Manning (in press).

Model Runs

Simulation runs were conducted to estimate the extent of campsite sharing in the Park under status quo conditions. Model runs were also conducted to estimate the effectiveness of management actions at reducing or eliminating campsite sharing, including a permit quota, fixed itineraries, and increasing the

Table 1. — Mean Number of Permits Issued per Day, by Trip Starting Location – 2001 Visitor Use Season

	Windigo	Rock Harbor	All Other Locations	All Locations Combined
July/August weekdays	12.8	19.0	2.3	34.2
July/August weekend days	17.9	29.8	4.3	52.1
July/August all days	14.2	22.0	2.8	39.1
Low use period weekdays	2.4	5.0	1.4	8.7
Low use period Weekend days	6.4	9.5	2.6	18.5
Low use period all days	3.6	6.3	1.7	11.6

Table 2. — Management alternatives quantified based on simulation model output

Wilderness Values	Status Quo	Permit Quota	Fixed Itineraries	Campsite Construction	Temporal Redistribution
Public Access	Current use	22% reduction in July/August use	30% increase in July/August use	Current use	Current use (shift 22% of peak)
Facility Development	No new campsites	No new campsites	No new campsites	70 new campsites	No new campsites
Visitor Freedom	No fixed itineraries	No fixed itineraries	Fixed itineraries	No fixed itineraries	No fixed itineraries
Camping Solitude July and August	9% of groups share sites/night	5% of groups share sites/night	<1% of groups share sites/night ¹	<1% of groups share sites/night	5% of groups share sites/night
Camping Solitude Low Use Period	0.4% of groups share sites/night	0.4% of groups share sites/night	<1% of groups share sites/night ¹	<1% of groups share sites/night	1.4% of groups share sites/night

¹Assumes permits are issued to achieve 80% occupancy rate to adjust for non-compliance

number of campsites on the Island. In addition, a workshop was conducted to instruct park staff how to use and modify the simulation model to continue meeting their planning needs. The park staff's use of the simulation model is ongoing, allowing them to evaluate management strategies as new ideas emerge throughout the Park's backcountry and wilderness planning process.

Results

Backcountry Camping Permit Data

All 3,810 backcountry camping permits issued by the park during the 2001 season were used as inputs to the computer travel simulation model. These data include permits issued to backpackers, kayakers, canoeists, powerboaters, and sailboaters. Data reported in Table 1 indicate that, on average, 27 more permits were issued per day during July and August than during the remainder of the season (referred to throughout the remainder of the paper as the July/August peak and the low use period of the season, respectively). The permit data indicate that substantially more visitor groups

started their backcountry camping trips on a weekend than on a weekday. Further, while the vast majority of backcountry camping trips started at Windigo or Rock Harbor, nearly twice as many trips started from Rock Harbor than Windigo each day.

Model Output

Table 2 summarizes the results of simulation runs conducted to estimate the current extent of campsite sharing in the Park and to estimate the effectiveness of alternative strategies for reducing or eliminating campsite sharing. The alternatives outlined in Table 2 were selected for analysis with the simulation model because they reflect a range of management approaches that emphasize campsite solitude, visitor freedoms, public access, and facility development to varying degrees. The "Status Quo" alternative suggests that under the Park's current management approach, an average of about 9% of groups are required to share campsites per night during July and August, with 24% sharing during the busiest two weeks of this period.

Less than 1% of groups are estimated to share sites during the low use period of the season. Results of the simulated "Permit Quota" alternative suggest that the Park would need to reduce visitor use during July and August by nearly 25% to ensure that an average of no more than 5% of groups share campsites per night (a standard for campsite sharing that the Park is considering). The computer simulation model results suggest that, by requiring visitors to follow prescribed, fixed camping itineraries, the Park could issue approximately 30% more permits than they did during the 2001 visitor use season, while at the same time virtually eliminate campsite sharing. The park's recently adopted General Management Plan allows for construction of up to 13 additional campsites in specific campgrounds. If the Park were to adopt this "Campsite Construction" alternative, the simulation results suggest that, without instituting any limits on use, the park could reduce campsite sharing by about 2%, resulting in an average of just under 7% of groups sharing campsites per night.

Results of the simulated "Temporal Redistribution" alternative indicate that if the Park shifted 22% of the July and August visitor use to the low use period of the season, total visitor use for the season could be held constant while ensuring that no more than 5% of groups would share sites during July and August. However, campsite sharing would increase from an average of approximately 0.4% of groups per night during the low use period of the season, to just over 1% of groups per night.

Simulations conducted to estimate the effect of redistributing visitor use evenly across the two primary starting locations for backcountry camping trips (i.e., Windigo and Rock Harbor) or evenly across the days of the week suggest that neither strategy would reduce campsite sharing. Therefore, the results of these simulations are not included in Table 2.

Park staff's use of the simulation model is ongoing. For example, park staff have used the model to estimate the effect of shifting some use to secondary entry points, differentially altering the visitation levels of hikers, paddlers, and powerboaters, and setting alternative standards for campsite sharing at different times of the season.

In addition, park staff have used the model to estimate where and how many new campsites would need to be added to the Park to eliminate campsite sharing during peak season demand. Using simulation results as a guide, park staff conducted site visits to determine the feasibility and desirability of estimated changes needed to meet peak camping demand, based on considerations of physical constraints of wetlands, fragile habitats and topography as well as appropriate size of campgrounds in different areas of the park. In Isle Royale's case, information from the site visits and the simulation model suggest that feasible campground expansions would not completely accommodate peak demand for sites, but could mitigate campsite sharing to some extent.

Discussion and Management Implications

The findings from this study have implications for management of backcountry camping use at Isle Royale National Park in particular, and for management of visitor use in parks and wilderness in general. Isle Royale National Park managers have made a commitment to adopt campsite sharing-related indicators and standards of quality and to develop and implement strategies to improve social conditions in campgrounds while also protecting park resources. To do this in an informed manner, park managers not only need to identify feasible management options, they must also understand the effects of alternative options on a diverse array of wilderness values (Cole, 2002). This study assists park managers in defining and assessing management alternatives not only in terms of how effective they are at reducing or eliminating campsite sharing, but also in terms of their consequences with respect to visitor freedoms, public access, and resource impacts associated with facility development. Consequently, the simulation modeling results aid managers in better informing the public of the costs and benefits of different management options, resulting in more effective public involvement in the planning process.

Results from this study are consistent with findings from previous research at Isle Royale National Park, suggesting that campsite sharing is prevalent during certain periods of the visitor use season. Although it would be possible to reduce campsite sharing through backcountry camping use limits alone, results from the travel simulation model suggest that the park would have to issue

Table 3. —Preference proportions for management alternatives

Status Quo	Permit Quota	Fixed Itineraries	Campsite Construction
Current use (39 permits/day)	22% reduction in use (31 permits/day)	30% increase in use (52 permits/day)	Current use (39 permits/day)
No new campsites	No new campsites	No new campsites	70 new campsites
No fixed itineraries	No fixed itineraries	Fixed itineraries	No fixed itineraries
9% of groups share campsites/night	5% of groups share campsites/night	<1% of groups share campsites/night ¹	<1% of groups share campsites/night
36%	39%	6%	19%

¹Assumes permits are issued to achieve 80% occupancy rate to adjust for non-compliance

approximately 22% fewer permits during July and August to ensure that an average of no more than 5% of groups share campsites per night.

The outdoor recreation literature generally suggests that use limits should be considered a last resort for managing crowding, and that less intrusive alternatives should be considered first (Behan, 1974, 1976; Dustin & McAvoy, 1980; Hall, 2001; Hendee & Lucas, 1973, 1974). The computer simulation model developed in this study helps managers identify effective management actions with relatively low “costs” to visitors and avoid those that are less effective or that come at a relatively high “costs” to visitors. In Isle Royale’s case, modeling suggests that the extent of use limits necessary to achieve certain standards for campsite sharing could be minimized by also redistributing use and/or modifying campground capacities.

Although this study provides managers with descriptive information related to backcountry camping at Isle Royale National Park, managers are still faced with difficult judgments concerning the most appropriate strategies for managing backcountry camping. These judgments require managers to reconcile tradeoffs among potentially competing wilderness values. For example, do the costs in visitor freedoms and spontaneity associated with a fixed itinerary system outweigh the benefits of increasing use and eliminating or substantially reducing campsite sharing? Is it in the public’s interest to limit backcountry camping use during the peak period of the season in order to minimize campsite sharing? If so, to what extent should use be limited to achieve a greater degree of camping solitude? Is it acceptable to shift a percentage of peak season use to the low use period of the season, or does the historically low use period of the season offer a type of wilderness experience that should be preserved? While these judgments must ultimately be made by managers, a growing body of

recreation research has been conducted to provide managers with a more informed basis for making such judgments (Lawson & Manning, 2001a, 2001b, 2002a, 2002b; Manning & Lawson, 2002).

The simulation results from this study formed the basis of a visitor survey conducted at Isle Royale National Park during the 2002 visitor use season. The visitor survey was designed to assess public attitudes toward management alternatives derived from the simulation model. Results of the visitor survey provide managers with estimates of the proportion of current visitors that support alternative strategies for managing backcountry camping (Table 3). In this way, the simulation model provides managers with information about the consequences and benefits of alternative management strategies, and the visitor survey assists managers in evaluating public acceptance of the consequences and benefits associated with those management alternatives.

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INDICATORS AND STANDARDS OF QUALITY AT AN URBAN-PROXIMATE PARK: LITTER AND GRAFFITI AT BOSTON HARBOR ISLANDS NATIONAL RECREATION AREA

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Abstract: This study examines visitor norms for litter and graffiti at Boston Harbor Islands National Recreation Area, an urban-proximate park. Keep America Beautiful (KAB), a non-profit organization, has developed two visual methods to monitor litter - the Litter Index approach and Photometric Index/ Grid approach. Both methods utilize a series of photographs illustrating a range of litter accumulation. This study uses both approaches to measure visitor norms for litter accumulation in the park. The grid approach is further adapted to measure normative standards of quality for graffiti in the park. Data from a visitor survey administered in summer 2002 provide information on normative standards for litter and graffiti. Contributions of the study are twofold. First, results provide managers with methods to measure and monitor litter and graffiti to help ensure that standards of quality for resource conditions and the quality of the visitor experience are not violated. Second, findings serve to extend carrying capacity research beyond resource-based backcountry parks and related areas to urban-proximate parks.

Introduction

Urban-proximate recreation settings provide interesting opportunities for recreation research. They are generally characterized by continuous year round use, have greater ethnic and cultural diversity as compared to backcountry recreation

settings, and in many cases are the only source of a restorative environment for an urban dweller. Such settings typically face intense pressures from a growing urban population that may cause severe resource as well as social impacts. Like their counterparts in backcountry parks, managers at urban-proximate parks are often faced with the fundamental question of what level of visitor use can be accommodated in a park or recreation area so that natural and cultural resources and the quality of the visitor experience do not deteriorate to unacceptable levels. Within the outdoor recreation field, this issue is referred to as carrying capacity and is often addressed through indicator-based planning/ management frameworks. Such frameworks include a set of elements that describe desired future conditions for resources and visitor experiences, identify indicators of quality resources and visitor experiences, and establish standards that define minimum acceptable conditions for indicator variables (Manning, 1999).

This study identifies indicators of quality at an urban-proximate park and provides standards that park managers may use to make informed decisions about park carrying capacity. Specifically, this study identifies litter and graffiti as important indicators of quality and examines visitor evaluations of a range of litter and graffiti at Georges Island, Boston Harbor Islands National Recreation Area.

Carrying Capacity

Carrying capacity is a multi-dimensional construct that takes into consideration resource, experiential, management and physical capacity parameters. Contemporary carrying capacity frameworks require managers to specify standards for the conditions they aim to provide. One way to achieve this is to define associated indicators and formulate standards of quality. Indicators are measurable, manageable variables that define the level of resource protection and type of visitor experience to be provided and maintained. Standards of quality are minimum acceptable conditions of indicator variables. Managers may develop standards based on legal mandates, agency policy, historical precedent, or public opinion (Shelby and Vaske, 1991).

Recreation research has increasingly relied on norms to provide evaluative information needed by

managers to set standards of quality that reflect public opinion (Manning, 1999). Norms in the field of outdoor recreation have been defined as standards individuals and groups use for evaluating behavior and social and environmental conditions (Donnelly, Vaske, & Shelby, 1992; Shelby and Vaske, 1991; Vaske, et al., 1986). The normative approach involves measurement of personal evaluative standards for recreation conditions which are then aggregated to determine social norms (Manning, Valliere, Wang & Jacobi, 1999).

The normative approach to indicator-based carrying capacity research has been successfully applied in a number of backcountry recreation settings (Graefe, Vaske, & Kuss, 1984; Vaske et al., 1986). More recently, this work has been extended to frontcountry and developed recreation settings (Manning, Lime & Freimund, & Pitt, 1996; Manning, Wang, Valliere, Lawson & Newman, 2002). However, these studies have examined impacts to the visitor experience using "traditional" crowding- and encounter-related indicators such as number of people at one time, and number of hikers per hour. Manning et al., (2002) suggest that visitors at developed and heavily used recreation sites are often concerned with crowding and other recreation related impacts, but that these impacts may be manifested in other ways. Potential indicators of quality may therefore vary from those used in traditional carrying capacity research.

Litter and Graffiti

Depreciative behaviors in recreational settings are a major cause of concern for both park managers and visitors. Concern has grown due to the increasing prevalence of such behavior, the effect of such behavior on resources and visitor experience, and its subsequent effect on visitation. Studies indicate that depreciative and vandalistic behaviors are common in (though not confined to) urban or developed recreation settings. Heywood, Mullins & Blower (1983) note that "results of recreation research on vandalism indicate the magnitude of the problem and provide evidence for its differential distribution and concentration in urban areas" (p. 25). Similarly, a survey by Christensen (1984) of recreation resource managers reports that managers consider vandalism of park resources and facilities to be prevalent in developed recreation settings. Another concern regarding vandalism has been the

detrimental impacts of these behaviors on park resources as well as visitor experiences (Ibitayo and Virden, 1996). Such impacts include financial losses due to efforts to control and monitor depreciative behaviors, and damage to resources or natural elements in the park. Other impacts of depreciative behavior include psychological effects that impair visitor experiences (Heywood, et al., 1983; Samdahl & Christensen, 1985). Heywood, et al. (1983) note that studies in U.S. Forest Service campgrounds indicate depreciative behaviors have a potential to cause sadness, depression and cynicism, and may even factor into the decline of physical and mental health in the elderly.

An impaired visitor experience has the potential to lead to reduced visitation and eventually displacement of visitors. A study by Anderson and Brown (1984) indicates the presence of litter was a factor in recreation displacement in the Boundary Waters Canoe Area Wilderness. While adverse effects of litter and graffiti on the quality of visitor experiences have been documented, little is currently known about the point at which their presence begins to be negatively evaluated by visitors. One useful way to understand this is to examine visitor norms toward litter and graffiti.

Methods

This study describes a program of research that identifies indicators of quality of the visitor experience at Boston Harbor Islands National Recreation Area and estimates associated standards of quality. Boston Harbor Islands National Recreation Area includes 31 islands situated near the shoreline of greater Boston. The islands are rich in natural and cultural resources. This study was conducted on Georges Island, the most visited island in the park. Georges Island receives up to 2000 visitors daily during peak times in summer. Fort Warren, dating from the Civil War era, is situated on this island.

Indicators and Standards of Quality

This research program was carried out in two phases. Phase I was conducted in summer 2000 with the primary objective of identifying potential indicators of quality of the visitor experience. Visitors returning on ferries from the islands were randomly selected, and given a self-administered questionnaire to complete. A researcher collected

completed questionnaires at the end of the trip. This sampling plan resulted in a total of 695 completed questionnaires. Visitors were asked to report the most and least enjoyable aspects of their experience. Several indicators of visitor experience emerged. Two indicator variables – litter and graffiti – were selected to be the focus of the current study.

Phase II of the research program was carried out with the purpose of determining standards of quality for litter and graffiti. The study surveyed a representative sample of adult visitors to Georges Island during the period August 10th through August 18th 2002. A researcher and assistant approached visitors as they completed their visit. Questionnaires were self-administered and took approximately 10 minutes to complete. A total of 223 questionnaires were completed for a response rate of 77%.

Questions focused on visitor related norms for litter and graffiti. A visual approach toward norm measurement in high use situations has been suggested as being “more realistic and valid than conventional narrative and numeric approaches” (Manning et al., 2002, p. 400). This study therefore employed series of photographs depicting increasing litter and graffiti. Questions addressed visitors’ acceptability, preference, and tolerance for litter and graffiti depicted in the photographs. Visitors were also asked to evaluate amounts of litter and graffiti the National Park Service should allow before restricting visitor use, and to report on conditions typically seen during their visit.

Standards of Quality for Litter

Standards of quality for litter were formulated by using two methods. Both involved combining visual litter evaluation methods designed by Keep America Beautiful, a non-profit organization, and Jackson’s (1965) return potential model of norm measurement described by Manning (1999).

The first method utilized the Keep America Beautiful (KAB) Litter Index approach toward litter evaluation. This approach involves a standardized series of four pairs of photographs depicting increasing amounts of litter. Each pair represents a four point scoring system used to estimate the presence of litter (similar to the “condition class” approach used when measuring,

monitoring and managing trail and campsite impacts (Hammit and Cole, 1998)). In this study, the pairs of photographs were separated to represent two versions of KAB Litter Index photographs. Each version had four photographs – one from each pair. Respondents were presented with either version I, or version II of the KAB Litter Index photographs.

Respondents were asked to rate the acceptability of each photograph on a scale of -4 (“very unacceptable”) to +4 (“very acceptable”). Findings from this series of questions are referred to as “acceptability-long form.” Next, respondents were asked to indicate the photograph that depicts the 1) amount of litter preferred (referred to as “preference”), 2) highest amount of litter that is acceptable (referred to as “acceptability-short form”), 3) amount of litter that is so unacceptable that respondents would no longer visit Georges Island (referred to as “tolerance/ displacement”), 4) highest amount of litter that should be allowed before visitor use is restricted (referred to as “management action”), and 5) amount of litter typically seen (referred to as “typically seen”). Where appropriate, visitors were allowed to indicate that they would continue to visit Georges Island regardless of litter, or that none of the photographs show a high enough amount of litter to restrict people from visiting Georges Island.

A second method utilized the Photometric Index (P.I.) approach toward litter evaluation. In this approach, a standardized (16ft x 6ft) horizontal grid of 96 cells created according to KAB specifications (KAB, p. 164) is overlaid on a park scene. Litter accumulation is measured according to the number of cells occupied by litter. Each of the 96 cells counts equally toward a P.I. rating of 0 to 96. If the same piece of litter covers multiple cells, each cell counts toward the scale. In this study, the grid created was overlaid on a series of four park scenes depicting litter accumulation. The four photographs used represented litter P.I. ratings of 0, 4, 8 and 12. Litter P.I. ratings were selected to represent a range of realistic levels of litter in the park.

Respondents were asked to rate litter P.I. photographs on a scale of -4 (“very unacceptable”) to +4 (“very acceptable”). Respondents were also asked to indicate the photographs that represented

the amount of litter they 1) preferred, 2) found acceptable, 3) would tolerate, 4) felt the National Park Service should allow, and 5) typically saw during their visit.

Standards of Quality for Graffiti

Standards of quality for graffiti were measured by adapting the P.I. approach of litter evaluation to graffiti and asking visitors to rate the acceptability of each photograph. A vertical grid of 16ft x 6 ft was overlaid on a series of four park photographs depicting graffiti accumulation with a P.I. rating of 0, 26, 62, and 94 respectively. As with litter, graffiti P.I. ratings were selected to represent a range of realistic levels of graffiti in the park. Visitors were asked to rate each of the photographs on a scale of -4 ("very unacceptable") to +4 ("very acceptable"). Visitors were also asked to indicate the photograph that represented the amount of graffiti they 1) preferred, 2) found acceptable, 3) would tolerate, 4) felt the National Park Service should allow, and 5) typically saw during their visit.

Study Findings

Standards of Quality for Litter

Findings from visitor evaluations of three series of photographs – two versions of the KAB Litter Index and the litter P.I. – depicting increasing amounts of litter are presented in this section. Figure 1 represents the norm curves associated with mean acceptability ratings for each photograph in the three series of litter evaluation photographs. Findings generally indicate a "no-tolerance" norm for litter, meaning that even small amounts of litter are evaluated as unacceptable.

Aggregate evaluations of KAB Litter Index version I photographs fall out of the acceptable range and into the unacceptable range at approximately photograph 1.97. Similarly, aggregate evaluations of KAB Litter Index version II photographs fall out of the acceptable range and into the unacceptable range at approximately photograph 1.85, and aggregate evaluations of Litter P.I. photographs fall out of the acceptable range and into the unacceptable range at photograph 1.9 or P.I. of 3.6.

Table 1 reports summary findings for the evaluative dimensions of "preference", "acceptability" "tolerance/ displacement", and "management action" for litter, using the three series of litter

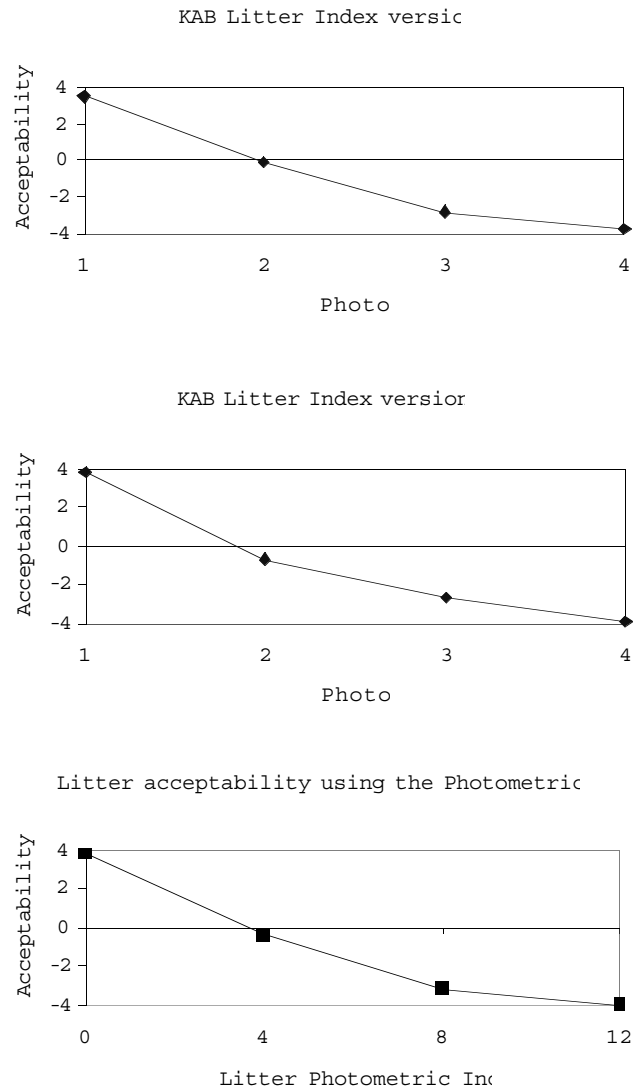


Figure 1. Norm curves for litter as measured using KAB litter Index version I, II and litter Photometric Index

evaluation photographs. Visitor reports of the amount of litter typically seen during their visit are also reported in the table. Standards derived using versions I and II of the KAB Litter Index refer to a photograph number. Standards derived using litter P.I. refer to a photograph number and a corresponding litter P.I.

Half the visitor sample (49%) evaluated KAB Litter Index Version I photographs. Respondents reported that they 1) prefer amounts of litter represented by an average (mean) photograph number 1.10, 2) find amount of litter represented by an average (mean) photograph number of 1.56

Table 1. — Visitor norms for litter

Summary table: KAB Litter Index version I, version II and Photometric Index				
Litter evaluation approach	Photo #	S.D.	P.I. Rating	S.D.
Version I (N = 110)				
Preference	1.10	0.4	-	
Acceptability (long form)	1.97			
Acceptability (short form)	1.56	0.6	-	
Management Action	2.13	0.9	-	
Tolerance/ Displacement	3.57	0.6	-	
Typically Seen	1.54	0.6	-	
Version II (N = 113)				
Preference	1.07	0.4	-	
Acceptability (long form)	1.85			
Acceptability (short form)	1.47	0.6	-	
Management Action	2.26	0.6	-	
Tolerance/ Displacement	3.70	1.0	-	
Typically Seen	1.83	0.6	-	
Photometric Index (N = 223)				
Preference	1.04	0.2	0.2	0.8
Acceptability (long form)	1.9		3.6	
Acceptability (short form)	1.55	0.6	2.2	2.4
Management Action	1.97	0.9	3.9	3.5
Tolerance/ Displacement	3.32	0.7	9.3	2.6
Typically Seen	1.59	0.6	2.4	2.2

as the maximum acceptable, 3) think the National Park Service should allow a maximum amount of litter represented by an average (mean) photograph number of 2.13, and 4) would tolerate a maximum amount of litter represented by an average (mean) photograph number of 3.57. Respondents also reported that amount of litter typically seen was represented by an average (mean) photograph number of 1.54.

The other 51% of the visitor sample evaluated KAB Litter Index Version II photographs. Respondents reported that they 1) prefer amounts of litter represented by an average (mean) photograph number 1.07, 2) find amount of litter represented by an average (mean) photograph number of 1.47 as the maximum acceptable, 3) think the National Park Service should allow a maximum amount of litter represented by an average (mean) photograph number of 2.26, and 4) would tolerate a maximum amount of litter represented by an average (mean) photograph number of 3.70. Respondents also reported that amount of litter typically seen was represented by an average (mean) photograph number of 1.83.

All respondents evaluated litter P.I. photographs. Respondents reported that they 1) prefer amounts of litter represented by an average (mean) photograph number 1.04 (P.I. of 0.2), 2) find amount of litter represented by an average (mean) photograph number of 1.55 (P.I. of 2.2) as the maximum acceptable, 3) think the National Park Service should allow a maximum amount of litter represented by an average (mean) photograph number of 1.97 (P.I. = 3.9), and 4) would tolerate a maximum amount of litter represented by an average (mean) photograph number of 3.32 (P.I. of 9.3). Respondents also reported that amount of litter typically seen was represented by an average (mean) photograph number of 1.59 (P.I. of 2.4).

Standards of Quality for Graffiti

Study findings from visitor evaluations of the four photographs depicting increasing amounts of graffiti are presented in Figure 2 and Table 2. Figure 2 represents the norm curve associated with mean acceptability ratings for each photograph in the graffiti P.I. series. Findings generally indicate a “no-tolerance” norm for graffiti, meaning that even small amounts of graffiti are evaluated as unacceptable. Aggregate evaluations of the graffiti P.I. fall out of the acceptable range and into the unacceptable range at approximately photograph 1.69 (P.I. of 18.3). This value is referred to as “acceptability (long form).”

Table 2 reports summary findings for evaluative dimensions of “preference”, “acceptability” “tolerance/ displacement”, and “management action” for graffiti on Georges Island. Visitor reports of the amount of graffiti typically seen during their visit are also reported. Respondents reported that they 1) prefer amounts of graffiti



Figure 2. Norm curve for acceptability ratings of graffiti

Table 2. — Visitor norms for graffiti

Summary table: Graffiti Photometric Index				
	Photo # (mean)	S.D.	P.I. Rating	S.D.
Preference	1.02	0.2	0.8	7.1
Acceptability (long form)	1.69		18.3	
Acceptability (short form)	1.27	0.6	7.4	18.0
Management Action	1.42	0.7	12.1	22.3
Tolerance	3.12	0.8	64.8	25.3
Typically Seen	1.39	0.6	10.8	18.3

represented by an average (mean) photograph number 1.02 (P.I. of 0.8), 2) find amount of graffiti represented by an average (mean) photograph number of 1.27 (P.I. of 7.4) as the maximum acceptable, 3) think the National Park Service should allow a maximum amount of graffiti represented by an average (mean) photograph number of 1.42 (P.I. = 12.1), and 4) would tolerate a maximum amount of graffiti represented by an average (mean) photograph number of 3.12 (P.I. of 64.8). Respondents also reported that amount of graffiti typically seen was represented by an average (mean) photograph number of 1.39 (P.I. of 10.8).

Discussion

The program of research described in this paper has several theoretical and managerial implications. As indicator-based carrying capacity theory develops and expands, it is important that programs of research be based in a variety of settings. Resource managers have largely accepted indicator based planning frameworks to manage crowding and other visitor-use related impacts. This approach utilizes indicators and standards of quality of the visitor experience. Indicators such as number of people at one time, and resource impacts to trails and campsites have traditionally been used. Manning, et al. (2002) suggest that indicators of quality of visitor experiences at heavily used sites may vary from those conventionally used in the backcountry. The expansion of the carrying capacity concept from backcountry to urban-proximate, frontcountry and built recreation environments is a step toward identifying appropriate indicators of visitor experience at such settings. Indicators developed in this study help illustrate this point. Findings suggest that litter and graffiti are appropriate indicators of quality of the visitor experience at

Boston Harbor Island National Recreation Area.

An underlying principle of contemporary carrying capacity frameworks is that decision-making be guided by management objectives and associated indicators and standards of quality. It is therefore apparent that there is no “magic number” that defines the carrying capacity of a given park. Instead, there is a range of standards to select from based on management objectives for the park. Again, data from the study help illustrate this. Visitors were shown a series of photos and asked to select a photo that represented a condition closest to what they preferred, found acceptable, would tolerate, and thought the National Park Service should manage for. Results of these multiple evaluative dimensions provide a range of normative standards which management may select from. Naturally, stricter standards result in high quality experiences, but may involve increased management investment, and restriction on visitor use.

Data from this study provide managers with a visitor perspective for managing depreciative behaviors. Often, managers perceive littering, damage to man-made facilities, and damage to the natural environment to a greater extent than do visitors (Heywood, et al., 1983; Ibitayo and Virden, 1996). Formulating standards of quality based on visitor norms enables managers make more informed decisions that reflect visitor views.

This study used KAB litter evaluation approaches to develop standards of quality for the visitor experience. The KAB Litter Index approach was split into two versions – I and II – for this study. Comparisons (T-tests) were performed to test for differences between corresponding evaluative dimensions for versions I and II. No significant differences emerged, suggesting either version I or II may be used for litter monitoring purposes depending on the context of the setting. The choice between the KAB Litter Index and P.I. approaches will depend on the purpose for which the series of photographs is being used. The KAB Litter Index approach utilizes a standardized series of photographs that are compared to actual settings. Results from such comparisons, though helpful for monitoring purposes, become less useful when formulating standards. As seen from results in Table 1, standards derived from the KAB Litter Index refer to a photograph number, but do

not represent a quantitative measure of litter. On the other hand, standards derived from litter P.I. represent quantitative measures of litter. The P.I. approach therefore may be more useful when setting standards of quality. Creating a grid and overlaying it on park scenes (as required in the P.I. approach) is a more involved process and therefore this approach may become more tedious for monitoring purposes as compared to the KAB Litter Index approach. A monitoring program based on indicators and standards of quality should ideally utilize the same measurement methods adopted when formulating standards. This study therefore suggests the litter P.I. approach as useful for both setting standards of quality and monitoring to ensure those standards are not violated.

Results from the study enable managers to make appropriate management action decisions regarding reducing impacts related to either litter or graffiti. For example, results show that irrespective of litter evaluation method (KAB Litter Index or Litter P.I.) used, visitors prefer seeing less litter than was typically seen during their visit to Georges Island (Table 1). If preference-related standards are selected for management purposes, then these standards are now being violated and the issue of litter on Georges Island deserves management attention. If, however, management selects acceptability-related standards, then the status quo could be maintained requiring no change in the way litter is currently being managed at the park.

Results from Table 2 indicate the level of graffiti on Georges Island is currently above that which visitors prefer or find acceptable, and is approaching a maximum level that visitors think management should allow. Data from the study suggest that graffiti is an important indicator of quality of the visitor experience at Georges Island. If amount of graffiti on the island increases beyond that which visitors tolerate, it might have the potential to negatively affect their experience and eventually lead to visitor displacement. Results therefore suggest that managers pay close attention to amount of graffiti on the island and take management action accordingly.

Other practical implications of this study include reduced expenditures for managing depreciative

behavior. While one hopes to completely eliminate depreciative behaviors, some amount of impact by visitors is inevitable. An approach that identifies visitor norms for litter and graffiti provides management with information that can be used for partial elimination of litter and graffiti in times of financial constraint.

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Communications and Information

**“WE’RE TRYING TO MAKE THIS PICTURE
COME ALIVE AGAIN”: AN EXAMINATION
OF HOW SITE HISTORY IS PRESENTED
TO SCHOOL GROUPS AT CHITTENANGO
LANDING CANAL BOAT MUSEUM,
CHITTENANGO, NEW YORK**

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Abstract: Chittenango Landing Canal Boat Museum is an historic site comprising the remains of a former canal boat building and repair complex, located within Old Erie Canal State Park, east of Syracuse, New York. The purpose of this study was to examine how site history is interpreted in on-site elementary and middle school programs, and specifically to develop an understanding of what was meant by staff comments to school groups about bringing the site “back to life”. Research included participant observation of school programs for grades four through seven, as well as a semi-structured interview was conducted with the educational program coordinator. Field notes and the interview transcript were coded, and microanalysis and comparison techniques were employed to identify emerging themes. Results indicate that site history is primarily depicted as comprising a single past condition, depicted in a photograph from the late 1870s. The site as interpreted to school groups is frozen in time, or “fossilized history” that is based upon a myth of the site’s abandonment, burial, and subsequent rediscovery and rebirth. New exhibits and signs, in conjunction with interpretive opportunities provided by the museum’s new Visitor Education Center, would enable the museum’s school programs to include references to social and economic changes in the surrounding

region, while also providing a sense of chronological narrative at Chittenango Landing. In this manner, the site’s spatial continuity with the surrounding landscape and temporal continuity with its 20th century history could be enhanced.

Introduction

Chittenango Landing Canal Boat Museum is an historic site within Old Erie Canal State Park, approximately fifteen miles east of Syracuse, New York. The site comprises the remains of a nineteenth century industrial center, including a boat building and repair complex, along the Old Erie Canal. The Erie Canal, which bounds the museum property to the north, was in operation from its completion in 1825 until it was replaced by the New York State Barge Canal in 1917. In 1985, Chittenango Landing was acquired by Chittenango Landing Canal Boat Museum, Inc., a non-profit organization formed by area residents hoping to excavate the canal boat repair complex, reconstruct as much of it as possible, and interpret it to the public. Since that time, several structures have been reconstructed on the property, including a canal dry docks, a store (which has served as a museum and gift shop), and a sawmill/blacksmith shop. The locations of other former buildings (residences, a barn, and other outbuildings) have been marked with signs. Several building foundations are exposed on the site, as well as the partial remains of a canal barge, preserved underwater in an excavated trough beside the Old Erie Canal. Chittenango Landing also contains a recently-constructed Visitor Education Center, dedicated in July, 2003. The building occupies the footprint of the main building in a former cannery complex; a few walls of one of another cannery building still stand, adjacent to the Visitor Center.

In addition to being open to the general public during three seasons of the year, Chittenango Landing also offers school programs during the fall and spring. In the fall, separate programs are offered primarily to 5th/6th graders and 7th graders, while educational programs are geared almost entirely to 4th graders during the spring. These programs include: a variety of hands-on activities about life along the Old Erie Canal; partial tours of the site (emphasizing the dry docks and sawmill/blacksmith shop); an archaeology simulation, in which the children unearth artifacts

and process them; a slide show telling the story of the excavation and reconstruction of Chittenango Landing; lessons on interpreting primary sources; and a first-person interpretation program about life during the canal era. These programs are run by staff educators (including the education coordinator) assisted by volunteers.

The purpose of this study was to explore how these school programs interpret the site's cultural landscape history to elementary and middle school students. As this investigation progressed, another purpose emerged: to develop an understanding of what was meant by the notion of bringing the site "back to life", as expressed several times to various school groups by staff members at the site. Specifically, what makes a site "living" in the first place? Using concepts derived from Michael Hough's *Out of Place* (1990), the researcher was able to contrast current site interpretive practices with conditions at Chittenango Landing during the early to mid twentieth century, after the canal had been relocated and the boat repair center had ceased operations. Hough's markedly different concept of a living landscape, more in keeping with the site as it existed prior to being set aside as a museum, provides a context for several recommendations concerning the improvement of present-day site interpretation.

Research and Analysis Methods

Over a period of five weeks in September-October 2002, the researcher conducted six participant observations of school group interpretive programs at Chittenango Landing, spending a total of eighteen hours on-site. During that time, he observed four 5th/6th grade programs, and one each of the 4th and 7th grade programs. Over this time period, four different educators were observed presenting the material, and most lessons were observed being presented by more than one educator. In this manner, it was often possible to account for variability between educators, enabling the researcher to distinguish common themes from different presentation styles. Three volunteers were also observed assisting with the hands-on activities. Copies of scripts for two of the lessons were obtained, for comparison to the actual presentations. Observations were recorded in a field notebook, and converted into more extensive typed field notes following each session. For the purpose of confidentiality, the museum educators'

names were replaced with "Educator One" through "Educator Four" in the field notes.

Additional research supplemented the participant observation study. Two brief informational videos (sent to schoolteachers prior to class visits) were reviewed. Copies of materials handed out to students in the various programs were obtained for examination as well. On 11 November 2002, the researcher also conducted a semi-structured interview with Educator One, who also serves as education coordinator at the museum. This interview addressed explored how the educational programs developed, program educational goals, and future plans for programming at the site. The interview was tape-recorded and transcribed verbatim.

As a supplement to this investigation, historical research was also conducted, emphasizing the twentieth century (post-canal era) history of the site. The purpose of this research was to obtain a more complete picture of site history, in order to ascertain what facets of site history were being presented to the children, and what items were being left out. Materials obtained from the museum archives included old photographs and postcards, the Cultural Resource Survey for the Visitor Education Center, canal boat museum newsletter articles about site history, and oral history tapes of two elders from the Chittenango Landing area. Additional notes, articles, and postcards pertaining to the Merrill-Soule cannery, which operated on the site for over 60 years, were obtained from the Town of Sullivan historical collections.

All field notes, notes on both videos, and the transcript of the interview with the museum education coordinator were coded. By means of microanalysis and constant comparison (Strauss and Corbin, 1998), major themes emerged based upon material in the various coding categories employed.

Emerging Themes

Only One Past

One theme that emerged consistently from the presentations and activities observed was the concept that there was only one past condition at Chittenango Landing, namely, the canal era. Rather than presenting site history as a

chronological sequence of events, educators emphasized a static past at the site, a time when the Erie Canal was in operation and Chittenango Landing was an active boat building and repair facility. This presentation of the site's past as a "snapshot" is evidenced by an historic photograph of the site (circa post-1874) which, together with Sanborn fire insurance maps for Chittenango Landing, has been used as a template for site reconstruction. As Educator One explained to a group of home-schooled students visiting the site, "We're trying to make this picture come alive again" (Field Notes, 2002, p. 3). In this manner, the site's history is restricted to its condition during the canal era, its abandonment and burial after the canal ceased operations, and the site's rediscovery, exhumation, and reconstruction over the past fifteen years.

The 5th/6th grade programs included a slide show, in which an educator told children a story of how the site was excavated and reconstructed. The show began with a black and white photograph of the canal, with a dense stand of saplings and underbrush visible where Chittenango Landing is located today. The educator narrating the presentation then explained to the students how there was "nothing but trees, vines, and mosquitoes" when the site was "discovered" fifteen years ago. The educator would describe this forest as "jungle" and "like a rainforest", in a manner evocative of the setting for an Indiana Jones film. Educator One used hyperbole to emphasize the severity of the mosquito problem, noting that one could be carried off by the mosquitoes if he or she remained there for more than two minutes, and that there were a million mosquitoes at the site at the time of its rediscovery.

At the end of the slide show, the educator would invite the children to compare the reconstructed dry-docks (meticulously laid stone wall, new gates, well-groomed lawn) with the wooded thicket in the first photograph. What was implied, in the task of comparing the two photographs, is that reconstruction had transformed the site for the better. When the site was rediscovered, it was an abandoned and uninviting place. In Educator Four's telling of the story, the canoeist who first discovered the site couldn't walk far from the canal because there were "a lot of trees, a lot of underbrush, a lot of nature growing up there"

(Field Notes, 2002, p. 44). (i.e., civilized) again. As emphasized by both educators observed giving the slide show, reconstructing the site (particularly the dry docks) entailed rescuing the landscape from wild nature, and restoring it to the more orderly and inviting condition it supposedly would have had during the canal era.

Although the site had been abandoned after the canal shut down, Educator One explained to a group of 5th graders, "We decided to make it come alive again" (Field Notes, 2002, pp. 18-19).

The site's past, then, is not presented as a chronology of events, such as building constructions and modifications, or land use changes at the site. Indeed, dates pertaining to site history are rarely given during school programs. The past that is presented at the site is, instead, what it was like during the canal era, as shown primarily in one historic photograph from about 1875. One of the museum's treasures, this photograph features prominently in the 4th grade video, as well as in the slide presentations at the site. According to Educator One, the museum long held a goal of reconstructing all the buildings shown in the photograph, although that will probably never occur due to floodplain building restrictions. Reconstructing the site has been largely envisioned as bringing the current site in line with the photographed one. In fact, Educator One pointed out that a "Milk" sign hangs on the porch roof of the museum building today because a similar sign is visible on the equivalent building in the photograph (Field Notes, 2002).

Life at the site during the canal era is presented to visiting students through a variety of activities. A first-person interpreter, for example, tells each 4th and 5th/6th grade school group stories about her experiences as a canal boat captain in the late 19th century. A compare-and-contrast activity for 4th grade students involves matching tools used in the household today with items that performed similar functions in a household "in the 1800s". As Educator One indicated in the interview, this activity helps the students recognize that people in the past used different tools, yet needed to accomplish similar tasks. However, this activity also serves to convey an image of the past as static, rather than an evolving sequence of events.

Primary Sources – "The Real Thing"

Primary sources, defined as original materials from the past, include historic documents, photographs, and archaeological artifacts. Lessons on the identification and use of primary source materials are provided in both 5th/6th and 7th grade educational programming at the museum. These lessons are intended to complement New York State learning standards for 5th, 6th, and 7th graders. Educator One would often refer to the original copies of primary sources as “the real thing”, and she noted in the interview that she felt it important for students to experience these originals firsthand. Thus, while these primary source activities teach students how to identify primary sources and utilize them to learn about life in the past, they also enable the students to see “the real thing”. Original primary sources at Chittanooga Landing have a quality which reproductions do not: they were actually handled and used by people during the canal era, and can therefore serve as points of connection with that time.

In the 5th/6th grade primary source activity, for example, students had to match photocopies of original documents with either reproductions of artifacts, or actual artifacts (such as a rusted horseshoe or lump of coal) having little value. During the preliminary lesson, however, the educator also donned gloves, and held up original manuscripts for the children to see. At the end of the lesson, the educator explained to the children that the caulking mallet used in the activity was just a reproduction. Then, she removed the lid from an archival box, revealing the actual mallet which had been unearthed at the site, commenting that the mallet is one of a kind, and therefore invaluable. As Educator One explained in the interview, “I like to see the children’s eyes go ‘bingo’, when they see that caulking mallet that somebody used, a hundred and fifty years ago” (Education Coordinator Interview Transcription, 2002, p. 11).

The same caulking mallet the students view also appears in the slide presentation, where it is shown in a photograph, with an ungloved hand holding it, as if evoking the hand that once wielded it to repair a boat. The sound of the same mallet striking wood is also heard at the beginning of the 4th grade informational video, in which the viewer is invited to listen to sounds that might have been heard on the site in 1865. Children also view an

historic photograph – shown in the video as well – of someone using a caulking mallet. The fact that someone used it makes it “the real thing – it’s a primary source” (Field Notes, 2002, p.30, Educator One). Primary sources at Chittanooga Landing hold a certain power, a certain life of their own, because someone once used them. They are personal points of contact with the past, imbued with the life force of their original owners. As Educator Three remarked to students during an archaeology lesson, “Everything you find had a life – had somebody that used it and touched it” (Field Notes, 2002, p. 32).

What Students Are Not Told: Life at Chittanooga Landing in the 20th Century

Another theme that emerged during this study concerned an aspect of site history that is not presented to the students, namely, site history from the late canal era until the site’s excavation during the late 1980s. The slide show, together with interpretive material presented to school groups at the dry docks upon arrival at the site, imply that Chittanooga Landing fell into disuse following the closure of the Old Erie Canal in 1917. However, the area continued to be utilized, and inhabited, until 1972. The site had only been “abandoned” for about thirteen years when it was “rediscovered”. This history, presented below, has been drawn from material in the archives of the Canal Boat Museum, as well as the historical room of the Town of Sullivan. Historical materials available included oral history tapes of local residents, newspaper clippings, postcards, and a report on archaeological investigations on site. Historical research indicates a far more complex site history than what is currently being interpreted to school groups, a history which reflects manifold ways in which the site continued to play a role in the local economy following the close of the canal.

Soon after the canal ceased operation, the Chittanooga Landing site became part of a working farm. Horses, cows, pigs, and chickens were kept in a barn on the property during the first half of the twentieth century, while two canal era residences on the site remained occupied until 1972. During the twentieth century, many materials were also harvested from the site. The store/warehouse along the canal, for example, was cut in two. Half the building was scrapped, and the other half was hauled, with horses, tackle

blocks, planks, and rollers, to a spot behind the sawmill, where it was used as an icehouse. In addition to the relocation and modification of the store/warehouse building, dry-dock stones and canal boat planks were also taken away. The Beech Nut (a sunken canal boat whose remains are now preserved in the canal on-site) fell into disuse, and local residents removed wood from it. Then, in 1950, the State took stones from the dry-docks' walls, to use in construction of the New York State Thruway.

In 1997, the museum acquired an adjacent 0.7 acre parcel of land, which was the former site of the Merrell-Soule Canning Works. The cannery had been constructed on or about 1883, and had operated for more than six decades. The vegetable canning facility employed up to 250 people during its early years of production and figured prominently, both economically and socially, in the local area. A local newspaper article from 1936 (a copy of which is kept in the Canal Boat Museum archives), reporting on the razing of the main cannery building, commented that the factory was at one time the largest seasonal industry within the Town of Sullivan. While no historical postcards of the boatyard appear to have been made, three postcards in the Town of Sullivan historical collections show the cannery, and one postcard depicts posed cannery employees. Cannery statistics, postcards, and newspaper articles suggest that the Chittenango Landing area retained economic significance to the local community well into the 20th century.

Conclusions and Recommendations

J. B. Jackson's Model of Historic Interpretation Applied to Chittenango Landing Canal Boat Museum

Based upon the results of this investigation, the researcher proposes that, when museum staff referred to bringing the site "back to life again", they were speaking of restoring a particular past condition, the canal era, at Chittenango Landing. As students are told in the slide presentation, that past had been abandoned and buried, but had been exhumed and restored to life through archeology and reconstruction. J.B. Jackson, in "The Necessity for Ruins," describes a similar process from abandonment to a return to life as characteristic of how the past is interpreted at historic sites throughout the United States. This

approach "...sees history not as a continuity but as a dramatic discontinuity, a kind of cosmic drama. First there is the golden age, the time of harmonious beginnings." (Jackson, 1980, 101). In the case of Chittenango Landing Canal Boat Museum, this "golden age" corresponds with the time period when the Erie Canal was in operation. As Educator One explained in the interview, the site celebrates the Erie Canal and its role in the historical development of the United States. Chittenango Landing, in particular, "...tells about the common person: how the common person worked, how the common person lived. These were the people that made the United States, the common people. ...it was the common person that made the boats that took the immigrants westward, that brought the cargo from the west to the east" (Education Coordinator Interview Transcription, 2002, p. 9). As a re-created place from a golden era of democracy and industry, Chittenango Landing functions in a manner similar to Meinig's symbolic landscapes, which "...are part of the iconography of nationhood, part of the shared set of ideas and feelings which bind a people together" (Meinig, 1979, p. 164). This past is made present through buildings that have been reconstructed on site, together with originals of primary source materials obtained through historical research and excavation. As observed in this investigation, these primary sources play an important role as points of personal contact with the canal era, helping to bring the past alive in the imaginations of students. They are "the real thing", because they were used by those individuals that kept the canal boat repair facility records or used a mallet to caulk a boat. They are relics of a golden age at Chittenango Landing.

According to Jackson, this "golden era" is always followed by a period of abandonment, "... when the old days are forgotten and the golden age falls into neglect", and then a time "...when we rediscover and seek to restore the world around us to something like its former beauty." The abandonment stage, according to Jackson, is a crucial part of this sequence. "There has to be...an interim of death or rejection before there can be renewal and reform. The old order has to die before there can be a born-again landscape" (Jackson, 1980, 101-2). Site interpretive programs for school students, particularly the slide show, also imply that the site had simply been abandoned

when the canal shut down. When it was rediscovered fifteen years ago, the site had returned to an overgrown, jungle-like state, full of “trees, vines, and mosquitoes” (Field Notes, 2002, p. 19, Educator One). In the interim, as slides reveal, the dry docks had been used for rubbish disposal, and many of the stones had been taken away. The students are not told, however, about the people who continued to reside on the site, about the farm operation, or about the adjacent canning factory which operated into the early 1950s. The site was not actually abandoned until 1972, after it had been acquired by the State of New York, when the two canal era buildings still standing on the property were demolished.

Michael Hough's Concepts of Fossilized History and Vernacular Community Applied to Chittenango Landing

What can easily be lost in the process of restoring a golden age, however, is both spatial continuity between a site and its surrounding landscape and temporal continuity between a site and its immediate past. As Lowenthal observes (1979, p. 111), spatial discontinuity begins when the historic marker is first placed: “When we identify something as old and we mark the site, we dissociate it from its surroundings, diminishing its continuity with its milieu.” Loss of temporal continuity, meanwhile, appears to be an inevitable by-product of a golden age interpretation model; as Jackson observes, “death” of the past (i.e. abandonment) must happen before the past can be restored to life. Along the way, events that might indicate a recent past not in conformity with the death/rebirth myth become minimized or ignored altogether.

In Out of Place, Michael Hough (1990) proposes the term fossilized history to describe what can result when “...change and adaptation to new conditions are precluded from the process of preservation” (Hough, 1990, 162). Historic sites then become fossils -- unchanging places, lacking a chronology and therefore ahistorical. As an alternative model that integrates the past and the present, Hough offers the concept of a vernacular community. Vernacular communities are distinguished by “...a sense of continuity. Throughout history buildings, squares, old walls, and paving stones – the fabric of urban form – have continued to be adapted to the conditions of

the present. It is part of the process of living” (Hough, 1990, 157). The vernacular community model aptly describes conditions at Chittenango Landing in the 20th century, prior to establishment of the museum. According to this model, decisions to harvest dry-dock stones for a highway or canal boat planks for a construction project were not tragic events, but simply manifestations of vernacular bricolage. In this interpretation, a living landscape is not one that has been raised from the dead (excavated and rebuilt) but one that has remained vital to the local community. Old materials, when no longer perceived as necessary for their original purpose, are put to new uses, just as medieval vellum was used and re-used for new manuscripts. The vernacular landscape becomes a palimpsest, in which wood lots contain old furrow lines, a barn contains timbers from an earlier cabin. The past remains present in traces everywhere, integrated and alive.

A drawback of applying Hough's model to historic site management and interpretation practices, however, is that doing so precludes the intentional establishment of places for the recognition of cultural identity through the preservation of cultural memory. Repeatedly, the education coordinator remarked on the value of Chittenango Landing for school students. School group interpretive programs at the museum offer children something history textbooks cannot -- a sense of history as hands-on, as present and accessible, in the form of artifact, photograph, and landscape. Based upon the results of this study, it is evident that programs for school groups at the site tell of life during a single canal era rather than offering a chronology of site history. It is also apparent that these programs neglect to connect the site to the surrounding landscape (including Chittenango Village, less than a mile away). However, as the education coordinator noted, unlike many historic sites that celebrate the lives of famous, and typically wealthy, Americans (such as Presidents' homes), Chittenango Landing Canal Boat Museum emphasizes the roles of common people, of blue-collar workers in American history. The Erie Canal certainly played a major part in American westward expansion during the mid-1800s. Chittenango Landing, one might argue, acknowledges and preserves a significant facet of the American experience. In fact, the museum is

the only reconstructed canal boat building and repair facility currently extant in the United States.

How, then, might concerns about fossilized history be reconciled with the value of Chittenango Landing as a place for cultural memory and identity? Based upon the results of this study, the researcher proposes that it would be possible to depict the canal era at Chittenango Landing without entirely sacrificing elements affording spatial continuity with the surrounding landscape or temporal continuity with 20th century history. New exhibits and signs, in conjunction with interpretive opportunities provided by the museum's new Visitor Education Center, would enable the museum's school programs to include references to the surrounding landscape, while also providing a sense of chronological narrative at Chittenango Landing.

Spatial continuity might be enhanced through the addition of museum exhibits and on-site signs which might be incorporated into existing school programs. For example, the Chittenango Lateral Canal, which connected Chittenango Village with the Erie Canal, crosses the museum site. This canal is not marked by a sign, and no reference is made to its presence during school tours, despite the fact that it played an important role in the industrial and economic development of Chittenango. Museum exhibits could also be developed depicting a timeline for the village alongside a timeline for the landing, or perhaps portraying Chittenango area businesses that thrived due to the presence of the canal nearby. Interpreting other nearby industrial sites, particularly the Merrill-Soule Cannery and perhaps also the Chittenango Pottery an eighth of a mile away, would also offer students a more complete picture of industrial operations at Chittenango Landing. As the education director observed, for example, the cannery was a very important part of the region's economic development, fostered by the presence of the Erie Canal. Many farms in the Chittenango region no doubt geared their production to meet the cannery's needs.

Temporal continuity might be enhanced through including aspects of site history not contained within the Chittenango Landing photograph, such as the Merrill-Soule Canning Works. With the completion of a new Visitor Education Center,

evoking the former cannery by means of both general appearance and architectural detail, an excellent opportunity is provided for integrating cannery history with current site interpretation. School groups could be invited to examine features of the Visitor Center, and their questions could be a springboard for an introduction to cannery operations. While the canal era drew to a close with the opening of the New York State Barge Canal, other activities continued at Chittenango Landing. The cannery, for instance, operated for more than thirty years after the canal closed. The demise of the cannery (partly demolished for building material, the rest destroyed in a fire years later) might, in turn, lead to a consideration of the loss of the original buildings on the site, which could offer opportunities for considering the changing economic and social conditions in Upstate New York in the 20th century.

Addressing these other landscape narratives at Chittenango Landing would enable the students to perceive how the cultural landscape has been continually in flux, and could lead to an awareness of how the perception of change is central to an understanding of history. Gathering stones from the dry-dock to build the New York State Thruway would be part of that history, as would the story of how a farmer in the 1920's sawed the original store building in two, and hauled half of it away to be used as an icehouse. All the stories of Chittenango Landing, of the people who inhabited the land, or simply used it for one means or another, belong to the site's past. Bringing that past back to life would require as many of these stories as possible, rather than solely evoking the golden age of the canal era as shown on an historic photograph, and trying to make the photograph come alive again.

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Management Presentations

300 YEARS MAKES A DIFFERENCE: USING FOCUS GROUPS TO IMPROVE RECREATION MANAGEMENT EFFORTS

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Abstract: The purpose of this management presentation was to provide participants with a set of skills and knowledge background on how to best utilize focus groups to assist managers in improving their understanding of resource conditions, and management actions, as perceived by visitors. Methodologies describing research design, implementation, and qualitative data analysis were addressed.

Information was presented on the following components:

- 1) Purpose of focus groups
- 2) Conducting focus groups: advantages and limitations
- 3) Designing focus group questions
- 4) Recruiting participants
- 5) Principles of conducting focus groups
- 6) Facilitation of focus groups: skills and techniques used in the process
- 7) Effectively ending focus group sessions, debriefings, and follow-ups
- 8) Analyzing and reporting results from focus group sessions
- 9) Executive summary reports

The session ended with a facilitated focus group. Workshop participants were asked to volunteer in a focus group facilitated by the presenter. The session was intended as an opportunity to examine how focus groups are conducted, and how information provided by focus group members can be analyzed and incorporated into reports to assist managers in meeting their management goals.

Introduction

Focus groups comprised of visitors have tremendous potential to provide valuable information about facilities, parks, and wilderness areas to managers.

Focus groups are inexpensive and time-effective methods for understanding how visitors define experiences, and what they see as concerns or problems. Moreover, it gives insight into their opinions of managers. Research strongly indicates that the use of focus groups, in combination with surveys and interviews, is a useful tool in the effort to improve management of recreation areas. Focus groups operate under the following assumption: people have attitudes and perceptions about their environment that are often influenced by interactions with other people (Krueger, 1998). Although these attitudes and perceptions are both personal and strongly held, Albrecht (1993) suggests that a number of group members realize that their opinions are often reconstructed as a result of what they hear from others within the focus group. Data provided by focus groups can accurately predict visitor expectations of onsite conditions and management practices, which in turn, help resource/recreation managers develop successful strategies to maintain quality (Absher, McAvoy, Burdge & Gramann, 1988). Over the past several decades, focus groups have been utilized primarily for private-sector marketing purposes. More recently, they are being employed to address issues in natural resource management (Winter, Palucki & Burkhardt, 1999; Flood, 2001).

Purpose of focus groups: Is to generate open discussion about specific topics or questions that managers need to learn more about in order to better understand responses visitors may have to management actions, visitor perceptions of services provided, visitor opinions of managers, and have a better understanding of how visitors define quality experiences. Carefully selected focus group members can provide valuable evaluation input before, during, and after a program or service has been implemented.

Conducting focus groups - advantages and disadvantages: Focus groups provide valuable insights in a short period of time and are cost effective. When focus group members are carefully selected, powerful insights from individuals who are closest to the issues with vested interests are revealed. Once valuable information has been received, managers can facilitate responsive recreation planning while improving service delivery. One weakness of the focus group process is that samples are often too small which reduces

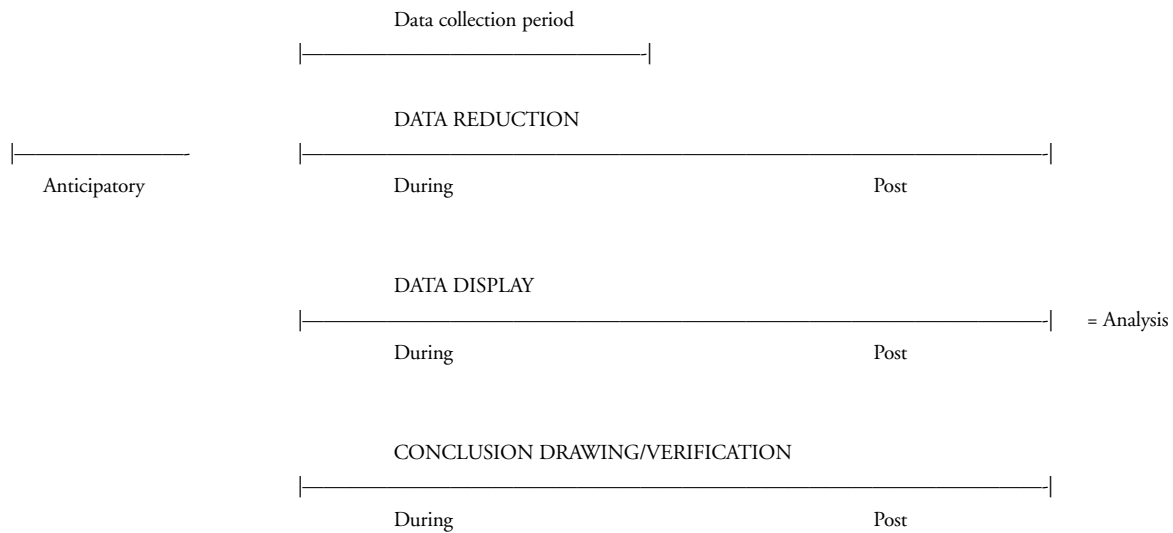


Figure 1. Components of Data Analysis: Flow Model (Miles & Huberman, 1994)

reliability. Secondly, members may be too conveniently selected (i.e., not reflecting the general populations' views). Results from social science research suggest that what people say may not always be reflected in their actions.

Designing focus group questions: The most critical issue for managers prior to the focus group session is determining precisely what they want to learn from members. If the management team is contemplating the use of focus groups, it should be driven by clearly written questions addressing specific issues that can assist managers in making more informed decisions. It is critical that managers a set of approximately five questions addressing specific concerns, conflicts, and public perception of managers.

Who should attend the focus group: The facilitator, eight to ten group members, a recorder (this person will ensure that the session is recorded on tape and that key points are written down), and an agency representative.

Recruiting participants: Above all, homogeneity is critical among group members. Focus groups are not intended to be debate sessions, but to offer opportunities for participants with similar interests and/or perspectives to share their perceptions. One strategy in identifying potential focus group members is to ask agency staff members to provide

a list of potential focus group participants. Also, letters can be sent to individuals throughout the area requesting their attendance in focus groups to address specific topic areas. Lists should reflect specific interest groups with an equal number of male and female participants. This is generally easy to accomplish with the help of agency personnel who are familiar with visitors with a long history of visiting the area. It is necessary to personally contact every member, send an invitation to attend the focus group, and include a map to the location (if needed), as well as a set of questions they should think about prior to the group meeting. Consent forms are used primarily for three purposes: To inform the group participant of the focus group goals, to get permission both to record the session and use his/her statements for research purposes, and to ensure that names and identities will remain anonymous.

Principles of conducting focus groups: Rules are clearly articulated to the members upfront by the facilitator regarding treatment of each other, and how the focus group will be conducted. It is important to emphasize that the role of the agency representative should be confined to acting primarily as an information provider. The agency representative should be an observer explaining the agency position and policies from a historical perspective and helping members understand how and why decisions have been made to achieve

specific goals. Due to an increasing number of legislative acts, managers are addressing many more complex issues each year that the public is often unaware of.

Facilitation of focus groups: skills and techniques used in the process: Select a group facilitator who is objective, and preferably not an agency employee. A skilled facilitator has the ability to keep the group focused on addressing a specific question, minimizing a member's ability to monopolize, and limiting the session to ninety minutes. The focus group experience, when facilitated properly, has enormous potential to empower members in knowing they are assisting in directing management.

Effectively ending focus group sessions, debriefings, and follow-ups: Limit the group meeting to ninety minutes. At the end of the session it is appropriate for the facilitator to summarize the session, ask if there are any questions, and thank participants for their time and assistance. In some cases, participants are offered refreshments and a meal, as well as reimbursement for their time and/or travel expenses. Participants should receive an official written thank you from the agency for their participation in the focus group session. Follow-up phone sessions are sometimes necessary to clarify an issue or verify statements made by participants during the session.

Reporting results from focus group sessions: Typically focus group sessions are recorded electronically and transcribed for analysis. During the session, an assistant takes hand written notes to verify the main points shared by participants, and to ensure that the session is recorded on paper in the event the audiotape fails to function properly. Near the end of the focus group session it is crucial for the facilitator to reiterate what the group shared, and for the group to verify that the facilitator understands their responses. At the conclusion of each session, a debriefing between the facilitator and assistant should take place in order to highlight the key points addressed by the group. Upon completion of a written report, it is highly recommended to write up an executive summary that emphasizes key points discovered from the research as well recommendations to managers. Each focus group member should

receive a copy this abridged document.

Qualitative analysis of the data: Includes reading through the transcripts, generating major themes and categories of responses for questions, coding the responses into the major codes/categories sharing a common focus, examining comparisons between and among participants, generating conclusions, member checks with focus group participants, and an independent analysis of randomly selected portions of the data by two additional researchers. This is especially important in attaining inter-rater reliability. It is particularly vital to identify areas of agreement between focus group members, and differing opinions/perceptions about specific phenomenon, management actions, and program evaluation. As information from focus groups is being grouped into thematic areas, it is critical to select specific quotes from participants, which offer an improved understanding emphasizing an important point, and specific feelings, and/or attachments members may have about a specific area or experience.

Data reduction, display, and conclusion drawing: Using the Components of Data Analysis, Flow Model (Figure 1), allows for coding and analyzing data. Data reduction process allows categories and themes to emerge (Miles & Huberman, 1994). Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the raw data that appear in written transcriptions (Henderson, 1991). The data reduction process is accomplished by writing summaries, coding, drawing out themes, making clusters, creating partitions, and writing memos. Further qualitative analysis emphasizes direct quotes from participants with the support from both frequency and Likert scale analysis for the purpose of triangulating results. Data display is an organized, compressed assembly of information allowing researchers and managers to begin making visual pictures of how the data are emerging from the study. In order to better organize and access information, matrices, graphs, and charts are often used. This enhances the visual display for drawing conclusions.

The final part of analysis activity is conclusion drawing, and verification. In conclusion drawing, researchers define what things mean. This includes noting regularities, patterns, explanations, possible

configurations, causal flows, and propositions. The verification process pulls together the fundamental aspects of the findings, and tests them for their plausibility, while attempting to confirm their validity (Miles & Huberman, 1994).

Executive Summary Reports: Visitors have the potential to provide valuable information about facilities, parks, and wilderness areas to managers. Regardless of whether the recreation manager is newly hired, or a veteran in the same position, asking visitors to share their perspectives on the area, their opinions of management, and their vision for the future helps managers to better meet management goals and offer a continuum of quality experience opportunities. Using focus groups to assist recreation managers can be a very inexpensive and time effective method for understanding how visitors define their concerns, and their opinions of managers. Research indicates that the use of focus groups, together with surveys and interviews, is another useful tool in the effort to improve management of recreation areas.

Conclusion: Although the use of focus groups to address issues in recreation and park management, and assisting managers in developing management solutions, is in its infancy, research strongly supports the idea that the knowledge and attachment participants have of the outdoors can only make management efforts to enhance quality visitor experience both more effective and acceptable to the public. After conducting a focus group with eight long-time visitors, what was most surprising to this author was that individuals who spend much of their free time (25 to 56 years) visiting recreation areas shared nearly the same observations and concerns as managers, but were neither included nor tapped for their insights into potential management solutions. The detailed descriptions and concerns these eight visitors participating in a focus group shared about our natural resources provided 300 years of insight and wisdom, as well as important lessons about the past and present. More importantly, they will continue to provide guidance to the future of effective management. The key is that we take the time to ask them.

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RECREATION VISITOR INVENTORIES: KEY INFORMATION FOR CAPACITY MANAGEMENT

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Abstract: A major change in recreational carrying capacity management during the 1990's has been a shift from emphasis on capacity planning to capacity decision-making. This has been developing because of a need for decision information in a shorter time frame and at lower cost than long-term planning processes. A recreation visitor inventory system has been developed and tested on river, lake, and land situations. The system involves identifying different conditions (and usually different users) on various parts of a management area, through visitor counts and interviews. This place-specific inventory information can then be analyzed in the context of providing and maintaining a recreation opportunity spectrum of choices for visitors. The process of gathering and utilizing this information is outlined as a recreation management information system (RMIS) following concepts from business management decision systems.

Introduction

One of the more worrisome problems for recreation area managers is recreation carrying capacity. As recreation use of an area increases, concerns arise about limiting use or taking other management actions. Manager's efforts to deal with these concerns often become controversial, leading to public meetings and court cases. Consequently,

the capacity issues are often not dealt with, and problems associated with increasing use aggregate.

A recreation visitor inventory system, similar to tree or wildlife inventories has been developed (Chilman 1983). It has been tested in river, lake, and land situations (Chilman and others 1996). Essentially, the inventory system involves identifying different conditions (and usually different users) on various parts of the area as management sub-units, and then counting and interviewing visitors at places where they exit the area. This place-specific inventory information can be immediately useful for management decisions, and then be incorporated into management planning, using the recreation opportunity spectrum (ROS) concept.

The process of gathering and utilizing this information for capacity management is outlined as a recreation management information system (RMIS) system and its development will be discussed, along with applications on river, lake, and land areas. Advantages for managers appear to be reducing capacity controversies, and increasing management credibility.

Methods

Because manager understanding and communication of data collected and procedures used has been found increasingly important due to more conflict situations, the research design has been participant observation, negative case analysis (Kidder 1981). The researcher uses a hypothesis about how a process works and then tests it in a series of case situations, revising the hypothesis as needed. In the research discussed here, the researcher participated as a recreation data specialist with field level managers in their decision-making.

The capacity process selected as a hypothesis for testing in the lake carrying capacity research was Quality Upgrading and Learning (QUAL). The hypothesis was that the process would work in the same way in lake situations as it had in river and terrestrial applications. The process was developed and tested during 20 years research at Ozark national Scenic Riverways in Missouri (Chilman et al. 1996). It also had been tested at Lark Tahoe, California and Land Between the Lakes, Kentucky. A key aspect of the process is the development of a system for collecting place-specific social data - the

numbers and types of visitors on specific parts of the management area, and the visitors' perceptions of conditions and changes occurring (Chilman 1983).

The QUAL process places emphasis on two aspects of quality of visit experiences: the reasons for choice of the specific place for the desired recreation activity (what is important to the visitor for the experience), and changes observed in the area in important visit attributes, if the visitor is a repeat visitor.

The key step in carrying capacity planning, as in other resource management such as wildlife, is inventory of existing conditions. This systematic measurement and documentation of existing conditions (physical-biological, social, managerial) can then be used as a basis for discussion of desired conditions (management objectives).

Examination of conditions on large land or water areas usually shows diverse conditions on various parts (or zones) of the areas, which can then be managed to provide diverse recreation opportunities for different kinds of recreation visitors. This allows visitors more specific choices of visit experiences, and hence higher quality in fulfillment of their preferred experiences. The concept of providing a recreation opportunity spectrum (ROS) is well-established (Manning 1985).

Social inventories (systematic visitor counts and interviews at specific places) are especially important for recreational capacity planning, and especially for lake situations. While physical and biological data has often been obtained for procedures for recreational areas, very little systematic social data has been gathered. Simple, low-cost social data collection procedures for large land and water areas have been developed and tested in various situations (Chilman 1983, Chilman et al. 1995). Essentially, they involve determining user types in each zone, and how and where to do sample counts and surveys.

To place these inventories in a modern management decision-making framework, and to enable manager training and communication, the steps to implement the inventories are outlined as a Recreation Management Information System (RMIS) in Figure 1. An example of more detailed elaboration of each step may be obtained by contacting the lead author of this paper.

RECREATION MANAGEMENT INFORMATION SYSTEM (RMIS) A Systematic Process for Gathering and Utilizing Visitor Data for Recreation Area Management Decisions

STEP I. DESIGN (with managers)

1. Select/recruit study supervisor.
2. Identify concerns/questions to be answered by the study.
3. Examine study area, determine user groups and sampling points.
4. Develop a survey sampling plan and boat count schedule.
5. Develop survey instruments and count forms.
6. Prepare press release for local news media.

STEP II. DATA COLLECTION

1. Train field data collectors.
2. Maintain quality control during data collection.
3. Train and supervise data collectors in data coding and entry.
4. Prepare monthly summary reports.

STEP III. DATA ANALYSIS AND REPORTING

1. Summarize and categorize cleaned and edited survey data.
2. Prepare preliminary report for managers' review.
3. Tally.
4. Discuss report, modify as needed.
5. Prepare final technical report for distribution.

STEP IV. DISCUSSION OF DATA, FOLLOW UP (with managers)

1. Discuss to determine whether data and data collection procedures are clearly understood.
 2. Discuss implications, alternatives for management objectives.
 3. Discuss needs for additional or other kinds of data, ways to improve data collection and sample.
 4. Design data collection for following year.
-

Figure 1. Recreation Management Information System

Results

The results of this decision-oriented approach can be illustrated by examples at three locations: Ozark

National Scenic Riverway in Missouri, Table Rock Lake in Missouri, and St. Croix National Scenic Riverway along the Wisconsin/Minnesota border. Essentially, we focused on capacity decisions that the managers needed to make, assisted the managers by gathering social inventory data relating to those decisions, and worked with the managers to enable them to understand the data and how it was collected and how it could be useful in their decision processes. The managers' experiences with social data in those initial decisions helped them with other later decision-making and planning efforts.

Capacity Management at Ozark National Scenic Riverways (ONSR)

A more detailed discussion of this case can be found in Chilman et al. (1996). The long-term capacity research project conducted at ONSR since 1972 has been basic to our understanding of capacity concepts and processes.

Ozark National Scenic Riverways includes 134 miles of the Current and Jacks Fork rivers in south central Missouri. Management by the National Park Service (NPS) began in 1964 when ONSR was established. Large numbers of canoeists were attracted by the spring-fed rivers and outstanding scenery.

In 1972, a 5-year research program was initiated to determine impacts of the canoeists on the river environment and on the other river users. The program included use monitoring, environmental impacts, social considerations (including perceptions of crowding), and water quality (Marnell et al. 1978).

The influx of large numbers of visitors wanting to canoe at ONSR gave rise to several persons establishing canoe rental operations. The NPS saw the need to regulate those operations through issuing concession permits to operate. Lawsuits by local rental operators began in local courts in 1976 and continued to Federal Court in St. Louis in 1982, challenging NPS authority to regulate canoe rentals as 'arbitrary and capricious'. Following appeals, the Federal court case was decided in favor of the NPS in 1984. Important evidence in the case was systematic sampling of canoeists to determine that perceptions of crowding had increased from 47% in 1977 to 61% in 1979.

Following the court decision that NPS had authority to regulate canoe rentals, a planning team developed a River Use Management Plan (USDI 1989). This plan was based on use data showing different levels of use on various sections of the rivers. Ten management zones were identified. Utilizing the recreation opportunity spectrum (ROS) concept, three different use densities were determined and distributed on various zones of the river to provide choices for visitors: some prefer high densities, some medium, some low. A brochure describing the choices was provided.

Since 1986, a system of use monitoring measurements has been carried out as per the QUAL capacity model. Approximately one-third of ONSR has been monitored—counts and short (one-page) surveys of river users—each year on a three-year cycle. Canoe use has been shown to be stable during that time, with some localized increases in tube floaters and fishing boats.

The major decision faced by NPS managers was the need to regulate canoe rental operators. Research data, especially social data on perceptions of crowding, helped to establish a management plan. A social monitoring system helps to answer concerns about changes occurring and provide a stable capacity management situation.

Capacity Management at Table Rock Lake (TRL)

Table Rock Lake is a large (approximately 70 miles long, 745 miles of shoreline) lake in the Ozark forest of southwest Missouri. It is managed by the U.S. Army Corps of Engineers (COE).

The town of Branson located near TRL dam is an entertainment Mecca, with some 30 music halls and other attractions. Because of Branson, the managers of TRL receive proposals for development and recreational use on the lake. The managers needed data on numbers and types of users on various parts of the lake and their perceptions of conditions. In addition to Branson, four other communities with different interests and traditions were located at various places around the lake. In 1992, the COE received a proposal for recreational float-plane rides on TRL. Visitors would have the experience of taking off from water, flying over the lake and landing on the

water. A 3-month trial permit was issued. Researchers did interviews of campers, homeowners, and fishermen near the plane takeoff area. Following a public meeting attended by approximately 200 people where the research data was presented, the COE made the decision to terminate the float-lane operation.

During that same year, a 3-year program of data collection on place-specific visitor numbers and perceptions of conditions began on the entire lake. The data was used in subsequent public meetings to add more “ducks” (amphibious vehicles that drive visitors to TRL from Branson, out onto the lake and around and then back to Branson) and to add boat docks in restricted areas. Both of those development proposals were not allowed by the COE.

At the Congress on Recreation and Resource Capacity held at Snowmass Village in Colorado from November 29 to December 2, 1999, Kenneth Foersterling, COE manager for TRL, discussed several ways that he had used the social inventory data for capacity decisions. One example was increased law enforcement patrols on TRL by State of Missouri Water Patrol. The TRL Water Patrol staff was increased from 5 to 12 officers, based on survey data showing visitors were concerned about water safety. These data were used in lobbying efforts by local groups and political representatives to increase the patrols and thus the quality of recreation experiences for visitors.

Thus the managers at TRL learned how the social data was collected and utilized in the float-lane decision issue. They learned how to use the data in subsequent capacity decision-making. Plans now are to initiate a social monitoring system to learn whether changes in visitor numbers, types or perceptions have occurred.

Capacity Management at St. Croix National Scenic Riverway (SCR)

St. Croix National Scenic Riverway encompasses 252 miles of the St. Croix and Namekagon Rivers. The St. Croix River is along the Wisconsin/Minnesota border near Minneapolis/St. Paul, and the Namekagon River (99 miles) in Wisconsin flows into the Upper St. Croix. The Riverway has been managed by the National Park Service (NPS) since its establishment in 1968.

In 1998, NPS became aware they would need to place canoe rental operations under permit. The SCR 1998 General Management Plan also calls for a capacity management plan to be developed. NPS managers at SCR learned of the capacity research done at ONSR, and called on ONSR researchers to help set up a social data collection system to assist their decision-making planning.

The major problem was a limited SCR management budget that did not include funding for a major new data collection effort. After several meetings, a 5-year research contract was worked out to use one or two data collectors each summer to gather data on portions of the river. If baseline visitor numbers and surveys were done on all sections of SCR before the 5-year period ended, monitoring remeasurements would be conducted to look for changes occurring.

During summer 1999, visitor counts and surveys were done on the Namekagon. Different use densities were found on various sections of the river, and one very high-density use area was identified for management attention. During summer 2000, social inventory data was carried out on the Upper St. Croix River down to Highway 70 near Grantsburg, Wisconsin. Preliminary findings suggest (1) that high-quality river use experiences can occur at existing use levels, and (2) that a system of various zone densities can be managed to provide a recreation opportunity spectrum type of capacity management plan.

One of the apparent deterrents to lack of social inventories for decision-making and planning has been management budget reductions in recent years. The SCR approach suggests that low-cost systems can be developed, especially if lawsuits may be a strong possibility. The information also can be useful in various decision situations, and aids manager credibility.

Discussion

This change in focus from capacity planning to capacity decision-making has been successful in these times of more public participation, political pressures with shorter time frames for responses, and reduced management operating budgets. The OUAL process is a simplified system, for improved manager understanding and communication and for lower costs.

It is curious that systematic social inventories have not been developed, similar to other resource inventories for decision-making. This may reflect a lack of knowledge by social scientists of diversity of wildland conditions, and resource inventory procedures. Or it may reflect a lack of training of recreation managers in inventory and decision-making processes.

Recreational carrying capacity management for large land/water areas can be viewed as not one decision but several interrelated decisions, often about different parts of the area and different people there. By beginning to attack these complex situations with some initial decision data, later decisions and planning can be faced with much more confidence and credibility by the managers.

Recreational capacity decisions are decisions about people's access to opportunities and the quality of their experiences there. As such, they need to be developed with recreation visitors' participation, and communicated to people involved. Place-specific social data should be a central part of that communication.

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Service Quality and Outdoor Recreation

METHODOLOGICAL AND CONCEPTUAL ISSUES IN THE DEVELOPMENT OF CUSTOMER SERVICE MEASURES FOR THE NATIONAL RECREATION RESERVATION SERVICE

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Abstract: The National Recreation Reservation Service (NRRS) customer service monitoring protocol includes methodological and conceptual issues related to opt-in and non-response bias across different reservation channels and stages of the reservation process. The limited available data show that opt-in rates and non-response bias may not be large in general, but might be quite problematic at times. The data suggest that monitoring processes should be continued and improved. The results also suggest that phone surveys are relatively bias-free and perhaps necessary for some user groups, and that quality assurance of email or internet surveys will be more difficult. Suggestions are offered to improve response bias checks and attain preferred quality standards.

Introduction

The National Recreation Reservation Service (NRRS) provides campsite and cabin reservations for U.S. Army Corps of Engineers (CE) and USDA Forest Service (FS) sites throughout the

United States. ReserveAmerica (RA) is a private company (a division of Ticketmaster) that provides access to over 140,00 campsites in 44 states and 1 province. RA's operations include over 45,000 reservable facilities at over 1,700 CE and FS locations under a contract with the federal agencies (cf. www.reserveamerica.com and www.reserveusa.com). The NRRS includes: 1. A phone center operation (RA's 800 number call-in subsystem), 2. Reserve-USA (R-USA), an internet based reservation subsystem (also operated by RA), and 3. Some on-site reservation and purchase capabilities (not studied herein as discussed below). The first two NRRS elements are the focus in this paper. As part of the federal contract, RA's performance must be periodically evaluated, and within this requirement, customer satisfaction evaluations are required for the R-USA internet and RA call-in subsystems. A pilot project was developed cooperatively among the principals to develop and test a scientifically defensive and accurate customer satisfaction measurement protocol. The NRRS, CE Waterways Experiment Station, FS R&D, and RA staff co-developed the survey protocol and instruments. RA conducted the surveys via contracts with commercial internet and phone survey firms (Dillman 2000; Absher 1998). This paper presents the results from one part of that effort, notably the methodological and conceptual issues that were encountered in the sampling and customer data gathering phases of the customer satisfaction study.

Overall, the pilot survey project team sought to develop a performance monitoring process that accurately portrayed key services important to the customer and related to the reservation process. As a pilot project, various issues were incorporated and six different surveys were used. The objectives for this paper are to look at the methodological issues that might show differences between internet and phone survey protocols, gauge the adequacy of opt-in and response rates throughout, and identify ways to improve sampling protocols for on-going contract administration.

Scope of Pilot Survey

The reservation process includes a number of steps, each containing important information relevant to customer satisfaction processes. Figure 1 shows this process from reservation to check-in and the associated issues or variables that need to be

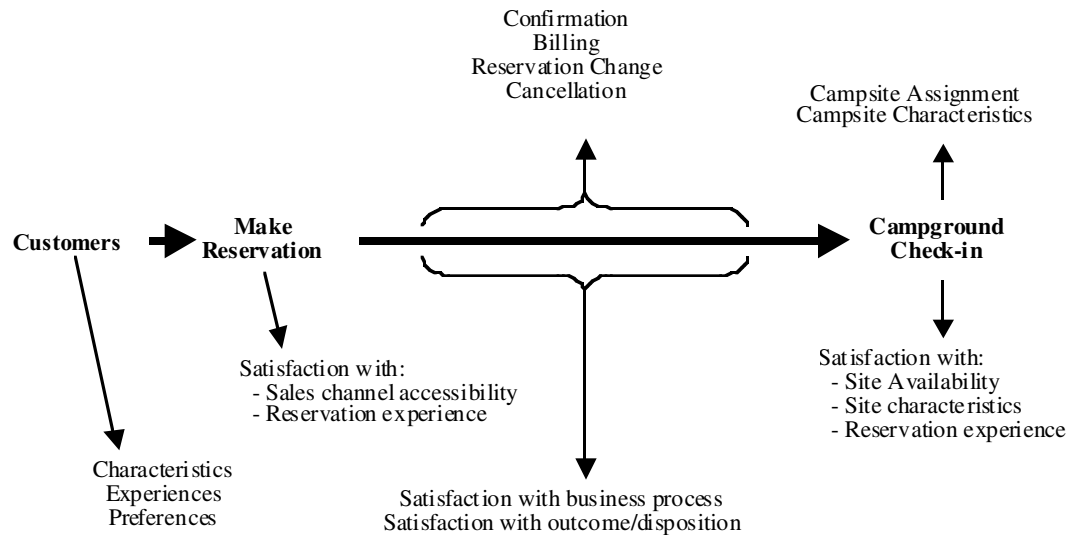


Figure 1. Scope of Pilot Survey: Reservation to Check-in

captured by the monitoring surveys. Note in particular that some items to be measured may occur months apart, e.g. a reservation can be made in April for an August camping trip. Thus, questions of recall and accuracy of responses are a concern. Methodological and data quality concerns also arise because of the multiple channels and sampling protocols used. First, in order to be included in the sample customers had to give prior consent. Due to privacy and policies, on phone and internet surveys there must be an explicit agreement to be contacted beforehand, or a positive opt-in response. Second, there are concerns about response rates across the different channels and different survey protocols used.

Methods

The focus of this paper is individuals who opt-in and make reservations¹. These “sales” are recorded as individual transactions, and one individual may choose to make multiple transactions at once or over time. The sampling unit is any transaction made through the NRRS/RA call center or the R-USA (internet) website. The names or addresses of those who are merely seeking information or do not make a reservation are not retained in any way. The actual pilot survey sample selection was made from the incoming stream of transactions that met the opt-in requirement (filtered). The timeframe of interest was June through August of 2002. During this time, 279,048 filtered transactions were made across all channels and both agencies. It is possible to make a reservation at a CE site in

person, but these “walk-ups” were outside the scope of the pilot study. Excluding them from the pilot study was an explicit decision and is addressed briefly later.

The sampling frame for the pilot survey was restricted to June - August 2002 reservations. For this paper, three sources of data are available. These are labeled pilot survey, opt-in and subsample in the tables below.

First is the data from reservations that were sampled and had a survey returned. This group includes all the actual pilot survey data from three subpopulations: internet-email (made reservation online, received survey via email), phone-phone (made reservation by phone, received survey by phone via a computer-assisted telephone interviewing (CATI) system) and phone-email (made reservation by phone, received notice via email with link to internet survey). Note that there are three main pilot survey subpopulations and only two survey modes: phone (CATI) and website. There are two website surveys because some call-in customers were surveyed through an

¹ About half (52%) of the reservation volume was excluded from this analysis. These are the “walk-ups” who made reservations directly at a campground or other site with an R-USA linked terminal (e.g., at a CE campground check-in kiosk). Although this omission was intentional in the pilot study, it is not intended to suggest that they be permanently absent from the customer service monitoring process. On-site reservations (walk-ups) should be considered for inclusion in future customer service monitoring protocols.

email message to click into a website to fill out a survey. For convenience, we refer to them as the email subpopulation. The content of the phone-CATI and phone-email surveys is the same as it was tied to the experience of using the phone center. The other website survey was tied to the use of the internet reservation portal and is referred to as the internet subpopulation. In the tables below there are six pilot surveys because each of the three main sources (internet-email, phone-email, and phone-phone) was further divided into two groups: one that received surveys immediately after the initial reservation session, and one that received surveys later after the camping trip was completed. Altogether, the six separate, mutually exclusive questionnaires in the pilot survey have 9,460 respondents.

Second are all the transactions from the larger pool from ReserveAmerica's operations, which includes ReserveAmerica's "opt-in/opt-out" records (n= 279,048). Third, there was a subsample of federal transaction records with limited reservation data attached (n= 715). The last dataset was requested because the larger transaction database (opt-in/-out above) had very limited transaction data attached that would bear on the response bias issue. Additional information about length of stay and type of site requested was obtained for this subsample. Because it could be further broken out into opt-in and opt-out groups it is possible to regard the subsample opt-in group as a strong surrogate for the non-respondents to the pilot survey, i.e., the pilot survey respondents are drawn directly from the group represented by the opt-in subsample and are a small percentage of the overall group (9,460 of 162,576 or less than 6%).

Results

Key Concern: Opt-In

The first issue is assuring the quality of the survey list from the larger pool of all reservations. Due to privacy concerns, those who make reservations must be asked separately and explicitly to be contacted in the future. All customers were asked to agree to be contacted again, or "opt-in." The opt-in process was an unknown factor as far as sampling bias or representativeness is concerned. Available data on opt-in rates by contact channel and primary residence are shown in Table 1.

Overall, about half of all people opt-in (56%). However, the rate varies by channel. The rate for

Table 1. — Opt-in rates by channel/residence

Channel/residence	Opt-in Customers	Opt-out Customers	Opt-in Rate (pct)
<u>1a: Channel</u>			
ReserveAmerica	64,491	36,570	63.8
ReserveUSA	35,762	50,368	41.5
No reservation	62,332	29,539	67.8
<u>1b: Residence</u>			
USA	159,863	114,779	58.2
Canada	2,355	1,406	62.6
Other foreign	358	287	55.5
Totals	162,576	116,472	58.3

federal sites (R-USA) is lower (42%) than the other RA or non-reservation contacts (64% and 68%). Residence does not seem to be a problem: in fact, Canadian opt-in is the highest in the table (63%) and other foreign (56%) is comparable to the core USA rate (58%). (The other non-USA sources might be overseas military as well as foreign nationals.) What can be said is that the opt-in group's representativeness relative to the behavior of concern, camping reservations, is not well known. Those who called in but made no reservation at that time were the highest to opt-in. Why is not clear - perhaps they had no reason to expect further interaction, had not yet committed to a transaction/purchase, or had not yet given personal particulars like credit card numbers. The low R-USA opt-in (42%) is not expected and stands apart from the other results. Why this might be so is not clear and unfortunately we don't have enough information at hand to clarify this further. Perhaps these customers regard the R-USA site differently e.g., the internet site presents itself in a substantively different way that lowers compliance, or, alternatively, telephone customers across the two channels may respond differently to the opt-in request. The key is that the opt-in request is generally only moderately successful.

Table 2 presents data from the reservation sessions that were available. From the dates in the transaction registers the proposed length of stay and the type of site requested are known and can be compared against other available data. Table 2 shows two variables (length of stay and site type) by data two data sources: pilot survey (first column) and transaction subsample (last column).

Table 2. — Data sources by length of stay, site type and management agency

Variable	Pilot Survey		Opt-in		Opt-out		Subsample	
	n	pct	n	pct	n	pct	n	pct
Length of stay								
1 night or less	852	9	31	10.5	47	11.2	78	10.9
2 nights	4,312	45.6	126	42.6	191	45.6	317	44.3
3 nights	2,112	22.3	71	24.0	112	26.7	183	25.6
4 nights or longer	2,184	23.1	68	23.0	69	16.5	137	19.2
Total	9,460	100	296	100	419	100	715	100
Site type								
Family	9,255	97.8	282	95.3	412	98.3	694	97.1
Group	205	2.2	14	4.7	7	1.7	21	2.9
Total	9,460	100	296	100	419	100	715	100
Agency								
Corps of Engineers	5,473	57.9	137	46.3	203	48.4	340	47.6
Forest Service	3,987	42.1	159	53.7	216	51.9	375	52.4
Total	9,460	100	296	100	419	100	715	100

Table 3. — Response rates for pilot survey by subpopulation

Survey	Sent to Customers	Completes Received	Response Rate (pct)
Internet Customers			
Internet link after reservation session	7,711	1,724	22.4
Internet link post-trip	15,627	3,828	24.5
Phone Customers			
Phone after reservation session	373*	366	98.1
Phone post-trip	888*	800	90.1
E-mail after reservation session	8,408	1,430	17.0
E-mail post-trip	11,772	2,032	17.3

* Estimated from CATI logs

The transaction subsample is further broken out in the middle two columns by opt-in and opt-out status. As above, the opt-in group in this table acts as a strong surrogate for the non-respondents to the pilot survey. Ideally, the data should be similar between the opt-in and pilot data. By inspection of the percentages in the table this is generally what we find. In fact, the length of stay variable does not vary much in absolute terms across these four groups. Statistically, the opt-in group is not different from the pilot survey group $X^2_{df=3} = 1.61$, $p = .656$). Site type data is relatively invariant as well, ranging from 95 to 98 percent choosing family sites. The 2.5 percent difference although small in real terms is, however, statistically significant between opt-in and pilot group $X^2_{df=1} = 8.59$, $p = .003$), with those reserving family sites more prevalent in the pilot survey. Thus, breaking out the data across these two variables tends to confirm the quality of the data in the pilot group. That is, based on admittedly limited data, there is evidence that the respondents in the pilot survey are similar to, and hence representative of, the larger group from which they were drawn. The last section of Table 2 presents the same four-

way breakout by managing agency. Here there is both a practical percentage difference and a statistical difference for the pilot to opt-in comparison $X^2_{df=1} = 15.724$, $p < .001$). The pilot survey CE respondents are 58 percent of the sample and FS are 42 percent, or exactly the opposite pattern from the opt-in group, which is 54 percent FS customers. This shift is not a major concern if the sampling list data is known. (It isn't here - the nonresponse pool size is unknown due to the way the surveys were sent out electronically.) In general, this sort of imperfection could easily be taken care of by more closely monitoring the sampling detail and using post-hoc case weighting if necessary. It is important to discern if the observed differences are due to a cognitive or behavioral difference in respondents, a difference in refusing to comply, or just due to a procedural difference in how the samples were drawn and administered.

Key Concern: Response rates and representativeness

The response rate data from the pilot survey (Table 3) is broken out by the six individual

questionnaires used, two each from the three main groups as explained in methods above: internet (website) reservations, phone center (800 number) callers contacted with a CATI survey, and phone center callers contacted via an email address they provided. Each of the three basic groups (internet, phone and email) was surveyed at two times as explained above. The response rates are consistent across all groups relative to the channel used. Internet and email customers respond at uniformly low rates (17% to 25%) whereas the phone customers' response rates are very high (90% and 98%). The low refusal rates on the phone surveys are quite encouraging and suggest no response bias concerns at all. The electronic survey forms are quite another matter. Although these rates are higher than those reported by others employing web-based or email surveys they are still low relative to the standards usually set for survey sampling (Schaefer & Dillman 1998). Note also that the rate observed here is after saying "yes" to a personal request to participate (they then supplied their email address), and that these response rates are after more than half of the R-USA subpopulation have opted-out (41.5% opted-in), thereby lowering the effective response rate further (to roughly 7% - 10% for the R-USA group).

However, there was no opportunity for multiple contacts or other follow up procedures that are often recommended for social surveys. Clearly, response bias is a concern here. A comparison within the phone channel customers is presented next (Table 4). Phone-CATI and phone-email respondents are compared across age, education, income and management agency.

Table 4.—Phone-CATI vs Phone-email Respondents

Variable	CATI		Email	
	n	pct	n	pct
Age				
Under 55	625	54.3	2,366	76.8
55 or over	527	45.7	729	23.2
Education				
HS or less	858	74.9	835	27.0
College or more	288	26.1	2,263	73.0
Income				
Under \$55,000	548	56.9	896	31.7
Over \$55,000	415	43.1	1,927	68.3
Agency				
Army Corps of Engineers	869	74.5	1,710	54.7
Forest Service	297	25.5	1,415	45.3

There are significant differences between these two groups that are at times striking. CATI respondents are older and hence are more likely to be retired (46% over 55 yrs), fewer have a college education (26% vs 73%), and concomitantly they earn less (43% vs 68% over \$55,000 per year). Finally, the CATI group is disproportionately found at CE sites (75% vs 55%). These results are consistent with recent studies of internet use (Census, 2001). Aside from the clear marketing implications, these data suggest that CATI surveys are important if not necessary to gauge the customer experiences of an important segment of the R-USA customers.

Conclusions

The opt-in processes that were used in the pilot program worked reasonably well. Although the opt-out rates were substantial (roughly 50%), the subsequent bias checks suggested no systematic bias relative to reservation or camping behaviors. However, the tests used here were quite limited and stronger, better-focused bias checks seem warranted, e.g., geographic or seasonal variation might occur and there may be differences based on experiential preferences. Second, the biggest concern for response bias is validated by the very low response rates for internet and email surveys. In terms of survey mode, these are one and the same, although the individual rates reflect a different subpopulation with slightly different means of contact and agreement to participate. The generally low rate for this mode of survey may be pernicious and difficult to solve because improving the response rates directly may not be possible if it is a common feature of electronic surveys. A suggested solution is to build in additional bias checks to counteract the fact that the available information is too sparse relative to the variables of interest (reservations and camping) to be definitive. Even though this adds to the overall work load, such bias checking improves the reliability and validity of the data and is thus a crucial task. Third, the phone channel response bias was especially distinctive socio-demographically (poor, older, etc.). Because of the implications for equity in service provision, these subpopulations will need to be monitored and if they cannot be adequately captured in web-based surveys, other means such as CATI surveys may continue to be useful. Finally, as noted above, the adequacy of the variables used for bias checks is only moderate- it

will be important to build in additional transaction data and membership information to assure the data is scientifically accurate.

Overall, the pilot surveys have been used to improve the NRRS customer service survey protocols, but some questions remain especially for walk-ups, phone only customers, and for the low internet response rates. Also, there seems to be a need to address and analyze opt-outs and non-respondents, especially for internet-based surveys.

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STANDARDS OF QUALITY FOR TRAFFIC CONGESTION IN PARKS: AN EMPIRICAL STUDY OF THE BLUE RIDGE PARKWAY

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Abstract: Crowding and carrying capacity are perennial and increasingly important issues in parks and outdoor recreation. Contemporary park and outdoor recreation management frameworks, including Limits of Acceptable Change and Visitor Experience and Resource Protection, rely on indicators and standards of quality to help manage these issues. One of the ways in which crowding can be manifested in the developed portions of parks and outdoor recreation areas is traffic congestion. This issue is especially relevant at parkways, a traditional type of park unit within the National Park System. Blue Ridge Parkway is the oldest and most heavily used parkway, and traffic congestion is an issue of increasing concern to park visitors and managers. This study used photographic and survey approaches to help formulate indicators and standards of quality for traffic congestion on the Blue Ridge Parkway. Study

photographs illustrated a range of numbers and types of vehicles along the Parkway, and a survey of visitors at eleven sites along the Parkway asked respondents to evaluate the acceptability of study photographs. The survey was conducted in the summer of 2002. Study data can be used to help the National Park Service formulate standards of quality for the number and type of vehicles on the Blue Ridge Parkway.

Introduction

The U.S. National Park System contains natural and cultural resources of national and, increasingly, international significance. Given the significance of this resource base, public demand to see and experience these areas is not surprising. Data on visitation to the national park system dramatically support this premise. For example, in 2002, there were over 275 million recreational visits to the national park system (National Park Service 2003). The increasing popularity of the national park system, presents substantial management challenges. Too many visitors may cause unacceptable impacts to fragile natural and cultural resources, and may also cause crowding and other social impacts that degrade the quality of the visitor experience. How many visitors can ultimately be accommodated in a park or related area? How much resource and social impact should be allowed? These and related questions are commonly referred to as carrying capacity (Manning 1999; Stankey and Manning 1986; Shelby and Herberlein 1986; Graefe et al. 1984).

The Blue Ridge Parkway is a good example of the issues noted above. The Blue Ridge Parkway is a 469 mile recreational motor road that connects Shenandoah and Great Smoky Mountains National Parks while protecting the cultural and natural features of the region. Designed as a "scenic drive" and built by the Civilian Conservation Corps in the 1930's, the Parkway provides both stunning scenery and close-up looks at the natural and cultural history of the Appalachian Mountains.

Adjacent to the park are rapidly growing towns and cities whose residents use and affect conditions on the parkway. Growing development around the park may draw larger numbers of recreational motorists, and may increase use of the parkway as part of the regional transportation system.



Figure 1. A sample of five of the 17 photographs used in the study. Photographs depict differing numbers of vehicles and different vehicle types.

Increases in these types of use could, in turn, potentially create congestion on the parkway and change the types of visitor use and the character and quality of the visitor experience. Moreover,

increasing pressures to improve secondary roads that cross the parkway also threaten to change the character of the Blue Ridge Parkway. As a result, significant resource and social impacts may occur

Table 1. — Problem Issues on the Blue Ridge Parkway

		No Problem (1)	Small Problem (2)	Big Problem (3)	Don't Know	
Issue	N	Percent				Mean
A. Difficulty finding your way around the park.	910	85.5	12.1	0.7	1.8	1.1
B. Traffic congestion on the roads.	912	67.4	27.5	3.6	1.4	1.4
C. Difficulty finding parking place.	901	70.8	24.9	3.1	1.2	1.3
D. Inadequate number of visitor facilities/services.	907	68.8	22.9	3.3	5.0	1.3
E. Poor condition of visitor facilities/services.	902	81.5	12.3	1.3	4.9	1.2
F. Lack of information about what to see and do in the park.	909	75.8	17.8	3.3	3.1	1.3
G. Lack of information on park natural/cultural resources.	903	76.2	18.2	2.1	3.5	1.2
H. Lack of recreation opportunities.	899	81.9	10.9	1.4	5.8	1.1
I. Poor condition of park trails.	887	69.6	11.7	1.6	17.1	1.2
J. Unattractive views from park overlooks.	893	77.9	15.2	4.6	2.2	1.2
K. Crowding at park overlooks.	899	68.3	26.0	2.8	2.9	1.3
L. Crowding at park visitor centers.	903	70.3	20.8	3.2	5.6	1.3

as visitor use of the Parkway increases. This study, therefore, attempts to develop indicators and standards of quality for the amounts and types of visitor use that can ultimately be accommodated on the Blue Ridge Parkway.

Study Objectives

Contemporary park and outdoor recreation management frameworks, including Limits of Acceptable Change (Stankey et al. 1985) and Visitor Experience and Resource Protection (National Park Service 1997; Manning 2001), rely on development of indicators and standards of quality to help protect natural and cultural resources along with the quality of the visitor experience. Indicators of quality are measurable, manageable variables that reflect the essence, or quality of the visitor experience at a particular site. Standards of quality define the minimum acceptable condition of indicator variables.

This study focused on three elements of the VERP framework that benefit from empirical data: 1) collecting baseline data on visitor use and associated impacts, 2) identifying indicators and standards of quality for the visitor experience, particularly as they apply to traffic congestion, 3) identifying differences in standards of quality for different vehicle types using the Blue Ridge Parkway.

Methods

Visitor surveys were conducted at eleven locations on the parkway. Locations included visitor centers and overlooks and were selected by park staff and researchers as representative of visitor attractions and facilities along the Blue Ridge Parkway. On three randomly selected days in the summer of

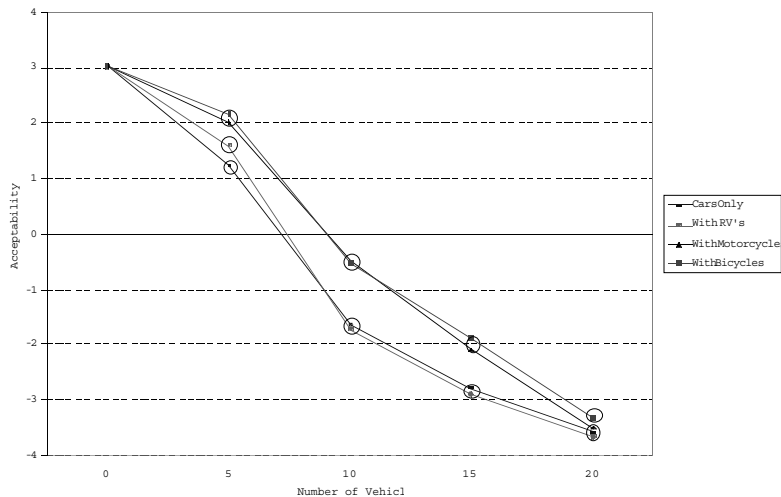
2002, a trained interviewer was stationed at each of these locations between the hours of 9 a.m. and 5 p.m. At the beginning of each survey day, the first person to complete their visit at the study site was asked to participate in the survey. If the group was willing to participate, the group leader was given a copy of the study questionnaire and asked to complete the questionnaire. Photographic techniques were used to simulate increasing levels and varying types of vehicle use on the parkway (Figure 1), and these photographs accompanied the questionnaires. A total of 1,378 visitor groups were asked to participate in the study and 991 questionnaires were completed yielding a response rate of 72%. The questionnaire used in this survey focused primarily on parkway uses and users, potential indicators of the quality of the visitor experience, and standards of quality for crowding-related issues.

Results

The survey instrument was designed to gather demographic information about visitors to the Blue Ridge Parkway, as well as data that may help support the formulation of standards of quality for the visitor experience. The following section presents results on use and users and indicators and standards of quality.

Use and users

Most visitors come to the Blue Ridge Parkway in small groups of two or three with an average (mean) group size of 3.2 people and a median group size of 2 people. The majority of visitors come in groups comprised of family and/or friends (90.8%). Respondents were also asked to indicate the type of vehicle in which they visited the Blue Ridge Parkway. Results indicate that the majority



* Note: Points in this figure within the same circle are not significantly different from each other, while points in different circles are significantly different.

Figure 2. Norm Curves for Traffic

of visitors (84.5%) came in autos/SUVs/pickup trucks. However, a second tier of respondents (8.3%) visited on motorcycles. Respondents were also asked about activities participated in along the Blue Ridge Parkway, and were given a list of activities and asked to indicate which they had done or expected to do during their visit. The most popular activities reported were scenic driving/stopping at overlooks (88.1%), visiting visitor centers (60.5%), hiking (59.0%), picnicking (39%), purchasing something at visitor center stores (37.2%), and visiting historic sites (33.7%)¹.

The number of times respondents had previously visited the Blue Ridge Parkway was also determined. Survey respondents previously visited an average of 21.2 times and a median of 5 times. Further analysis was done to explore differences in previous use of the Blue Ridge Parkway between local and non-local residents. Local residents consist of all respondents residing in Virginia and North Carolina. As one might expect, local visitors had visited significantly more often than non-local visitors (38.5% vs. 7.9%). Along with previous visitation, respondents were asked several socio-demographic questions such as their educational background and income levels. Overall, visitors to the Blue Ridge Parkway tend to be well educated with 87.3% having at least some college education or higher. In addition, visitors reported a wide and

relatively even distribution of income levels. The most frequently reported income level was \$40,000 to \$59,999 (21.7%).

Indicators and standards of quality

To measure visitor perceptions of issues pertinent to the experience at the Blue Ridge Parkway, respondents were given a question containing a list of issues and were asked to rate each on a three point scale where 1 = "No Problem", 2 = "Small Problem", and 3 = "Big Problem". Respondents were also given the opportunity to indicate that they "Don't Know". Results are shown in Table 1. All issues included in the question were rated by a majority of respondents as "No Problem". The issue rated as the biggest problem was traffic congestion on roads (mean = 1.4), suggesting that the number of vehicles may be a relevant indicator of quality for the visitor experience along the Blue Ridge Parkway.

As described previously, a section of the survey questionnaire contained a series of questions and corresponding photographs that were used to measure standards of quality for crowding-related issues. The first question in this series presented respondents with a set of seventeen photographs

¹ Note that these percentages total more than 100% because most visitors participated in more than one activity during their experience on the Blue Ridge Parkway.

depicting different amounts of traffic along a 0.16 mile generic section of the parkway (Figure 1). These photographs contained varying combinations of traffic consisting of cars, recreational vehicles (RV), motorcycles, and bicycles. Respondents were initially asked to evaluate the “acceptability” of each photograph using a response scale that ranged from -4 (“Very Unacceptable”) to +4 (“Very Acceptable”).

Findings are shown in Figure 2 and Table 2, and these findings suggest that smaller amounts of traffic are more acceptable than larger amounts of traffic. In addition, aggregate evaluations of the photographs fall out of the acceptability range and into the unacceptable range at between approximately 7 to 10 vehicles. A multiple analysis of variance was used to determine that photographs with RVs and automobiles were, on average, less acceptable to respondents than were photographs with motorcycles and bicycles. Individual comparisons were also done, and points in Figure 2 within the same circle are not significantly different from each other, while points in different circles are significantly different. This suggests that photographs with differing numbers of autos/SUVs/pickup trucks and RVs are approximately equivalent to each other in their acceptability to respondents, while different numbers of motorcycles and bicycles are approximately equivalent to each other in terms of acceptability. In other words, visitors’ evaluations of acceptable numbers of vehicles varied by type of vehicle, with visitors characterizing motorcycles and bicycles as one group, while autos/SUVs/pickup trucks and RVs constituted another group (Figure 2).

Table 2. — Summary of Acceptability Ratings for Different Types of Vehicle Use

Acceptability	Mean Number of Vehicles
Cars Only	7.0
Cars and RVs	7.4
Cars and Motorcycles	9.0
Cars and Bicycles	9.1

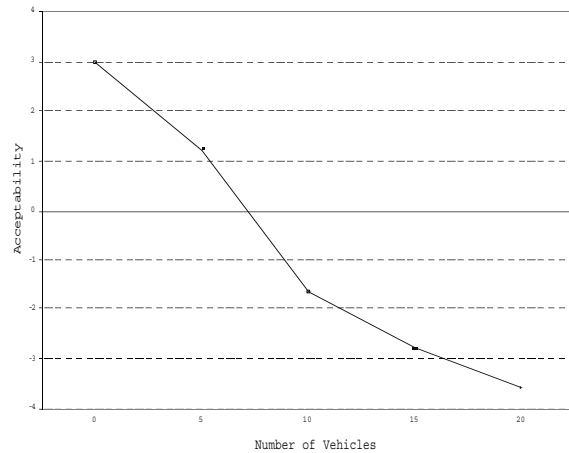


Figure 3. Norm Curves for Cars Only

Table 3. — Summary (Cars Only)

Measure	Mean Number of Cars
Acceptability	7.0
Preference	3.4
Management Action	12.1
Tolerance/Displacement	16.2
Typically Seen	5.1
Expectation	6.6

Using the five of seventeen photographs containing only cars, respondents were asked to indicate the photograph that 1) shows the number of cars preferred (referred to as “preference”), 2) shows the number of cars that would be so unacceptable that respondents would no longer visit the area (referred to as “tolerance/displacement”), 3) shows the highest number of cars the National Park Service should allow before visitor use is restricted (referred to as “management action”), 4) shows the number of cars typically seen by respondents on the day of the study (referred to as “typically seen”), and 5) shows the number of cars expected to be seen (referred to as “expectation”). Where appropriate, respondents were allowed options to indicate that none of the photographs represented the conditions asked or that the National Park Service should not restrict visitor use. Findings for these questions are summarized in Figure 3 and Table 3. Respondents reported that 1) an average of 7.0 cars was the highest level of use acceptable, 2) they prefer to see an average of 3.4 cars, 3) they would be displaced by an average of 16.2 cars, 4) that the National Park Service should allow no more than an average of 12.1 cars, 5) that they typically saw an average of 5.1 cars, and 6) that they expected to

Table 4. — Summary Cars per Mile

Measure	Number of Cars per Mile
Acceptability	56
Preference	21
Management Action	75
Tolerance/Displacement	101
Typically Seen	31
Expectation	41

see an average of 6.6 cars. The displacement and management action values are slightly underestimated as some respondents reported that either none of the photographs represented the condition asked or that the National Park Service should not restrict visitor use.

Table 4 presents an extension of study data from the 0.16 mile section of road shown in the photographs to cars per mile. When converted to cars per mile, results from this study indicate that, 1) an average of 56 cars per mile is the maximum acceptable condition, 2) visitors prefer to see an average of 21 cars per mile, 3) visitors would be displaced by an average of 101 cars per mile, 4) the National Park Service should allow no more than an average of 75 cars per mile, 5) visitors typically saw an average of 31 cars per mile, and 6) visitors expected to see an average of 41 cars per mile.

In addition, results from an analysis of variance indicate there is no statistically significant difference in standards of quality across the 11 study sites on the Blue Ridge Parkway.

Management Implications

This study has at least two potential contributions to the management of parks and related protected areas. First, results from this study suggest that traffic congestion on the Blue Ridge Parkway is a moderately salient indicator of quality for the visitor experience. In addition, visitors to the Blue Ridge Parkway appear to be able to express meaningful normative standards of quality about acceptable levels of traffic congestion. These results may be important because traffic congestion is predicted to increase on the Blue Ridge Parkway. Moreover, while perhaps expected, study findings such as these help to expand the applicability of indicator-based planning and management

frameworks from backcountry or wilderness settings to front country and urban-proximate contexts (Manning et al. 1999; Budruk and Manning, In Press). As management agencies create new types of protected area designations (e.g., National Heritage Areas (Hamin 2001)) and use of indicator-based planning and management frameworks increases (Stokes 1990), development of contextually relevant indicators and standards of quality becomes an important research priority.

Second, this study begins to address how visitors evaluate different types of vehicle use on the Blue Ridge Parkway. For example, results from this study suggest that larger vehicles impact the visitor experience to a greater degree than smaller vehicles. This information may be useful to managers because increased traffic congestion may lead to conflict among different user groups. Although previous research has explored conflict among participants in alternative recreation activities (e.g., Lucas 1964; Brewer and Fulton 1973; McAvoy et al. 1986; Williams 1993; Hendricks 1995; Watson 1995; Jacobi et al. 1996; Manning 1999, Chapter 9), little of this work has been directly applied to traffic congestion in parks and protected areas.

Study Limitations and Future Research

As previously discussed, this study begins to explore how visitors evaluate alternative types of vehicle use on the Blue Ridge Parkway. However, the vast majority of respondents (84.5%) visited the park in a car, SUV, or pickup truck. In contrast, only 8.3% percent of respondents drove motorcycles, 1.7% drove RVs, and 1.5% used bicycles. However, previous research suggests that visitors participating in different types of recreational activities may evaluate uses differentially. For example, canoeists in the Boundary Waters Canoe Area Wilderness, MN perceived themselves as very different from motorboat users, and these differences in perceptions may contribute to, or result in, conflict between motorboat users and canoeists (Adelman et al. 1982; Lucas 1964; Manning 1999). Similar differences may also be present among visitors to the Blue Ridge Parkway, and future research might integrate a combination of targeted sampling and qualitative methods in an effort to identify and articulate these differences.

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CONSUMPTIVE ATTITUDES AND CUSTOMER SERVICE PERCEPTIONS AMONG NEW ENGLAND ANGLERS

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Abstract: This study explores the nature of the relationship between consumptive attitudes towards fishing; twelve individual customer service items; satisfaction with facilities, services, information, and the recreation experience; and overall quality of experience for a diverse group of anglers at New England lakes. Recent attention to customers and their experiences and attitudes has increased interest of both managers and researchers in issues related to customer satisfaction. This study builds on previous research by continuing exploration of satisfaction's role in furthering a better experience for people engaging in recreation. Data for this investigation were collected as part of a larger project focusing on anglers in the New England District of the U.S. Army Corps of Engineers. Regression analysis was used to examine relationships between anglers' consumptive attitudes and several dependent variables (multiple customer service items representing facilities, services, information, and recreation experiences). The results of the study showed several positive and significant relationships between anglers' consumptive attitudes and visitor satisfaction items and domains. Notably, attitudes toward catch and release fishing were related to satisfaction with the availability of the type of fish one wants to catch and catching the number of fish one should be able to catch.

Introduction

For over three decades researchers have been trying to determine what represents quality in outdoor recreation and how satisfied recreation customers are with their experiences. The first researcher to examine what constitutes quality in outdoor recreation was Wagar (1966). Quality is an issue of perception, and because individuals have varying past experiences, satisfaction will generally deviate across different customers in different situations. Because of this variability, it is desirable for management to offer a wide variety of activities and to manage for as many different experiences as possible (Wagar, 1966). By managing for a variety of experiences, parks and recreation managers are more likely to provide the unique experiences that people are looking for in their recreation activities.

Consumer behaviorists have also conducted research related to service quality and customer satisfaction. Parasuraman, Zeithaml, and Berry (1985, 1988) have played a leading role in this area of research. Probably one of the most influential pieces of service quality research came when Parasuraman et al. (1988) developed a 22-item instrument named SERVQUAL. Mackay and Crompton (1988, 1990) adapted SERVQUAL in the recreation field to help researchers and managers better understand how people engaging in recreation activities evaluate quality of service from recreation providers. Mackay and Crompton referred to their satisfaction construct as RECQUAL and used the original customer service domains of tangibles, reliability, responsiveness, assurance and empathy.

Burns, Graefe, Absher and Titre (1999a, 1999b) created a customer satisfaction model with four domains (facilities, services, information, and recreation experience) in order to make satisfaction measurement more tangible for recreation researchers and managers. This customer satisfaction model was intended to be more easily understood by recreation researchers and managers because the items within the domains are more relevant and tangible. The domains used are flexible in nature and may be adapted to meet the needs of the specific recreation area under study.

Consumptive propensity is a term representing an angler's attitude towards catching or harvesting fish. This topic has been of some interest and

importance in the field of human dimensions of fisheries management for some time. Relevant studies have examined the relationship between consumptive (catch-related) motives and non-consumptive motives (such as stress release, escape, nature appreciation, and social interaction) in the overall angling experience (Driver & Knopf, 1976), as well as differences in consumptiveness or catch orientation among various segments of anglers (Fedler & Ditton, 1986; Fisher, 1997). Aas and Viterso (2000) investigated the multiple dimensions of consumptiveness using confirmatory factor analysis. Their results confirmed a general consumptiveness factor along with three sub-dimensions including "eagerness to catch large fish," "importance of catching something," and "willingness to release fish." Other researchers have suggested that additional dimensions of consumptive propensity might include the number of fish caught and the ability to catch the type of fish an angler believes he or she should be able to catch while fishing (Fedler & Ditton, 1986; Graefe, 1980).

The purpose of this study was to explore the nature of the relationship between consumptive attitudes and customer satisfaction. Specifically, this study examined the variables of consumptive attitudes, twelve individual customer service items, satisfaction with four customer service domains (facilities, services, information, and recreation experience), and overall quality of experience for a diverse group of anglers at lakes in the New England region. This study builds on Graefe and Fedler's (1986) analysis of the determinants of satisfaction in marine recreational fishing.

Methodology

A multiple-method data collection approach was used to obtain a diverse sample of anglers from the New England region. U.S. Army Corps of Engineers project offices provided names of individuals, groups, and club representatives for the researchers to contact by phone. A total of eight groups out of fifteen contacted agreed to provide the names and addresses of their members for a mail-out survey. As a means of increasing the sample size for the study, a stratified random sample of users was contacted on-site at four lakes (Hopkinton-Everett Lake, East Brimfield Lake, Buffumville Lake, and West Thompson Lake). Upon the completion of a brief on-site interview,

each respondent was asked if he/she was willing to provide his/her name and address for a follow-up mail-back survey.

In total, 433 addresses were collected for the survey. A modified implementation of Dillman's (1978) multiple mailing process was used (four instead of five mailings). A total of 123 usable surveys were returned from the address database for a response rate of about 33%. Surveys were also sent to two large state bass fishing organizations. By combining the surveys returned from the mail-out portion of the study and the surveys distributed to the state bass organizations, the total sample size for this study increased to 176.

A telephone survey of non-respondents was conducted to determine if there was a significant difference between non-respondents and respondents in the study. Thirty interviews were completed and the sample means of 13 items were compared with the results in the original mail survey. The comparison between respondents and non-respondents showed little significant difference between the groups.

Measurement

Customer service was measured using a list of 12 items patterned after scales developed by Parasuraman et al. (1985), Mackay and Crompton (1990) and Burns et al. (1999a). The domains used in this study include facilities, services, information, and the recreation experience. Respondents rated each statement using a five-point Likert-type scale ranging from "not at all satisfied" to "extremely satisfied."

Respondents were also asked to rate their satisfaction with each of the customer satisfaction domains (facilities, services, information, and recreation experience) and their overall satisfaction with their fishing experience at the lake they fish most frequently. Similar to the customer service items, respondents rated their satisfaction with each domain using a five-point scale ranging from "not at all satisfied" to "extremely satisfied." The respondents were allowed to respond "not applicable" if the item or domain did not apply at the lake that they fished most frequently. For overall satisfaction with their fishing experience, anglers were asked to rate their overall quality of experience on a scale of 1-10, with one being the

Table 1. — Reliability Analysis for Consumptive Propensity Indices

	Item-Total Correlation	Alpha if Item Deleted
Size of Fish (alpha = .76)		
I would rather catch one or two big fish than five smaller fish	.74	.50
I would rather catch one or two big fish than ten smaller fish	.65	.60
The bigger the fish I catch, the better the fishing trip	.40	.89
Number of Fish (alpha = .67)		
The more fish I catch the happier I am	.51	N.A.
A successful fishing trip is one in which many fish are caught	.51	N.A.
Catch is not Success (alpha = .69)		
A fishing trip can be successful even if no fish are caught	.45	.63
When I go fishing I'm just as happy if I don't catch a fish	.51	.58
It doesn't matter to me what type of fish I catch	.40	.66
I must catch fish for the fishing trip to be successful*	.52	.60
Catch and Release (alpha = .58)		
I am just as happy if I don't keep the fish I catch	.37	.52
I'm just as happy if I release the fish I catch	.46	.37
I must keep the fish I catch for the trip to be successful*	.34	.53

* Item reverse coded for inclusion in index

least and ten being most satisfied. To measure consumptive propensity, anglers responded to several items representing various dimensions of attitudes towards catching fish. The 12 consumptive propensity items were measured with a 5-point Likert scale ranging from “strongly disagree” to “strongly agree.”

Results

Factor analysis was used to examine the dimensions of customer satisfaction and consumptive propensity. One of the most important characteristics of factor analysis is its data reduction capability. Results of the factor analysis revealed inconsistent factor loadings for the individual items representing the customer service domains. Therefore, no composite indices were created for these variables. The individual items were examined in relation to the consumptive attitudes.

Factor analysis of the consumptive propensity items produced four factors (Table 1). The first factor included three items related to the size of the fish caught (alpha=.76). Agreement with this dimension indicated the importance to the angler of catching bigger fish. Although the reliability analysis showed that the factor reliability could be increased substantially by deleting the third item (the bigger the fish I catch, the better the fishing trip), this item was retained due to its conceptual relevance to the factor theme. The second factor featured two items related to the number of fish caught (alpha=.67). Endorsement of this factor reflected a desire to catch a large number of fish. The third factor included four items describing the role of catching fish in the evaluation of fishing success. The underlying theme of this factor was the idea that catch does not equal (or is not necessary for) success (alpha=.69). The final factor included three items representing the concept of catch and release fishing (alpha=.58). Agreement with this dimension of consumptive propensity reflected acceptance of catch and release fishing, or lack of interest in keeping the fish one catches.

Multiple regression was used to examine the relationship between the consumptive indices and the measures of satisfaction (Table 2). Among the consumptive indices, the attitude toward “catch and release” was a predictor of two satisfaction items within the recreation experience domain (availability of the type of fish I want to catch and catching the number of fish I should be able to). Anglers with attitudes favorable to catch and release fishing were more satisfied with the opportunities to catch the type and number of fish that they wish to catch. The catch and release dimension was not related to any of the other customer service items.

Table 2. — Significant Relationships between Satisfaction Items and Consumptive Indices

Independent Variables - Consumptive Propensity Indices	Dependent Variables - Satisfaction with Customer Service Items							
	Cleanliness of Toilets		Staff Knowledge and Ability to Answer Questions		Availability of the Type of Fish I Want to Catch		Catching the Number of Fish I Should be Able to	
	Pearson r	Beta	Pearson r	Beta	Pearson r	Beta	Pearson r	Beta
Size of Fish	.135	.189	.189*	.234*	.080	.078	.029	-.019
Number of Fish	-.025	.004	.008	-.031	.028	-.005	.160	.149
Catch is not Success	.175*	.211*	.086	.135	-.049	-.050	-.093	-.060
Catch and Release	.083	.091	-.019	-.016	.213**	.220**	.242**	.250**
R ²		.070		.056		.055		.089

* p < .05

** p < .01

Table 3. — Significant Relationships between Satisfaction Domains and Consumptive Indices

Independent Variables - Consumptive Propensity Indices	Dependent Variables - Satisfaction with Customer Service Domains			
	Satisfaction with Services		Satisfaction with Recreation Experience	
	Pearson r	Beta	Pearson r	Beta
Size of Fish	.210	.275**	-.035	.002
Number of Fish	-.062	-.111	-.129*	-.147
Catch is not Success	.115	.133	.012	-.055
Catch and Release	.039	.049	.160*	.161*
R ²		.082		.044

* p < .05 ** p < .01

Two other significant relationships were found between consumptive propensity dimensions and customer service items (Table 2). The “catch is not success” dimension was significantly related to satisfaction with the cleanliness of toilet facilities. The “size of fish” dimension was significantly related to satisfaction with staff knowledge and ability to answer questions. There were no significant relationships between the consumptive indices and the other eight individual customer service items (appearance of area, water quality, water safety information, staff friendliness, roadside signs and directions, parking availability, ranger patrols, and recreation information).

When consumptive attitudes were tested against satisfaction with the four customer service domains (facilities, services, information, and recreation experience), significant relationships were found for two of the four domains (Table 3). In each case, only one of the consumptive dimensions was directly related to domain satisfaction. The “size of fish” dimension was significantly related to satisfaction with the services domain. The “catch and release” dimension was significantly related to the recreation experience domain.

The consumptive attitude dimensions were also examined in relation to overall fishing satisfaction at the lake fished most frequently. There were no significant relationships between the consumptive indices and overall satisfaction with the fishing experience.

Conclusions

Four consumptive propensity indices were created from factor analysis using twelve individual items. These dimensions are consistent with previous research and demonstrate that consumptiveness is a multi-dimensional attitude. Different aspects of consumptive propensity showed different relationships with the customer service measures, reinforcing the importance of considering specific attitudes in recreation user studies.

Building on previous research, results showed some significant relationships between the dimensions of consumptive attitudes and anglers’ customer service perceptions. The most logical of these relationships was the connection between the attitudes towards catch and release fishing and satisfaction with the number and type of fish caught. It makes sense that anglers who are less

concerned with keeping fish would be more easily satisfied with the number and type of fish caught. The meaning of the other two significant relationships regarding customer service items is less transparent. The relationship between the "size of fish" dimension and satisfaction with staff knowledge and ability to answer questions is plausible in that anglers who are more concerned with catching large fish may place more value on access to information about fishing quality. There is no apparent explanation of the relationship between the "catch is not success" dimension and satisfaction with cleanliness of toilet facilities.

It is important to note that the consumptive propensity indices were not significantly related to more customer service measures than they were related to. Additionally, those relationships that were significant were relatively weak and accounted for little of the variance in customer service perceptions. This is in contrast with previous analysis showing stronger relationships between customer service items and domains. For example, the customer service items accounted for 29% to 52% of the variance in domain-level satisfaction among these same New England anglers (Wickham, Graefe & Burns, 2003). It appears that the role of consumptive attitudes in the broader model of angler satisfaction is via a relatively small influence on the evaluation of certain aspects of customer service. For example, attitudes towards releasing fish influence satisfaction with the number and type of fish caught, which in turn influences the overall evaluation of the fishing experience. The items and domains that were significantly related to consumptive attitudes (especially satisfaction with the number of fish available and with the services domain) were generally the stronger predictors of overall satisfaction (Wickham et al., 2003), lending further support to this interpretation of the results.

Implications for Further Research

Findings of this study may reflect the fact that the frame of reference for the customer service and satisfaction questions was the lake the angler fishes most often. This differs from the more typical examination of a particular resource or fishing experience. The variation in lakes represented, coupled with the generalized focus on overall experience at a lake rather than a particular fishing outing, may have influenced the strength of

statistical relationships in this study. Likewise, with fishing clubs playing a major role in the sample design for this study, results may not represent all anglers.

Future research should consider using the same variables in different recreation settings. Researchers may also consider modification of the current constructs as they were used in this study. Refinement of the customer service and consumptive attitude measures might provide more information to inform management decisions in various places. Examining the relationship between consumptive attitudes and variables like place attachment, involvement, or human territoriality may assist managers to make important decisions.

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Recreation Behavior

DOES DISTANCE MATTER? DIFFERENCES IN CHARACTERISTICS, BEHAVIORS, AND ATTITUDES OF VISITORS BASED ON TRAVEL DISTANCE

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Abstract: The purpose of this study was to determine if there are distinct socio-demographic and behavioral characteristics among visitors based on distance traveled. The sample consisted of 642 visitors to the Gifford Pinchot National Forest. Chi-Square tests showed that more distant visitors participated more in viewing activities, were more likely to be first time and day visitors, did less camping, and spent more money on activities, private lodging, and transportation than those traveling shorter distances. One-way ANOVA tests revealed that distant visitors had less place attachment with the destination, visited the destination less frequently, and spent longer periods away from home than close visitors.

Introduction

Various approaches have been used to predict outdoor recreation participation. The most traditional approach is consideration of socio-economic variables (gender, age, income, education, race, occupation, family composition, and party composition). Some studies (Moutinho & Trimble, 1991; Smith, 1985; Young & Smith, 1989) added geographic variables (e.g. distance,

urbaneness) and found that they play a greater role than socio-economic variables in explaining recreation behavior. Among the geographic variables, distance is the most powerful variable as explained in the "gravity" model. The gravity model was derived from Newton's law of gravity, which states that the interaction between two bodies is proportional to their masses, and inversely proportional to the square of the distance between them (Timmermans, 2001). The model is useful for intercity travel; however, the unmodified gravity model is not applicable to recreation travel, particularly with respect to parks (Wolfe, 1970). In this case, traffic is unidirectional (i.e., traffic is generated in one place and attracted to the other). In the model, distance is treated as friction. Wolfe (1970) indicated that the relationship between distance and visits to public parks is not linear. Wolfe (1970) suggested that the gravity model is applicable only for short recreational trips, between 100 and 150 miles. When trips are very short, the friction of distance is negligible, and beyond a certain considerable distance (500, or 1,000 miles, or one or two days' travel time) the friction of distance not only disappears but even becomes reversed (Wolfe, 1970). This is explained by the concept of "inertia," which helps explain the impediment of the gravity model (Wolfe, 1972).

Previous research shows that distance is an important variable for predicting visitors' behavior and for market segmentation. Wolfe (1972) found that the further people go, the further they want to go. Debbage (1991) tested how various factors influence spatial behavior in a resort context. For example, affluent, well educated, and single people tend to travel further distances. Further, Debbage (1991) hypothesized that distance could be a good predictor of recreation behavior such as the longer distance someone has to travel to reach a destination, the more expensive the trip becomes, the longer they tend to stay, and the more they want to see and do. Moutinho and Trimble (1991) found that those who travel further are more likely to be first-time visitors. Gitelson and Crompton's (1984) study also showed that repeat visitors are from closer distances than first time visitors. They also found that repeat visitors have more desire for relaxation than non-repeaters. The non-repeaters on the other hand have more desire for variety. Gitelson and Crompton's (1984) study also found that older individuals are more likely to be repeat

visitors. Their study also indicated that the tendency to visit more familiar destinations (possibly closer) increases with age. The break point of such age was 40, at which the shift to visit a familiar destination occurs more noticeably, whereas non-repeaters were more likely to be younger. O'Leary et al. (1986; Cited in Moutinho & Trimble 1991) found that people with high education and income, males, and those with professional/managerial occupations travel the farthest distances to reach a destination. Therefore, the degree of change in market behavior with respect to distance traveled will place greater emphasis on facilities and resorts in the future (O'Leary et al. 1986; cited in Moutinho & Trimble 1991). In the travel and tourism field, destination distance is considered an important travelers' decision making criterion (Cook and McCleary, 1983; Ankomah, Crompton, & Baker, 1996). The relationships between distance and other variables, however, are not linear (Moutinho & Trimble, 1991). For example, within a comfortable day's drive, a family can travel by a car at a cost per mile. Beyond that limit, when a family travels by air, an increase in miles is less important than for traveling by car.

Distance can be measured in different ways: actual distance between origins and destination (Bell, 1977), highway or travel distance (Smith 1989) travel time (Calatone, di Benedetto & Bojanic, 1987), travel costs (Smith, 1989), or cognitive distance (Ankomah & Crompton, 1992). Recent literature (Ankomah & Crompton, 1992; Ankomah, Crompton, & Baker, 1996) has placed emphasis on cognitive distance rather than actual distance because travelers may rely more upon their cognitive distance. However, the pattern of cognitive distance has not been very clear. For example, Ankomah and Crompton (1992) proposed eight hypotheses to explain cognitive distance, which complicated the measurement of distance. Cook and McCleary (1983) warned marketers and researchers that negative outcomes can occur if consumers use cognitive distance rather than actual distance when selecting a vacation. Mayo and Jarvis (1986; cited in Moutinho & Trimble, 1991) found that tourists perceive destinations as closer than they actually are, whereas Walmsley and Jenkins (1999) indicated that this varies with experience, age, and sex. Cadwallader (1979) found that individual distance estimation is unstable across different

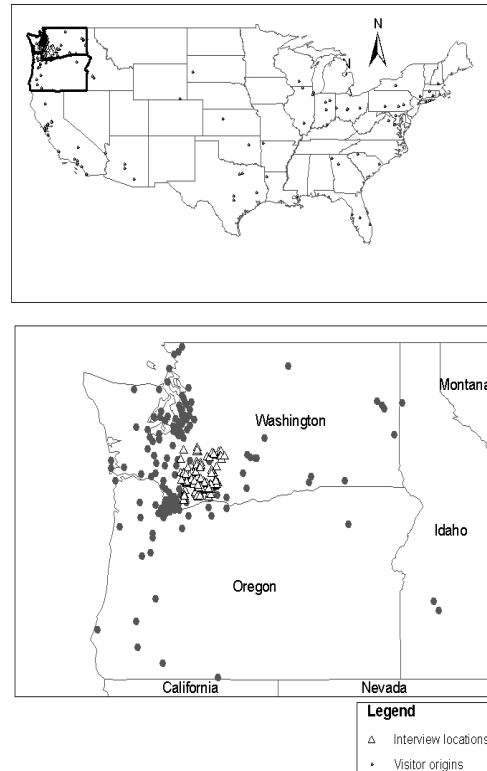


Figure 1. Interview locations and visitor origins

methodologies. In order to reduce the chances of such errors, many studies have used actual distance between the traveler's origin and destination (Applebaum, 1966; Bucklin, 1971; cited in Moutinho & Trimble, 1991).

The objective of the study was to determine if there are distinct socio-demographic and behavioral characteristics among the different market segments based on distance traveled.

Methods

Data were collected in the Gifford Pinchot National Forest between October 1, 2000 and September 30, 2001 as part of the USDA Forest Service National Visitor Use Monitoring Project. On-site interviews were conducted with a representative sample of National Forest visitors (n=642). Sampling took place at developed sites and access points and was designed to represent the different types of sites within the Forest, and their relative use levels.

Analysis for this paper focused on selected variables within the larger study. For the purpose of measuring distance, the Euclidean (crow fly)

distance was calculated between the origin and the destination for each respondent. GIS software was used to compute the distance in miles between the respondents' home zip code and the site visited (based on latitude and longitude of each site). Although the distance does not represent true driving distance or travel time, it is much more accurate than recalling the distance traveled. Since the sample includes visitors from all states of the contiguous United States (see Figure 1), there will be different means of transportation; some by air, some by road, and consequently the travel distance would vary based on the mode of transportation. Therefore, the Euclidean distance minimizes such errors.

The distance traveled ranged from 2.91 miles to 2668.40 miles with a mean distance of 418.10 miles. For the purpose of analysis, subjects were divided into four categories (less than 50 miles, 50 to 99.99 miles, 100-599.99 miles, and 600 or more miles) based on the distance travel. About one-third (36.6%) of the sample traveled less than 50 miles, 27.9% traveled between 50 and 99.99 miles, 17.1% traveled between 100 and 599.99 miles, and 19.4% traveled more than 600 miles to reach their forest destination (table 1).

Frequency of visitation was measured with an open-ended question asking respondents how many times they had come to the National Forest for recreation during the past 12 months. Age was also asked as an open-ended question. Activity participation was assessed through a two-part question. Subjects first responded to a list of potential activities they may have participated in (yes/no) and then were asked to select their primary activity from all of the activities that they had reported. This analysis used the primary activity, which was further reduced to two categories: viewing activities (including sightseeing, driving for pleasure, viewing natural features and visiting cultural sites) and non-viewing recreational activities (including all active forms of outdoor recreation such as hiking, camping, mountain biking, etc.). Subjects were also asked to indicate whether their visit was first time or repeat, day or overnight, camping or non-camping. Similarly, some questions were asked about their travel expenditures, or how much money they spent in different categories such as accommodations, transportation, etc. These

Table 1. — Table showing the characteristics of sample

Independent Variables	N	%
Distance		
<50 miles	187	35.6
50-99.99 miles	147	27.9
100-599.99 miles	90	17.1
≥600 miles	102	19.4
Total	526	100.0
Dependent variables		
Age		
30 and younger	85	16.3
31 to 40	115	22.0
41 to 50	146	28.0
51 to 60	103	19.7
Over 60	73	14.0
Total	522	100.0
Primary Activities		
Viewing activities	235	48.0
Non-viewing activities	255	52.0
Total	490	100.0
Repeat Visitation		
First time visitor	198	40.6
Repeat visitor	290	59.4
Total	488	100.0
Day/Overnight Visitors		
Day visitors	327	66.6
Overnight visitors	164	33.4
Total	491	100.0
Camping		
Campers	150	30.4
Non-campers	343	69.6
Total	493	100.0
Expenditure within 50 miles		
Activity		
No expense	123	90.4
Expense	13	9.6
Total	136	100.0
Private lodging		
No expense	119	87.5
Expense	17	12.5
Total	136	100.0
Transportation (plane, bus, etc.)		
No expense	71	52.2
Expense	65	47.8
Total	136	100.0

expenditure answers were recoded into dichotomous variables, representing whether they spent any money or not within each category.

Table 2. — Chi-square table showing the relationships between distance and dependent variables

Dependent Variables	Distance (miles)				N	df	Chi-square
	<50	50-99.99	100-599.99	599.99>			
Age					522	12	24.52*
30 and younger (%)	16.0	22.6	13.6	10.0			
31 to 40 (%)	26.2	20.5	25.8	13.0			
41 to 50 (%)	27.8	28.8	25.8	29.0			
51 to 60 (%)	19.8	15.8	15.7	29.0			
Over 60 (%)	10.2	12.3	19.1	19.0			
Total (%)	100.0	100.0	100.0	100.0			
Primary Activities					490	3	55.33***
Viewing activities (%)	34.8	38.3	56.5	78.7			
Non-viewing activities (%)	62.2	61.7	43.5	21.3			
Total %	100.0	100.0	100.0	100.0			
Repeat Visitation					488	3	125.10***
First time visitor (%)	15.3	33.3	59.3	80.9			
Repeat visitor (%)	84.7	66.7	40.7	19.1			
Total (%)	100.0	100.0	100.0	100.0			
Day/Overnight Visitors					491	3	8.39*
Day visitors (%)	65.9	62.1	61.6	78.7			
Overnight visitors (%)	34.1	37.9	38.4	21.3			
Total (%)	100.0	100.0	100.0	100.0			
Camping					493	3	15.22**
Campers (%)	30.7	38.1	34.9	14.9			
Non-campers (%)	69.3	61.9	65.1	85.1			
Total (%)	100.0	100.0	100.0	100.0			
Expenditure within 50 miles							
Activity					136	3	12.17**
No expense (%)	93.5	95.1	95.8	72.0			
Expense (%)	6.5	4.9	4.2	28.0			
Total (%)	100.0	100.0	100.0	100.0			
Private lodging					136	3	10.82*
No expense (%)	95.7	92.7	79.2	72.0			
Expense (%)	4.3	7.3	20.8	28.0			
Total (%)	100.0	100.0	100.0	100.0			
Transportation (plane, bus, etc.)				110	3	2.42	
No expense (%)	100.0	100.0	100.0	84.0			
Expense (%)				16.0			
Total (%)				100.0			

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

Place attachment was measured with a four-item scale based on previous studies. Two of the items represented the affective dimension of place attachment (place identity) and two represented the functional (place dependence) component (Williams & Roggenbuck, 1989). The overall reliability of the place attachment index was high ($\alpha = .88$). Since there were only two items representing each dimension, no attempt was made to ascertain differences in the effects of the possible

sub-dimensions of place attachment. To measure the crowding variable, a 10-point scale, 1 for “hardly anyone” through 10 for “over crowded” was used. Overall satisfaction of their visit was measured with another 10-point scale, with 10 being the most satisfied. The characteristics of the sample are presented in Table 1.

Analysis and Results

Chi-square and one-way ANOVA tests were

Table 3. — One-way ANOVA table

Dependent Variables	Distance (miles)				N	F
	<50	50-99.99	100-599.99	599.99>		
Place attachment (mean) ¹	3.46 ^a	3.32 ^{ab}	2.99 ^{bc}	2.88 ^c	236	8.05***
Frequency of visit (mean) ²	18.12 ^a	5.81 ^b	2.86 ^b	1.24 ^b	488	10.45***
Days away from home (mean)	1.44 ^a	1.60 ^a	4.54 ^a	10.42 ^b	133	24.00***
Crowding (mean) ³	4.22	3.61	3.27	2.8	111	2.42
Satisfaction (mean) ⁴	8.58	8.79	8.40	8.63	235	.629

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

¹Measured on 5-pt scales ranging from strongly agree (1) through strongly disagree (5), higher mean scores more place attachment.

²Frequency of visit during the past 12 months

³Measured on 10-pt scales ranging from hardly anyone (1) through over crowded (10)

⁴Measured on 10-pt scales, 10 being the most satisfied

^{a b c} superscripts with different letters indicate significantly different groups at .05 level.

conducted to examine differences in socio-demographic and behavioral characteristics among four groups of subjects based on traveling distance. The results showed significant age differences among the four categories of visitors ($X^2 = 24.52$, $p < .05$) (Table 2). Visitors between age 41 and 60 were more likely to travel longer distances. For example, 58% of the longest distance travelers (>600 miles) were between 41 and 60. Nearly one-fifth of those traveling more than 100 miles were over 60 years old. There was also a significant relationship between the primary activities of the visit to the National Forest and traveling distance ($X^2 = 55.33$, $p < .001$) (Table 2). Those who traveled longer distances were more likely than the short distance travelers to participate in viewing activities. The pattern is very clear; as the distance increases the participation in viewing activities also increases. The first two categories of travelers (less than 50 miles, and between 50 and 99.99 miles) had similar primary activities. About two-thirds of the travelers who traveled less than 100 miles participated in non-viewing activities, whereas more than three-quarters of the longest distance (>600 miles) travelers participated in viewing activities. The results also showed a significant relationship between distance and repeat visitation ($X^2 = 125.10$, $p < .001$) (Table 2). About 85% of the shortest distance visitors (<50 miles) were repeat visitors, whereas only about the 21% of longest distance visitors were repeat visitors. Again, the pattern was clear; as the distance increases visitors are less likely to repeat their trip to the National Forest. The results showed that distance played a significant role in camping behavior. Only about 15% of visitors who traveled the longest distance (>600 miles) did camping, whereas more than

30% of visitors traveling less than 600 miles did so.

When visitors' expenditures within 50 miles of the site visited were compared across the four different groups of travelers, the results showed significant differences for three types of expenditures: activity, private lodging, and other transportation. Expense on activities including guide fees and equipment rentals were significantly different among the four categories of visitors ($X^2 = 12.17$, $p < .05$) (Table 2). The longest distance visitors (>600 miles) spent more on activities than the visitors traveling less than 600 miles. Over one-fourth (28%) of the longest distance visitors (>600 miles) spent some amount of money on activities as opposed to 4-6% visitors who traveled less than 600 miles. Similarly, more visitors who traveled longer distance (more than 100 miles) spent some money on privately-owned lodging than the shorter distance (less than 100 miles) visitors ($X^2 = 10.82$, $p < .05$) (Table 2). Very few (4%) of the short distance visitors (<50 miles) spent any money on private lodging, whereas 28% of long distance (>600 miles) visitors did so. A similar result was found for the expense category, other transportation, such as plane, bus, etc. No visitors traveling less than 600 miles spent money in this category, whereas 16% of the visitors who traveled farther than 600 miles did so.

One-way ANOVA tests were conducted to see the effects of distance on place attachment, frequency of visiting, days away from home, crowding, and satisfaction. Among them, place attachment ($F(3, 235) = 8.05$, $p < .001$), frequency of visits ($F(3, 487) = 10.45$, $p < .001$), and days away from home ($F(3, 132) = 24$, $p < .001$) were significant (table 3). Post-hoc tests for place attachment showed that

visitors who traveled less than 50 miles had significantly higher place attachment scores ($m=3.46$) than the visitors that traveled more than 100 miles. Post-hoc tests of frequency of visits showed that the visitors traveling less than 50 miles visited the National Forest more frequently during the past 12 months (18 times) than visitors traveling more than 50 miles. The results clearly depicted that visitors traveling from more than 600 miles spent more time (about 11 days) away from home on this recreation trip than the visitors traveling less than 600 miles (Table 3). Although crowding was not statistically significant, the descriptive results showed a pattern in which, as distance increased, visitors felt less crowding (Table 3). This is based on a smaller number of subjects because this version of the questionnaire was distributed to only one-quarter of the total sample. If the sample size was larger, the results may have been significant. Finally, there was no significant difference in satisfaction between the different groups. Forest visitors were equally satisfied with their visit regardless of the distance they had traveled.

Discussion

The findings of this study reveal that, among the demographic variables, age is related to distance; however, the pattern is not consistent. It could be inferred from the results that those between 41 and 60 travel longer distances than the other age groups. Possibly, this is related to life stage and income. Gitelson and Crompton (1984) indicated a break point of repeat visitation at age 40, which could not be seen in this study. Rather, this study shows that age group between 31 and 50 is not much different while traveling less than 600 miles. Beyond the 600 miles, the age group between 41 and 50 is the same. The findings of this study on the relationship between distance and repeat visitation is consistent with the previous studies (Bell, 1977; Gitelson & Crompton, 1984; Moutinho & Trimble, 1991; Smith, 1985). The short distance visitors are more likely than the long distance visitors to be repeat visitors.

In terms of camping, it is interesting to note that the first three groups of travelers are similar. The threshold of camping appears to be 600 miles. Wolfe (1970, 1972) suggested a threshold point between 500 and 1000 miles because it is within a comfortable driving distance. Findings from this

study suggest a threshold within Wolfe's (1970, 1972) range. When visitors travel longer than 600 miles, they are more likely to fly to a destination and more likely to spend the night at lodges or with friends/families. This assumption is supported by the expenses of this group of travelers on private lodging and other transportation. Only the visitors traveling farther than 600 miles spent some amount of money on other transportation. All of the visitors traveling less than 600 miles probably traveled by their own transportation. This study also supports Debbage's (1991) hypothesis that, the longer distance someone has to travel to reach a destination, the more money they are likely to spend in their destination.

There is a clear pattern that distance and place attachment are reciprocal; i.e. as distance increases place attachment decreases. Close visitors are more likely to visit the National Forest more frequently than the distant visitors. This result is consistent with the gravity model in that, the closer one lives to a park, the more frequently they visit the park. In addition, the results showed that the frequency dropped significantly when the distance increases, particularly above 50 miles, which could be a threshold distance for frequency of visit. Findings of this study suggest that visitors traveling farther than 600 miles spend more time on their trip than visitors traveling less than 600 miles. Again, the threshold is 600 miles because the number of days increases significantly when the distance exceeds 600 miles.

Descriptive comparison of crowding and distance clearly showed that closer visitors are more likely to feel crowded than the distant visitors. The possible reason for such a difference could be a difference in activities. Distant visitors participated in viewing activities, which may have greater tolerance for crowding than the non-viewing activities. Since the result was not statistically significant, possibly because of the small sample, it is suggested to test this with a bigger sample.

The above findings suggest that there could be two possible distance break points, 50 miles and 600 miles. Place attachment and frequency of visit are different between the visitors traveling less and more than 50 miles, suggesting that those visitors who live within the 50 miles consider park as their home and consequently frequently visit the park.

For camping, days away from home, and expenses on other transportation such as bus plane and bus, 600 miles appears to be the break point. When distance exceeds 600 miles they tend to plan for longer vacation trips, travel by air rather than car, and tend to spend more money in the destination.

Conclusions and Implications

The findings of this study increase our understanding of visitors' behavior by exploring the difference between visitors based on distance traveled. Distance was found to be a good predictor of recreation behavior, specifically with regard to activity participation, repeat visitation, day/overnight visiting pattern, camping, place attachment, frequency of visiting, days away from home, and crowding. This has great application for resource managers as it may help them to design and provide facilities to visitors from different distances.

In addition, it also provides a criterion for market segmentation based on distance. The apparent break points are 50 miles and 600 miles. For travel and tourism marketers, these geographic segments should be considered when designing travel promotions that are effective in attracting target consumers.

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ASSESSMENT OF OVERNIGHT USER BEHAVIOR IN THE HIGH PEAKS WILDERNESS AREA: STRATEGIES FOR TRENDS ANALYSIS

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Abstract: The Eastern Portion of the Adirondacks' High Peaks Wilderness Area is a popular destination for wilderness users from the northeastern United States and Canada. This paper describes overnight user data collected on site, in two of the most popular backcountry camping areas in the High Peaks Wilderness management complex: Lake Colden and Marcy Dam. The study method used was the recording and analysis of daily observations of New York State Department of Environmental Conservation personnel assigned to interior management facilities at these locations. While employed by NYSDEC the author and a co-worker kept a journal of routine public education patrols and campsite inspections, recording campsite type and location, party size, trail head access point, party origin, group type, general age range, gender, and number and type of violations of camping rules and regulations. The data includes nearly 1700 parties, over 160 days of interior campsite inspections. The paper presents analysis of the data, including general demographics of overnight users, change in violations resulting from management interventions and regression analysis of variables affecting violations.

Introduction

Funding plays an important role in the process of deciding the extent of campsite monitoring efforts in wilderness; when resources are limited, managing agencies have fewer options for implementing such programs (Cole 1989). Standardizing a methodology of overnight user data collection that utilizes existing human resources without overburdening them, and provides managers information that is pertinent to the Limits of Acceptable Change (LAC) process

could expand the options for wilderness management agencies with limited funds for monitoring programs. This paper presents an example of a standardized method of data collection that adds little significant time to the workloads of field personnel (approximately 15 minutes to routine nightly public education patrols) while at the same time providing baseline data that informs the judgement of managers.

The High Peaks Wilderness Complex (HPWC) of New York's Adirondack Park, has, for over a century, been a popular destination for wilderness recreation in some of the highest and most rugged mountains in the East. The Eastern zone of the HPWC sees the majority of visitors in the area and has been categorized as an intensive use area within the wilderness opportunity spectrum area (Johnson and Dawson 2001). In order to meet management challenges of recreational use in this area the New York State Department of Environmental Conservation (NYSDEC) adopted the High Peaks Wilderness Complex Unit Management Plan (HPWCUMP) in 1999 that incorporated the LAC management process. The parameters chosen by NYSDEC to gauge limits of acceptable change in this area that are monitored by this study are:

- General campsite condition,
- Campsite solitude - sight and sound spatial characteristics,
- Conflicts between differing user groups, and
- Encounters with large groups while camping (HPWCUMP).

In this study temporal and spatial distribution of overnight users is monitored for 80 percent of campsites in the highest overnight use corridor of the HPWC. By incorporating violations of camping rules and regulations observed on routine public education patrols, it is possible to gauge overnight users' understanding of (or willingness to comply with) rules and regulations. And, by incorporating this data with other monitoring data such as impact assessment of campsites (Cole 1989) the ecological impacts of behavior can also be measured. Monitoring violations can also be helpful in the prioritization of resource allocation, in developing appropriate management interventions and measuring the effectiveness of management interventions in reducing impact, an important function in monitoring systems (Marion 1995).

Study Area

Lake Colden and Marcy Dam are the most popular destinations for campers in the eastern zone of the HPWC. Lake Colden is a 41-acre lake at 2700 feet in elevation located in the heart of the Eastern High Peaks with 20 designated campsites at the south end of the lake. Camping at Lake Colden - a 6-mile hike from both Adirondack Loj trailhead to the north and Upper Works trailhead to the south - offers spectacular scenery and an ideal location to set up a base camp to hike many of the surrounding mountains. This area is the confluence of seven different trails. Marcy Dam is a 3-acre pond that offers high aesthetic qualities for a relatively short hike - 2.1-miles from Adirondack Loj trailhead - with 30 designated campsites. Because of its proximity to the most heavily used trailhead in the High Peaks Wilderness Area, Marcy Dam sees a higher level of day and overnight use than that seen at Lake Colden. In response to the impacts on the wilderness resource in this area a number of direct and indirect management actions were taken by NYSDEC in 1999. These include:

- Prohibiting the use of camp fires;
- Limiting camping to designated sites only;
- Reduction of the maximum overnight party size to eight persons;
- Requiring tents to be within 15 feet of the sign designating the site;
- Remediation of closed sites and impacted areas.

NYSDEC maintains interior outposts (ranger stations) at Lake Colden and Marcy Dam in order to facilitate management at these areas. The responsibilities of the caretakers at these cabins include trail maintenance, public education, assisting Forest Rangers with enforcement of rules and regulations, and search and rescue.

Methods

Backcountry personnel utilized as mechanisms for data collection were the Caretakers stationed at the interior outposts at Lake Colden and Marcy Dam. Caretakers were trained by forest rangers to recognize and correct violations of rules and regulations. Among the duties of the interior caretakers are routine public education patrols of the campsites in their work circles. Patrols of campsites take place generally in the evening, between 5:00pm and 9:00pm, though parties

observed at any time of day were included in the data. The evening is the most effective time for public education because it is when overnight parties are in or arriving at the campsites. At this time of day backcountry personnel can direct parties to designated campsites that are not immediately apparent upon arrival in the camping areas, explain rules and regulation, and mitigate impact on the resource by correcting violations before they occur.

During the extent of this study the caretaker at Lake Colden (the author) was assigned to the outpost Friday through Tuesday and patrolled campsites on all nights of the tour of duty except Tuesday. The Caretaker at Marcy Dam was assigned to the outpost from Thursday to Monday. Data was collected at Marcy Dam less frequently, but generally on weekend nights.

The Data that was included was that which was most readily available through observation: campsite location, campsite type, number in party, gender of individuals in the party, general age range of party, number and type of violations. The violations that were recorded were:

- a) Camping more than 15 feet from the sign (disk) designating a primitive campsite,
- b) Camping within 150 feet of the trail or water in a non-designated site,
- c) Making a campfire,
- d) Leaving a campfire unattended,
- e) Having an unleashed pet,
- f) Exceeding the maximum overnight party size (8 persons),
- g) Failing to properly secure food from bears,
- h) Washing dishes in/polluting a stream,
- i) Possessing glass containers, and
- j) Failing to keep a neat and sanitary campsite.

Violations that were included were not necessarily those that enforcement personnel would consider deserving of enforcement action but can be characterized as illegal, careless, or unskilled (see Dawson and Hendee). The following is an account of what infractions were included as violations. (A, B) Camping greater than 15 feet from designated disks and camping in non-designated sites within 150 feet of trail or water were counted as violations if the party had set up their tent(s). Even if the tent had been set up for only a few minutes prior to the arrival of NYSDEC personnel and was then moved

to a legal site, this was counted as a violation. If the party had not set up a tent in this illegal site it was not counted as a violation, even if they intended to camp there, and/or were unaware of proper camping rules and regulations. Tent violations were counted as occurring in the site where the party was moved to, which was generally the nearest designated campsite. (C) No fires are permitted in the Eastern High Peaks. This regulation reads, "No person shall ignite or maintain a campfire for any purpose at any location in the Eastern High Peaks Zone." For the purposes of this study all parties gathering firewood and building fire rings, were counted as violations even if they did not ignite or maintain the fire. This is based on the idea that foraging for firewood has significant impact on the understory of the area. The intent of the fire ban is in part to reduce this impact. (F) The maximum overnight user group size in the Eastern High Peaks is eight persons. All instances of parties exceeding maximum overnight group size were counted as violations even if the party was split up (camping in two smaller parties greater than 1 mile apart, as per regulations) before spending the night. Parties larger than eight are not permitted to congregate, eat or camp in a single site. Not counted as violations were instances when separate parties would congregate in one campsite in a group larger than eight to cook or socialize. This occurs often at a few sites at Lake Colden where the view from the lean-to is much nicer than that of nearby campsites. (G) Parties are required to adequately secure their food from bears. Parties considered to be in violation were those that made no attempt to secure their food, brought no equipment to do this, or their attempt to secure food was sorely inadequate. Not counted as violations were parties who lost food to the bears after making a reasonable attempt to secure it. (I) Glass containers are not permitted in the Eastern High Peaks. Counted as violations were all glass containers in the possession of a party that were seen by the Caretaker (data collector). (J) Failing to keep a neat and sanitary campsite was counted as a violation only if there were food scraps or garbage in an unattended campsite.

Brief survey questions were used to determine party origin, trailhead access, and group type. These questions were asked in a casual manner: "Where did you folks hike in from today?" "Where are you from?" If there was some indication that

the party was an organized group (i.e. larger groups with individuals of the same age or gender, with a clear leader, uniform equipment, etc.) the question, "What type of group is this?" was asked. The data was recorded in a notebook during and after the patrol and was then entered in a Microsoft Excel spreadsheet. Parties were not aware that information about them was being recorded.

A notable bias in this methodology is that uniformed personnel (data collectors) may influence the behavior of subjects being studied. If overnight users act differently (i.e., hide glass bottles, set up tents after personnel leave) when uniformed personnel are present one would assume that the results would show less violations than what actually occur. Further, observation of some violations require that the data collectors must be present at the exact time the violation occurs. Examples of this are washing dishes in the lake or stream, litter in the campsites or outhouses, a pet that is unleashed once the data collector has left, a poorly hung bear bag far from any campsite whose owner is not encountered. Another difficulty in assessing violations is that the results of violations cannot always be attributed to a specific party. Examples of this are, food scraps in the stream, human waste sites, garbage left in the outhouses, remains of campfires. Violations or results thereof that could not be tied to a specific party or campsite were not included in this study.

Another notable bias is that if the routine public education patrols are interrupted because of search, rescue, public assistance or other job requirements, the number of violations increases because personnel are not available to provide information on campsite locations, rules and regulation, and low impact camping techniques. The most notable example of this occurred at Lake Colden on the Canadian Victoria Day holiday weekend in mid-May 2001. The Lake Colden Caretaker was asked to respond to a rescue and was not able to patrol the campsites until 9:00 pm. where there were numerous violations because of lack of educational presence.

Altogether, this assessment of overnight user behavior shows fewer violations of infractions of applicable rules and regulations than actually occur. Additionally, since violating parties were educated by the caretakers, this data also can be used to

demonstrate the importance of backcountry personnel.

Results and Discussion

The data was collected in three sets: Lake Colden, summer 2001 containing observations of 561 overnight parties, 1832 individuals, over 58 days; Lake Colden 2002 containing observations of 637 overnight parties, 1914 individuals, over 69 days; and Marcy Dam 2002 containing observations of 479 overnight parties, 1691 individuals, over 34 days.

User origin. Most overnight users visiting Lake Colden and Marcy Dam were from the northeastern states and Canada (primarily Quebec). The difference in the proportion of Canadians to New Yorkers between the two camping areas is presumably because the trailheads that access Marcy Dam are on the northern boundary of the HPWC and are therefore a much closer drive from Canada. Lake Colden is equidistant from the northern trailheads and from the Upper Works trailhead to the south - a much shorter drive from Albany or New York City.

Temporal distribution. Temporal distribution of overnight use at Lake Colden is quite uneven over the summer season. Early season holidays (Victoria Day and Memorial Day) can be among the busiest of the year or have little use at all. This fluctuation is due primarily to the weather in the HPWC this time of year. On Victoria Day 2001 the weather was partly sunny and in the 50's; in 2002 it was raining and snowing. Overnight use drops off immediately in early June (no doubt in correlation with the area's notorious Black Fly season) and slowly increases throughout the summer with a peak around 4th of July. August sees the most use with number of parties exceeding campsites on most weekends. Labor Day weekend saw the highest level of overnight use at Lake Colden for both years.

Violation types. The primary type of violation (11.22% of all parties) in the total data set was camping in a non-designated site less than 150' from the trail stream or water. This was followed by camping greater than 15 feet from the disk designating the campsite (7.16% of parties). Discrepancies in tenting violations (the 150' rule as opposed to the 15' rule) between Lake Colden and

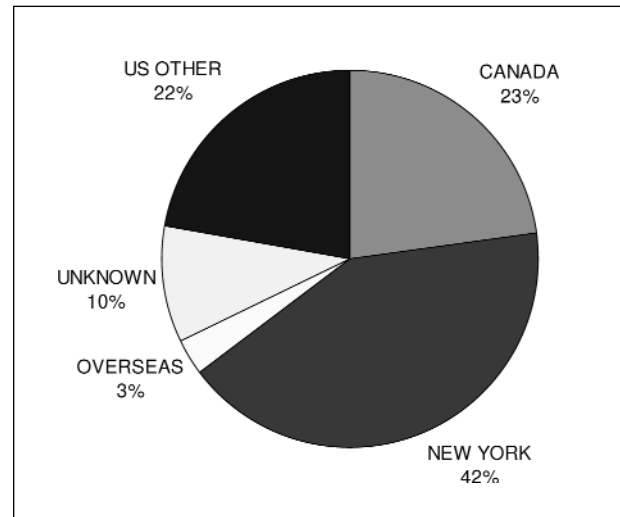


Figure 1: Lake Colden User Origin.

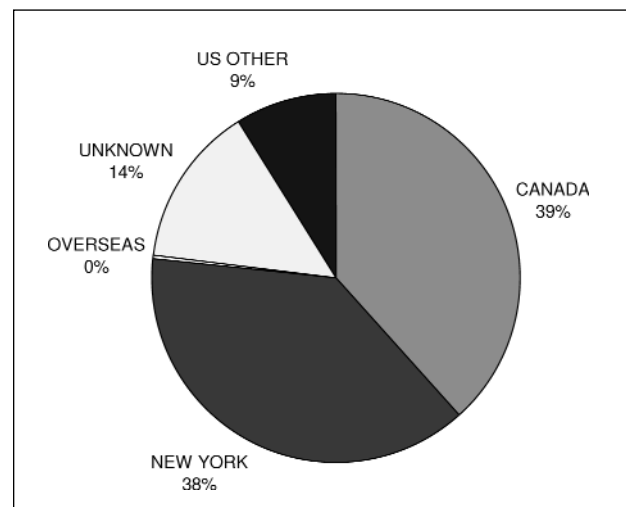


Figure 2: Marcy Dam User Origin.

Marcy Dam can be attributed to the data collector's interpretation of rules and regulations.

The greatest change in violations between 2001 and 2002 occurred at Lake Colden in the percentage of parties violating the camping greater than 15 feet from the disk rule. This is because of campsite remediation efforts implemented by the NYSDEC in both 2001 and 2002. In the summer of 2000 NYSDEC began closure of sites in the heavily impacted 'at large' tenting area at Lake Colden known as "Day Glow North" (because of

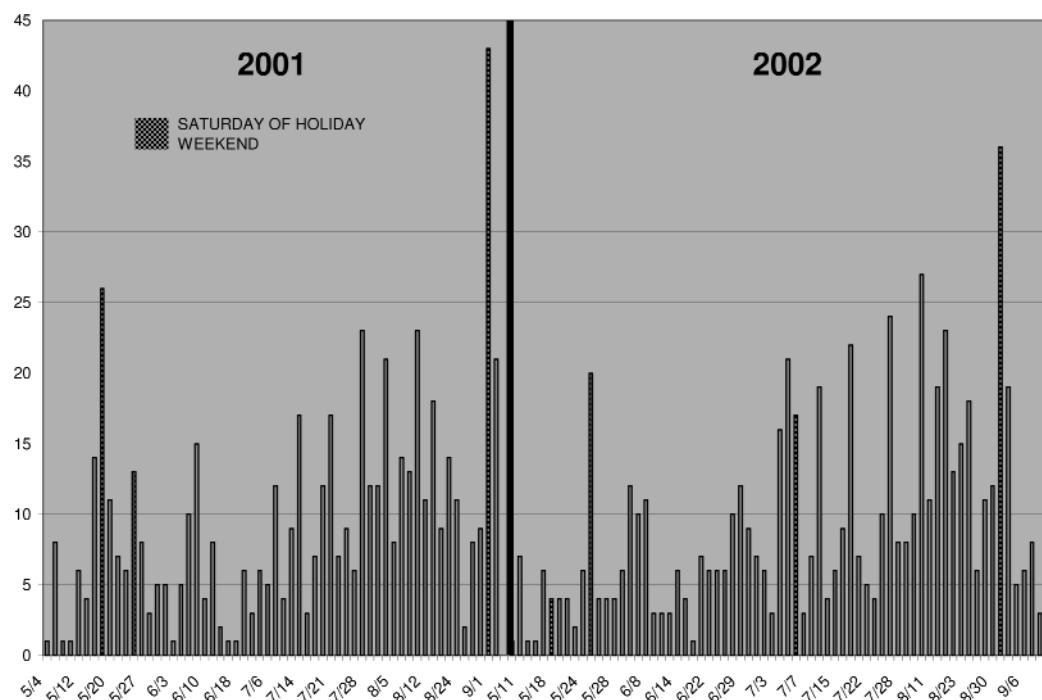


Figure 3: Temporal Distribution of Overnight Users at Lake Colden.

the glow, visible from a distance, of brightly colored tents lit from within with flashlights). Though four of seven 'Day Glow North' sites had been closed a year before, the only indicator of closure was the removal of the designated camping disks and their replacement with 'NO CAMPING' signs. In June of 2001 closed sites were revegetated with locally transplanted seedlings and seed logs, and brushed in with fallen trees. On two of the remaining sites, three eight-foot by eight-foot tent cribs were established to increase intrasite concentration of use (Marion 1996). A food bag cable was strung nearby to help secure campers' food from bears. This, along with the ban on campfires, further minimized trampling impacts on revegetation sites and peripheral areas. More remediation work followed in 2002 with the relocation of a lean-to further away from the water and from other campsites. Revegetation of impacted areas continues in summer 2003.

Regression analysis of Violations. To illustrate management applications of data collected using this methodology, descriptive statistical analysis was conducted using Microsoft Excel software. Regression analysis were used to examine the relationships between violations (specifically defined below) and descriptive variables. For multiple regression analysis, dummy variable coding was used for each classification of

descriptive variable. Dependent variables are violations per night (VPN)- number of violations occurring on a single night, violations per party (VPP) - number of violations per party, and violations per campsite (VPC)- number of violations in a campsite on a single night.

Regression 1: Descriptive variable visitors/nights - the number of individuals at a camping area on a single night (Marcy Dam or Lake Colden)- versus dependent variable violations per night (VPN).

Regression 2: Descriptive variable parties per nights - the number of overnight parties in the camping areas on a single night versus VPN. Regression 2 is run for all the data set and then for each set; Lake Colden 2001, Lake Colden 2002 and Marcy Dam 2002.

Multiple regression 1: descriptive variable party origin (classified as New York, US Other and Canada) versus violations per party (VPP).

Multiple regression 2: Descriptive variable party type (classified as individual, friends/family and organizations) versus VPP.

Multiple regression 3: Descriptive variable campsite type (classified as tent site, remediated tent site and lean-to site) versus violations per campsite (VPC)

Multiple regression 4: Descriptive variable arrival time (classified as arriving before patrol or after patrol) versus VPP.

Multiple regression 5: Descriptive variable campsite

Table 1. — Violation Types As Percentage of Total Parties.

VIOLATION TYPE	ALL DATA	LC 2001	LC 2002	% CHANGE AT LAKE COLDEN	MARCY DAM
LESS THAN 150'	11.22%	8.02%	9.26%	1.24%	17.57%
15' FROM DISK	7.16%	15.15%	5.34%	-9.81%	0.21%
NO FIRES	2.33%	3.39%	1.88%	-1.50%	1.67%
UNATTENDED FIRE	0.06%	0.00%	0.16%	0.16%	0.00%
8 PERSON MAX	1.91%	2.32%	1.26%	-1.06%	2.30%
DISHES IN STREAM	0.54%	0.71%	0.47%	-0.24%	0.42%
BAD FOOD HANG	5.37%	2.50%	2.67%	0.17%	12.34%
NO GLASS	2.09%	0.71%	2.20%	1.48%	3.56%
LEASH PETS	1.67%	2.85%	1.88%	-0.97%	0.00%

Table 2. — Violations as Percentage of Total Parties Before and After Campsite Remediation.

VIOLATION TYPE	BEFORE REMEDIATION 2001	AFTER REMEDIATION 2001	AFTER REMEDIATION 2002
15' FROM DISK	75.86%	8.75%	2.61%
LESS THAN 150'	3.45%	5.00%	9.57%
NO FIRES	6.90%	0.00%	0.00%
LEASH PETS	3.45%	3.75%	0.87%
8 PERSON MAX	0.00%	3.75%	3.48%
BAD FOOD HANG	0.00%	1.25%	0.00%
NO GLASS	0.00%	0.00%	2.61%
N	29	80	115

sharing (classified as one party per site, two or more parties per tent site and, two or more parties per lean-to) versus VPP.

Variability in the data set is accounted for mostly by regression one and two, visitors per night and parties per night, $R^2=.674$ and $.662$ respectively. While there is no surprise that there is a strong relationship between number of parties and number of violations, defining this relationship provides a benchmark against which overnight user's knowledge of and willingness to comply to rules and regulations can be measured. In multiple regression 1 party origin accounts for little of the variability of violations in the data set ($R^2=.017$). It does show with high probability that the coefficient of Canadian parties is greater. There is variation in the coefficient of party origin between Lake Colden 2001, Lake Colden 2002 and Marcy Dam 2002 (not shown) though in all of these data sets Canadian parties had the highest coefficients. At Marcy Dam 2002 the difference between Canadian and New York party was much less significant. Possibly accounting for this is Marcy Dam's accessibility and thus its attractiveness to novice campers. The change in the coefficient between Lake Colden 2001 and Lake Colden 2002

(-25%), corresponds, speculatively, to the change in early season holiday use (Victoria Day) and campsite remediation efforts.

In multiple regression 2, party type also accounted for little of the variability ($R^2=.015$), but showed that the coefficient of organized groups was greater than that of friends/families or individuals. In multiple regression 3, campsite type accounts for about 20 percent of the variability in violations per campsite. The coefficient in tent sites is much higher (almost double) than that in lean-tos or remediated tent sites. The most common violations (see above) have to do with where a tent is erected. Remediated tent sites, where intrasite use concentration was increased through indirect management intervention, effectively decreased number of violations. Such sites provide clear visual indication to parties of where tents belong. This also seems to be true for lean-tos. Again, it must be noted that violations were assigned to the site that parties stayed in for the night. When a tent was erected in a lean-to site and the party was moved to a tent site the violation was associated with the tent site. Because this happened very infrequently this flaw in data collection would insignificantly affect the coefficient.

Table 3. — Results of Regression analysis.

	Dependent variable	Descriptive Variable	N	R ²	coefficient	Standard Error	T-Stat	P-Value
Regression 1	violations per night	visitors per nights	161	0.67	0.11	0.00	27.18	7.52E-62
Regression 2	violations per night	parties per nights (PPN)	161	0.66	0.34	0.01	26.60	1.31E-60
Regression 2	violations per night	PPN Lake Colden 2001	58	0.76	0.38	0.02	18.52	8.57E-26
Regression 2	violations per night	PPN Lake Colden 2002	69	0.59	0.28	0.02	14.48	1.87E-22
Regression 2	violations per night	PPN Marcy Dam 2002	34	0.54	0.36	0.03	13.51	5.34E-15
Multiple Regression 1	violations per party	PARTY ORIGIN	1667	0.02				
		New York			0.30	0.02	14.17	4.16E-43
		US Other			0.30	0.03	9.47	8.89E-21
		Canada			0.41	0.03	15.77	2.64E-52
Multiple Regression 2	violations per party	PARTY TYPE	1667	0.02				
		Individual			0.16	0.05	3.15	0.001663
		Friends/Family			0.33	0.02	21.77	1.18E-92
		Organization			0.44	0.05	9.02	4.96E-19
Multiple Regression 3	violations per campsite inspection	CAMPSITE TYPE	1378	0.02				
		Lean-to			0.29	0.03	9.58	4.36E-21
		Tent			0.47	0.02	19.12	2.03E-72
		Remediated Tent Site			0.24	0.05	4.44	9.53E-06
Multiple Regression 4	violations per party	ARRIVAL TIME	479	0.33				
		After Patrol			0.71	0.09	8.21	2.13E-15
		Before Patrol			0.15	0.06	2.46	0.014229
Multiple Regression 5	violations per party	CAMPSITE SHARING	1676	0.00				
		One party per campsite			0.29	0.02	18.31	2.22E-68
		Shared campsite			0.37	0.03	14.60	1.65E-45

In multiple regression 4, arrival time accounted for one third of the variability in violations at Marcy Dam. There was a significant difference in the coefficient between parties arriving before and after evening patrols. Parties arriving at Marcy Dam after dark are more than four times as likely to have violations. It must be noted that morning patrols at Marcy Dam were not usually as comprehensive as evening patrols, thus biasing the results somewhat. None-the-less, the data collector was confident that 80 to 90 percent of parties were included.

In multiple regression 5, campsite sharing accounts for nearly none of the variability in the data set ($R^2 = .004$) but the coefficient of shared campsites is higher than campsites that were not shared, indicating that parties sharing campsites more frequently have violations. Of the 1676 parties included in the data, 72 percent had a campsite to themselves, 19 percent shared a tent site with at least one other party, and 9 percent shared a lean-to with at least one other party.

Management implications

Coordinating this assessment of overnight user behavior with other monitoring programs could

potentially provide a broader view of conditions in the HPWC. NYSDEC has implemented two programs to monitor conditions in the backcountry. First, both day and overnight users are required to fill out Trip Tickets available at trailhead registers. This data provides more detailed information on user origin, party size and intended destination than what is available from trailhead register books. Comparing trailhead data to on-site data could illuminate the difference between overnight users' intended and actual destinations and lengths of stay. Second, a campsite inventory and impact assessment (Cole 1989) was undertaken starting in the fall of 2000. This provides baseline data for monitoring changes in ecological and aesthetic conditions of designated campsites. By supplementing these data with the overnight user data collected in this study (spatial analysis of violations) managers can gain a clearer picture of the effect of behavior on ecological conditions. This would also provide managers specific representations of use and violations, enabling prioritization of remediation efforts based on user behavior.

The HPWC faces management challenges presented by its overnight users' origin. Evaluation of the relationship of overnight party's origin and violations is useful to managers in directing user education resources. Research is required into why Canadian overnight users visiting Lake Colden and Marcy Dam violate rules and regulations more frequently than other users. This may simply be because of the accessibility of the HPWC to users from Canada, the timing of the Victoria Day holiday -before NYSDEC has hired its full seasonal staff of Assistant Forest Rangers (AFRs)- or a mix of sociological and cultural preferences and expectations of Canadian overnight users. Campsite remediation at Lake Colden has been essential in reducing ecological impact by curtailing the behavior (tent violations etc.) that stifles natural regeneration of understory and overstory vegetation (Marion 1996). Increasing intrasite use concentration through the use of tent cribs, revegetation and centralized food hanging areas is effective in reducing tent violations at Lake Colden and could be an effective management intervention in other areas heavily impacted by overnight use.

Overnight parties arriving after dark at Marcy Dam are frequently in violation of rules and regulations. Extending the shifts of personnel dedicated to trailhead education into the evening may also curb such behavior. Implementing limitations on how late in the day a party can start hiking to camp in the high use areas of the HPWC may be appropriate to curb the improper behavior of late arrivals at Marcy Dam. This may be a politically palatable alternative to other direct management use limitations such as a permit system.

Utilizing backcountry personnel for monitoring conditions in wilderness is nothing new. By recording observations made on routine public education patrols the management dialogue is enhanced. Identification of a managing agency's personnel who frequently interface with recreationists is the first step in the application of an assessment of use such as this.

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A COMPARISON OF RESIDENTS AND NON-RESIDENTS ON PERCEPTIONS OF OFF ROAD VEHICLE USE AND CARRYING CAPACITY

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Abstract: Numerous studies have been done to determine the social carrying capacity of outdoor recreation sites. These have usually been done in the context of visitor satisfaction, character of use, conflict, and perceived crowding. Although many authors have acknowledged that different user groups have various perceptions of conflict and crowding, the majority of these relationships have focused on segregating visitors/users by motivating and/or activity preferences. However, few studies have examined the relationship between crowding and conflict norms and visitor/user points of origin. The fact that local users of recreation sites may feel more ownership toward the sites, feel more displaced by other users, and have more accurate expectations about use than non-local users creates the premises that these groups have different preferences, attitudes, and standards toward social and environmental impact. A survey was conducted for a period of one year (May 2002-May 2002) at the Cape Hatteras National Seashore through a combination of on-site interviews and mail-back questionnaires. This survey addresses issues such as participant activities, perceptions and norms of carrying capacity and off-road vehicle use, demographic information, and satisfaction. In addition to providing results of measures on perceived crowding, satisfaction, and attitudes toward ORV use, this paper will concentrate on how residents (people residing within sixty miles of the seashore) differed from non-residents who have traveled to the seashore from further distances. More specifically, discussions will focus on why these groups may be

different, and how managers can use this information to reduce conflict and increase satisfaction for all park users.

Introduction

Management of our Nations outdoor recreation areas have attracted much attention and raised concerns about appropriate amounts and types of use over the past several years. Difficulties discerning the impact of recreational use in specific recreational settings became an important factor in the management of resources. The concept of determining pressures on park resources and visitor perceptions on their quality of experience is referred to as carrying capacity. Carrying capacity can be defined as the level of recreation use an area can sustain while maintaining a consistent quality of recreation (Wagner, 1964). Management objectives should focus on concerns about resource conditions and the perceived recreation quality of experiences that are derived from them (Stanky & Manning, 1986).

Research indicates that quality of visitor experiences and visitor satisfaction can be greatly reduced due to resource degradation, crowding, and/or other social impacts on the natural environment (Cole, 1994; Manning & O'Dell, 1997). Rising visitation has increased pressures on conserving park resources while management must also maintain visitor satisfaction. Visitor satisfaction has been regarded as the primary goal of outdoor recreation management (Ditton, Graefe, & Fedler, 1981; Manning, 1999; Schomaker & Knopf, 1982; Wagar, 1964) and therefore can create a challenge when balancing recreational opportunities while protecting natural resources.

The challenge of this balance is being addressed at Cape Hatteras National Seashore (CHNS) by determining resident and non-resident norms and attitudes toward crowd levels and Off Road Vehicle (ORV) use. Norms in resource management have been defined as standards for individuals and/or groups that are used as a basis for evaluating behavior, social, and environmental conditions relevant to the quality of recreational experience (Donnelly, Vaske, & Shelby 1992). Norms are created to establish a means for describing and predicting aspects related to carrying capacity and

establishing a foundation for the standards of quality an individual or group has come to expect from a certain resource or environment. For this study, the individuals and groups were identified to delineate the attitudes and standards that are formed among residents and non-residents.

Data from this research will determine if there is a relationship between perceptions and norms towards carrying capacity and off-road vehicle use among residents and non-residents of CHNS. Data analysis will address specific issues designed to identify more precise information on the preferences of both residents and non-residents with respect to expectations, perceived crowding levels, and suggested management adjustments regarding use limitations. Researchers and managers can use this information to assess current and changing conditions regarding visitor norms and preferences. This study will assist managers to address potential trade-offs when assessing the impacts of resources and maintaining the objectives of the park without diminishing visitor satisfaction. More specifically, results will assist NPS managers of CHNS in developing and evaluating appropriate management decisions, maintaining the standards of quality, and evaluating the norms and perceptions of separate user groups.

This paper is part of a larger study funded by the National Park Service under the United States Department of Interior. The initial purpose of this study was to assess the visitor attitudes and perceptions about management issues at Cape Hatteras National Seashore. Additional information such as participant activities, personal expenditures, perceptions and satisfaction rankings of carrying capacity and off road vehicle use, demographic information, and a numeric overall rating of the site by the participant was used. An attempt is made to identify satisfaction indicators and deconstruct the visitors' perceptions to determine what individual factors may influence overall expectations while visiting the Cape Hatteras National Seashore. The primary purpose of this study was to explore different expectations and perceptions between residents and non-residents to Cape Hatteras National Seashore.

Data Collection & Methods

Data was gathered at CHNS from May 2001 to May 2002 at twenty-seven data collection sites that included off-road vehicle (ORV) beach access areas,

walkover beach access areas, visitor centers, lighthouses, and sound-side access areas along 70 miles of shoreline and 30,000 acres of land. Each data collection site was accessed during separate times of the week and times of the year to ensure that all types of visitors to the National Park would be represented in this study. The number of participants and ORV's were counted at each data collection site. Visitors of the walkover beach access areas and ORV beach access areas were randomly chosen to participate in an on-site survey. Once visitors were selected for the on-site survey they were asked to participate in an interview that consisted of sixteen questions. Respondents were informed that participation in this survey was completely voluntary and that responses would be kept completely confidential. Visitors answered questions that were designed to determine visitor demographics, visitor's perceptions of crowding capacity, and preferences/support for management actions that may be necessary to mitigate undesirable conditions. Questions included travel distance, duration of trip, perceptions of number of people and ORV's on the beach, visitor norm questions, and overall rating of park experience and satisfaction. More specifically, visitors were asked to estimate the number of visitors and ORV's that they had seen on the beach, specify the maximum number of people per day they find to be acceptable and tolerable, and specify the maximum number of people and ORV's they should see before managers limit use. Once participants completed the on-site survey they were asked to participate in a mail-back survey. The mail-back questionnaire collected additional information concerning visitor activities, ORV use, economic information, crowding information, aircraft information, and overall satisfaction and perceptions.

More specifically participants were asked:

1. How did the number of people you saw compare with what you expected to see on a scale of 1 ("a lot less than expected") to 5 ("a lot more than expected")?
2. How crowded did you feel on the beach today? 1 ("not crowded at all") to 9 ("extremely crowded")
3. How acceptable is the number of people you saw on the beach today? +4 ("very acceptable") to -4 ("very unacceptable")

Table 1. — Visitor Norms Toward ORV's

Visitor Norms	Residents		Non-residents		Independent T
	N	Mean	N	Mean	
Maximum Number Acceptable	73	175	648	226	-0.785
Maximum Number Tolerable	56	253	496	496	-3.96*
Maximum Before Use is Limited	23	295	242	414	-0.684

*Significant at .001

Table 2. — Visitor Norms Toward ORV's

Visitor Norms	Residents		Non-residents		Independent T
	N	Mean	N	Mean	
Maximum Number Acceptable	81	116	672	60	1.92
Maximum Number Tolerable	63	104	610	122	-0.249
Maximum Before Use is Limited	40	87	452	91.65	-0.054

Table 3. — Crowding Perceptions Towards People

Visitor Perceptions	Residents		Non-residents		Independent T
	N	Mean	N	Mean	
Number of people vs. expectations	105	3.04	892	2.95	0.834
How crowded do you feel?	104	2.72	890	2.82	-0.554
How acceptable is the # of people?	105	2.42	890	2.38	0.194
Others on the beach...	105	0.67	889	0.68	-0.109
Overall I would like to have seen...	104	-0.22	883	-0.36	0.853

Table 4. — Crowding Perceptions Towards ORV's

Visitor Perceptions	Residents		Non-residents		Independent T
	N	Mean	N	Mean	
Number of ORV's vs. expectations	104	2.95	885	3.24	-2.52*
Would you say that ORV's are...	105	3.16	889	3.23	-2.4
How acceptable is the # of ORV's?	104	2.11	886	1.74	1.537
ORV's on the beach...	104	1.42	884	1.28	0.591
If ORV's were not allowed...	104	-1.99	886	-1.69	-1.384

Significant at .001

4. Would you say the other people on the beach greatly enhanced or detracted from your enjoyment? +4 ("greatly enhanced my enjoyment") to -4 ("greatly detracted from my enjoyment")
5. Overall I would have liked to have to have seen far more or far less people on the beach. +4 ("far more") -4 ("far less")

Additional questions regarding ORV information were also addressed:

1. How did the number of people you saw compare with what you expected to see on a scale of 1 ("a lot less than expected") to 5 ("a lot more than expected")?

2. How crowded did you feel on the beach today? 1 ("not crowded at all") to 9 ("extremely crowded")
3. How acceptable is the number of people you saw on the beach today? +4 ("very acceptable") to -4 ("very unacceptable")
4. Would you say the other people on the beach greatly enhanced or detracted from your enjoyment? +4 ("greatly enhanced my enjoyment") to -4 ("greatly detracted from my enjoyment")
5. Overall I would have liked to have to have seen far more or far less people on the beach. +4 ("far more") -4 ("far less")

Questions were designed to allow participants opportunities for both negative and positive responses and allow for cross-sectional analysis between on-site and mail-back surveys. A modified Dillman (1978) approach was used to maximize response rates by sending a reminder post card and mail-back questionnaires to non-respondents.

Results

For this study, 1706 on-site interviews and 1307 mail-back surveys (76.6%) were analyzed. For the purpose of this study, residents were categorized as individuals residing within 60 miles of CHNS (N = 130) and non-residents as individuals living beyond 60 miles of the CHNS (N = 1531). The data analyzed from these respondents provided a sample of 8% residents and 92% non-residents.

Results from comparing visitor norms toward crowd size between residents and non-residents (Table 1) shows that the residents found the maximum number of acceptable people to be 175, while non-residents maintained a mean of 226. The results of maximum number tolerable number of people among residents yielded a mean of 253, where non-residents provided a much higher number of 496. The maximum number of visitors before use is limited for residents was 295 with non-residents providing a number of 414. The average number of individuals that both residents and non-residents reported seeing was 105. These results show that both residents and non-residents are prepared to accept and tolerate more people than are currently being observed at CHNS. Interestingly, for all three questions, non-residents reported higher means than residents. Although the only significant (.001) difference was for the number of people tolerable, this pattern suggests that there may be differences between visitors and residents.

Results from comparing visitor norms toward ORV use (Table 2) indicated that visitor norms toward ORV's at CHNS were not being exceeded. Respondents reported seeing an average of 33 ORV's at the site they were interviewed. Residents proved to be slightly more tolerable than non-residents concerning the maximum number of ORV's acceptable to see on the beach. However, residents and non-residents provided similar responses on the maximum number tolerable and

the maximum number before ORV's use is limited. Numbers for residents and non-residents declined drastically in these results because both user groups paralleled the decision that managers should not limit use. Regardless, responses from both residents and non-residents confirmed that visitor norms at CHNS were not being exceeded. When comparing perceptions of crowd size between residents and non-residents, the responses were strikingly similar with no significant difference's between the two groups (Table 3). Both groups reported that they saw about the number of people they anticipated, felt relatively un-crowded, were accepting of the number of other people they saw on the beach, felt that others on the beach neither enhanced or detracted from their experiences, and would have preferred seeing a few less people.

The relationship between crowding perceptions of ORV's among residents and non-residents is illustrated in Table 4. Resident's reported that their expectations of ORV use was actually "a little less than what they expected" where non-residents found that ORV use was "about what was expected" at CHNS. Both groups agreed that the number of ORV's on the beach was "neither acceptable nor unacceptable" and that use of the ORV's "neither enhance or detracted from their enjoyment of the park." One interesting finding from Table 4, is that while respondents felt ORV's "neither enhanced nor detracted from their enjoyment" they maintained that if management limited ORV use then they would visit the park "less often." Results from these findings show that attitudes and perceptions are consistent across both residents and non-resident visitors to CHNS.

Conclusions and Implications

Results from this research will provide CHNS managers with specific data related to perceptions and norms of carrying capacity and off-road vehicle use, provide results of measures on perceived crowding, satisfaction, and attitudes toward ORV use among separate user groups. CHNS park managers can use this information to guide them towards making appropriate resource planning decisions, protection of resources, site design, minimize user conflict, and improve visitor communication. Carrying capacity research provides the foundation for the standards of quality and expectations that individuals and groups use

for establishing the norms and attitudes of crowding levels and off-road vehicle use at CHNS. The standards that are presented in this study provide the representation of all park users that is necessary to be considered when making management and policy decisions.

Data analysis indicated that both resident and non-resident perceptions of carrying capacity and off road vehicle use were not being exceeded at CHNS. Few differences between residents and non-residents expectations and satisfaction were noted. Overall norms and perceptions of both groups are distributed equally and are in agreement. Results hint that these two groups are not divergent and do not require separate treatments. Thus single messages can be used for the management of this setting.

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Founder's Forum

PERSPECTIVES, RETROSPECTIVES AND PROSPECTIVES: NERR IN ITS 15TH YEAR

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Abstract: This year NERR celebrated its 15th anniversary. At the time of the conference, the United States was at war with Iraq. This provides the global context within which this paper looks at the influence of life experiences and external contexts on both the work and issues faced by recreation and resource managers and scientists, and in the ways in which we approach our work. This paper is presented in three major sections that deal with 1) perspectives, the role of varying human perspectives on science and management work; 2) retrospectives, a look back at a brief history of NERR and a brief commentary about changes that have affected recreation, tourism and natural resources science and management; and 3) prospectives, a discussion of current contexts for our work, and challenges to be addressed in the future.

Introduction

The Northeast Recreation Research Symposium, commonly known as NERR (and pronounced a variety of ways) celebrated its fifteenth anniversary in 2003. As is typical within most human cultures, events such as anniversaries, holidays, and memorials provide opportunities to reflect on where we've been and where we're going. They provide opportunities to consider what we do and how we live in a deliberate way rather than simply to move through life from, as many of us do, rushing to meet deadlines and dealing with crises of various degrees of import. This fifteenth NERR anniversary combines this opportunity with sharing an anniversary cake and celebrating with long-time friends and colleague.

Over the years, a portion of the NERR participants have been researchers. As researchers, we are obligated to approach our work as objectively as

possible. We strive to minimize bias, reduce error, and present results as neutral, non-judged outcomes of carefully constructed and implemented research methods and procedures. Yet, even as researchers, we are human beings first. So, as much as we strive to be objective, we bring to our work — and our interpretation, applications and implications of research results — our personal perspectives derived of individual experiences, upbringing, culture, and the current context of local, national and global events. Thus, many of the comments in this paper, as were the comments presented during the Founders' Forum, 1 are presented from a personal perspective and in the context of current global events (Perspectives). Also, they reflect on a bit of the history of the NERR symposium (Retrospectives), and look to the future about where we might be turning our research and recreation/resource management attention (Prospectives).

Perspectives

Personal Fire Perspectives. As I was thinking about how in the world I would have any relevant commentary in the midst of such an intense global event - the war in Iraq, following so closely on the heels of the September 11 World Trade Center attacks - images of fire surfaced over and over, both in my mind and on the television set casting eerie, flashing glows around my room. The image of flames, one of the four central life elements (earth, air, water, fire), triggers so many other images and meanings. My earliest (and most preferred) images of fire are mostly positive and, in some experiential way, probably contributed to my career involvement in the field of parks, recreation, leisure, tourism and resource management. I presume this might be the case for many people in the NERR "family" who are now involved as resource managers, outdoor recreation providers, and researchers. Among the conceptual and experiential associations represented by fire are leisure, relaxation, tasty food, and time shared with friends.

When I was still a toddler, my parents took us camping. Tasty meals cooked over the campfire were topped off with even tastier, sticky marshmallows toasted over the coals. A fire-stirring stick, its distal end glowing, could become an instant "sparkler" to draw glowing images in the blackness beyond the reach of the fire's glow. Fire in the morning not only took the chill out of the

air, but released the wonderful aroma of frying bacon and beckoned us out of the heavy canvas tent. For those having great patience (particularly in the eyes of a child), glowing embers would slowly cook a big baked potato.

Later, when I was able to branch out into camping environments away from the family, initially through years of Scouting, the campfire also became a place of sharing secrets and emotions with friends, and a place where singing and guitar-playing were learned and enjoyed. A deep bed of glowing embers could mesmerize late into the night, and inspire creation of intriguing stories of exploration, adventure . . . and ghosts. Giant bonfires — carefully constructed like log cabins, lit by ceremonial torches or magical chemical-combination-combustion, or with flames colorfully enhanced by chemical-dipped pinecones - and tiny memory boats or wish boats carrying glowing candles out across a river or lake became the focal point of hundreds of special ceremonies.

Fire remained central to ceremonies even as I went to college. Really giant bonfires (compared with what I considered “giant” in earlier years, which were maybe four- to five-feet high log stacks) became the rallying symbol of a major football rival. First, at the University of Texas at Austin, the huge bonfires were fed by monstrous piles of trash wood. Later, when I dared become a student at UT’s rival institution, Texas A&M, the huge bonfires were carefully engineered structures. Both were guarded fiercely, then burned in the same fervor of sports rivalry.

My fascination with fire, and my pride in building and maintaining quality fires by carefully placed blowing even was partially responsible for my camp counselor nickname of “Windy” (yes, a play on “Gail” and my love of sailing were also involved). Campfires have remained a meaningful part of wilderness expeditions, whether climbing or backpacking expeditions in the Rockies (where fire conditions and regulations allow) or canoeing in northern Canada. When I bought my first house a couple of years ago, a fireplace was one of my must-have features.

Cultural Fire Perspectives. My personal perspectives about fire probably are similar to those of many others in the United States. Additionally,

we celebrate special occasions with fireworks, fire that is controlled in patterns and colors, and which triggers collective oohs and aahs, claps and cheers. A fiery golden sunset stirs similar feelings, reactions, inspirations. Yet fire has another “face” - the destruction, terror and pain of a powerful, uncontrollable force. Our nation’s most effective media campaign, one associated with resource management - Smokey Bear - has taught generations of Americans that fire is “bad,” more specifically that forest fires are “bad.” Arsonists use fire as a tool of destruction. Eco-terrorists use fire as a tool of protest. Fires in Yellowstone National Park, and more recently on Storm King Mountain and in Mesa Verde, not only reinforced the negative images, but became a killer of fire fighters and a tool for self-aggrandizement of one. More recently, fire ultimately was the force that brought down the Twin Towers.

Fire Perspectives “Today.” In the weeks leading to the 2003 NERR symposium, United States citizens found themselves bombarded with media images of fire from the front lines of war: fire from the oceanic test firing of the “Mother of all Bombs;” riot fires at the British embassy; fire from Tomahawk missiles; fire from burning oil wells; Baghdad on fire. In Michigan, war images were disrupted by those of riot fires inspired by basketball revelers during “March Madness.”

Fire, War and Recreation. So what are the relationships between war and recreation, leisure and natural resources? At first glance, the two concepts seem disparate. Yet there are numerous interrelationships. First, the language of war and the language of sport are intertwined. Sports commentators use battlefield analogies in describing sport strategy. Many sports cheers use “fighting” images (e.g., “lean to the left, lean to the right, stand up, sit down, fight fight fight;” “hit ‘em again, hit ‘em again, harder, harder”). Conversely, war correspondents and the military public relations staffer provided daily updates using sports analogies (e.g., during the march toward Baghdad, troops used a “bump and run” strategy). Second, when we’re a nation at war, we consider the “appropriateness” of certain types of celebratory and “fun” recreational activities and events. For example, some considered it “obscene” to have post-Oscar parties when so many are suffering and dying. (How odd that such a consideration occur

only when we, as a nation, are directly involved with and shown events so regularly and graphically through the news media. Such suffering and dying and warfare are going on somewhere in the world almost continuously.)

When nations are at war, people are under stress - soldiers, civilians of war-torn countries, and those "back home." Perhaps this is a time and context in which leisure and recreation are more critical than ever. Historically, there is precedence for use of recreation and leisure during war time. Bob Hope's comedy shows provided entertainment and reprieve for soldiers engaged in wars throughout the world. Leisure, play and recreation have been used as therapy in many contexts, including war, to help people cope with stress, tragedy and suffering. The television series MASH regularly illustrated how self-generated play and humor, in concert with more organized recreation events, helped medical staff deal with a highly stressful environment. In an article published in the Washington Post (Temple, March 23, 2003), Kathleen Cole, a Community and Family Support Center deployment specialist with the Army's Department of Morale, Welfare and Recreation (MWR), describes the importance of recreation to military staff today. "When we first went into Bosnia in 1996, we went to each base camp, basically grabbing 'space,' or tents to house the treadmills and the library. . . . We organized talent shows. . . . We brought games like dominoes, foosball, Risk, Scrabble - the real old-style, rec-center kind of games these guys wouldn't be caught dead playing back at home. . . . In Bosnia, mud was everywhere, so we had a mud-sculpturing contest. To see grown men playing in the dirt, with these big grins, that's job satisfaction. We've got five MWR civilians [in the Middle East] now, and 150 around the world gearing up to go in, just like the army is."

A contemporary movie, Piano, as have other war-time films, reminds us that it is particularly important when people are involved in war and other tragedies to hang on to the things that make us human: culture, art, poetry, relationships. After the 9-11 attacks, many parks and natural areas, especially those close to home, indicated increased use of those areas, where people were trying to find some place peaceful, quiet, natural, in which to process the tragedy, to provide a reminder of "the

good things in life," or simply to escape the constant media bombardment. Yes, the work we do - both in providing recreation opportunities and managing a wide range of parks and other natural resource areas - is important in times of war. It is interesting to note that those things we value as humans - good food, play, relationships - also are effective motivators when training animals, even animals involved in the war effort: dogs trained to find bombs, drugs and bodies; dolphins trained to find mines.

Another entanglement between war and recreation/tourism is related to impacts of war on historic, cultural and natural resources. Acts of modern warfare, even with supposed accuracy of modern weapons, destroy natural areas, historic records, cultural and historic buildings and resources. Often this initial damage is exacerbated by subsequent looting and theft of artifacts. Loss of these objects and resources not only destroys tourism attractions, but results in global loss of national and international history and heritage. In this recent war in Iraq, known as the "cradle of Western civilization," the national museum was looted. Threatened are artifacts, documents and structures reflecting many of history's greatest developments that occurred in early Mesopotamia, among them: irrigation for agriculture; use of copper and making of bronze; herding and animal husbandry; mathematics, calendars and maps; written language; use of the wheel for making pottery and moving carts. Persia, Babylon, Mesopotamia, the Arab Empire and Sumer are all important civilizations of the area, with Sumer dating to 5000 B.C. (Rodriguez and Duginski, n.d.) As these treasures are lost, so also are tourism attractions.

Retrospectives

NERR Retrospectives: A Brief History. As with many good ideas, the seeds of the idea for NERR were born of an informal conversation among four colleagues - Tom More, Alan Graefe, Jerry Vaske and Maureen Donnelly - who thought it important to develop some type of opportunity for recreation resource researchers and managers to interact face-to-face, to share ideas, identify challenges, and discuss issues of mutual interest. Goals were for researchers to better meet the needs of recreation and resource managers, and for managers to better understand and apply results of scientific inquiry in

managing their resources and providing recreation opportunities. Thus was born the NERR symposium. The atmosphere was to be informal, collegial, and based on sharing rather than solely on professional scrutiny. The research would be scholarly and quality, but the delivery non-threatening and to highlight management implications. Out of this conversation developed the first gathering of researchers and managers at Saratoga Spa State Park in eastern New York State, then the headquarters of the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). Ultimately, the following mission statement was developed:

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

Initially, the NE of the NERR acronym was intended to indicate "The North East," subtly indicating "New England," as this was the general regional scope of the initial meeting. As the NERR meeting gained credibility and popularity, as participants began to come from places as distant as California and Oregon, and as doctoral students participating in early meetings eventually took faculty positions and their commitment elsewhere, NERR's participation range expanded (to Michigan, Illinois, West Virginia, Florida, Colorado, Texas and beyond). Jokingly, the steering committee decided that "northeast is a direction, not a place . . . as in "The North East" . . . and eastern New York could be considered northeast of most places in the United States. This "definition" effectively covers even those participants coming from places such as Italy and the Netherlands, as occurred this year, because eastern New York could be considered north east of those countries . . . if one were to follow the proper route, circumnavigating most of the northern hemisphere. This is conceptually cumbersome, so we might want to take a corporate lesson from organizations such as Kentucky Fried Chicken

Table 1. — Comparison of NERR program & fees, 1989 & 2003.

Total # of:	1989	2003
Presentations	23	112
Management Sessions/Rd Tables	0	10
Posters	0	18
Keynotes/Special Sessions	0	2
Female Presenters	2	26
Registration Fees (Standard Professional/Student)	\$40/\$25	\$175/\$125

Table 2. — New NERR initiatives from 1989 - 2003.

New Initiatives	YEAR
First Symposium	1989
Keynotes/General Sessions	1991
Move from Saratoga Spa to Sagamore	1996
Poster Sessions (# /year: 6, 6, 5, 8, 6, 11, 17, 18)	1996
SUNY/Horace Shaw begin registration	1997
10-year Anniversary	1999
First Founders' Forum	1999
Venture Publishing support begins	~2000
Student Scholarship Program begins	2000

(now, simply "KFC") or Texas Agricultural and Mechanical University (now, simply Texas A&M), and attach no particular meaning to the acronym, relying on our brand identity.

While the mission of NERR has remained consistent and proceedings have been continuously published and funded by the U.S. Forest Service, several changes have occurred. Over its 15-year history, NERR has grown in participant numbers, in student participation, and in range of program elements and activities. Compared with 23 presentations during the first symposium, the 2003 symposium has 112 papers and management sessions listed. Primarily traditional research papers were presented during the first symposium. Since then, other program types have been instituted: management round table sessions; poster presentations; keynote presentations of several kinds, to include the Founders' Forum series. The number of women participating has increased greatly, with the number of first-author women

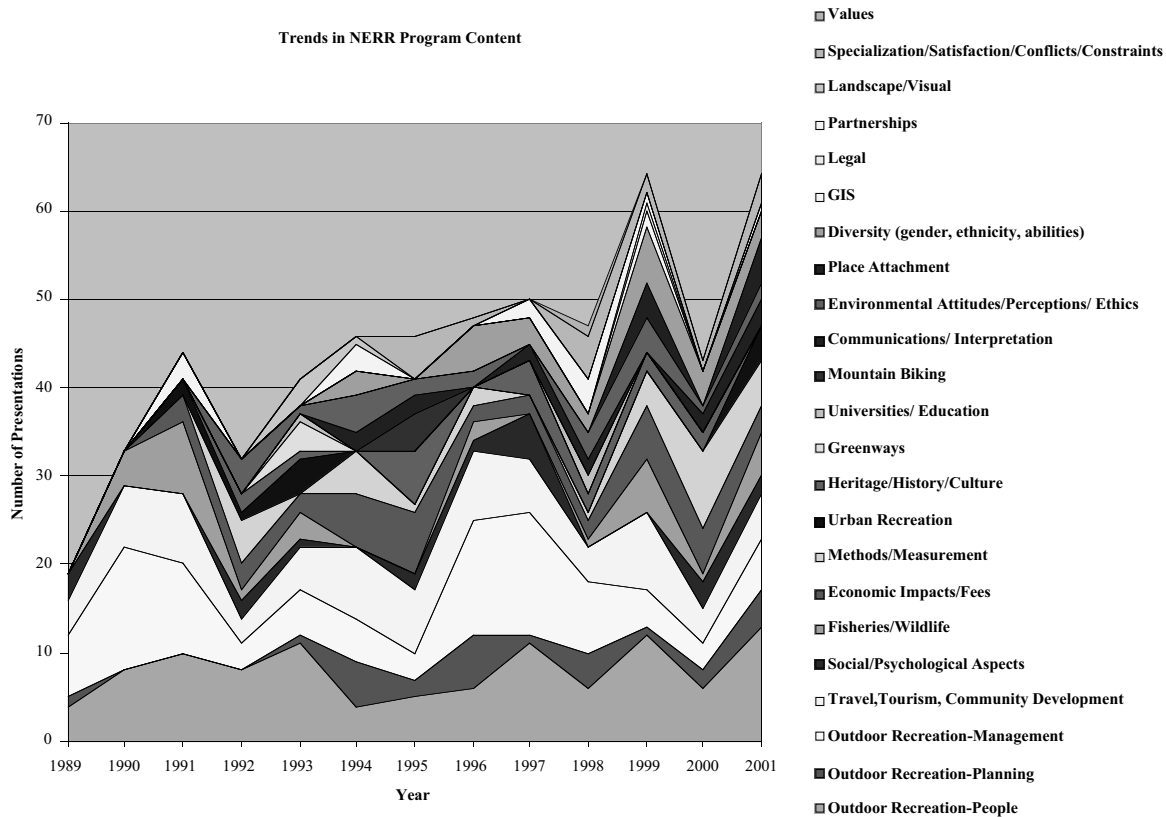


Figure 1: Trends in NERR program content from 1989 through 2001.

expanding from two in 1989 to 26 in 2003. Of course, symposium costs also have increased, partly due to inflation, partly due to increases in services and food events included during the symposium. (See Table 1.)

After seven years at Saratoga Spa, changes were afoot. Priorities within NYSOPRHP and related to its management of the research center shifted. This, combined with growing participant numbers (outgrowing the space availability at Saratoga Spa), encouraged the steering committee to seek an alternative site. In identifying a new site or sites, the committee considered whether the symposium should move annually throughout the region (thus making it more convenient for participants in different parts of the region during different years) or remain at a known, quality site (for ease of logistics planning, delegate participation, and ease of repetitive travel planning). As evidenced by the now eight years at the Sagamore in Bolton's Landing, the committee opted for the second choice. During the early years, each major task (program, logistics, registration, mailing list

maintenance, finances, proceedings) rotated among steering committee members. Beginning in about 1997, a contract with SUNY-ESF, in Syracuse, NY was signed, through which many of the logistical issues (e.g., mailing list maintenance, pre- and on-site registration, AV equipment management) was assumed by SUNY-ESF, in the embodiment of Horace Shaw. Tom More has continued to coordinate negotiations with the host facilities and Muriel More has been a volunteer "right arm woman" for Horace during the conference. Most of the early steering committee members remain actively involved with conference planning, and the committee size has grown continuously over the years. Individual contributions are too numerous to acknowledge here. On the occasion of the 10th anniversary, the Founders' Forum series began (reflective presentations by early, still-active steering committee members). Other program innovations have included addition of poster presentations (which have grown in number), sponsorship by Venture Publishing, and implementation of a student scholarship program. (See Table 2.)

Over the years, some categories have remained as core topics: social aspects of outdoor recreation (e.g., choices, preferences, participation patterns), management of outdoor recreation resources; travel, tourism and related community development. Other topics (usually more narrowly described than the core areas) have surfaced as “hot topics” for a few years, then subsided. Examples include urban recreation; fisheries and wildlife-related topics; GIS applications; wilderness; legal issues; industrial/non-industrial private forests; and greenways planning. Other topics have emerged at various times and remained as part of the program, though at relatively low levels. Examples include place attachment, diversity issues, communications and interpretation, landscape and visual aesthetics, and heritage/cultural tourism. See Figure 1 for trends. Note that the criteria for placing papers in categories are relatively loose, and some presentations could easily be placed in more than one category. For the most part, categories were selected based on what seemed to be the main focus of a paper as represented by its title and abstract. Only papers appearing in published proceedings are included.

Retrospectives: Our Work. As with the Smokey Bear anti-fire campaign, numerous resource management actions and outdoor recreation behaviors once accepted as appropriate have now fallen into disfavor, sometimes due to unintended consequences of those actions, sometimes due to changes in values and philosophies, and sometimes due to increased numbers of people engaging in activities that, when few were doing them, caused negligible impacts. Examples include:

- building large campfires for cooking and camaraderie;
- cutting pine boughs to make beds and chopping down trees to lash complex campsite furniture;
- trenching around tents to keep water from puddling under tent floors;
- discarding used oxygen canisters and food tins during remote, extreme expeditions, such as to Mount Everest;
- draining wet areas and planting exotic plant species (in Yosemite National Park and many other areas) to make parks more accessible and pleasurable, and for a variety of resource management purposes;
- allowing artifacts to be removed from

shipwreck sites as part of the recreational experience; and

- introducing non-native species to improve specific fisheries, often for recreational fishing purposes.

All these actions were taken with good intentions and good rationale . . . at the time. Yet experience, research and changing values, economics and policies all influence endeavors of both research and resource management. Similar patterns of changing values have influenced interpretive communications and the stories of places, people and cultures that we tell to tourists who visit many of our nation’s recreation and natural resource areas. Where we once told stories of Custer’s Last Stand (a “massacre” of a “hero” and his men), celebrated the valor of white defendants at the Alamo, lauded Columbus, Lewis and Clark and westward expansion, and memorialized Hiroshima as the best way to end World War II, we now question the one-sided, value-laden, often politically inspired perspectives of these stories. While the changes often are still controversial, many sites are making efforts to tell more balanced stories, allowing visitors to arrive at their own conclusions. We now tell the story of the Battle of Little Big Horn, acknowledge the role of Mexican people at the Alamo, and question the use of the atomic bomb (e.g., the Enola Gay exhibition at the Smithsonian). We’re more careful about how geology and archaeology and evolution are presented. These are a start, yet we have a long way to go in being inclusive, in telling the stories of “common people” and those not in the majority groups.

Those of us who are scientists often have not thought about the impact of the science process in our parks. Yes, the Office of Management and Budget (OMB) must approve any social science that occurs on federal lands to protect the visitors, yet we conduct other types of science in parks and protected areas. We assume - and often argue - that if something is done in the name of science, then it is a perfectly legitimate and justified enterprise. In the name of archaeology we have unearthed human remains as well as ceremonial and other artifacts from pyramids, burial grounds, and other sacred sites. We have sold archaeological items (often across international borders) and placed human remains on display in museums throughout

the world. While much knowledge has been gained from these activities, and quality tourism destinations and experiences have developed around many of these sites, the very act of Phase III archaeology is destructive and extractive and displays of sacred objects and human remains are a cultural affront. Scientific inquiry sometimes creates "special privilege," often challenged by others. Archaeologists may excavate historic sites, but the general public may not use metal detectors and hunt for potsherds and arrowheads on federal lands. Scientists may take documentary photos of human remains on shipwrecks, but avocational divers who take such photos and use them in publications and public presentations are chastised. Very few people raise an eyebrow when National Geographic publishes photographs of scantily clad native people, but the general public is strongly criticized for similar publication and sale of images. While I could write a strong scientific justification for each of these scenarios (and could just as easily write a counter-point argument), it is no wonder that the general public is often confused, at the very least, or outright angry at the "special" accommodation often given to work done in the name of science.

Other challenges for scientists and managers of resource sites are changing laws and ethics, changing public values and priorities, changing economic pressures, changing political climate, and improving technology that changes not only the way we do our work, but makes accessible many natural and cultural resources to people previously restricted. For example, deep water shipwrecks once were protected by their very location. However, mixed gas technical diving and reasonably priced robots and mini-submarines now enable recreational divers to access those sites. Managers fear resultant theft and rapid deterioration. Now, archaeologists do not automatically excavate every site and artifact. Other options - such as re-burying objects and sites after excavation, returning excavated artifacts to original owners (e.g., tribal groups), or simply not disturbing a site at all - are analyzed carefully. In maritime environments, several factors are considered in determining whether to excavate or remove artifacts as part of the scientific process: Would the site make a quality, safe dive site if everything is left in situ? Should some selective recovery of highly valuable or attractive artifacts by

done to protect them from theft? Should recovery of select artifacts be done to provide access (through museum exhibits) to many people? Should artifacts in highly vulnerable sites be recovered to prevent imminent deterioration and loss?

Speaking to some of the challenges facing resource managers are recent articles published in mainstream newspapers:

- National Park System Gets Low Marks in History; A scholarly reminder: blacks and women were there, too (speaking of numerous sites); social history is often sacrificed to stories of military history (Scott, New York Times, November 15, 1997);
- Museums: Britain Has Right to Keep Greek Items; Greece demands return of artifacts acquired in the 1800s (Barr, Associated Press, 12/12/02);

Prospectives: Where Do We Go From Here, What Impacts Our Future Work?

As discussed in the previous sections, external factors and changes across many factors have affected both what we study and how we approach science, how we provide recreation opportunities and how we manage both the resources and users. Such contextual factors - political, environmental, technological and demographic - will continue to affect our work and the places we manage. News articles foreshadow some of the challenges - many not entirely new, but perhaps intensified or modified - we must address. Political unrest and terrorism have influenced where tourists travel, the number of tourists, and how we screen and manage tourist movement. "At Grand Canyon National Park, which typically depends on foreigners for nearly half of its visitors, 42 percent fewer people arrived at the south entrance station on bus tours through April [2002] vs. [the previous year], while arrivals by private vehicles were up 5 percent" (Engle, Los Angeles Times, June 9, 2002). In some cases there have been site closures (high profile national parks, Army Corps of Engineers dams and other facilities) and increased surveillance/visitor screening (e.g., boaters crossing international boundaries in the Great Lakes are required to report in a timely manner to the nearest customs office). A more direct impact on science is the potential constraint to publication of scientific studies for fear that contents will be used for illicit

purposes by enemy groups, as indicated in a news article titled "Journals to edit out dangerous material; Scientists fear data in publications may aid terrorists' work" (Verrengia, Associated Press, n.d.).

Population growth, sprawl, pollution and other environmental factors can affect visitor numbers or behavior patterns as well as impact the visitor experience. A recent Associated Press article (n.d.) discusses problems associated with smog and haze in Western parks. "The typical visual range at monuments and national parks in the West is 62-93 miles - half to two-thirds what it would be without pollution." Light pollution, sound pollution and water pollution also affect habitats and visitor experiences in parks. Even global warming is affecting visitor experiences, as evidenced by glacial melting which now has post-movie curtains at one Alaska visitor center opening onto a pool of water backdropped by mountains. This facility was designed originally so the large wall of windows opened onto a view of the toe of a major glacier.

Not only has technology created faster, new and alternative toys and transportation modes for outdoor recreation (e.g., ATVs, snowmobiles, personal water craft, snowboards, wind surfers, parasails, mountain bikes), it has provided other tools to the wilderness traveler such as cell phones and GPS. While these tools may help people navigate or more easily call for assistance if they get lost or otherwise in trouble, they also strip adventurers of the true sense of "risk" and "adventure," as expressed several years ago by Dan Dustin. Additionally, they may create a false sense of security for people who might otherwise not venture into more remote areas, and who are otherwise less prepared for such recreational experiences. Such visitors then become the responsibility of the recreation resource managers. Technology also provides new ways for us to conduct research, ranging from web-based surveys to GPS for community input into planning to increasingly sophisticated remotely operated vehicles (ROVs) for deep water exploration.

Technology also can help provide experiences to a wide range of visitors to museums and other recreation sites. Remote video technology (sometimes controllable by visitors) can be used to observe things otherwise unobservable. This

includes observation of sensitive species (e.g., visitors watching raptors build nests, lay and hatch eggs, and fledge the young) as well as inaccessible resources (e.g., divers exploring a shipwreck). A specific example of a remote visitor opportunity will be tested at California's Monterey Bay National Marine Sanctuary. Exploration will involve underwater robots, live video, the Internet and a Telepresence Center. "The project can be experienced at the Immersion Institute at the Mystic Aquarium and Institute of Exploration in Mystic, Connecticut . . . Visitors to the theater can operate the robots beneath Monterey Bay in real time and test their skills with other interactive tools." (Wall Street Journal, n.d.) In another example, Colorado's Ocean Journey Aquarium will use lots of technology to create virtual experiences for visitors, borrowing extensively from theater and entertainment worlds. Stimulating all the senses, the aquarium will include "[s]imulated flash floods with thunder and lightning. Live archer fish that will be rewarded with food if they spit water at mechanical bug targets. . . . And don't forget the pine scent atomizer that will sprinkle an alpine smell and make the Colorado high country display a true sense-surround exhibit." (Booth, Denver Post, December 26, 1997)

Recent newspaper articles addressing these issues include:

- Group tackles smog, haze in Western parks (Associated Press, n.d.);
- Parks less crowded this year; Fewer international visitors, post-9/11 jitters decrease travel (Engle, Los Angeles Times, June 9, 2002);
- Iraq war may devastate tourism (unknown);
- Cell phone helps in rescue of 4 hunters (Associated Press, n.d.);
- Paddle Pushers: Landlubbers who never so much as crossed a millpond are taking up competitive rowing (speaking of male and female senior citizens) (Richards, Wall Street Journal, n.d.);
- Undersea explorers get high-tech boost (Wall Street Journal, n.d.); and
- Aquarium to offer dash of Hollywood (Booth, Denver Post, December 26, 1997).

Perhaps our work in recreation resource management, and in the scientific study of challenges and issues facing managers, is needed

now as much or more than ever. With increasing population, increasing demands and impacts on resources, and new stresses in lives of people, our work is essential. People are looking for places of refuge. Natural areas play a critical role. People are looking for places to connect . . . with each other and with their heritage. Experiences in the out-of-doors and exploration of historic and cultural sites and stories are essential contributors to meeting such needs. As sprawl, pollution, competing land and water use demands, and increasing population place greater demands and impacts on natural, cultural and historic resources, managers and researchers must work together to address the challenges. In a culture of instant gratification, electronic records, and disposable resources, all of these resources will assume increasing importance as humans (hopefully) look for ways to find meaning in their lives.

Current challenges are traditional, modified and new. Increasing urbanization brings increasing needs for urban residents to have opportunities in natural areas, and to have nearby recreation opportunities. Recreational needs of diverse populations - racial, ethnic, family structure, and those having various disabilities - continue to be under-addressed, despite focused efforts in recent years. Coastal communities, perhaps the highest growth areas in this country, are facing issues of public vs. private access, coastal land and water impacts, demands for revitalization, and impacts on fisheries resources. Sprawl development continues to threaten integrity of natural ecosystems and agricultural lands. Energy use, including for recreational pursuits, continues to rise. Visitor safety in recreational areas increasingly is a concern. Changing visitor preferences for recreation and entertainment impact how and what we offer. In a push-pull sort of way, our technology-savvy, heavily mediated society both relies increasingly on Hollywood-style, convenient entertainment, yet also is looking increasingly for authentic, engaging, and involving experiences. They are looking for meaning and value in many of their recreational and travel experiences. Some of our challenges, as scientists and managers, include:

- How do we assist in managing resources within park (and other resource site) boundaries by helping manage critical adjacent resources, land use activities, and economies?
- How do we stay cognizant of and responsive to

external factors that affect our work?

- How do we, in turn, affect communities and resources adjacent to parks and other sites within our direct management control?
- How do we better serve increasingly diverse populations, with increasingly diverse and often conflicting resource use demands?
- How do we help our visitors more effectively explore, learn, question, and connect with our natural and historic resources and stories?
- How do we stay relevant - in service provision, policies, management actions?
- How do we contribute to our global society and help protect our global resources?

Perhaps, as we move our work forward, we can strive to contribute to making a world in which images of fire are those having positive associations - warmth, safety, relaxation, camaraderie, celebration - rather than those of war, terrorism and destruction. Perhaps we can contribute to making the close-up observations and perceptions of world match those "from a distance," as sung by Nancy Griffith, written by Julie Gold:

"From a distance the earth looks blue and green,
and the snow-capped mountains white. . .

From a distance we all have enough, and no one is in need.

From a distance there are no guns, no bombs, no diseases, no hungry mouths to feed.

From a distance we are instruments, marching in a common band,

Playing songs of hope, playing songs of peace,
they're the songs of every man. . .

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¹This presentation was heavily dependent on visual images, much of which will not be evident in the paper. Also note that, at the time of this symposium (early April 2003), the United States was deeply involved in a war in Iraq, which specifically shaped many of the "perspectives" comments. In the "perspectives" section, I take liberties to be "human" rather than a "detached, objective scientist." Meanings, values and experiences are, after all, important concepts in understanding recreational behavior and motivations. They are central also to this "reflection."

Featured Posters

OBLIGATIONS INHERENT TO THE CREATION OF LEISURE SPACES: WHAT CAN THE HISTORY OF SHENANDOAH NATIONAL PARK TEACH US?

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Abstract: When a local park is designed, built, and managed there is an obligation to the various social groups who live nearby (Field, 2000). It would stand to reason that the same could be said of a larger, more rural park site, such as a national park or designated wilderness area. What then, are the ethical obligations held by those in power who create large natural resource-based recreation spaces? The establishment of Shenandoah National Park in the 1920's and 1930's created a resource that today is one of the most heavily used recreation sites in America (Sheaffer, 1999). Its development was unique, however, in that instead of setting aside unused wilderness lands, it reclaimed inhabited land (Reeder, 1978). This reclamation led to the forced dislocation of many of the mountain residents, who had lived on and farmed the Virginia mountains for generations. Throughout the discourse of obligation there breathes the following questions: was this forced relocation in Shenandoah National Park an example of the hegemonic elite exercising their power and marginalizing the less fortunate? Would relocation from the mountains improve the welfare of those affected? If so, what were the social and cultural costs of this improvement? To answer these three questions, and address the resulting connections to obligation, this paper will view the creation of Shenandoah National Park through the three contextual lenses of leisure research: the social, the economic, and the political (Kelly, 2000). The political context will examine power and voice, and the obligation to observe those voices. The economic context will consider the obligations toward the welfare of the people. Finally, the social/cultural context will examine the impact of this relocation on the norms, ideas, and ways of life of the park's residents. Although

displacement and eminent domain are no longer appropriate during the park creation process, state and local governments are still custodians of certain obligations as developers of leisure spaces. An investigation of these obligations will help serve those custodians, reminding them that no matter what the manner of acquisition, care needs to be taken to facilitate the inclusion of everyone, regardless of location and class.

Introduction

When a local park is designed, built, and managed there is an obligation to the various social groups who live nearby (Field, 2000). It would stand to reason that the same could be said of a larger, more rural park site, such as a national park or designated wilderness area. What then, are the ethical obligations held by the government agencies in power that create large natural resource-based recreation spaces? Furthermore, how can an understanding of these obligations help developers and managers?

The establishment of Shenandoah National Park in the 1920's and 1930's created a resource that today is one of the most heavily used recreation sites in America (Sheaffer, 1999). Its development was unique, however, in that instead of setting aside wilderness lands, it reclaimed inhabited land (Reeder, 1978). This reclamation led to the forced dislocation of many of the local mountain residents, who had lived in and farmed the Virginia mountains for generations.

A consideration of the discourse regarding obligation yields the following questions: was this forced relocation in Shenandoah National Park an example of the hegemonic elite exercising their power and marginalizing the less fortunate? Would relocation from the mountains improve the welfare of those affected? If so, what were the social and cultural costs of this improvement?

To answer these three questions, and address the resulting connections to obligation, this paper will view the creation of Shenandoah National Park through the three contextual lenses of leisure research: the social, the economic, and the political (Kelly, 2000). The political context will examine power and voice, and the obligation to observe and heed those voices. The economic context will

consider the state-held obligation to maximize the welfare of the people. Finally, the social (cultural) context will examine the impact of this relocation on the obligation to maintain the norms, ideas, and ways of life of the park's residents.

Although displacement and eminent domain are no longer appropriate means of acquisition during the park creation process, state and local governments are still custodians of certain obligations to nearby residents as developers and maintainers of leisure spaces. An investigation of these obligations will help serve those custodians, reminding them that no matter what the manner of acquisition, or the subsequent management, care needs to be taken to facilitate the inclusion of everyone, regardless of location, class, and power.

Shenandoah National Park Background

Today, Shenandoah National Park (SNP) encompasses almost 300 square miles of mountaintops, valleys, and ridgelines (Sheaffer, 1999). In the 18th and 19th centuries, farming, logging and mining contributed to economic prosperity in the area. Decline began in the early 20th century, when blight destroyed most of the native chestnut trees. As the population dwindled, the heavily damaged area began the long process of reverting back to forest land (Sheaffer, 1999). As the region's environment improved, and as the automobile became an important factor in vacation travel, tourist pressures on the entire Appalachian region began to increase (Lacey, 1991).

In central Virginia, tourism existed long before the completion of the SNP. Facilities such as George Freeman Pollock's Skyland Lodge and Black Rock Springs Hotel began to attract more and more people every year (Lambert, 2001). This increased interest in using the region for recreational purposes paved the way for the idea of a national park that would not only provide recreation opportunities for nearby areas such as Washington DC, but would also serve to restore the heavily damaged land. This enthusiasm was a considerable boon to the private fundraising that took place during the early stages of the park's development, and lessened reluctance towards the proposed relocation of the mountain residents.

When the park was authorized in 1925, almost 450 families of varying socioeconomic

backgrounds inhabited the area (Reeder, 1978). They were an "unorganized, nonhomogenized, tiny minority" with little political influence (Lambert, 2001). By the time the park opened in 1935, most of these residents had agreed to relocate outside the park boundaries (Sheaffer, 1999). This relocation, however, was not without controversy. While some residents saw the relocation as an escape from dire poverty, other residents fought (within the boundaries of the law) to keep their homes. Still others threatened violence, and as a result were forcibly removed (Lambert, 2001). To make matters worse, many people received no compensation for land on which they had been tenants or squatters for generations (Reeder, 1998).

The Political Context: Power and Voice

According to Datillo and Williams, inclusion and the facilitation of self-determination are important obligations inherent to the development and delivery of leisure services (Datillo & Williams, 1999). An important element of this self-determination is the ability to make choices free from external influences or interference (Datillo and Williams citing Wehmeyer, 1999). The foundation of this ability to control our existence is based on two important concepts, power and voice. It appears that the mountain residents who were evicted found themselves without either during the debate over the creation of the park.

Power and Voice

Power can be defined as "the ability or capacity to perform effectively" (American Heritage Dictionary, The, 1985). Similarly, voice is defined as "any attempt at all to change, rather than to escape from, an objectionable state of affairs" (Hirschman, 1970). Despite the fact that there were variations in education, lifestyle, and socioeconomic status (Reeder, 1978), many of the mountain residents found that the institutions in place at the time silenced their voice, and limited their power. For example, Virginia law dictated that illiterate people with less than \$250 of taxable property could not vote. Furthermore, more than half of the mountain families had no equity at all, meaning that they were squatters or tenants (Lambert, 2001; Reeder, 1978). With no voting rights, and no property rights, residents found themselves without the necessary tools to make their own choices "free from external influence" (Datillo and Williams citing Wehmeyer, 1999).

The Obligation to Listen

The political context is one of the most complicated leisure contexts, because those who make decisions usually have competing interests in mind. In the case of the SNP, increased visitation and outside support for a new park area from affluent tourists may have influenced political agendas, shifting the government's focus away from its obligation to consider the voice of the people who would be directly affected by the park's development. Despite any potential conflict, it is imperative that developers and managers of recreation space give equal weight to all voices, even the ones without power. To further connect this to a leisure context, Karen Fox adds: "Leisure thinking becomes a locatable political practice that demands the presence of people who represent the plurality of the world and who are capable of publicly assessing and critiquing the practices, beliefs, scholarships, and values of leisure from multiple locations" (Fox, 2000). The "leisure thinking" that took place during the development of the park was not inclusive of a plurality. In summary, the relocation was indeed a marginalization of a less fortunate class, and the obligations of inclusion and the facilitation of self-determination were ignored.

The Economic Context: A Fresh Start

From an economic standpoint, the developers and managers of a recreation space have an obligation to create economic opportunities for nearby residents, or at the very least replace opportunities that have been taken away. Furthermore, there is also an inherent obligation of sustainability - the development of a resource which meets the requirements of present day while allowing future generations to meet their own needs (Swinnerton, 1999).

New Opportunities Through Tourism

Much of the poverty throughout the Appalachians was not the result of a poor work ethic. Due to a lack of arable land and poor farming techniques, by 1930 many of the farms in the region were declared unfit for agriculture (Jolley, 1969). Additionally, the land was rendered useless by the exploitive mining practices of the century before (Jolley, 1969). The good news for the mountain residents was that the growth of the tourism industry in the area created new opportunities.

George Freeman Pollock's Skyland Lodge provided jobs, medical care, money and, via the entertainment programs, provided the locals a view of a different world (Reeder, 1998). The construction of the Blue Ridge Parkway and Skyline drive provided many opportunities for work, as did the participation of the Civilian Conservation Corps in the construction of the park (Jolley, 1969; Lambert, 2001). In addition, many tourist visitors occasionally provided money and other goods. There was some criticism, however, that this altruism was fostering a begging mentality among some of the locals.

Relocation

Of the nearly 500 families still living in the park, almost 300 were chosen to participate in a federal program to relocate them to areas that could provide suitable educational, medical, and agricultural opportunities¹ (Reeder, 1978). The state taught many of the residents modern methods in home-making and agriculture, and provided free health care for five years.

A select group of older residents were allowed to stay in their homes within the park for the remainder of their natural lives². For others, the relocation arrangements allowed them to pay the government five dollars a month as rent for the first year of residence in their new homes, with long-term purchasing options available afterward. The arrangements were structured so that the residents would wind up paying less than it cost the government to build the homes (Lambert, 2001).

New, sustainable opportunities through collaboration

Economically, it seems difficult to argue that the state of Virginia ignored its economic obligations to the mountain residents. The collaboration between the state and the residents, evidenced by the provision of home-skills education programs and affordable housing, helped fulfill an important obligation to replace lost opportunities to

¹ Of the 465 families, 64 required no assistance, a few elderly residents were given permission to stay, 293 participated in the program, and the rest went on welfare (Reeder, 1978).

² Interestingly enough, the number of older residents in the park dwindled quickly - most were gone by 1945. The last one, Annie Shenk, died in 1979 at the age of 92 (Lambert, 2001).

participate in the growing tourism industry by “building understanding [through the process of] fostering exchange of information and ideas...providing a mechanism for resolving uncertainty” (Wondolleck & Yaffee, 2000). By providing relocation areas that were in close proximity to suitable economic activity, the state was attempting to replace the lost economic opportunities and reduce the inherent uncertainty. Additionally, the obligation to develop sustainability was met via the education on modern life that was provided to the residents.

It should be noted, however, that while the obligations outlined in this section seemed to be upheld by the state, there is another, more post-modern view to consider which states that economic efficiency should not be measured using the criteria established by the dominant, powered view. What the state considered to be in the best interest of the people might actually have (inadvertently) entailed very high social and cultural costs. The next leisure context to be examined will address the cultural costs of this improvement.

The Cultural Context: A Changing Identity

The idea of picking people up and moving them into predetermined areas with the idea that they will be better off is inherently troublesome. One of the most significant elements in one's identity is their home, and their familial foundations. Further nestled within this identity are norms and ideas. Throughout history, many social groups have been forced to give up their homes, solely for the benefit of a more powerful group. In the case of the mountain people of the SNP, some (including some of the residents themselves) would argue that the benefits of the relocation would outweigh these considerations. While this is a complicated issue whose resolution is difficult at best, it is still possible to illuminate the social obligations of the state.

Maintaining Cultural Identity

The following quote from Young's *Justice and the Politics of Difference* (cited in Allison, 2000) succinctly outlines the social justice obligation:

“As doers and actors we seek to promote many values of social justice in addition to fairness in the distribution of goods: learning and

using satisfying and expansive skills in socially recognized settings; participating in forming and running institutions, and receiving recognition for such participation; playing and communicating with others, and expressing our experience, feelings, and perspective on social life in contexts where others can listen”.

Put more simply, the social justice obligation involves providing an opportunity for people to share their experiences and become involved in the society around them, while allowing for them to maintain their cultural identity. Care needs to be taken, however, to assure that cultural identity is not jeopardized by requiring that people fit in. For the mountain residents, life after the relocation was indeed a substantial adjustment, and anecdotal evidence from the Ida Valley, Virginia, relocation community provides an example of the potential misunderstanding of cultural identity: “People laughed when some of the mountaineers relocated at Ida Valley dragged their bathtub outside and used it to scald hogs in at butchering time. But it was just a matter of values and priorities: they needed something to scald hogs in a lot more than they needed something to bathe in” (Reeder, 1978).

This example also demonstrates the pressure that the mountain people were under to become assimilated into a more modern society. Over time, the new surroundings and the new value structures in which the mountain people were immersed most likely influenced their values, and so their uniqueness, their cultural definitions and their ways of life began to be suppressed and were eventually lost altogether. This change, since it was not allowed to happen within the course of normal social evolution, is decidedly a heavy cost in terms of social capital.

Over time, the community and culture of the mountain residents slowly disintegrated. As they began to become assimilated into their new situations, many people opted not to stay in the government-provided housing (Lambert, 2001). While the transition to “lowland” life may not have been inherently difficult, the loss of cultural identity is always unfortunate.

Summary and Conclusion

This investigation of the relocation of the mountain people in Shenandoah National Park has

served to illuminate the obligations inherent to the creation of large natural resource recreation spaces. Within the three contexts of leisure studies, the obligations become apparent:

Political Context - There is an obligation to give equal weight to all voices, regardless of power, race or class.

Economic Context - There is an obligation to create economic opportunities for nearby residents, and replace opportunities that have been taken away. Additionally, there is also a secondary obligation to develop a sustainable resource.

Cultural Context - There is an obligation to provide an opportunity for people to maintain their cultural identity, and not be forced to fit in, or be forced to adopt a set of established norms and identities.

In the case of the SNP, the state of Virginia and the United States Congress ignored most of these obligations. They overlooked the fact that the mountain residents, due to their situation, were powerless and voiceless, and therefore were left out of the planning process. They placed the residents in situations where their cultural identity was jeopardized. Furthermore, the residents were subject to misunderstanding and ridicule, most possibly resulting in a suppression of, and eventually a loss of, their culture. The state did, however, attempt some good by placing the residents in an area where they would have easier access to education, jobs, and medical care.

What can be done to insure that all obligations for all people are met in the future? Eminent domain may not be an acceptable or appropriate method of land acquisition anymore, but the question is relevant for consideration in leisure service delivery and management situations. For example, the lessons regarding the obligation to provide for equality in terms of voice could be useful to a park manager in an urban setting. "It is not uncommon to plan a recreation program ignoring differences in age, race, class, cultural heritage, and abilities" (Fox & van Dyck, 1997). Hopefully, an understanding of the lessons learned during the relocation of the Blue Ridge Mountain residents will prevent a similar situation from occurring again.

From an academic perspective, it is equally important to apply these lessons to the issues and problems of today. To further this goal, perhaps

additional research in more contemporary settings will provide specific insights and methodologies. Additionally, there is little documentation besides the anecdotal which specifically details the opinions of those who live in close proximity to recreation spaces. In the case of the SNP, this is a human resource that is rapidly disappearing. It would be fascinating to ask the question: what exactly was taken away? Darwin Lambert, in his book "The Undying Past of Shenandoah National Park" (2001), writes eloquently of the potential feelings of yearning for a time gone by, a culture lost forever:

"Yet those park-land mothers and fathers who are still with us, and the park-born children, too, long grown up now, have a longing that won't quit. They remember the mountain spring, the cold water so pure and sparkling forever flowing. They remember the nut trees and the berries, the trout in the streams, the taste of the squirrel and maybe 'possum and coon and groundhog. The cabbages grew bigger up there, and the apples tastier. Though life was sometimes hard, they could do what they had to do when they felt like doing it, not when some schedule imposed on them. The freedom was greater there, and the security was far more dependable than outsiders ever seem to have understood."

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INDIAN STUDENTS' PERCEPTION OF RURAL WEST BENGAL AS A TOURIST DESTINATION

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Abstract: Creating and selling cultural experiences, particularly cultural attractions, is a trend in the travel and tourism industry (Richards, 1996). However, little is known about the impact image has on the sale of cultural experiences, especially in rural settings within developing countries. Thus, the purpose of this study was to assess the image of West Bengal, India, and to identify its strengths and weakness as a travel destination. Data were collected through in-depth interviews with graduate students whose home residence is India. The results indicated that the images of West Bengal were a mixture of both positive and negative perceptions and challenge commonly held assertions about the appeal of rural areas. Further, no differences in response were found between males and females. Differences were found with respect to home residence.

Introduction

According to the Travel Industry Association of America (TIA: 2003), in 2000 21% of domestic person-trips (business and pleasure) included a cultural activity, an increase of 10 % from 1996. One facet of culturally-based tourism-rural tourism-has contributed to this increase.

Rural areas attract tourists because of their mystique and their distinct cultural, historic, ethnic and geographic characteristics (Edgell & Harbaugh, 1993). As Meyer et al. (1991) remarked, in rural areas tourists get to experience life as it really is, to meet local residents, and to return to their roots. There is also a growing

interest in engaging in many of the activities associated with rural tourism, such as wildlife viewing, hiking and cycling. In a study of the North American eco-tourism market, Wight (1996) revealed that 77% of respondents had taken a vacation involving a nature, cultural, and/or adventure component. Perhaps this travel behavior is due to the fact that people tend to strongly believe rural areas are part of a better physical and social world-a world they would like to experience.

The image or "mystique" associated with rural areas affects whether or not individuals choose to visit. In fact, marketers who do not promote the unique attributes of their destination may fail to attract the interest of tourists (Fakeye & Crompton, 1991). Further, destinations with strong, positive images are more likely to be chosen in the travel decision process (Goodrich, 1978; Woodside & Lysonski, 1989). Do these theories hold true in developing countries, however? And, what factors comprise the image held by potential tourists? The purpose of this study was to explore the image potential domestic tourists have of a rural area in a developing country and to identify its strengths and weaknesses as a travel destination.

Rurality and Rural Tourism

What do we mean by the term "rural"? Willits, Bealer, and Timbers (1990) argued that there is not one commonly accepted definition for rurality. According to Derno (1991), rural refers to a non-urban territory in which human (land-related economic) activity is on going. Willits et al. (1992) conducted a survey in Pennsylvania, USA, which revealed that a substantial proportion of state residents held positive images about rural living, agrarian values, and wilderness areas. More specifically, their findings suggested that residents see rural people and places as good, wholesome and desirable. "Indeed, the positive imagery is so strong and so pervasive that it seems appropriate to speak of a 'mystique' of rurality" (p. 8).

According to Lane (1994), rural tourism is activity that takes place in the countryside. This simple definition, however, does not include the complexity of the activity and the different forms and meanings developed in different countries. Opperman (1997) argued that rural tourism can be defined as tourism in a "non-urban territory where human (land related economic) activity is going

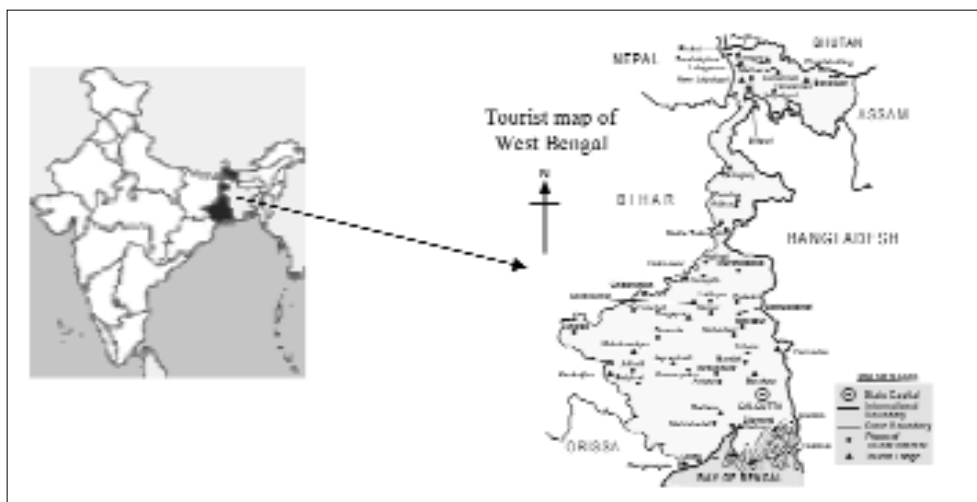


Figure 1: Maps of India (left) and West Bengal (right)

on, primarily agriculture...” (p. 109). Rural tourism is not new (Edgell & Dalton, 1993; Opperman, 1997) yet, according to Hunt (1992), it deserves special and renewed attention.

Despite the accolades attributed to rural tourism, Butler and Clark (1992) suggested that it is not necessarily a panacea to rural development due to income leakages, volatility and low pay. Given the differences in opinion regarding features of rural tourism, Page (1994) and Pigram (1993) recognized that identification and segmentation of the rural tourism market is probably the least researched and understood process in the rural tourism system.

Rural Tourism in India

There can be no denying the fact that rural tourism is of immense importance to the overall travel and tourism industry. Rural areas continue to attract increasing number of tourists and in many countries, including India, it is now one of the most popular forms of tourism. Early movers in adopting this concept in India have been the states of Kerala and Rajasthan.

The state of West Bengal, “the cultural capital of India,” is located in eastern India. It shares international boundaries with Bangladesh, Nepal and Bhutan and domestic borders with the Indian states of Bihar, Orissa, Sikkim and Assam (see Figure 1). The state is bisected by the River Ganges and fed by her various tributaries and distributaries. Covering an area of 87,853 sq. km., West Bengal has a population of around 68 million. While West Bengal occupies only four

percent of the total land of the country, it is burdened with eight percent of the total population. About three quarters of the population lives in villages. It has 18 districts, including the famous city of Calcutta, which is the capital of the state.

Despite being the only Indian state that spreads out from the frozen Himalayas in the north to the temperate coastal plains in the south and having a wide range and variety of attractions and cultures, West Bengal has never done well in the tourism sector. In 1999, the inflow of foreign tourists into the state was only 200,000 of the 2,641,157 that visited India (Department of Tourism, 1999). Further, the tourism sector in West Bengal is growing at a rate of eight percent, which is not satisfactory (Department of Tourism, 1999). Among the four metro cities of India, Calcutta ranks last in foreign tourists arrival after New Delhi, Mumbai and Chennai, and the international airport in Calcutta is among the worst airports in India. In terms of domestic tourism, nearly five and one-half million people visited West Bengal in 1999, which is a meager three percent of the one hundred sixty million domestic tourists in the country.

Compounding the issue, the 25 year-old West Bengal Tourism Development Corporation incurred losses of US\$5.3 million from 1994 to 1998. The Department of Tourism (1999), Government of India (1999), attributed the Corporation’s losses to the fact that it had no master plan for the development or maintenance of facilities and attractions necessary to attract tourists.

Further, West Bengal’s poor performance in foreign and domestic tourism may be due to its negative image. West Bengal is generally thought to have

demonstrations, poverty, disease, over crowding and poor infrastructure. In addition, attributable in part to the media, Calcutta has been portrayed as a place of abysmal poverty, shocking filthiness and disgraceful overcrowding.

Taking into consideration the growth in rural tourism globally and domestically (i.e., within India), and the role that “image” plays in individuals’ decisions to travel for pleasure, it is imperative that research be conducted to substantiate the image tourists (domestic and foreign) have of rural destinations such as West Bengal. Few researchers have attempted to study tourists’ destination image; none have studied tourists’ image of rural travel destinations in India or West Bengal. Therefore, the primary purpose of this study was to explore the image potential domestic tourists (i.e., residents of India) have of rural West Bengal and to identify its strengths and weaknesses as a travel destination.

Destination Image

A destination image is the expression of all objective knowledge, impressions, prejudice, imaginations, and emotional thoughts an individual or group might have of a particular place (Lawson & Baud-Bovy, 1977). Destination image, according to Etchner and Ritchie (1991), is composed of perceptions of individual attributes (e.g., friendliness of the people, climate) as well as more holistic impressions (i.e., mental pictures and imagery) of the place. Destination image may also be affected by the social meaning attributed to the environment in which the destination is located. For example, a destination located in a countryside may elicit very different perceptions and impressions than a destination located in the middle of a city.

Images held of destinations are important because they influence both the decision-making behavior of potential tourists (Crompton, 1979; Mayo 1975) and levels of satisfaction regarding the tourist experience (Chon, 1992).

Methods

This study was exploratory in nature because no image-based research currently exists on rural areas in India, specifically West Bengal. Consequently, instead of formalized hypotheses, the following research question guided the study: What image do potential domestic tourists (i.e., Indians) have

of West Bengal? This question was supported by a series of questions that were intended to uncover specific elements of the image potential domestic tourists had of West Bengal.

While this study was exploratory in nature there was a need for an overall framework to guide the study. First, graduate students from India, who were registered at a large land grant university in the northeastern section of the United States comprised the study population. They were deemed appropriate for the study population because they characterize potential domestic tourists. A list of 767 Indian students was obtained from the university’s Office of International Students and Scholars. Out of this list, six graduate students were selected for open-ended personal interviews. Three of the interviewees were male and three were female; three are from northern India and three from southern India. Males and females who were from different parts of India were selected in order to obtain different perspectives about rural West Bengal.

The primary method for data collection was in-depth interviews. We adopted a qualitative method that allowed us to understand phenomena associated with destination image in a different way from a positivist perspective alone (Bogdan & Biklan, 1982). Given that one of the co-authors had the dual roles of being a researcher and a resident of West Bengal, he had to deal with issues of researcher bias. Therefore, he constantly assessed his involvement as a researcher in the process and was quick to deal with any aspects that were a result of his bias. Further, his co-author and the interviewees were asked to review the transcripts and his interpretation of the data. This triangulation enhanced the validity of the results.

The interviews were formal and directed by pre-structured questions (i.e., What are your perceptions of West Bengal? What do you think about the people of West Bengal? and What do you think about the physical environment of rural West Bengal?). The interviews were also recorded and transcribed. At no time were names used; instead, each participant was given a pseudonym. Data analysis was inductive (Creswell, 1998). The themes highlighted in the results were constructed from the interview data and incorporate a review of literature that sensitized the authors to the subject matter.

Results

The results of this study supported the notion that images of a travel destination are a mixture of both positive and negative perceptions (Milman and Pizam 1995; Willits, Bealer, and Timbers 1990). In fact, they challenge Willits et al.'s (1990) contention that most individuals see rural people and places as good, wholesome and desirable.

In terms of the positive perceptions of West Bengal, the respondents recognized the "arts," "interesting customs and culture," "beautiful scenery," "variety of cuisines," "colorful festivals," "stable political situation," "pleasant climate," "Himalayas," "Darjeeling," and the "Royal Bengal tigers." Surprisingly, none of the respondents mentioned the 15 Wildlife Sanctuaries, 5 National Parks and 3 Tiger Reserves that exist in West Bengal. On the other end of the continuum (i.e., negative perceptions) five of the six respondents were aware of but knew very little about rural tourism in the state. They did, however, have specific comments about the people and infrastructure, which were perceived to be undesirable. For example, potential respondents argued that residents of West Bengal need a drastic change in their "work ethic," are "Calcutta-centric," and "impolite." And, local transportation, tourist-information centers, the number and variety of activities, and the pace of life, were perceived to be major hindrances to the development of tourism. The interviewees were either not convinced or ignorant about the level of accommodations and transportation in rural West Bengal.

No differences in response were found between males and females. However, the results did reveal that home residence (i.e., northern vs. southern India) is related to individuals' preferences for rural tourism areas, although the reasons for these differences are not readily apparent. For example, individuals expressed interest only in visiting rural areas that lie within the region (i.e., northern vs. southern India) of their home residence.

Discussion

Given the fact that some of the respondents were essentially unaware of what West Bengal has to offer, it is clear that the state's tourism advertising is not as well known or received as that of its competitors. Furthermore, because the West Bengal government has failed to create a strong,

positive image of the rural areas, which would distinguish the state from other destinations, other states are attracting more tourists with similar or less attractions. To attract potential visitors, the government must reinforce the positive attributes of the state. As Echtner and Ritchie (1993) have suggested, this approach is necessary for effective positioning of a destination.

Further, the finding that preferences for rural tourism areas differed based on home residence may be due to the fact that when respondents travel to India they do so for a short period of time. Hence, they may not want to travel outside of their home region, e.g., away from friends and family. This finding may also be due to the influence of "culture." In India there are significant regional differences in culture. Therefore, after having lived in the USA for months or years, individuals may want to spend their vacation experiencing the culture in which they were raised.

In summary, rural tourism in West Bengal is in its infancy. Therefore, at this exploratory stage tourism planners should utilize a qualitative approach to gain a more detailed picture and a deeper understanding of tourism in the context of rural West Bengal. As Babbie (1992) claimed, we can't solve our social science problems until we understand how they come about and persist.

Limitations

The sample population does not adequately represent all Indian students studying at The Pennsylvania State University or in the USA. Thus, the findings are not generalizable. In addition, the term "rural areas" was not precisely defined and as such each individual's interpretation of the term may have influenced his or her response to the questions in the interview. Finally, the questions used to probe individuals' perceptions of rural West Bengal may not have uncovered all components that comprise Indian students' images of rural West Bengal.

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NEW ENGLAND RECREATIONAL FISHERS' ATTITUDES TOWARD MARINE PROTECTED AREAS: A PRELIMINARY INVESTIGATION

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Abstract: The purpose of this research is to examine support of marine recreational fishers for each of the various types of Marine Protected Areas (MPA) in the Northwest Atlantic. Further, to explore the extent that differences exist between those who strongly support MPAs and those who do not strongly support MPAs within a specific region of the Northwest Atlantic across a wide variety of demographic, behavioral, perceptual and attitudinal variables. The primary research instrument for this study was a mail questionnaire administered using a mixed method research design yielding 208 completed surveys by persons meeting qualifying characteristics (fish in open ocean). Our research found that roughly half of participating marine recreational anglers support MPAs. However, the extent and strength of that support depends on the specific objectives of the MPA, the restrictions imposed on saltwater anglers and the specific location of the MPA. The research also suggests that anglers who support MPAs are more likely to believe specific benefits, such as increased size of fish stocks, will result from the MPA.

Introduction

That many of the ocean's pelagic fish species are overexploited is beyond debate. As many as 25 to 30 percent are over fished, and another 44 percent are fully exploited (FAO 1999; NRC, 1999). In an effort to protect remaining fish stocks and allow for recovery, a variety of fishery management proposals have been proffered. One such strategy is the adoption of Marine Protected Areas (MPAs)

as a means to limit disturbance from human economic activities on specified marine ecosystems. A recent National Research Council (1999) report on Sustaining Marine Fisheries defined marine protected areas as a spatially defined area in which all populations are free from exploitation. The report considered the primary purposes of the "no take" zones to be the protection of target species from exploitation and to allow their population to recover, to protect critical habitat, to provide some protection from pollution, to provide a vehicle for learning about marine ecosystems and to protect against uncertainty. In practice however, there are as many different definitions for MPAs as there are management objectives. The Fisheries Management Act requires that social impact assessments must be incorporated into the decision-making process prior to implementing new policies. As such, it is important for managers and policy-makers to recognize that the impact of MPAs on the users of marine resources will depend on the definition of marine protected areas, the specific goals of the MPA, and the specific user of marine resources. Furthermore, the NRC (1999) concluded that any attempt to establish MPAs without adequate knowledge of local socioeconomic conditions (to include important attitudes and concerns of specific stakeholder groups) would surely fail.

This exploratory study focuses on attitudes and behaviors of those persons who use marine resources for recreational fishing. The purpose of this research is to examine support of marine recreational fishers for each of the various types of Marine Protected Areas in the Northwest Atlantic. Further, to explore the extent that differences exist between those who strongly support MPAs and those who do not strongly support MPAs within a specific region of the Northwest Atlantic across a wide variety of demographic, behavioral, perceptual and attitudinal variables.

Literature Review

The human dimensions of fishing literature has a variety of techniques for assessing the relationship between specific resource management strategies and recreational fishing, these include their motivations for fishing, their sense of attachment to the region, and the level of specialization of the fishermen. This information is important because it allows for a preliminary understanding of what

an important stakeholder group thinks about marine protected areas and helps determine if there are differences within this group. This paper is a preliminary investigation into the various components that may influence recreational fishers' perceptions of the costs and benefits of implementing MPAs. We will briefly discuss the rationale of utilizing MPAs and define commonly implemented strategies. The next section will contain a review of research that identified the factors that motivate saltwater recreational fishers to angle and formulated the basis for our survey questions. Finally, we will examine the existing literature to identify how recreational fishers' motivations, attitudes and expectations can predict attitudes toward management decisions.

Marine Protected Areas

The advent of MPAs as a management tool is a distinct departure from single species management philosophies towards a holistic approach to resource use. The establishment of MPAs has the potential to negatively affect marine recreational fishing. This is especially true if the persons engaging in recreational fishing lack mobility (i.e., small boat, lack of time, etc.) and the MPA excludes them from traditional fishing areas (NRC, 1999). The establishment of marine protected areas could also improve the quality of marine recreational fishing by enhancing the health of marine fish populations and improving habitat.

Marine Protected areas are discrete geographical areas designated to enhance the conservation of marine and coastal resources. MPAs are managed by an integrated plan that includes MPA-wide restrictions on some activities (oil and gas extraction), provides increased levels of protection on delimited zones, and establishes fishery and ecological reserves within the MPA. Currently, there are four main types of MPAs in practice today as identified by the NRC (2001):

- *Economic Enterprise Zones*: Areas specifically licensed and managed for economic activities such as open ocean aquaculture, mineral extraction and commercial shipping.
- *Marine Sanctuary*: Zone that prohibits dumping, but a limited amount of extraction is allowed including commercial and recreational fishing. Additionally, economic activity such as laying telecommunications

cables and whale watching are permitted.

- *Fishery Reserve*: Zone prohibiting dumping, commercial fishing and extraction. However, limited shipping lanes and recreational fishing is permitted.
- *Marine Preserve*: Zone defined as off limits to all traffic, including recreational fishers. Non-motorized boats are permitted.

These broad definitions solicit a stakeholder approach to resource management. This expansive management philosophy demands that stakeholder involvement in the planning process associated with MPAs is critical in determining whether management objectives will be met or undermined by stakeholders (NRC, 2001). Each group of stakeholders will view policy changes differently depending on their level of risk, political organization and the management goals and objectives under consideration. Like existing fishery management doctrines, "...any policy changes resulting from establishing an MPA will alter the mixture of services, the set of beneficiaries of those services, and potentially the level of benefits from these services" (NRC, 2001).

Marine Recreational Fishing

As alternative methods of harvesting seafood and interest in pursuing leisure activities have increased, recreational saltwater fishing has gained in popularity and economic importance in coastal communities. It is estimated that 9 million anglers spend more than \$9 billion annually on recreational saltwater fishing (Dalton, NMFS 2000). The total impact on the U.S. economy in direct and indirect expenses in goods and services is more than \$25 billion annually (Dalton, NMFS 2000). By virtue of these facts, recreational anglers have become increasingly important stakeholders, gaining recognition in the political process, and now have seats on some fishery management councils such as the North East Consortium, among others.

Beyond economic considerations, recreational fishermen possess useful knowledge and resources that may; both influence locational decisions, and facilitate implementation and management of the MPA. By failing to include important stakeholder groups in the decision-making and management process, stakeholders may undermine the integrity of the MPA. Alternatively, inclusion in the process

Table 1. — Perceptions of Use by Type of MPA

	Extremely Bad (1)	Somewhat Bad (2)	Neither (3)	Somewhat Good (4)	Extremely Good (5)
Economic Enterprise Zones (c = 3.06)	15 (7.9%)	42 (22.2%)	59 (31.2%)	62 (32.8%)	11 (5.8%)
Marine Sanctuaries (c = 3.5979)	7 (3.6%)	18 (9.3%)	51 (26.3%)	88 (45.4%)	30 (15.5%)
Marine Reserves (c = 3.9691)	9 (4.6%)	15 (7.7%)	21 (10.8%)	77 (39.7%)	72 (37.1%)
Marine Preserves (c = 2.8299)	47 (24.2%)	49 (25.3%)	26 (13.4%)	34 (17.5%)	38 (19.6%)

often results in stakeholder support and enforcement of the rules of the MPA (NRC, 2001). In order for managers to appreciate recreational anglers attitudes towards proposed regulations, we must gain a better understanding of variables that determine angler's motivations, attitudes and expectations.

A review of social considerations in regards to recreational anglers has concentrated on freshwater anglers but we believe that many of the motivations and measures of satisfaction apply to saltwater recreational anglers as well. The few preliminary studies available for marine anglers point out that motivations for fishing are multifaceted and that different types of anglers rank the importance of those motives differently (Dawson and Wilkins 1980). Moeller and Engelken (1972) find that experiencing the natural environment, relaxation, and companionship were consistently rated higher by anglers than were catch. Bryan (1974) and Spaulding (1970) find that relaxation, experiencing the outdoors and catching fish are strong motives for marine recreational anglers. Knopf et al. (1973) suggested that temporary escape, achievement, exploration, and the experience of natural settings were important. Fedler and Ditton (1994) identified relaxation and getting away, environmental enjoyment and time with family and friends as the primary motivations for recreational saltwater anglers; whereas, experiences related to the catch (i.e. size, number) and testing equipment were of relatively little importance among all subgroups except trophy and big game anglers. Angler motivations also change over time as some anglers become more experienced and specialized resulting in changing motivations and satisfactions (Hendee and Bryan 1978).

Social scientists have written a great deal about

each of the variables discussed briefly above. However, surprisingly little work has incorporated that understanding of angler's behavior into policy recommendations for fishery management. This is unfortunate since knowledge of these various expectations and motivations for each type of fishing can provide some guidelines for fishery managers to determine management alternatives, redirect expectations or change expectations (Dawson and Wilkins 1980). What, if any role do these factors play in predicting angler's attitudes toward management strategies - specifically MPAs? Of the variables discussed above, our finding suggest that prior fishing experience, skills and satisfaction, motivations for fishing, attachment to region and importance of catch offer potential explanations for angler attitudes toward MPAs.

Objectives

This research was begun with three main objectives in mind:

1. To measure angler support for four classifications of Marine Protected Areas.
2. To measure demographics, behaviors, motivations and attitudes of New Hampshire Seacoast and Southern Maine (USA) anglers.
3. To interpret the results to provide direction for future research and to begin to frame conceptual models for fishery managers.

Research Procedure

Data Collection: The primary research instrument for this study was a mail questionnaire administered using a mixed method research design. Names and addresses of people that boat and fish were collected using two primary methods. The first method involved the use of postcards that were placed on the windshield of cars that were parked at access sites along the New

Hampshire and Southern Maine (USA) coasts. The post card described the objectives of the study, asked a couple of short questions and solicited their participation in the larger study questionnaire. The second method used to obtain names for the study was membership mailing lists from three groups: persons renting dock space at Little Harbor Marina (n=296), members of NH Coastal Conservation Association (n=250); and members of the Southern Maine Conservation Association (n=250). The NH and Southern Maine Coastal Conservation Association are chapters of a National Coastal Conservation Association, an organization focused on issues and topics associated with marine recreational fishing. These two data collection methodologies yielded 208 completed surveys by persons meeting qualifying characteristics (fish in open ocean).

Measurement of Attitudes toward MPAs: The questionnaire measured attitudes towards three specific type of marine protected areas that included a description of the activities allowed in the area: 1) Marine Sanctuaries:-No Dumping, but a limited amount of resource extraction is allowed (including commercial fishing); 2) Marine Reserves:- No dumping, no commercial fishing, no extraction. Limited shipping lanes and recreational fishing is allowed; and 3) Marine Preserves:- This zone is off-limits to all traffic, including recreational fishing. Non-motorized boats are okay. Attitudes were measured by asking if the respondent felt that each type of protected area was an extremely good or extremely bad use of marine resources use (measured on a five point scale).

The study also includes a number of measures of attitudes towards a more general definition of marine protected areas. The respondents were provided with the following general definition of marine protected areas. A marine protected area is "any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein". A single measure of attitude towards MPAs (i.e., I strongly support the establishment of MPAs) was used. As stated earlier, each MPA (regardless of classification) will be defined according to specific management objectives and will therefore impact users differently. Given this uncertainty we used the general definition as our

dependent variable. We then aggregated the responses into a two-category variable: support or non-support. In other words, this variable was operationalized by collapsing a five-point scale into a two-point scale (See Table 1). Out of 178 responses to the general question, "I strongly support the establishment of Marine Protected Areas", 51 percent of respondents disagreed [7 Strongly Disagree, 22 Disagree, 62 Unsure], whereas, 49 percent agreed [68 Agree, 19 Strongly Agree].

Angler Motivations, Attitudes and Expectations: The independent variables for this study included socio-demographic and behavioral characteristics (i.e., age, income, education, years of residence) of the respondents. Detailed information was also collected on the use characteristics (size of boats, years boating, fishing practices and years fishing, etc.) of recreational anglers. The study also included measures of motivations for marine recreation behaviors. The respondents were provided with the following information: "Below is a list of reasons why people tend to fish. Please indicate how important each reason to fish is to you personally". This was followed by seventeen specific statements (e.g., To be outdoors; For relaxation; To obtain fish for eating; To obtain trophy fish, etc.).

The next section focused on measuring attachment to the study area. The respondents were provided with a chart of the study area and a set of statements that included the following instructions: "Below is a list of statements that address your feelings about the region represented on the chart. Please indicate your level of agreement with each of the statements listed below" (measured on a five point strongly agree to strongly disagree scale). The specific items included a variety of measures of attachment (e.g., This region of the ocean means a lot to me; I am very attached to this region of the ocean; For me, lots of other regions could substitute for this one, etc.).

This study also asked the respondents the extent that they agreed or disagreed with a series of statements focused on different attributes associated with the catch measured on a five point strongly agree to disagree scale (e.g., The more fish I catch the happier I am; A fishing trip can be successful even if no fish are caught; I would rather catch one

or two big fish than five smaller fish, etc.).

The final set of measures included some specific outcomes that may be associated with MPAs (i.e., MPAs will improve the quality of fish stocks; MPAs will negatively impact my use of the open ocean), and measures of more general goals of marine protected areas (i.e., More attention should be given to habitat restoration; I would discontinue my recreation fishing if it would increase fish stocks) were also used. These measures of specific and general attitudes towards marine protected areas serve as the dependent variables for this study.

Statistical Procedures: The study utilizes distributional and bivariate statistical techniques to examine the respondents' attitudes towards marine protected areas and identify relationships between these attitudes and the various personal, behavioral and socio-psychological measures included in the study. The results from this analysis suggest that the respondents are supportive of some types of marine protected area and not supportive of other types. This support (i.e., positive attitudes) can be partially explained by socio-demographic, behavioral/motivational characteristics of the respondents. The results from this study are discussed in terms of a series of recommendations for managers and policy makers interested in establishing marine protected areas in the Northwest Atlantic.

Results

Support for Different Types of MPAs: This section will highlight the findings of our research by first presenting angler support for specific types of MPAs. In response to the questions of support for specific types of MPAs, the results are what one might expect. Mean responses ranged from 2.83 for Marine Preserves to 3.97 for Marine Reserves. Sixty-two percent of respondents were not in support of Marine Preserves as defined. Whereas, only twenty-three percent of respondents were not in support of Marine Reserves, where recreational fishing is allowed, but with limited entry of competing users.

Differences Between Supporters and Non-Supporters of MPAs: This section will compare how specific socio-demographic, behavioral and motivational variables affect angler attitudes across those that support MPAs.

Socio-demographic and Use Behavior: Education, Income, Age or Years of Residence, were found to be statistically insignificant in determining the extent to which an individual supported MPAs. Of the use variables measured, only boat size was found to be significant (.009), with anglers supporting MPAs having slightly smaller boats on average.

Years boating in the seacoast, and the amount of time spent in the open ocean were both marginally significant (.086) and (.077). Anglers with less years boating and less time spent in the fishing in the open ocean tend to have greater support of MPAs. There were no differences in angler support of MPAs based on the target species sought.

Motivations and Satisfaction: It is important to note that, of the 32 measurements of motivations and satisfactions, there was only one strongly significant difference between supporters and non-supporters (i.e. supporters were more likely to identify experiencing marine surroundings as important as non-supporters (.008)). Of the five marginally significant variables, supporters for MPA scored higher for fish type (.039), fish size (.088), thrill of catching a fish (.089), experience of catch (.080) and promise of catch (.086).

Attachment to the Region: Two of the 18 variables measuring angler attachment to the region were found to be significant. Non-supporters were more likely to agree with the statements, 'People should be free to do whatever they want in this region' and 'there should be no use restriction of this region' were both significant (.001). Non-supporters were also marginally more likely to agree with the statement, 'I feel no commitment to this region' (.065).

Attitudes and Perceptions: Attitudes appear to play an important role in angler's perceptions of MPAs. We used thirty variables to measure angler attitudes about the state of fisheries in New England, support of MPAs and perceptions of various policies. The statement, supporters of MPAs thought: New England fisheries are in crisis (.031); and that the topic of MPAs are important (.001). Supporters also indicated that MPAs will improve the quality of fish stocks (.001). While those that did not support MPAs indicated a belief that

MPAs will negatively impact their use of the open ocean (.001). Finally, anglers who supported MPAs were more likely to have positive attitudes toward habitat restoration (.001).

Conclusions

This preliminary study lays the foundation for future research that investigates the relationship between marine recreational fishing and the establishment of marine protected areas. Our research found that roughly half of participating marine recreational anglers support MPAs. However, the extent and strength of that support depends on the specific objectives of the MPA, the restrictions imposed on saltwater anglers and the specific location of the MPA. For example, marine recreational anglers were much more likely to support the less restrictive types of marine protected areas. The research also suggests that anglers who support MPAs are more likely to believe specific benefits, such as increased size of fish stocks, will result from the MPA. Other important findings include:

- Marine anglers were more supportive of the less restrictive marine reserves than they were for the more restrictive marine preserves. This can likely be attributed to the lack of restrictions on recreational fishing in the description of marine reserves provided.
- Marine anglers with boat lengths of 19' - 21' were more likely to be supportive of MPAs. One plausible explanation for this finding is that angler's with smaller boats would not be directly affected by an MPA. It is important to note that the mean was the measure of central tendency used in this finding.
- Recreational angler's that are supportive of MPAs also support habitat restoration. Since MPAs are essentially designed to protect and restore ecosystems, this finding is consistent with what one would expect.
- Recreational angler's support of MPAs depends on their perception of the effect that MPAs will have on the outcome of their fishing trips. Non-supporters believe that MPAs will negatively impact their access rights; whereas, supporters tend to believe that MPAs will improve fish stocks.
- Both supporters and non-supporters place a strong degree of motivation and satisfaction on experiencing marine surroundings. Our findings suggest that this is an important

component of the marine angling experience. Consequently, there was little measurable difference between the two groups.

The small sample size and specific membership lists used in this study limited some meaningful differences that one would expect to find in the data. A larger study looking at the impact of marine protected areas on the Seacoast region of New Hampshire is ongoing.

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THE IMPACT OF WILDLAND FIRE REDUCTION TECHNIQUES ON ATTITUDES TOWARD FUELS MITIGATION: A COMPARISON OF SPECIAL USE CABIN PERMITTEES AND OTHER HOMEOWNERS LIVING NEAR A NATIONAL FOREST

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Abstract: This study examines the impact of fuel mitigation and fire prevention programs on homeowners' attitudes toward and approval of fuel reduction techniques. This research is relevant to resource managers, from fire to recreation, who are responsible for a multitude of land uses and conditions. A mail questionnaire was used to collect data from three types of homeowners in the Big Bear Lake area of the San Bernardino National Forest, in San Bernardino County, California. Based on a half-day meeting with fire managers from federal and local authorities and a focus group with local residents many of whom were active in Fire Safe councils, we learned about various educational and mitigation programs offered and/or enforced by the appropriate authorities. The Forest Service implemented a fire safety program with special use cabin permittees that enforced defensible space standards, primarily through a periodic home and property inspection. Special use cabin permittees were required to comply or be subjected to fines. Permanent and seasonal homeowners in the area were not targeted with the same fire safety program; although many fire safety and fuel mitigation programs were administered locally. The results of this research shows special use cabin permittees, most of who are seasonal home users, and permanent homeowners who live in the area full-time have

high levels of experience with defensible space. These two types of homeowners exhibit strong positive attitudes toward defensible space over mechanical fuel reduction and prescribed burning. However, when asked if defensible space should be implemented in the local area all homeowner types held fairly high levels of approval for this fuel reduction technique.

Introduction

This study presents the impact of fuel mitigation and fire prevention programs on homeowners' attitudes toward and approval of fuel reduction techniques. This research is relevant to resource managers, from fire to recreation, which are responsible for a multitude of land uses and conditions. Often these programs contain a public outreach component involving residents and/or forest users. Based on meetings with federal and local fire managers and a focus group with local residents many of whom were active in Fire Safe councils, we learned about various educational and mitigation programs offered and/or enforced by the appropriate authorities. Specifically, the Forest Service implements a fire safety program with special use cabin permittees that enforces defensible space standards, primarily through a periodic home and property inspection (figure 1). Special use cabin permittees are required to comply or be subjected to fines. Permanent and seasonal homeowners in the area were not targeted with the same fire program, although many fire safety and fuel mitigation programs were administered locally.

Past research on wildland fire has studied people in a variety of settings ranging from visitors to a national park to homeowners commenting about practices near their homes. Bright and his



Figure 1. A special use cabin in San Bernardino National Forest

colleagues reported (1993) that two-thirds of the park visitor sample had a positive attitude toward supporting a controlled burn policy in a national park (conducted the year following a major fire at the park) and one-third had a negative attitude. Using contrived messages for the positive group (negative message) and negative group (positive message); attempts were made to change attitudes (particularly negative attitudes) and ultimately the intent to support the fuel reduction technique. Their results showed that factual evidence from a credible message source is needed to change beliefs, attitudes and intentions to support resource management policies. Jacobson and her colleagues reported (2001) experience with prescribed (previously called controlled) burning was correlated with positive attitudes toward prescribed burning, as well as increased knowledge levels. Individuals employed in natural resources or agriculture also exhibited positive attitudes and improved knowledge. Additionally, residents of Florida identified that prescribed burning prevents the onset of wildland fires; however, burning harms wildlife, may produce spreading fire, and leaves an ugly landscape. In another study of Florida residents, Loomis and his colleagues (2001) reported significant changes in attitudes toward prescribed burning (more positive) and knowledge about the impact of burning after residents were exposed to education materials about prescribed burning.

Few social science studies have considered several fuel reduction techniques. Winter and his colleagues (2002) conducted focus groups asking homeowners directly, as well as asking fire managers to comment about homeowners, about their beliefs, attitudes toward, and support for three fuel treatment approaches (i.e., prescribed burning, mechanical fuel reduction, defensible space). Comments suggested that several factors influenced these psychological elements including beliefs that an approach would produce certain outcomes, personal importance of related issues (e.g., vegetation preferences, smoke impacts on health, and personal property rights), situational specifics, and trust in the agencies managing resources and fuel build-ups. McCaffrey (2003) examined a set of different thinning techniques including herbicides, animals grazing, selective timber harvesting, salvage logging, hand thinning, and equipment thinning by asking wildland-urban

interface residents in Nevada which techniques were acceptable. She reported that several factors such as age, wildfire experiences, perception of fire risk, and perceptions of the agencies in fire planning influenced the acceptance of the fuel reduction techniques. While these studies shed light on the levels of attitudes toward and acceptance of fuel reduction techniques, few studies have examined how the type of residency a household has in the wildland-urban interface may influence their exposure to fuels mitigation, interest in learning more about wildland fire risks and how to make living in the WUI safer, or attitudes toward or support levels for fuel reduction techniques. These residency types represent the length of time a household spends in the WUI area, possibly investment in a home, and the degree of exposure to resource management on public lands. Thus, the purpose of this study is to test the influence of residency type (seasonal homeowners, permanent homeowners, and special use cabin permittees) on a set of experience, information seeking, and cognitive factors about fuel reduction techniques.

Methodology

This study began by considering several areas in the United States that had been identified as wildland-urban interface areas and that wildland fire was a significant issue to resource managers and local communities. One area selected for study was the Big Bear District of the San Bernardino National Forest (figure 2). This area is near the Los Angeles metropolitan area, actually located in San Bernardino County. Specifically, Arrowhead and Big Bear Lake areas were considered as residential areas that would provide a mix of permanent, seasonal, and special use cabin permittees. Based on meetings with fire managers from the Forest Service and local fire departments, many residential areas in Arrowhead and Big Bear Lake were suggested. Suggested areas were studied by the researchers and two communities/neighborhoods were selected as final study sites. Next, a list of names and addresses were purchased from a database firm in California when the local tax assessors were unable to provide a viable computerized list. A population of 5,531 permanent and seasonal home and land owners was identified in the two interface communities — Running Springs, a community west of Big Bear Lake, and Sugarloaf, a large neighborhood east of



Figure 2. Ranger district office from which research conducted.

Big Bear Lake. From this population, 1,000 households were sampled weighted by permanent and seasonal proportions. Additionally, a population of 463 Forest Service special use cabin permittees was identified with the assistance of the district Forest Service office. All cabin permittees were included in the sample.

Data were collected in fall 2001 using an eight-page mail questionnaire. A modified Dillman mail procedure was employed including two questionnaire mailings, a reminder postcard, and an incentive. Press releases were sent to two local papers to better inform mostly permanent residents that a study was in progress and those who received an envelope from Michigan State University should be encouraged to respond. An incentive of a Walmart gift certificate for one out of 250 households was offered. Response rates of 41% (n=119) for permanent homeowners, 34% (n=176) for seasonal homeowners, and 49% (n=224) for special use cabin permittees were achieved. Nonresponse bias was checked by comparing demographic characteristics of permanent homeowners to the available census data (1990). Respondents to the survey tended to be better educated, reported higher levels of income, and were more likely to be male in comparison to the general population.

Based on our meetings with fire managers, a resident focus group, and on-site inspection of neighborhoods, we anticipated special use cabin permittees to hold the highest level of experiences with defensible space practices because of the defensible space program targeted at them, followed closely by permanent homeowners. Seasonal homeowners were perceived by fire

Table 1. — Demographics of Homeowners in Selected Wildland-Urban Interface Areas of the San Bernardino National Forest, Big Bear Ranger District

Description of Respondents	Seasonal	Perm.	Spec. Use
Gender			
Male	61.0%	53.0%	64.0%
Female	39.0	47.0	36.0
Household Income			
Less than \$40,000	21.0%	28.0%	12.0%
\$40,000 to \$79,999	33.0	43.0	27.0
\$80,000 or more	46.0	29.0	61.0
Education Experience/Level			
Jr. or High School	21.0%	16.0%	10.0%
College	52.0	61.0	45.0
Graduate School	27.0	23.0	45.0

authorities and permanent homeowners to be less involved in local fire prevention efforts.

Results

Demographics. Respondents for all homeowner groups tended to be male, particularly with special use cabin permittees and seasonal homeowners (table 1). Special use cabin permittees and seasonal homeowners held higher levels of income than permanent homeowners. Over 50 percent of special use permittees earned \$80,000 or more household income (before taxes). Special use cabin permittees also held higher levels of educational attainment than seasonal or permanent homeowners. Nine out of ten permittees had some college or graduate school education.

Most of the respondents claimed California as their primary state of residency with 98% of permanent homeowners and 97% of both seasonal homeowners and special use cabin permittees. Most respondents were either employed full or part time or were retired. The greatest percentage (23%) of permanent homeowners lived most of their lives in a medium sized city (population 25,000 to 99,999); in comparison to the greatest percentage of seasonal homeowners (45%) and special use cabin owners (51%) lived most of their lives in a major city (one million or more). The majority of California respondents hold the perception that their home is serviced by a fire department and that there are fire hydrant located near their homes.

Table 2. — Homeowners' Past Experiences with Fuel Reduction Techniques

Past Experience With Fuel Reduction Techniques	Seasonal	Perm.	Spec. Use
A Prescribed Burn Occurred Near My Home	8.0%	45.4%	8.5%
A Mechanical Removal of Trees Has Occurred Near Home	22.4	22.7	29.9
Have Been Required to Remove Flammable Vegetation on My Property	69.0	67.2	71.0
Implemented a Defensible Space around My Residence	51.7	68.1	67.4

For example, 93% of permanent homeowners, 96% of seasonal homeowners and 88% of special use cabin owners believe there are hydrant in their neighborhoods. Approximately one out of every four households included an individual that suffers from respiratory or breathing problems.

Based on homeowners' response, all special use cabins were less than a half mile from National Forest land, while approximately half of all permanent (60%) and seasonal homeowners' (54%) homes were less than a half mile away. A greater number of seasonal homeowners (30%) purchased their homes within the last five years than other residents, while special use permittees owned their homes the longest (44% more than 20 years). Permanent (70%) and seasonal (74%) homeowners owned relatively the same size of land, a quarter to one acre, while 63 percent of special use permittees leased from the Forest Service less than one-quarter acre. Thirteen percent of seasonal homeowners reported owning greater than 10 acres.

Past Experience and Exposure to Fuel Reduction Techniques. Permanent homeowners had the highest level of experience with prescribed burning in their lifetime (table 2). Close to 50 percent of permanent homeowners indicated that a prescribed burn had occurred near their Big Bear Lake home, while less than ten percent of seasonal homeowners and special use permittees had experienced prescribed burning near their home ($X^2=90.0$,

Table 3. — Homeowners' Exposure to Wildland Fire Education and Outreach

Exposure to Wildland Fire Education and Outreach	Seasonal	Perm.	Spec. Use
Asked Local Fire Department about How to Reduce the Risk of Property Damage from Wildland Fire	5.7%	13.4%	12.9%
Asked Forest Rangers How to Reduce Risk of Property Damage Caused by Wildland Fire	2.9	11.8	22.3
Read Information on Home Protection from Wildland Fires	70.1	73.9	68.3

$p<.001$). Approximately one-quarter of all homeowners have seen mechanical fuel reduction, with a slightly greater proportion of special use permittees experiencing this form of fuel removal. Over two-thirds of all homeowners have been required (by some authority or neighborhood group) to remove flammable vegetation on their property. Special use cabin permittees (67%) and permanent homeowners (68%) were more likely to have complied with this request/mandate than seasonal home owners ($X^2=12.5$, $p<.01$).

Few homeowners (less than 15% of any of the homeowner groups) have worked with local fire departments to reduce property loss/damage risks (table 3). Permanent homeowners and special use permittees were more likely to ask local fire departments than seasonal homeowners ($X^2=6.6$, $p<.05$). A greater proportion of special use permittees (22%) had asked forest rangers about reducing property risks than seasonal (3%) or permanent (12%) homeowners ($X^2=32.4$, $p<.001$). Over two-thirds of all homeowners have read information on home protection from wildland fires.

Attitude Toward and Approval of Fuel Reduction Techniques. Permanent homeowners and special use cabin permittees held significantly stronger positive attitudes ($F=10.5$, $p<.001$) toward defensible space practices than seasonal

homeowners (table 4). Defensible space was described to homeowners in the survey instrument as “homeowners maintaining a fire-safe zone consisting of 30 feet around homes that is free of flammable vegetation.” Following strong positive attitudes toward defensible space, mechanical fuel reduction was also viewed moderately positive by all homeowner groups. Mechanical fuel reduction was described as “resource managers using chainsaws, brush mowers, and specialized machines to cut and remove shrubs, trees, and other fuels.” On average, homeowners were neutral towards prescribed burning. Prescribed burning was described as “resource managers using planned fire to reduce fuels, regenerate desired plant or animal species, and promote ecological health.” Overall, prescribed burning was viewed less positively by homeowners than defensible space or mechanical fuel reduction.

Table 4. — Homeowners’ Attitudes toward Fuel Reduction Techniques

Attitude Toward Fuel Reduction Techniques	Seasonal	Perm.	Spec. Use
	Mean (Scale was “-3” extremely negative to “3”extremely positive)		
Prescribed Burning	0.13	-0.17	-0.20
Mechanical Fuel Reduction	1.42	1.68	1.30
Defensible Space	1.50	2.20	2.10

In general, approval of the use of these fuel reduction techniques in the local area lagged attitude toward these techniques (table 5). On all of these approval ratings, homeowners were similar (meaning no statistically significant differences). Following attitude ratings, defensible space practices were approved for implementation at the highest levels, followed by mechanical fuel reduction and prescribed burning, which received a mix of neither approve or disapprove ratings.

Implications

All types of homeowners, on average, held strong positive attitudes toward fuel reduction efforts that they can perform (i.e., defensible space) as homeowners living in the wildland-urban interface. As expected, special use cabin permittees held some of the highest levels of experiences (required to remove vegetation, asked forest ranger for information) related to fuel reduction programs.

Special use cabin permittees were very similar to permanent homeowners on actual implementation of defensible space and attitudes toward defensible space. As expected, seasonal homeowners “lagged” permanent homeowners and cabin permittees in some fuel reduction programs (particularly requesting information from local fire department or ranger), however this does not seem to significantly influence attitudes or support for fuel reduction implementation by seasonal homeowners (other than lower positive attitudes toward defensible space). Overall these results suggest a fairly high level of support for defensible space across the three homeowner groups as the leading fuel reduction program. A very high level of reading of fire prevention materials (at least two-thirds of each segment) was found amongst all homeowners. Communication materials and their distribution may be critical for building awareness of and support for a hybrid of fuel reduction efforts in the Big Bear Lake area.

Table 5. — Homeowners’ Approval of Fuel Reduction Techniques

Approval of Fuel Reduction Techniques	Seasonal	Perm.	Spec. Use
	Mean (Scale was “-3” strongly disapprove to “3”strongly approve)		
Prescribed Burning	0.12	-0.10	0.05
Mechanical Fuel Reduction	1.16	1.11	0.80
Defensible Space	1.38	1.76	1.60

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DETERMINING STANDARDS OF QUALITY FOR PAY FISHING ESTABLISHMENTS IN WEST VIRGINIA

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Abstract: Pay fishing involves paying a fee for the privilege of fishing a body of water where fish populations are enhanced by stocking farm-raised fish. This study compared angler motives and beliefs about standards of quality among those anglers fishing for channel catfish in a catch-and-release fee structure under a competitive program format and those anglers fishing for rainbow trout in a catch-and-harvest fee structure under a non-competitive program format. The purpose of this study was to determine the standards of quality for the pay fishing experience in West Virginia as they relate to type of fish caught, fee structure, and the motives of the angler in order to provide pay fishing business owners with information on how to most effectively use farm-raised channel catfish and rainbow trout in the recreation market. Results indicated that these two groups of anglers differed significantly in most of twenty-seven itemized desired recreational fishing experiences as well as their beliefs about standards of quality for the size of the fish caught and the unit of effort required to catch the fish. The authors of this

study recommend to business owners that fish stocked in ponds at pay fishing establishments need to be stocked at a size and density appropriate to the beliefs of the anglers who fish for them.

Introduction

There are over thirty pay fishing businesses that help make up the growing recreation market in West Virginia aquaculture. Pay fishing involves paying a fee for the privilege of fishing a body of water where fish populations are enhanced by stocking farm-raised fish. A fishing license is not required of the angler to fish in these private waters, most often ponds. Logar, Ponzurick, and Semmens (2001) reported that bluegill, bass, trout, and catfish are the four most preferred species that in-state and out-of-state anglers would like to catch in West Virginia. The overall goal of our research effort is to gain understanding as to how these species can be better utilized in the West Virginia recreational market. In this, our first study on this particular form of recreation, we examined fishing opportunities involving channel catfish and rainbow trout.

Pay fishing establishments attract anglers by utilizing various fish species under different fee structures (catch-and-harvest or catch-and-release) and program formats (competitive or non-competitive) to produce high quality recreation opportunities that are desired by customers. However, the fish are often supplied to these establishments by state and regional farms that are structured to cater to the food industry, rather than the recreational market. Thus, the size of the fish stocked, and potentially the stocking density, reflect the demand of consumers in an entirely different market.

In order to most effectively select fee structures and program formats, the managers of a pay fishing establishment must first understand the motives of their customers and the customers' beliefs about standards of quality set for the fish they are catching. The purpose of this study was to determine the standards of quality for the pay fishing experience in West Virginia as they relate to type of fish caught, fee structure, and the motives of the angler in order to provide pay fishing business owners with information on how to most effectively use farm-raised fish in the recreation

market. Phase One of this study focused specifically on catch-and-release channel catfish tournaments and non-competitive catch-and-harvest rainbow trout fishing opportunities. By comparing these two popular combinations of species selection, fee structure and program format, this study will help pay fishing establishments better utilize farm-raised channel catfish and rainbow trout.

Methods

Three pay fishing establishments in West Virginia were selected for data collection sites, based upon the diversity of their locations, fish species, fee structures and program formats. One site was Mill Run Farm in Marlinton, WV, which is located adjacent to the Monongahela National Forest. In the 2002 season, Mill Run stocked four ponds with steelhead, rainbow, brown and brook trout. The fee structure at this establishment was catch-and-harvest with a non-competitive program format. Another data collection site was Whispering Pines in Alum Creek, WV, which offered one pond stocked with channel catfish, shovelhead and brown trout. The fee structure at this establishment combined catch-and-harvest and catch-and-release opportunities, dependant upon size and type of fish caught, with a competitive program format. The final data collection site was Family Fishing and Camp in Wendel, WV, located to the relatively large urban center of Fairmont. This establishment offered four ponds in the 2002 season, stocked with various combinations of bass, catfish, carp, bluegill, flathead, sunfish and trout in each pond. The fee structure at this establishment combined catch-and-harvest and catch-and-release opportunities, dependent upon size and type of fish caught. The program format at Family Fishing and Camp was primarily non-competitive, with the exception of two evening fishing competitions per week on Friday and Saturday nights. This establishment also provided its customers with cabin rental and camping opportunities.

Sampling days were systematically selected between 2 June and 17 August 2002, with weekend and weekdays being equally represented. An eight-hour time block was randomly selected for each sampling day. Using a random number table, researchers randomly selected one adult (18 years of age or older) from each group of customers and

asked these individuals to participate in an on-site interview and complete a mail-back questionnaire. The short on-site interview was developed primarily to determine customer demographics (age, gender and annual household income), as well as other information such as variables in determining travel cost. Customers' motives and beliefs about catch-related standards of quality were among the variables examined in the mail-back questionnaire. Twenty-seven experience opportunities, indicating customer motives for seeking their chosen fishing experience, were rated for desirability using a seven-point Likert scale (-3 very undesirable to +3 very desirable). Customers were also prompted to report the species they most targeted during their visit; for this species, they further indicated the number of fish caught, average size of the catch, approximate size of the largest fish caught and the amount of time they spent fishing. Each of these catch-related variables was rated for acceptability on a seven-point Likert scale (-3 very unacceptable to +3 very acceptable). Of the 340 questionnaires distributed, responding participants totaled 220 at a response rate of 65%.

Data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS version 10.0 for Windows). Only data concerning anglers who targeted channel catfish within a catch-and-release fee structure and competitive program format and anglers who targeted rainbow trout within a catch-and-harvest fee structure and a non-competitive program format were included in the analysis. These two groups of study participants were compared using descriptive statistics and t-tests.

Results

Channel Catfish Anglers in a Catch-and-Release Fee Structure and Competitive Program Format

Demographically, channel catfish anglers tended to be male (84%), travel in a variety of travel groups and had an average annual household income of less than \$30,000 (Table 1). Among the twenty-seven experience opportunities examined for desirability, the six fishing experiences most desired by this group of anglers were to escape from pressures, recover from everyday stresses, enjoy the natural scenery, be with people who share similar values, catch large fish and to tell others about their visit to the pay fishing establishment (Table 2).

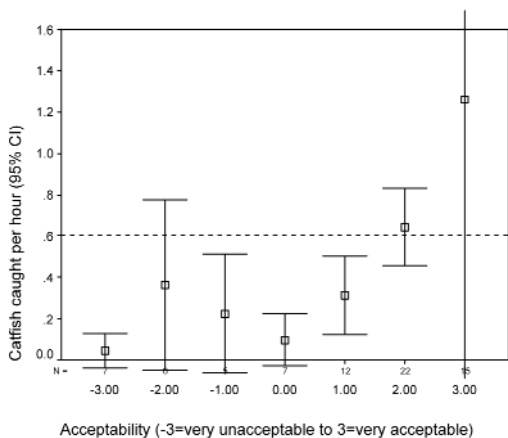


Figure 1. Number of channel catfish caught per hour by acceptability rating.

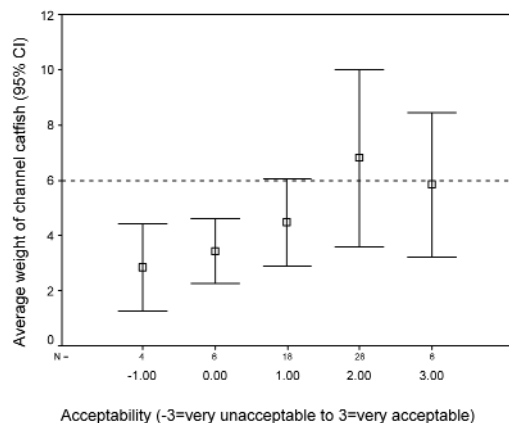


Figure 2. Average pounds per channel catfish by acceptability rating.

Catch-related variables rated for acceptability showed a noticeable increase in acceptability as the unit of effort approached 0.6 fish caught per hour, or approximately one fish caught for every two hours of fishing (Figure 1). Acceptability ratings also noticeably increased when the average weight of each fish caught approached 6 pounds (Figure 2).

Rainbow Trout Anglers in a Catch-and-Keep Fee Structure and Non-Competitive Program Format

The demographic characteristics of rainbow trout anglers included a tendency for these anglers to be older (average age of 47 years), to travel as a family with children (62%) and have an average annual household income of greater than \$52,000. Further, the distribution of males (59%) and females (41%) tended to be much more even than

Table 1. — Angler Characteristics

	Rainbow Trout Anglers	Channel Catfish Anglers
Number of participants	29	84
Average age (years)	47	39
Gender		
Male	59%	84%
Female	41%	16%
Travel group		
Alone	3%	20%
A couple	14%	14%
Family with children	62%	24%
Two or more families or relatives together	10%	14%
Family and friends	3%	14%
Two or more friends together	3%	14%
Other	3%	1%
Average reported annual income (US dollars)	\$52,600	\$29,800

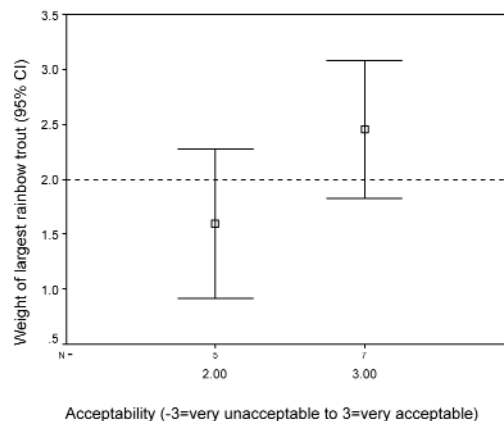


Figure 3. Weight (lbs.) of largest rainbow trout by acceptability rating.

with the channel catfish anglers (Table 1). Among the twenty-seven experience opportunities examined for desirability, the four fishing experiences most desired by this group of anglers were to take a child fishing, spend time with their families, catch fish to eat and to experience fishing excitement (Table 2). Noticeable increases in the acceptability ratings of the analyzed catch-related variables occurred as the weight of the largest rainbow trout caught approached two pounds (Figure 3) and as the number of fish caught per trip approached five (Figure 4).

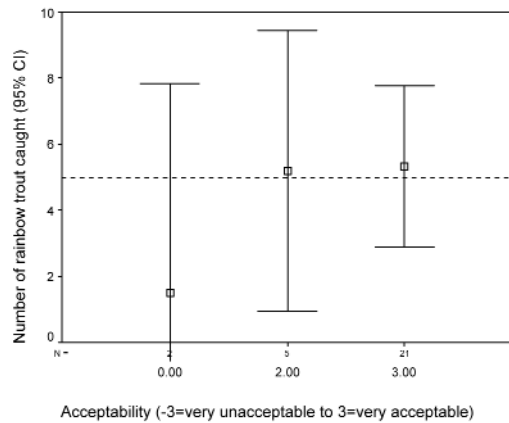


Figure 4. Number of rainbow trout caught per trip by acceptability rating.

Discussion

The results of this study indicate that the fishing experiences sought by different types of anglers vary greatly. Anglers who prefer fishing for catfish in a tournament come to pay fishing establishments for significantly different reasons than those who attend these establishments to fish for rainbow trout to take home with them. Therefore, those who own and manage West Virginia pay fishing establishments should be aware that there are different segments within the recreational pay fishing market, and that choosing a particular fee structure and program format will attract a particular type of angler whose motives, experiential preferences and beliefs about standards of quality for pay fishing experiences differ from those anglers in other segments of the market. Further, the standards of quality reported by the various types of anglers within the recreational pay fishing market are different from the standards of quality set for the food industry, the driving force behind fish production and distribution at fish hatcheries and farms. Fish stocked in ponds at pay fishing establishments need to be stocked at a size and density appropriate to the beliefs of the anglers who fish for them.

Channel Catfish Anglers in a Catch-and-Release Fee Structure and Competitive Program Format
These anglers seek opportunities to escape from pressures, recover from everyday stresses, enjoy the natural scenery, be with people who share similar values, catch large fish and to tell others about their visit to the pay fishing establishment.

Recommendations to pay fishing establishments for appealing to anglers in catfish tournaments include stocking average channel catfish at a weight of six pounds, maintaining a population of channel catfish at a density conducive to catching 0.6 fish per hour (about one fish per two hours fishing) and maintaining a natural looking environment. These fishing opportunities tend to attract males that travel in a wide range of travel groups.

Rainbow Trout Anglers in a Catch-and-Keep Fee Structure and Non-Competitive Program Format

These anglers seek opportunities to take a child fishing, spend time with their families, catch fish to eat and to experience fishing excitement. Recommendations to pay fishing establishments for appealing to anglers fishing for rainbow trout non-competitively include stocking the largest rainbow trout at a weight of two pounds and maintaining a population of these fish at a density conducive to catching five fish per visit. Pay fishing business owners should consider marketing this experience primarily to families with young children.

Suggestions for Further Research

This study examined two popular types of pay fishing modes of business operation, catch-and-harvest rainbow trout angling and tournament catfish angling, in order to help pay fishing business owners and fish producers better utilize farm-raised rainbow trout and channel catfish in the recreation market. It seems likely that the position of a fee fishing business in the agricultural tourism industry can be determined to a large extent by the combination of fish species, fee structure and program format. Future research is still necessary to understand how bluegill and bass, two other popular species at pay fishing establishments in West Virginia, can contribute to this recreation market. Particularly, what fee structures and program formats for these and other fish species deserve special attention from researchers?

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Table 2. — Desired Recreational Experiences

Recreational Experience	Anglers Targeting Rainbow Trout			Anglers Targeting Channel Catfish		
	Rank	n	Mean*	Rank	n	Mean*
Feel more free	11	29	1.38	19	81	1.78
Experience fishing excitement	4	29	2.17	13	81	1.88
Spend time with my family	2	29	2.28	8	78	2.10
Catch fish to eat	3	28	2.25**	26	79	-0.61**
Escape from pressures	6	28	1.79**	1	80	2.44**
Enjoy the natural scenery	5	29	1.97	3	82	2.28
Improve my fishing skills and abilities	27	29	0.17**	18	80	1.78**
Catch a trophy-size fish	22	29	0.55**	10	80	1.98**
Do something challenging	26	29	0.24**	9	81	2.00**
Meet new people	24	29	0.45**	12	81	1.93**
Keep physically fit	25	29	0.31**	23	79	1.25**
Learn more about nature	23	29	0.52**	21	80	1.45**
Catch the limit	21	29	0.69**	22	81	1.44**
Experience adventure	18	29	0.83**	15	79	1.84**
Experience solitude	19	29	0.76**	17	80	1.79**
Recover from everyday stresses	15	29	1.14**	2	81	2.32**
Be with people who share similar values	13	29	1.17**	4	81	2.23**
Rest physically	14	29	1.14**	11	80	1.95**
Catch large fish	12	29	1.28**	5	81	2.19**
Get away from crowds of people	8	28	1.46	24	79	1.15
Be alone	16	28	0.93	25	78	0.55
Rest mentally	10	29	1.34**	7	81	2.11**
Strengthen ties to my friends	17	29	0.86**	19	79	1.67**
Meet/observe people	20	29	0.69**	20	81	1.58**
Take a child fishing	1	29	2.48**	16	80	1.81**
Be in a wild area	7	29	1.48	14	81	1.88
Tell others about my visit	9	29	1.34**	6	80	2.16**

*Means reflect responses based on a seven-point Likert scale from -3 (very undesirable) to +3 (very desirable).

**These non-competitive rainbow trout (catch-and-harvest) angler scores are significantly different from competitive channel catfish (catch-and-release) angler scores. (t-test, 2-tail, $p < .05$).

CHANGING ETHNIC POPULATIONS IN THE STATE OF MICHIGAN: ETHNIC INPUT IN LEISURE SERVICES PROVISION AMONG MICHIGAN PARK AND RECREATION DEPARTMENTS

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Abstract: The rate of ethnic population change in the U. S. is rapidly changing the social fabric of the nation. Following a multicultural concept of inclusiveness of ethnic groups and their subcultures in the mainstream of community life, the quality and diversity of community life can be enhanced. Leisure and recreation can serve as important means of providing social cohesion and social identity among the various ethnic groups as well as integrating these groups and their subcultures into community life, for example, arts and crafts, music, dance, food, clothing, and literature. Recreation managers in the State of Michigan were surveyed to examine the extent to which ethnic groups were involved in recreation department decision making or various input areas, for example, decision making for strategic planning, policy making, designing the department mission statement, and surveying and marketing leisure services. Results of the survey indicate that no change versus positive change is dominant in ethnic input in management decision making across 12 decision making areas over the last 10 years. Recommendations for recreation agencies are suggested.

Introduction

The population of the U. S. is growing increasingly older as well as ethnically more diverse. U. S. Bureau of Census estimates that 81 percent of the increase in the U. S. population will occur in ethnic groups and by 2005 Latino/as are expected to be the largest such group increase. This growing diversity brings with it different challenges and opportunities. The challenge for the recreation manager is to meet both the wider cultural needs of these groups as well as their unique subcultural

needs and tie both into a package that addresses quality of life issues in the community. Merchandising subcultural arts, crafts, clothing, food, dance, music, etc. in such a way as to create demand from persons outside of that subcultural group will be a challenge for recreation departments, for example, concerts, plays, dance, festivals, demonstrations of art skills, crafts, language, etc.

This multicultural approach advocates inclusion of ethnic subcultures into the mainstream of community life, promoting intergroup understanding and appreciation, and constructive relationships. This approach will preserve the uniqueness, pride, vitality, and cohesiveness of community subcultural groups and add to the diversity and quality of life of the community. Subcultural groups also share in the resources of the community which integrates them into community life while preserving their uniqueness (Karlis, 1998 and Ivan Ramos et al, 1998). Leisure and recreation can be both instrumental and a positive force in accomplishing this goal. A 1998 survey of recreation, park, and leisure-service educators in the U. S. and Canada listed serving an increasingly diverse society (race, age, gender, etc.) as the most important challenge facing the leisure-service field in the twenty-first century (Kraus, 2001).

This goal is particularly challenging as the forces of racism, discrimination, prejudice, and exclusivism are slow to disintegrate in our society. One only needs to recall recent examples of bias in hiring, housing, quotas for enrollment, restricted membership in sporting clubs, etc. Moreover, recreation managers need to examine their own perspectives toward ethnic groups in their community.

The purpose of this study is to examine the perception of recreation managers in the State of Michigan of ethnic populations in their communities and the extent to which they, as recreation agency managers, receive input from ethnic populations in their communities in various recreation agency decision making (input) areas, for example, decision making related to strategic planning, policy making, marketing, and merchandising recreation services and areas.

Objectives of the Research

1. To ascertain the extent of change of ethnic populations in the State of Michigan from 1990 to 2000 and recreation managers' perception of ethnic population change in their communities.
2. To examine recreation managers' perception of ethnic population usage of recreation facilities and park areas in their communities during the last ten years.
3. To examine the perceptions of recreation managers regarding the extent to which recreation managers in the State of Michigan need to manage resources in their communities/service areas to accommodate the needs of ethnic populations.
4. To examine recreation agency management/decision-making (input) areas and the perceived extent of change of ethnic population input in each agency input area over the last decade.

Sample

The sample is a listing of park and recreation organizations/agencies both public and private who are current members of the Michigan Recreation and Park Association (MRPA). A self-administered questionnaire was mailed to each listed member of the MRPA, a total of 633 members. A stamped self-addressed envelope was not enclosed with the data collection instrument and there was no follow-up mailing. A self adhesive return address label was enclosed with the data collection instrument. This label was used by 128 or 89 percent of the respondents. A total of 143 completed questionnaires were returned, a return rate of 22.5 percent.

The Data Collection Instrument

The data collection instrument was a three-page mail-out questionnaire consisting of an introduction explaining the purpose of the survey and welcoming the addressee to participate in the survey. The introduction was followed by three sections, the first section consisted of 14 questions asking recreation providers the extent of change of ethnic populations in their community "during the last 10 years and to the best of your knowledge" in providing input into the park and recreation

department decision making areas concerning the provision of recreation services and areas, for example, decision making concerning strategic planning, policy making, and marketing and merchandising recreation services and areas. The second section contained five questions related to the community and the recreation department (community population, kind of agency, for example, community park and recreation department, number of employees, percent minority employees, and annual budget). Section III contained six questions related to the respondent (job title, years with the present agency, years in the leisure services profession, respondents' perception of change in ethnic groups living in their community, perception of respondent concerning the need to manage resources in their community to accommodate the needs of ethnic populations, and the race of the respondent).

Findings-Describing the Sample Population

Agencies surveyed are community recreation agencies (63%) followed by county, township, or regional park and recreation departments (23%). Other agencies surveyed are community education or community services (7%) followed by private clubs, community family centers, Special Olympics, state park, a special district for recreation, and a YMCA (6%). The average number of agency employees was 35 (s.d. 53.5) with a reported minimum of no employees to 293 employees.

The job title reported most frequently was that of Park and Recreation Director/Superintendent/Executive Director (46%), Program Director/Supervisor (15%), Park Administrator/Director/Manager (10%). Other job titles were: Director of Community Education/Services, Director/Coordinator Senior Programs, Program Director/Supervisor, Assistant/Associate Director of Parks and Recreation, and Recreation Coordinator (26%).

The average number of years reported with the present agency was 12.3 (s.d. 9.7) with a range of one-third of a year to 42 years. The average number of years in the leisure services profession was 16.9 (s.d. 9.8) with a range of one to 42 years. Seventy-six respondents (53%) are female and 64 (45%) are male. The sample population is 95 percent Caucasian. One respondent is African American and two respondents are Hispanic.

Findings—Population Growth in the State of Michigan and Recreation Managers' Perception of Ethnic Population Demographic Growth in Their Communities

Table 1 indicates that the overall rate of population growth in the State of Michigan was 6.9 percent from 1990 to 2000, a change in population growth from 9,295,297 to 9,938,444 persons. All ethnic populations are experiencing growth with the highest growth among Asians and Hispanics followed by African Americans, American Indian and Alaska Natives, and Whites. The percent change of growth in the state of ethnic populations from 1990 to 2000 was 68.1, 60.6, 9.3, 5.1, and 2.7 percent respectively.

Concerning the extent of perceived change of ethnic groups living in their community, 66 percent of respondents indicated an increase, one percent indicated a decrease, and 33 percent indicated no change in ethnic groups living in their community. A few open-ended comments to this question were:

"Both of the local communities have seen their populations of Hispanic persons grow as many become permanent residents as compared to the migrant majority of Hispanics only a matter of a decade ago. Most rent their homes at present, but that will slowly change and they will find themselves taking a greater part in the direction the local agencies take and possibly even their local state parks."

"Unsure never tracked."

"University campus is ethnically diverse but rest of county other than tribal members, is still 'Lily White.'"

"Larger Middle Eastern population."

"Don't know."

"Went from 10% to 30%."

When asked about the extent of change in ethnic group use of recreation facilities in their community or service area during the last decade, 59 percent of the respondents stated that there was increased use of their recreation facilities.

Moreover, 60 percent of the respondents indicated that ethnic populations increased use of their park areas over the same time span. Several open-ended responses to two questions on recreation facilities and park areas were:

Table 1 — U. S. Bureau of Census Data, State of Michigan, 1990 and 2000

	1990	2000	Percent Change
Total Population	9,295,297	9,938,444	6.9
White	7,756,086	7,966,053	2.7
African American	1,291,706	1,412,742	9.3
American Indian, Eskimo, or Aleut	55,638	58,479	5.1
Asian ¹	104,983	176,510	68.1
Hispanic ²	201,596	323,877	60.6

¹ Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, and other Asian

² Mexican, Puerto Rican, Cuban, and other Hispanic or Latino

"More use of certain facilities by people from the Middle East."

"Increase reservations of shelters and lodges and sections."

"More use by Hispanic population."

"Group use of facilities."

"Hispanic groups renting facility."

"More are renting our pavilions for functions."

"We have a variety of ethnic groups visiting our day use but very few in our campgrounds."

"Many Hispanic families are using the park/soccer field."

"Ethnic groups from out of town use our parks and attend our festivals."

Respondents' were asked to indicate the extent to which recreation managers in the State of Michigan need to manage resources in their communities to accommodate the needs of ethnic populations. The response scale ranged from one "not at all" to 10 "very much." Sixty percent of the responses reported six (6) or above, 17 percent reported a scale of five (5), and 21 percent of the responses indicated four (4) or lower. Examples of respondents' comments to the open-ended option for this question were:

"I would prefer to have resources aimed at age groups, ability, and income level rather than ethnicity."

"We should be striving to accommodate the needs of everyone in our communities."

"It depends upon community and use patterns."

"Provide for everyone equally."

"My perspective is that public agencies, such as the one I work for, need to direct their efforts towards

what will best serve the majority of the users, no matter what their ethnic background might be. I was brought up the 'melting pot' and 'majority rule' concepts of society/community and prefer to see activities that promote and celebrate 'assimilation' rather than separation of cultural backgrounds."

"Some what, but I believe immigrants and ethnic groups should assimilate to the American way of living."

"All recreation managers should strive to tailor programs and facilities to meet the needs of the populations they serve and ethnicity of that population should absolutely be one of many criteria considered when planning programs/facilities."

"Are their needs different?"

Findings-Extent of Ethnic Involvement in Recreation Department Input Areas

Extent of ethnic involvement in agency decision making during the last 10 years (1992 to 2002) or to the best of the respondents' knowledge was measured on an 11 point scale. Zero indicated no change, +1 to +5 indicated positive directional change whereas -1 to -5 indicated negative directional change. Table 2 indicates that managers in the sample population indicated either no change or positive change in ethnic persons input into recreation managers' decision making in twelve recreation department input areas:

- agency decision-making
- policy making
- recreation programming
- department rules and/or regulation
- recreation area and/or site planning to accommodate the needs of ethnic groups in the community
- signage in recreation buildings, structures, and/or areas that is multilingual
- recreation department employment of minorities from different ethnic groups
- department mission statement
- recreation marketing strategies
- recreation merchandising
- recreation marketing
- surveying user needs among different ethnic groups in the community

Of the twelve department input areas an average of 67 percent of the respondents indicated that the extent of change involving ethnic populations in

recreation department input areas from 1992 to 2002 (or to the best of his/her knowledge) was "no change." The percent of managers agreeing with a no change input from ethnic populations ranged from 56 percent to 77 percent across all input areas (Table 2). By rank order the highest areas of no change were:

1. Change in surveying user needs among different ethnic groups in your community/ service area
2. Change in the recreation department's mission statement to reflect changes in the ethnicity in your community
3. Change in signage in recreation buildings, structures, and/or areas that is multilingual
4. Change in departmental rules and/or regulations in response to ethnic change

By rank order the lowest areas of no change were:

1. Change in recreation department employment to employ minorities
2. Change involving ethnic populations in department decision making
3. Change in recreation marketing strategies for ethnic populations
4. Change in department policies that are the result of ethnic change

An average of 30 percent of respondents indicated that ethnic populations in their communities had input or a "positive change" in various department input areas (Table 2). The percent of recreation managers agreeing with a positive change ranged from 18 percent to 60 percent. In rank order the department input areas reported as having the highest positive change were:

1. Change in recreation department employment to employ minorities from different ethnic groups
2. Change in recreation programming
3. Change involving minority populations in department/agency decision making
4. Change in department/agency policies that are the result of ethnic change
5. Change in recreation marketing strategies

Input areas that had low reported positive change in rank order were:

1. Change in signage in recreation buildings, structures, and/or areas that is multilingual
2. Change in the recreation department's mission statement

3. Change in surveying user needs among different ethnic groups
4. Change in departmental rules and/or regulations in response to ethnic change
5. Change in recreation merchandising in response to different ethnic groups
6. Change in recreation marketing in response to different ethnic groups

Conclusions

1. In light of: a) the rate of population growth, particularly among Asians and Hispanics in the State of Michigan, b) agreement among Michigan park and recreation managers that ethnic populations are increasing in number in their communities, and c) recreation managers' perceived increased demand on recreation facilities and park areas by ethnic populations in their communities, it would seem appropriate that recreation managers in the state would increase involvement of ethnic populations in recreation agency input areas during the last decade in such department input areas as planning, surveying user needs, and marketing. The data indicate that this is not the case. Overall, it appears that recreation managers are not extending themselves to recognize the increased diversity associated with different ethnic groups in their communities/ service areas. The opportunities lost are the increase in the diversity and quality of life within the community, for example, music, art, dance, food, games, sports, clothing, crafts, language, literature, customs, and various trade skills.
2. Ninety-five percent of the sample population is Caucasian. If the sample is truly reflective of the population of membership in the Michigan Recreation and Parks Association, then the association is dominated by a white middle class membership. Respondents' place of residence was located on a Michigan state map. Sample respondents are located in all areas of the state including the Upper Peninsula.
3. Ninety-three percent of the sample population represents public leisure service agencies of which 90 or 63 percent are community park and recreation departments. Forty-six percent of the respondents are directors or

superintendents of recreation followed by supervisors and park managers (25%) with an average of 12 years of work experience at their present location and an average of 17 years in the leisure services field. The sample population represents seasoned leadership in the field.

4. An average of 30 percent of the respondents indicated that ethnic populations were involved in various departmental input areas, however, an average of 67 percent indicated "no change" in ethnic population input into park and recreation department input areas during the last decade as described in Table 2. Departmental input areas that rank highest, "no change," are surveying user needs, developing the mission statement, signage, and rules and regulations (group size, time limits, equipment, sound levels, etc. that impact user behavior in park and recreation areas and subsequently affect user enjoyment). These are areas where recreation managers need ethnic population input due to the different needs of ethnic groups that are, in part, a reflection of their varying cultural backgrounds.

Recommendations

1. Recreation managers must adopt an attitude of bone fide involvement of ethnic populations into management decision making in agency strategic planning and problem solving related to long-range objectives. This attitude must be reflected in the department mission statement, strategic planning, and the annual operating plan.
2. Establish a system of continual contacts with members of ethnic populations. Individuals, families, organizations, and recreation groups who have a vital interest in their culture as well as that of the general community. A combination of methods of public input into management decision making such as: public meetings, public workshops, surveys, advisory committees, continual contacts by way of news conferences, newsletters, newspapers inserts, news releases, paid advertisement, public service announcements, a network of individual contacts, and solicitations. Additional methods are task forces, focus groups, hotline, plebiscites or polls.

3. Examine needs assessment techniques for relevance in identifying the needs of ethnic populations, for example, questions related to recreation participation that are reflective of their subculture and lifestyle. Ethnic population input into survey design and data collection, multilingual wording, and appeal in merchandising recreation services can assist managers in understanding community subcultural groups.
4. Recruit members of ethnic populations as members of the state recreation association (MRPA), community park and recreation boards, and regional/state advisory groups as well as community organizations to achieve representation.
5. Provide staff training programs that permit self examination, awareness of ethnic needs, and tools necessary for managing communication and interactions with various ethnic groups.

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THE MEDIA DICHOTOMY OF SPORT HEROS AND SPORT CELEBRITIES: MARKETING OF PROFESSIONAL WOMEN'S TENNIS PLAYERS

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The modern sports hero is actually a misnomer for the sports celebrity. Critics have noted true sports heroes are an endangered species, whereas sports celebrities are as common as Texas cockroaches. On the surface professional sports seem to offer a natural source for heroes, but on closer examination they offer celebrated sports figures shaped, fashioned, and marketed as heroic.

-SUSAN DRUCKER

Introduction

There is perhaps no better example of media-created frenzy over heroism and celebrity than in the world of professional women's tennis. Two of the most recognizable personalities, Venus Williams and Anna Kournikova, are known for very different reasons: Williams because of her on-court success and her rivalry with her sister Serena, Kournikova because of her on-court failures yet curiously strong endorsement success. Survey research was undertaken to examine perceptions of both women, to determine a) how society views them (as heroes or celebrities), and b) to determine their marketing worth, with regards to consumer intention to purchase an endorsed product. The research was conducted in three phases during 2001-2002, with a research framework being constructed consistent with previous studies of this nature. Burton (2001) establishes two real concerns for research based on celebrity endorsers: 1) "can a celebrity endorser provide multiple meanings or cross easily between targeted groups?" and 2) "what drives a consumer's celebrity elaborations, when a celebrity's image is transformed by unpredictable real-life actions?" Additionally, Burton questions the popular "Q" score rating system - commonly used in marketing - because it focuses upon likeability and fame, and ignores many of the significant values

important to the consumer: source relevance, authenticity, and trustworthiness. Chalip (1997) contends that it is possible to be an unknown hero, but not an unknown celebrity. The primary focus of Chalip's work is that heroism depends on celebrity, although one need not be a hero to become a celebrity. This notion refers to the idea that the media creates celebrities, that these celebrities are fleeting, and that they aren't real heroes to most people. Finally, Brooks (1998) provided a strong overview of theory and issues related to celebrity endorsement involving athletes. Brooks asked what type of celebrity athlete is most effective, under what conditions, and most importantly, do athletes sell products? Brooks also stated that the answer to the question "does a (sport) hero have more cultural meaning than a (sport) celebrity?" would have tremendous impact for marketers. Given the fact that our heroes change as quickly as does the programming on television (Leonard, 1980), it was crucial to reassess the true value of sport heroes and celebrities, and the tremendous impact that the media plays in creating them in our country.

Justifying the Research

The research was shaped heavily by suggested future research directions by three eminent sport hero scholars. Burton (2001) challenged researchers to better "understand how heroes are created and, if not worshipped, revered." He also questioned the popular "Q" score rating system commonly used in marketing. Burton claimed that Q-scores, which focus predominantly upon likeability and fame, might not be truly indicative of celebrity athlete endorsement phenomena.

Brooks (1998) was thorough in her research and posed the question "does a hero have more cultural meaning than a celebrity?" Brooks contended that answering this question could potentially have a tremendous impact for marketers.

Chalip (1997) examined the hero vs. celebrity debate in sport, and opined similarly to both Burton (2001) and Brooks (1998). A key contribution of his work was proposing that future research should attempt to combine elements of celebrity endorsement and hero worship.

Salient Quotations

- "We are drawn to celebrities for a variety of

reasons. These can only be concretely established through empirical investigation. At the level of theory, it might be hypothesized, inter alia, that celebrities provide us with heroic role models in an age of mass standardization and predictability.” - Rojek (2001)

- “Perhaps the athlete did not seek fame, but notoriety finds the athlete anyway in an era relentless television and burgeoning hero worship.” - Ham (2001)
- “Heroes symbolize something greater than attaining wealth and fame, performing death-defying acts, or acquiring media-promoted status. They reflect our values, our ideals, our dreams. Their qualities endure as a guide and inspiration for all of us to be heroes. It’s time for heroes, again.” - Sanchez (2000)

Statement of the Problem & Purpose of the Study

“Sports figures fit the mold of the typical national hero. From humble socio-economic class backgrounds, they demonstrate self reliance, determination, courage, adventure, and honesty” (Porter, 1983). Throughout the ages, our world has changed dramatically, in terms of technology, societal makeup, and probably most importantly to this study, media coverage. However, throughout it all, the generally accepted definition of the sport hero has remained fairly constant with what Porter (1983) states. One of the most impressionable target markets is the college-aged population, for several reasons. One, this is a group that after living at home for most of their lives, is now on their own for the first time; conversely, this is the first time this group has spending power, although not on a great scale. Much of mass mediated marketing efforts are geared towards the 18-22 year old age group, traditionally regarding as college-aged students. The purpose of this study, hence, was to survey college students; most previous research ignores this target market (Harris, 1994). A preliminary examination of athletic heroes was made so that a secondary study, to determine product endorser effectiveness, could be undertaken to assess athlete impact upon on sales returns. As stated in the introduction, the focus of this study was on women’s tennis players Venus Williams and Anna Kournikova, although selected research results of other athletes in the study will be included for comparison purposes. The ultimate goal of the study was to determine

whether sport heroes were different from sport celebrities.

Background of the Study

The premier scholar in the field of hero worship is Orrin Klapp (1949). Many other researchers have added to the knowledge base over the years, but Klapp is the one person who everyone ultimately comes back to. His seminal writings included the often-repeated 5-stage process in the development of a societal hero:

1. the person begins to be recognized during informal events.
2. the person is formally recognized as a hero.
3. the image-building process takes place as the person attains a somewhat legendary status.
4. commemoration/celebration
5. cult-status

Klapp was quick to point out that stages 4 & 5 usually occur post-mortem, although this is not necessarily always the case. It is important to point out, though, the importance in the sport realm of this statement. Given the media’s fleeting nature, and our society’s forgiving quality, it is not hard to understand why much maligned athletes become more revered years after retirement and/or death. As humans, we tend to soften the past in our minds, glorifying good acts and forgetting or minimizing the negatives. Thusly, a Babe Ruth (considered a womanizing alcoholic scoundrel during his playing days) can in time become one of the most respected and loved heroes of all-time. Further clouding the picture is the fact that, as Burton (2001) pointed out, depending upon the product and marketing strategy, someone with a negative or counter-culture image, an anti-hero, might actually be preferred over someone with a cleaner image.

Leonard (1980) made an important contribution with his comparative study which examined the changing state of heroes as the cultural makeup of America changed. Considering what has been said previously regarding the impact of constantly evolving television coverage, it is interesting to look at how something fictitious, the novelized creation of fictional sports hero Frank Merriwell (who disappeared in print in 1915) created a real world craving for admirable athletes. Successive generations in Leonard’s paper all were tied to themes of the decade that were accurately reflected

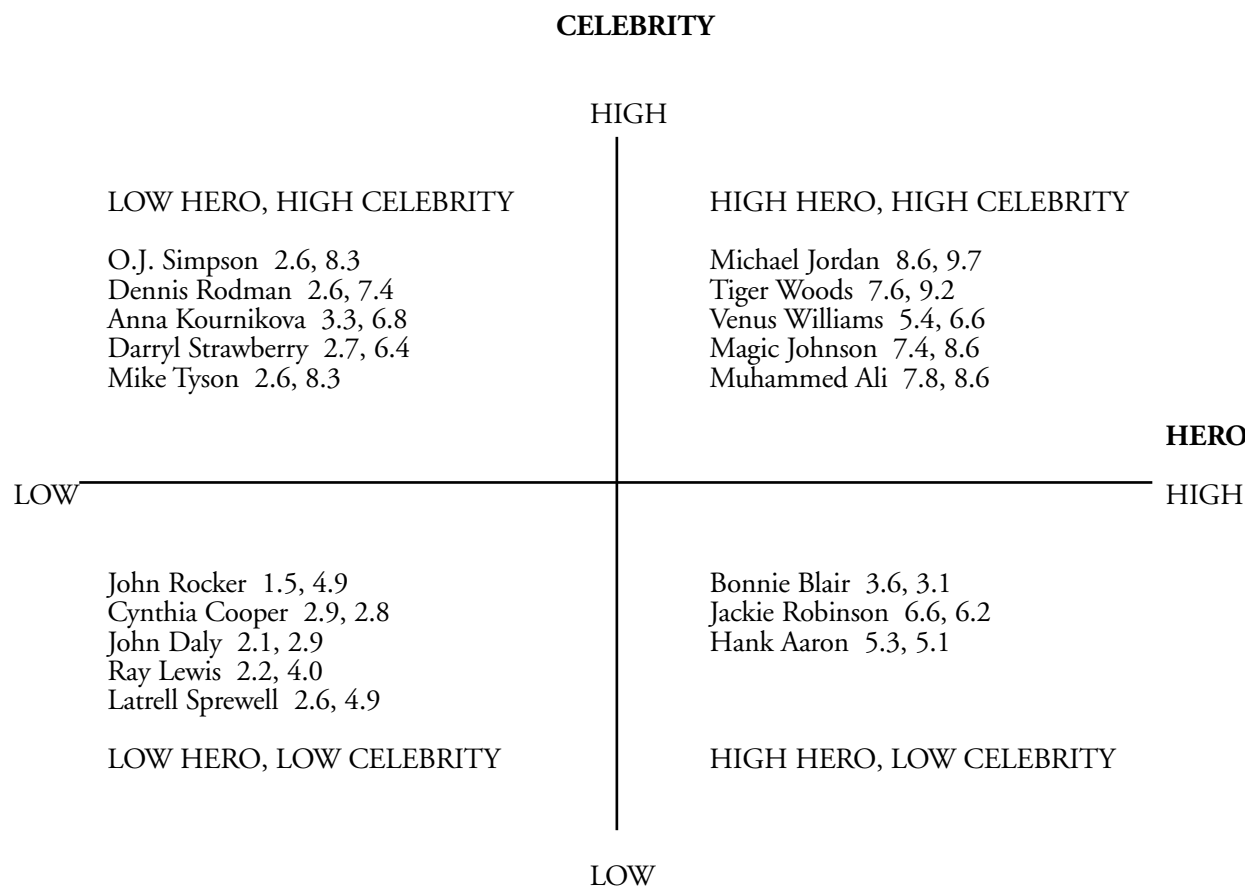


Figure 1: Celebrity-Hero Matrix

with the popular sports heroes of that age. Vander Velden (1986) conducted research on ‘favorite’ and ‘admirable’ athletes, stopping short of proclaiming athletes as heroes of sport. He concluded that many people indicated reluctance when approached about heroes, but had no problem discussing their favorite or most-admired athletes. The findings of this study were consistent with prior sport hero studies and are therefore considered a solid piece of the foundational literature.

Ohanian’s (1991) structural framework for celebrity endorsement research was the piece that bridged the sport hero literature to the endorsement literature. Contrary to earlier models, discussed at length in Ohanian (1990, 1991), this study provided a comprehensive element that had never been used before. Ohanian discussed and test the three main constructs that lead to ‘intent to purchase’ an endorsed product. These constructs are a) attractiveness, b) trustworthiness, and c) expertise. Each construct had 5 sub-

constructs that were tested and analyzed using factor analysis.

Building Upon the Literature

None of the previous studies had effectively synthesized the knowledge of heroes with marketers’ portrayal of the endorsers, at least not in the athletic setting. This study combined elements previously uncombined, and helped to develop a model for subsequent studies of the athlete as hero and endorser. Specific attention was paid to women athletes, particularly women’s tennis players. The media coverage of women, and the endorsement money involved with women athletes, is dramatically different from that of their male counterparts.

Methods & Procedures

a) Design

- 3-phases administration of surveys
- aimed at college students.

b) The Sample

- 222 respondents
- convenience and purposive samples

c) Instrument(s)

- 4 parts, based on literature.
- all instruments were tested for reliability and validity
- previous studies of endorser effectiveness focused on 1 of the 3 dimensions of source credibility (seen in Ohanian, 1991 figure); this study implemented all 3 simultaneously; focus on hero/celebrity.
- respondents were asked to rate 52 athletes (see next page for complete list) on a hero scale and a celebrity scale.

d) Athletes selected for the study

- all athletes selected in known prior research studies on sport heroes, celebrities, icons, and favorite players were included on a “master list”. Additionally, a panel of experts was asked to review this list and names were strategically added (or deleted) based on relevance and a pilot study using the full list. Additionally, all athletes appearing on the annual “Forbes Celebrity 100” list (2002) were added, resulting in the total of 52 athletes for the Phase 3 administration.

Results

Once all of the athletes were rated, it was possible to create a celebrity-hero matrix which indicated in which of four quadrants - high hero, high celebrity; high hero, low celebrity; low hero, high celebrity; low hero, low celebrity - each belonged. The exemplary athletes for the four quadrants are indicated by Figure 1.

From each quadrant, one male and one female were selected, so that the next phase of the study consisted of eight athletes. Venus Williams was considered by respondents to be part of the HIGH HERO, HIGH CELEBRITY category, meaning that people considered her to be very much a celebrity, and also considered her to be a hero. Tiger Woods was her top male counterpart in this same category. In the LOW HERO, HIGH CELEBRITY category was Anna Kournikova (and Mike Tyson). Both were recognized as celebrities, but few considered either to be heroic. In the LOW HERO, LOW CELEBRITY category was Ray Lewis and Cynthia Cooper, and in the HIGH HERO, LOW CELEBRITY category was Bonnie

Blair and Hank Aaron. The phase-3 survey was constructed, based on the above athletes and their endorsement of a fictitious sport-drink product.

To the question “do you have a famous sports hero?“, 75.5% of those in the Phase One administration said “yes”, vs. 82.5% of those in Phase Two who answered “yes”. The top sports heroes selected (on a 10-point scale) were: Michael Jordan (8.588), Muhammed Ali (7.784), Tiger Woods (7.578), Babe Ruth (7.411), Magic Johnson (7.401), and Jackie Robinson (6.578). There were only two women chosen in the top 20, the first one being Venus Williams (5.372).

The sport celebrity list contained quite a different mix of athletes. The top celebrity was Michael Jordan (9.696), proving his universal appeal among college students, and confirming what we already know: he is an excellent product endorser. The rest of the celebrities are as follows: Tiger Woods (9.166), Magic Johnson (8.627), Muhammed Ali (8.588), Shaquille O’Neal (8.568), O.J. Simpson (8.303), Babe Ruth (8.186), Mike Tyson (8.176), Andre Agassi (7.735), Wayne Gretzky (7.686), and Dennis Rodman (7.421). The two top female sport celebrities were #17 Anna Kournikova (6.813) and #18 Venus Williams (6.617). The overlap on the first few athletes, such as Michael Jordan, Muhammed Ali, and Tiger Woods on both lists is not surprising. However, the two lists are quite different, indicating that college students can indeed differentiate between sports heroes and sports celebrities; or at least have clear perceptions of what each is composed.

More interesting and applicable to this study is the mathematical discrepancy, derived by taking the difference score between the two rankings. Because Venus Williams had relatively high scores on both the hero and celebrity scales, she did not factor into the difference score; however, Kournikova had the fifth highest discrepancy between her celebrity (6.81) and hero (3.27) score, resulting in a difference of 3.53. It should be noted that there were only six athletes from the entire study of 52 that had significantly high discrepancies between their two scores.

An additional research question asked “How do the hero and celebrity constructs impact the consumer’s intent to purchase the endorsed

product?” Results were tabulated and analyzed for all 8 of the athletes in the final phase of the study. Female respondents were far less likely to purchase endorsed products than their male respondent counterparts. Overall, males were far more likely to consider the 8 athletes (Ray Lewis, Hank Aaron, Tiger Woods, Mike Tyson, Anna Kournikova, Cynthia Cooper, Bonnie Blair, and Venus Williams) heroes than were their female counterparts. The female endorsers were, probably not surprisingly, ranked considerably lower by both the male and female respondents. Conclusively, with the total sample of 120 (phase two), none of the endorsers proved to be exemplary endorsers in terms of their impact on intention to purchase. The top endorser for the entire sample was Tiger Woods (3.80), followed by Hank Aaron (3.03), Venus Williams (3.15), Mike Tyson (2.80), Ray Lewis (2.75), Cynthia Cooper (2.43), Anna Kournikova (2.40), and Bonnie Blair (2.38).

However, the focus of this study is on the two women's tennis players, Anna Kournikova and Venus Williams. Only the results pertaining to these two will be presented here. The “endorser rating” is particularly interesting. It is interesting to see that among males, Venus Williams had a higher hero rating (3.47) than Kournikova (3.07), but a lower celebrity rating (4.93) than Kournikova (5.20). However, in terms of ‘intent to purchase’ the endorsed product, males were more likely to buy from Williams (3.53) than from Kournikova (2.87). Among female respondents, Williams again rated higher (3.13) than Kournikova (2.17) on the hero scale, and also rated higher on the celebrity scale (5.47) than did Kournikova (4.10). The overall ‘intent to purchase’ numbers were extremely low for both, although female respondents were slightly more likely to buy from Williams (2.77) than from Kournikova (1.93). In terms of the total of 120 respondents in that phase of the study, college students were more likely to buy from Venus Williams (3.15) than from Anna Kournikova (2.40). These numbers are significantly lower than the numbers for nearly all of the male athlete endorsers.

Additionally, correlations and linear regression were very telling concerning intention to purchase the endorsed product. The results are explained as such: the first number is the Pearson correlation for each, in terms of correlation to intention to

purchased the endorsed product. The second number (in parentheses) is the P-value. All numbers are examined at the .05 significance level. Immediately following, for all 8 endorsers, is a quick summary of salient numbers from the linear regression. The regression equation for this is Y_1 (dependent variable, i.e. intent to buy) = $a + bx_1$ (independent variable, i.e. hero) + cx_2 (independent variable, i.e. celebrity). Results for the two tennis players are as follows:

- Anna Kournikova: both were correlated - Hero .493 (.000) and Celebrity .311 (.008), with intention to buy. The R Square was, as explained earlier, low at .246. Again, hero (.509 coefficient and .152 Std. Error) was significant (.001) and celebrity (.065)
- Venus Williams: both were correlated - Hero .481 (.000) and Celebrity .240 (.033). The R Square was .232. Like several others, the regression showed that hero (.539 coefficient and .150 Std. Error) was significant (.001) and celebrity (.034 coefficient and .146 Std. Error) was not significant (.813), at the 5% level of significance.

Overall, endorsers had statistically significant scores on the hero construct. None of the endorsers had statistical significance on the celebrity construct. This would indicate that sport heroes are stronger predictors of intention to purchase the endorsed product than sport celebrities. This again supports the main premise of this investigation, which had hypothesized a stronger emotional connection (and subsequent stronger selling power) of sport heroes over sport celebrities.

Summary

Smith's (1973) assertion that the sport hero is dead is one that has never been realized. One could never have imagined how powerful and domineering the mass media would become, nor could it predict how intertwined the media would be with the development and ascension of sport heroes in the 21st century. Innovation and technology have aided the growth of the sports industry, and it is interesting to note that many of the things we now take for granted - reading newspapers online, instant access to statistics and scores, and digital satellite television - are things that were unfathomable when much of the theory on hero worship in America was first developed and tested. Most of the original sociological theory

still pertains, with minor modification. It is clear that sport heroes will always be a solid piece of American societal makeup. What is still unclear is the ability of the average consumer to differentiate between truly heroic people/events and things that are merely glamorized in the media (e.g. celebrities). However, the tragic events of 9-11-2001 helped society to re-focus on heroes. The focus on the actions (heroic deeds) of the firefighters and volunteer workers positively contributed to a nationwide reconsideration of ideals, values and morals. Inherent with this rethinking was a return to the classic definition of the hero (Klapp, 1969), whereby professional athletes were relegated to celebrity status. The occurrence of true heroism, by classic standards, is rarely achieved in sport. Here is prime evidence of truth in such a statement: Anna Kournikova, voted the "Sexiest Woman in America" in 2002 by FHM Magazine, was winless in her sport of tennis during this same timeframe. As Chalip (1997) so astutely opined, being a sport celebrity can result from sport heroism; however, being a sport celebrity does not guarantee that one will become a sport hero. The media to a large extent controls this, and unfortunately in the game of tennis, the marketing emphasis has been placed on the sexual appeal of the players. As evidenced by this study, despite the fact that people like to look at these women, this shortsightedness is likely hurting the integrity of the game. But for now, it is the only way that they can find to sell the sport to consumers.

The findings of this study and others (Burton, 2001; Ohanian, 1991) confirm the belief that someone known as both a hero and celebrity will prove to be the most effective spokesperson for products. The way that the media operates, there are few people who seem to embody the qualities of hero and celebrity. Michael Jordan and Tiger Woods are two exemplary characters in this vein.

Men, more likely than women, appear to be influenced to purchase by celebrity sports endorsers. This is developed in the study and seems to make sense logically. It is perceived that this trend may be moving toward a greater level of equality, in light of the development and growth of several women's professional sports leagues (ex: WNBA, WUSA). The status of these leagues is something that was a non-issue before 1996-1997.

The rise of women's professional basketball, and most recently women's professional soccer and tennis, is certain to impact, at least for younger women, the selection processes of famous sport heroes. However, women are still more likely to idolize male heroes, despite the growing appearance and recognition of, more female sports heroes in the media. As women's sports continue to develop, and catch up to men's sports, it would seem that eventually there will be a swing to famous female sports heroes for young girls. Males should continue to be relatively unaffected.

One of the eight exemplary athletes in the second phase of the study, Anna Kournikova, recently suffered a tarnished reputation. Kournikova, mainly because of her inability to win tennis matches, has been dropped from several of her endorsement contracts in recent months, despite continuing to be a popular pin-up figure in the media. Most recently, she unwillingly appeared in an issue of Penthouse magazine; although it was later determined that the photos were doctored and were, in fact, not her, her marketability was negatively affected. This supports Burton's (2001) assertion that although negative publicity for athletes is not necessarily bad, it is also an inconsistent and unpredictable force which can adversely affect the endorser's ability to do what they do best, help companies to sell products.

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THE SOCIAL BENEFITS OF SALTWATER RECREATIONAL FISHING

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Abstract: While there are numerous studies on economic benefits of saltwater fishing, there is little literature on other benefits such as social benefits. It is widely accepted that leisure, and angling are associated with social benefits, family cohesion and friendship development, yet few empirical studies exist to support these claims. Additional research that examines the relationship between recreation and leisure activities (e.g. saltwater fishing) and social benefits is needed to determine if such a relationship exists. The purpose of this project is to present the findings of a study done to determine the social benefits of saltwater fishing. Data was collected by interviewing fishermen along North Carolina beaches participating in surf fishing, charter boat fishing, and pier fishing. Discussion focuses on the extent that social benefits received through saltwater fishing compare to other recreational activities, to what extent is involvement in saltwater angling related to social benefits received, and the relationship between participation frequency in saltwater fishing and social benefits received.

Introduction

According to Driver, Brown, and Peterson (1991), "the word 'benefit' refers to a change that is viewed to be advantageous-an improvement in condition, or a gain to an individual, a group, to society, or to another entity" (p.4). In a study by Burch (1986), "a social benefit, in contrast to an economic benefit, is an outcome that results from motives that are directed to sustaining a social relationship rather than gaining profit from the relationship" (p.81). While there have been studies on the

benefits of local recreation and park services, few studies have been done on the social benefits of saltwater fishing. As noted by Brown (2002), "nearly all studies that have investigated benefits of boating and fishing have noted some type of social benefit". Examples of social or group benefits can be companionship, competition, family cohesion, time spent with friends, family, and others, social status benefits, cultural identity, and social support.

Relationships fostered during recreation and leisure activities may provide social benefits. Anglers participating in the sport of saltwater fishing are most likely participating in the activity at their own will. Kelly and Godbey (1992), define "leisure" as "a context for the development and expression of social bonding. The building of relationships of trust and sharing, essential for meaningful human life, is more than a matter of common tasks. Relationships, at any age, are expressed in common play" (pp.173-174). According to an analysis by Cheek and Burch (1976), "a significant purpose of leisure is its relation to social bonding. Any activity that supports the association of a family makes a contribution to our society". Anglers may participate in saltwater fishing to spend more time with family, friends, and others. Kelly and Godbey (1992) offer the following definition:

We engage in play that adds dimensions to relationships that make them attractive, exciting, and even fun. On the other hand, relating to others in communication and action is itself satisfying. Leisure allows for us to focus on the relationships that are important rather than what the goal or outcome of the leisure activity can provide for us (p.176).

Social benefits and leisure seem to be at least theoretically related, and there is some literature suggesting that social benefits have a relationship with freshwater fishing. However there are few studies that have investigated a relationship between social benefits and saltwater fishing. Specifically it could be argued that existing evidence supports the hypothesis that social benefits are related to fishing, yet little empirical or other evidence exists to support the hypothesis that social benefits are related to saltwater fishing.

Purpose of the Study

The objective of this study was to identify if there

are perceived social benefits associated with saltwater fishing. If a relationship is found between saltwater fishing and social benefits, there may be an increase in more participation of outdoor recreational activities (e.g., saltwater fishing). Specifically the following questions were explored.

Research Questions

1. What are the perceived social benefits to recreational anglers participating in the sport of saltwater fishing?
2. How do the social benefits received through saltwater fishing compare to other recreational activities?
3. Do anglers who report saltwater fishing as their most important activity derive more social benefits from the activity than more casual saltwater fishing anglers?
4. Is there a correlation between how often anglers participate in saltwater fishing and the social benefits that they receive from the activity?

Review of Literature

The premise of this research is based on the proposition that there is a relationship between saltwater fishing and social benefits. However, little research has been conducted on the relationship between saltwater fishing and social benefits.

A growing number of researchers have begun to examine the social and economic benefits of saltwater fishing. Much of the initial research has focused on how saltwater fishing benefits the economy and the people associated with saltwater fishing of a particular coastal region of the United States.

According to Burch (1986), “a social benefit, in contrast to an economic benefit, is an outcome that results from motives that are directed to sustaining a social relationship rather than gaining profit from the relationship”(p.81). This study attempted to identify social benefits associated with saltwater fishing.

A social support study conducted by Auld and Case (1997); found that social interaction was a primary reason for participating in leisure activities. In the study, Auld and Case (1997) examined the differences in perceptions of leisure and non-leisure related to social exchanges of men and women

during leisure and non-leisure activities. The results of the study suggested that the social exchange theory might contribute to the understanding of why people participate in the social aspects of leisure.

According to Brown (2002), “among some groups of people, including both indigenous people and others raised particularly in coastal communities with some history of commercial fishing, fishing in a non-commercial context is not just a recreational or subsistence activity-it is a way of life and a part of the culture. In such contexts, fishing contributes to maintaining one’s self-identity” (p.21).

While each explanation of social benefits and saltwater fishing suggests a significant relationship between the two, neither seems to offer a complete picture.

Study Population

Participants in this study were anglers on the coast of North Carolina. Data was collected through a self-administered survey. Subjects were selected only if they were participating in some sort of saltwater fishing, whether on charter boats, from piers, or surf fishing from beach areas.

Participants completed the on-site survey, independently, so that survey instruments could be left on charter boats for the captain to pass out to the fishing party. However, the researcher also traveled along the beaches of North Carolina to target angler’s surf fishing and fishing from piers. Leaving surveys with charter boat captains reduced the amount of time the researcher had to spend passing out, and reading the survey questions to survey participants on the charter boat trips. A list of charter boat captains along the coast of North Carolina was obtained before the research project began. From this list, charter boat captains received an email asking if they were willing to participate in this study by passing out surveys to charter boat fishing parties.

Data Collection Instrument

The survey for this study was developed to determine the relationship between saltwater fishing and social benefits by using questions from three studies, two of which were previously administered by Ditton et. al. (1998a; 1998b) These studies looked at the social and economic

Table 1. — Perceived Social Benefits Derived from Saltwater Angling

Potential Benefit	Mean	Standard Deviation	More from fishing		More from other	
			N	%	N	%
Competition	3.23	1.36	40	51	39	49
Time away from family	2.12	1.27	14	19	61	81
Cooperation	3.65	1.05	47	61	31	40
Family Time	3.84	1.14	50	65	27	35
Heritage	3.27	1.30	31	40	47	60
Fellowship	4.13	1.06	53	67	26	33
Get to know people	4.12	.953	52	67	26	33
Hang out with friends	4.13	.966	49	62	30	38
Group participation	3.76	1.18	38	51	37	49
Away from children	2.05	1.22	14	21	53	78
In touch with friends	3.90	1.08	46	59	32	41
Keeps kids busy	2.78	1.24	25	38	40	61
Interaction skills for children	3.23	1.25	32	46	36	52

Table 2. — Benefits by Importance of Activity

Potential Benefit	Most Important Activity		2nd or 3rd Most Important		One of Many Activities		F	Sig.
	N	Mean	N	Mean	N	Mean		
Competition	43	3.70a	17	2.76b	19	2.58b	6.54	.002
Time away from family	42	2.40	17	1.59	19	1.95	2.86	.064
Cooperation	41	4.00a	17	3.35	19	3.16b	5.68	.005
Family Time	39	3.92	17	3.76	19	3.74	.214	.808
Cultural Awareness/Heritage	43	3.77a	17	2.65b	19	2.68b	.839	.001
Fellowship	43	4.35	17	3.88	19	3.84	2.17	.122
Get to know people	42	4.48a	17	3.82b	19	3.58b	8.07	.001
Hang out with friends	43	4.35	17	3.76	19	3.95	2.78	.068
Group participation	43	4.09	17	3.35	19	3.37	4.07	.021
Away from children	39	2.03	17	1.82	19	2.32	.749	.477
In touch with friends	43	4.21a	17	3.59	19	3.47b	4.27	.017
Keeps kids busy	37	2.89	17	2.71	19	2.63	.312	.733
Interaction skills for children	38	3.29	17	3.41	19	2.95	.709	.496

benefits of angling. A study done by Godbey, Graefe, and James (1992) investigated different benefits that recreation and leisure provide.

Data Analysis

The social benefits that are received by saltwater anglers was determined by having respondents state to what extent they agree or disagree (5 point Likert scale) that saltwater fishing provides them with 13 possible social benefits derived from the literature and modified to fit the purposes of this study. Descriptive statistics were used to indicate how respondents rate each of these possible benefits

In addition to stating whether or not they agree that they derive social benefits from saltwater angling, respondents were asked to rate the extent

that they receive each of the 13 benefits from saltwater angling compared to other leisure activities. Frequency statistics were used to demonstrate the comparative value of saltwater angling to other activities in providing each benefit.

Finally, analysis of variance was used to compare differences in reported benefit ratings between respondents who report that saltwater angling is their most important activity and those that report that it is not their most important activity.

Study Findings

Table 1 shows how anglers reported that that they receive a considerable number of benefits from saltwater fishing, and that other outdoor activities, not saltwater recreational fishing, accounted for

negative social issues (spending time away from their families and their children). There are also a considerable number of benefits that had a positive influence on anglers (spending time with friends, meeting new people, a feeling of cultural awareness/heritage). With these results in mind, it can be assumed that the activity of saltwater recreational fishing does have positive social benefits that attract anglers to the sport.

Table 2 shows results from the survey instrument of angler's perception of how important they feel saltwater fishing is compared, to other outdoor activities. This demonstrates that benefits such as competition, cooperation, cultural awareness/heritage, getting to know people, and keeping in touch with friends were benefits directly derived from saltwater angling more than from other outdoor activities.

Conclusions and Implications

The research has shown that anglers reported that they receive a considerable number of benefits from saltwater fishing, and that other outdoor activities, not saltwater recreational fishing, accounted for negative social issues (spending time away from their families and their children). The most beneficial aspects of this research reported by anglers include meeting new people, increasing fellowship, and spending time with friends and family. Finally, anglers who report saltwater recreational fishing as their most important outdoor activity are more likely than more casual anglers to derive increased social benefits from the activity than from other outdoor recreational activities.

These findings provide important information for both researchers and managers. First, this study demonstrates that participants in saltwater angling perceive that they are receiving social benefits from the activity. Additional research should concentrate on further defining the nature of these benefits and discovering how and why saltwater angling tends to provide them. The findings from this study also help to justify marine fisheries role as an important social institution. Clearly, marine fisheries agencies are not only managing aquatic species, but they are providing opportunities for the public to spend more time with friends and family, increase fellowship, and meet new people. Fisheries agencies can use these and other findings

to help justified continued budget support for their operations. Lastly, these findings can be used by organizations who desire to increase participation in recreational fishing and boating. By understanding the nature of social benefits that participants are gaining and seeking through saltwater angling, specific marketing and promotional efforts can target non-participants who may be likely to seek these same benefits.

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TRAFFIC CONGESTION AND TOURISM DISPLACEMENT IN THE NH ROUTE 1A/1B CORRIDOR: DOES SAMPLING METHOD MATTER?

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Abstract: Traffic congestion along coastal highways and beach access roads represents a serious threat to the quality of visitor experiences while visiting coastal resort areas. This paper investigates the extent that visitors have altered their use of New Hampshire's scenic coastal Route 1A/1B corridor as a result of traffic congestion. Data collected from alternative research designs were analyzed and compared to determine if responses to a series of eight questions regarding visitation and changes in use patterns due to traffic congestion in the Seacoast differ across alternative research designs. The results suggest that the two sample populations reduced their use of the corridor at the same rate. The data did suggest, however, that there were differences between across the samples with respect to the extent that visitors reported changing when they visited the corridor.

Introduction

Traffic congestion along coastal highways and beach access roads represents a serious threat to the quality of tourist experiences while visiting coastal resort areas. Nobody likes to be stuck in a traffic jam on the way to the beach. As a result, many tourists may chose to change the amount they visit the coastal resort areas or change when they visit in the future, in order to avoid the crowds, and some will abstain from visiting a particular coastal region all together. This behavioral adjustment to traffic congestion will be examined through the conceptual framework of recreational displacement.

Recreational/tourist displacement has been defined as an adjustment in behavior to maintain satisfaction in response to changes in the social or environmental attributes of a destination.

Displacement has the potential to impact both the quantity of recreation opportunities, as well as the quality of those opportunities provided. This in turn can have a substantial impact on coastal and regional economies (i.e., if tourist don't visit, they don't spend money).

Recreational or tourist displacement research has primarily examined the relationship between changes in social conditions and the various forms of displacement. Few studies have examined the relationship between displacement and overall satisfaction and no studies have used alternative methodologies to measure displacement from the same location. A brief review of some of the previous research methodologies for understanding recreation displacement suggest inherent difficulties in studying the behaviors and attitudes of recreationists who are not present at a displaced area (Nielsen & Endo, 1977). Early researchers mailed surveys to summer-season permit holders for a specific wilderness area (Anderson & Brown, 1984; Shelby, et al., 1988), and conducted on-site interviews (Becker, 1981; Dekker, 1976; Hammitt & Patterson, 1991; Nielson & Endo, 1977). Current users of the setting were questioned about their cognitive or behavioral reactions to changes in the recreation setting. This research only offers a qualified documentation of the displacement process (Kuentzel & Heberlein, 1992), and does not provide empirical evidence for the inverse relationship between displacement and overall satisfaction.

Recent displacement investigations have used panel studies to document the behavioral and attitudinal consequences of changes in the social conditions of a recreation setting (Kuentzel & Heberlein, 1992; Shindler& Shelby, 1992). These studies contacted respondents on-site initially (1975 and 1977 respectively), with mail questionnaire follow-ups (1985 and 1991). Panel studies can more accurately determine the relationship between crowding and the various coping mechanisms (e.g. displacement). Panel studies are a preferred

technique for investigating recreation displacement, but replication tends to be difficult, costly and time consuming.

Robertson & Regula (1994) used an alternative research design to investigate displacement by drawing a random sample of recreational users within a given radius of a specific resource that is being stressed. Random sampling of a specific population of interest allow researchers to distinguish between those who have never used a recreation setting, those who continue to use it and those who have discontinued their use as a result of social or environmental conditions of the area. This design is more efficient than on-site sampling, and avoids the cost and time constraints of panel studies. This method was able to document an inverse relationship between satisfaction and displacement, but it was unable to verify if off-site random sampling produced higher displacement estimates than on-site random sampling (Robertson and Regula, 1994). There is a need for comparative research that allows for an understanding of the potential impact of alternative data collection strategies on displacement.

This research addresses research need identified above through a comparison of two data sets collected from alternative sample populations. One data set was collected through on-site sampling of visitors to New Hampshire's seacoast. The other data set was collected through a random sample of New Hampshire residents. Both data sets included a common set of questions focused on displacement from NH seacoast. This approach allows for a more complete understanding of the extent research designs influence estimates of displacement rates. More specifically, this study had three primary objectives. First, to determine the extent to which recreation displacement has occurred in the Seacoast corridor for each sample. Second objective is to determine if people who were displaced were less satisfied with the conditions of NH seacoast area than people who were not displaced for each sample. Finally, the third objective of this study is to compare the two data sets, a on-site contact will a mail survey and a random sample of the general population, to

determine if displacement behaviors hold constant across the two different methods of collecting data.

Research Methods

The Research Setting

Route 1A/1B runs along New Hampshire's scenic coastline from Seabrook to Portsmouth. This "Seacoast" route was designated as a "Scenic and Cultural Byway" by the New Hampshire State Legislature in 1992. Due to spectacular views of the Atlantic Ocean, numerous state parks, and beautiful old estates, thousands of people are attracted each year to visit this corridor. Recently, traffic congestion has become a serious threat to the quality of these tourists' experiences and a number of agencies have a broad mandate to decrease the use of passenger vehicles in this coastal zone.

Data Collection-1996 On-site Survey

The 1996 study included an inventory of tourism resources (i.e. restaurants, lodging, and tourist attractions) along the 18-mile seacoast route. Also, data on traffic counts and visitation patterns was documented. Then, University of New Hampshire students and faculty conducted a mini-survey of on-site visitors (n =1807) to nine tourist attractions in the corridor (a one-page questionnaire was administered by a student interviewer). A follow-up mail survey was sent to willing participants of the on-site survey. Approximately sixty-six percent of the on-site sample agreed to provide their names and addresses. Of those, 51% (n = 620) returned the survey. The mail survey was eight pages long. One section (a series of eight questions) of the survey sought to measure tourists' displacement levels and change of use patterns from visiting the Seacoast due to traffic congestion and related issues.

Data Collection-1997 Outdoor Recreation General Population Survey

In 1997, the University of New Hampshire conducted an Assessment of Outdoor Recreation in New Hampshire. The objective of this research was to collect information from a random sample of New Hampshire Residents to help improve the outdoor recreation and resource management programs in New Hampshire. A sample of 3000 households was randomly drawn from a listing of

Table 1. — Overall Satisfaction Scale and Tourist displacement from NH Rte. 1A/1B corridor

Change in Use Statements	Yes		No		F-Value	Chi-Sq. * < 6.63
	%	Mean	%	Mean		
I have not changed the amount I visit the corridor	58%	3.92	42%	3.83	3.285 NS	12.01
I have not changed the amount I visit the Seacoast	48%	4.13	52%	3.88	16.89**	reject null
I will visit the corridor more than I used to	24%	4.06	76%	3.82	10.125**	33.14
I will visit more than I have in the past	14%	4.55	86%	3.91	55.10**	reject null
I visit less in responses to changes in environmental conditions	2%	3.45	98%	3.89	7.299**	16.19
I visit less in response to conditions other than traffic	7%	3.37	93%	4.05	34.8**	reject null
I visit less because of traffic congestion	25%	3.72	75%	3.94	15.494**	2.92*
I visit less in response to crowding or congestion	29%	3.61	71%	4.16	74.41**	accept null
I now visit the corridor in the off-season to avoid traffic	27%	3.89	73%	3.88	.001 NS	13.85
I change the time of year I visit to avoid crowds	18%	3.93	82%	4.02	1.16 NS	reject null
I now visit the corridor in the morning instead of afternoon	31%	3.89	69%	3.88	.001 NS	32.13
I change the time of day I visit to avoid crowds	18%	4.02	82%	4	.08 NS	reject null
I visit the corridor on the weekdays rather than weekends	49%	3.94	51%	3.82	6.199**	87.63
I change the day of the week I visit to avoid crowds	25%	4.04	75%	3.98	1.07NS	reject null
I will not visit the corridor again due to traffic congestion	3%	3.12	97%	3.9	23.527**	3.97*
I no longer visit the Seacoast due to crowding/congestion	6%	3.09	94%	4.05	54.08**	accept null

(*The calculated value of $X^2 = \sum (f_o - f_e)/f_e$: f_o -Observed Frequency; f_e -Expected Frequency).

persons licensed to drive in New Hampshire. About 31% or 928 completed questionnaires were returned. Only respondents who had been to the seacoast were counted in this study. A section of this survey was designated to ask the same sort of eight questions about tourists' displacement and change of use patterns due to traffic congestion on the 1A/1B corridor as the 1996 on-site/mail survey.

Measurement of Key Study Variables

Again the primary goal of this paper is to compare these two different survey techniques (on-site/mail questionnaire and random sampling of the general population) and determine if there are differences in levels of satisfaction and displacement across the data sets.

Dependent Variable—The surveys' eight statements that related to the corridor use. Respondents were asked to circle yes or no to each statement. See Table 1 for precise wording. Example:

I change the day of the week I visit the corridor to avoid traffic congestion.
Yes or No

A limitation to this comparison is that the eight questions that were asked about displacement and change of use were not exactly the same.

Although, the main idea of the question was the same, the wording was not identical. Table 1 lists the eight questions from each survey side by side when presenting the results, so comparisons in the wording can easily be made.

Independent Variable—Overall satisfaction was used as the independent variable in each case.

How would you rate your last visit to the Seacoast?
Very Poor Poor Fair Good Excellent

Statistical Methods

The frequencies of the dependent and independent variables were document the extent that recreational displacement occurred and the level of overall satisfaction. Next, one-way analysis of variance was used to examine the bivariate relationships between dependent and independent variables. A one-way analysis of variance was done for both the on-site/mail survey responses and the mail-in survey responses. In each case, overall satisfaction was used as the independent variable.

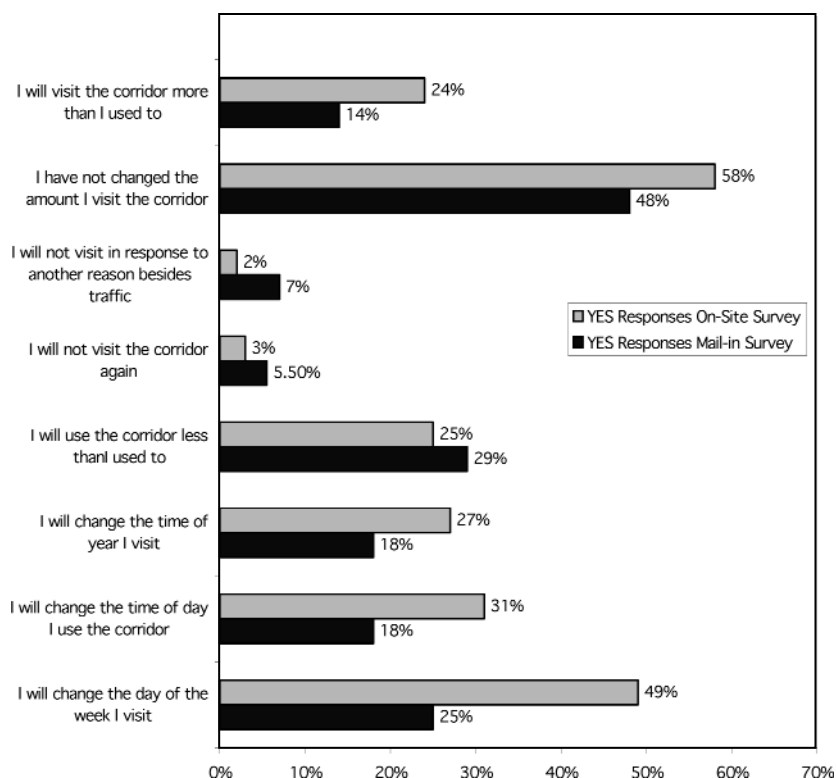


Figure 1. Displacement rates and change in use rates in response to traffic congestion on-site and general population samples

The list of eight yes or no questions were used as the dependent variable at an Alpha = .05 level.

Chi-Square Test for Independence

Finally, the Chi-Square Test of Independence was done to compare the two sets of data (on-site data/mail-in data) to determine if the two sample groups are significantly different from one another across each of the eight statements.

The Chi-Squared distribution is used to test if observed frequencies differ significantly from expected frequencies when more than two outcomes are possible. The Chi-Square test is a useful tool in determining whether or not the two sets of data differ significantly from one another. The two hypotheses for this test are as follows:
 H_0 - There is no significant difference between the two samples.

H_1 - There is a significant difference between the two samples.

(Alpha = .10, Degree of Freedom: 1, X^2 tabular value = 6.63)

In order for the H_0 to be rejected, the calculated value of X^2 must be greater than 6.63.

Results & Analysis

The results of the one-way analysis test for variance between the independent variable (satisfaction) and the dependent variables (eight yes or no survey questions) is shown in Table 1. Table 1 represents data from the 1996 on-site panel study and the 1998 mail-in random sample survey side by side so comparisons can be more easily made between the two. The top question in each pair was asked in the 1996 on-site panel study, while the bottom italicized question was asked in the 1998 mail-in random sample survey. Also, the Chi-squared value, which determines the significant difference between the two samples, is listed at the end of each set of questions. A double star (**) denotes that the particular analysis is statistically significant at the Alpha = .05 level. A (*) denotes that we cannot reject the null hypothesis that there is no significant difference between the two sample methods.

Figure 1 presents the percentage of each sample that answered yes to each particular question they were asked. The top bars next to each question represent data from the mail-in survey, while the bottom bars represent data from the on-site survey. We rejected the null hypothesis H0 in every case except for the two questions about displacement:

** I will not visit the corridor again because of the traffic congestion and **I use the corridor less than I use to because of traffic congestion. This implies that the two sample groups are being displaced at the same rate. However, there is a significant difference in the two samples when it comes to questions about changing ways to use the corridor. The on-site sample seemed to be more willing to change the way they use the corridor in response to traffic, and overall had a higher level of satisfaction with this resource.

Nearly 60 percent of the on-site sample indicated that they did not change the amount they visit the corridor. Whereas just less than 50 percent of random sample indicated that they have not changed the amount of use. There was a significant Chi-square meaning that the two samples were different. There was not a significant difference in level of satisfaction for the on-site sample. There was a significant difference in satisfaction for the random sample, with persons who have changed the amount the use the corridor having a lower level of satisfaction than those who have changed their level of use. The one-way analysis of variance and the Chi-square statistic suggest that the random sample was more able to identify people who have changed the amount that they use the corridor.

With respect to the questions that asked the respondents if they plan to visit the corridor more than they have in the past, the on-site sample was more likely to respond yes, while the on site sample had a higher level of satisfaction with their most recent experience. There was a significant relationship between both the samples across for both statements related to the amount of use and traffic congestion the statement "I visit less because of traffic congestion" and "I will not visit again because of congestion and crowding" and the level of satisfaction. There was not a significant

difference in the rate of displacement across the samples. Respondents from the on-site sample were more satisfied with their tourist experience if they "visited the corridor on weekdays rather than weekends", while there was no significant difference for the general population sample. The on-site sample appears to be better able to identify persons who are more likely to change when they use the corridor as opposed to changing the amount that they visit the corridor. The two methodologies produced significantly different results from one another, except for the two questions about displacement. However, four of the five questions found to be significantly related to satisfaction were the same for each sample. The means all appear to be heading in the right direction and the inverse relationship between overall satisfaction and displacement holds true. For example, those people who responded "yes" to changing the way they use the corridor had a higher mean value, and therefore a higher level of satisfaction. Likewise, those people who responded that they would not visit the corridor again had a lower level of satisfaction with the resource.

Conclusions and Recommendation

The two survey methodologies produced significantly different results on the questions regarding change of use. The on-site sample group had a higher level of satisfaction overall, and also indicated that they would be more willing to change the way they use the corridor in order to maintain their level of satisfaction. Using two sampling techniques has raised some important questions about why the on-site group seemed to be more satisfied with the Seacoast than the mail-in group. One reason for this may be that the people who were surveyed on-site had more in-depth knowledge as to how better change their behavior to maximize their enjoyment of this resource. The general population, although displaced at the same rate, is not as willing to change their use pattern probably because they are not aware of the best ways to do this. The state should targeting in-state residents about specific sites, and ways in which they can change their use pattern to avoid the traffic congestion enjoy the beautiful Seacoast again. Some preliminary suggestions include posting the times of day, days

of week, and weeks of the year in which the Seacoast area experiences the most traffic congestion on the Seacoast website. Another way of promoting this information could be to distribute pamphlets at visitor information centers, local restaurants and shops, or toll booths.

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Tourism and the Community

ETHNIC TOURISM DEVELOPMENT IN YUNNAN, CHINA: REVISITING BUTLER'S TOURIST AREA LIFECYCLE

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Abstract: The purpose of this study was to examine whether or not Butler's Tourist Area Lifecycle (TALC) is useful in explaining the development of ethnic tourism in Yunnan, China. Qualitative methods including Nominal Group Technique (NGT), Participant Rural Appraisal (PRA), secondary data from the provincial tourism bureau, and participant observation were used. The findings suggested that Butler's TALC model provides limited explanation of the role of external and internal factors on the accelerated rise and collapse of ethnic tourism destinations. In addition, the findings indicated that the TALC model falls short of explaining the geographic progression of ethnic tourism to ever more remote areas of the Yunnan province as tourists continuously seek authentic experiences in yet untouched villages.

Introduction

The current focus on sustainable tourism development has brought renewed attention to the examination of long-term trends in destination development. One destination development model commonly used to explain the long-term evolution of tourism destinations is Butler's (1980) tourist area lifecycle. According to Butler's model, destinations progress through six stages of development: exploration, involvement,

consolidation, stagnation, and decline or rejuvenation. In the exploration stage, the most prevalent visitors are small numbers of allocentrics and explorers that rely on individual travel arrangements and follow irregular visitation patterns. These travelers typically seek unique natural and cultural features and pursue their own enlightenment. In these regions, locals still don't understand the needs of outsiders visiting their region and consequently they do not know how to provide the desired accommodations and entertainment. In the involvement stage, local residents begin to dedicate resources (facilities, people, events) towards their visitors. Some advertisement to attract more tourists can be expected; although most often, the advertising is not controlled or originated by the local community. The first variations in tourist numbers begin to take shape creating high and low seasons. In the development stage, the number of tourists keeps increasing and may equal or exceed the number of permanent local residents. The type of tourists also changes from allocentrics to mid-centrics. While natural and cultural attractions continue to attract tourists, these original attractions are gradually replaced/enhanced by man-made facilities. In the consolidation stage, the rate of increase in numbers of visitors declines. The local economy begins to rely heavily on tourism revenues. Due to the increased image of the destination (and its decreased uniqueness) and the growth in facilities and access, organized package tours take control of the tourism market. In the stagnation stage, the peak number of visitors and capacity levels are reached. At this time, the area has a well-established image but it falls out of fashion. The type of visitors tends to change to organized mass tourists with psychocentric characteristics. After reaching this plateau, some destinations may fall into the decline stage characterized by decrease in tourism market and collapse of tourism infrastructures. Conversely, others may recover into the rejuvenation stage identified by complete change in the attractions, or the discovery of untapped natural resources.

The tourist area lifecycle has been reported to appropriately describe the evolution of tourism in various destinations. Ioannides (1992) indicated that the path of growth of the tourism industry in Cyprus followed Butler's tourist area lifecycle. Goncalves and Aguas (1997) concluded that the six

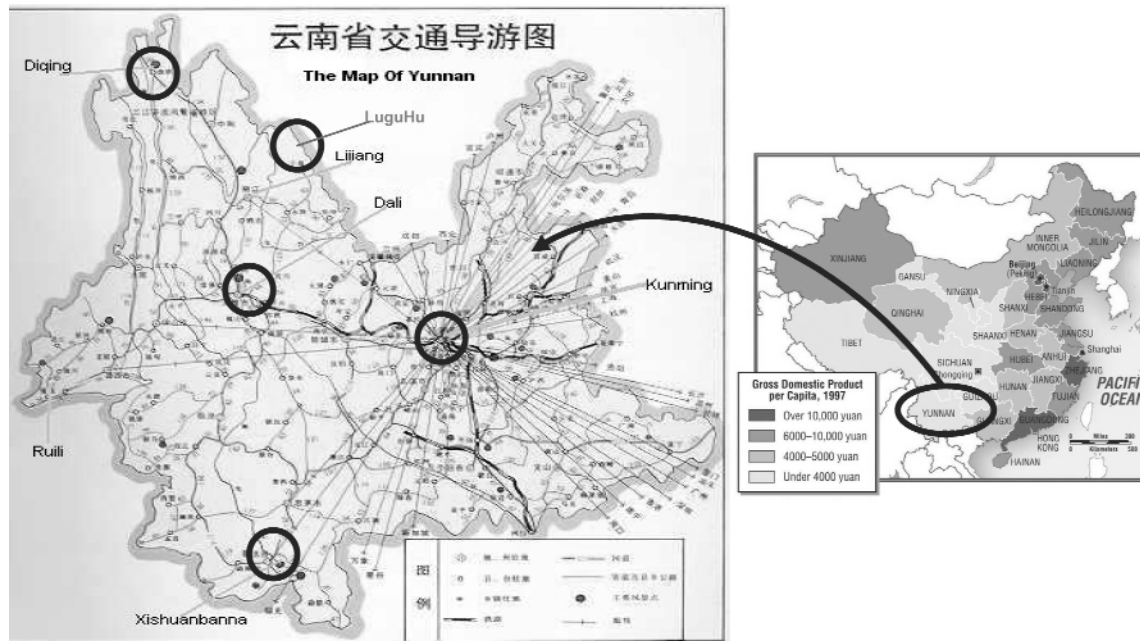


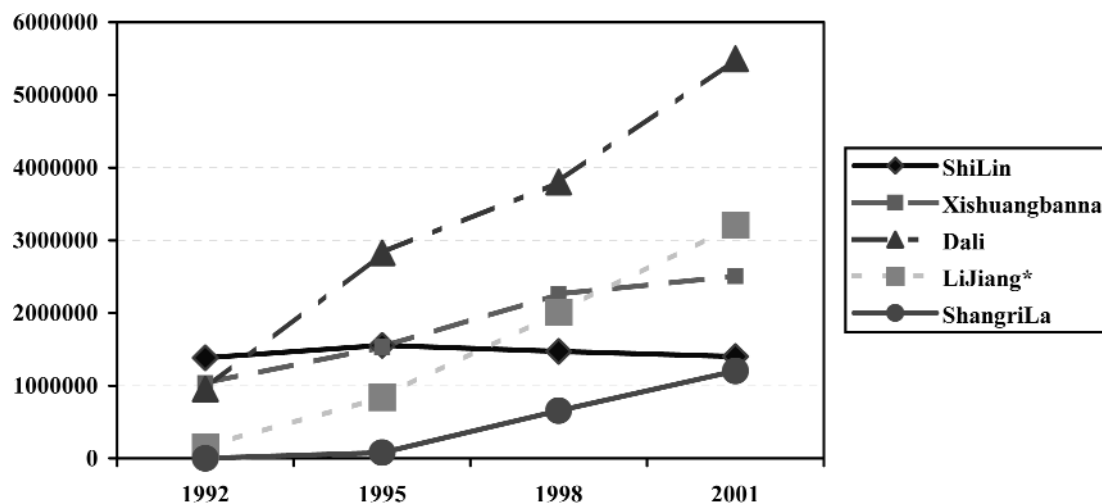
Figure 1. Map of China and Yunnan with study sites

stages proposed by Butler were suitable for the examination of how tourism evolved in the Algarve region of Portugal. A case study of Isle of Man conducted by Cooper and Jackson (1989) revealed that Butler's tourist area lifecycle was useful descriptive tool for analyzing the development of that destination. However, some researchers have reported that Butler's model needs revision or extension when studying alternative forms of tourism. A study by Choy (1992) suggested that Butler's tourist life cycle was not applicable to most pacific island destinations as it was not able to explain the large variation in growth patterns across various destinations in that region. Foster and Murphy (1991) found that the model provided a good description of early tourism trends of resort retirement communities on Vancouver Island, but that the model failed to explain the later development patterns of those resort communities. Hovinen (2002) concluded that Butler's later stages of consolidation and stagnation did not fit well with the empirical evidence he collected from Lancaster County in Pennsylvania. Cohen (1999) also argued that the tourist area lifecycle has limitations in explaining the development of ethnic tourism in Southeast Asia. Collectively, the literature appears to suggest that Butler's tourist area lifecycle may be a very useful conceptual tool for the examination of the development patterns of traditional mass tourism destinations. When the

destinations do not fit that description, however, the model begins to show limitations. The type of tourism activity and the region where the destination is located appear to influence the applicability of the model. Choy (1992) and Cohen (1999) argued that the applicability of Butler's model was limited in the Asia Pacific region. In addition, Hovinen (2002) and Foster and Murphy (1991) argued that the model had limitations in explaining the development of cultural tourism in Amish country and retired tourism in Vancouver. Therefore, the purpose of this paper is to test the usefulness of Butler's tourist area lifecycle in helping understand the development of ethnic tourism in Yunnan, a southwestern province in China.

Ethnic tourism may be defined as (1) a variety of "site-seeing" tourism that (2) targets groups that do not fully belong culturally, socially, or politically to the majority population of the state within whose boundaries they live and that are (3) touristically "marked," owing to their alleged ecological boundedness or cultural distinctiveness, uniqueness, or "otherness." (Cohen, 1999, p. 28)

Ethnic tourism differs from traditional forms of tourism because it is based on the conflict between the dominating government's intent to control the



Note: *Statistics reflect tourism development affecting neighboring LuguHu.

Figure 2. Number of visitors to study sites. Statistics reflect tourism development affecting neighboring LuguHu.

unassimilated ethnic tribes and the tourists' motivation to experience authentic and marginal ethnic cultures.

Description of Yunnan Province

China is a diverse nation with 56 ethnic groups. The Han ethnic group represents 91.96% of the population with the remaining population consisting of 55 other ethnic groups. Yunnan is located in the southwestern portion of China adjacent to Vietnam, Laos and Burma. This area has limited industrial potential as it is landlocked; however, its military and trade importance is great as it is considered China's "Southgate" to important trade partners in Southeast Asia. The Yunnan Province is also one of the most diverse regions in China in terms of both biological and cultural diversity. Yunnan possesses a very rich diversity of eco-regions including major watershed systems (Yangzi, Mekong, Salween, Red River, Pearl River) and mountain ranges (East Himalaya, Hengduan, Ailao). There are 26 ethnic minority groups accounting for 40% of the population in Yunnan province (PRC, 2001). Compared to other provinces in Eastern China, Yunnan is a less developed province due to its geographic isolation. However, national and regional policy-makers have proposed that Yunnan's natural and cultural richness should be used to develop tourism industry to stimulate regional economy. Therefore, in Yunnan, tourism has been identified as a major industry in the rehabilitation of rural areas (He & Zhang, 1991). Over the last decade, more and

more Yunnan's natural and cultural richness have been developed with the support of the central and provincial governments. As a result, Yunnan's tourism attracted more than 1 million foreign tourists and approximately 38 million domestic visitors in 2000 (Yunnan Statistical Bureau, 2001).

Method

Data collection for this study used various methods. First, provincial tourism experts and researchers from Yunnan University and Yunnan's Society of Social Sciences were invited to participate in group meetings to discuss the impacts and challenges of tourism development on the main destinations in the province. The group interviews followed a protocol suggested by Nominal Group Technique (NGT) as this technique was designed specifically for development studies in which group consensus is desired (Ritchie, 1985). Community leaders from the main tourism destinations in the region were also recruited for NGT interviews to discuss the impacts of tourism on their villages. Second, the Participant Rural Appraisal (PRA) technique (Chambers, 1994) was used in meetings with villagers from the selected regions to explore how tourism affected their daily life and their socio-economic conditions. Since many informants from these villages spoke only their ethnic dialect and could not speak fluent Mandarin, translators were used to mediate communication. The PRA technique was chosen for this study because it is has proven to be an effective method to gather

Table 1. — TLAC Stage Indicators of Tourism Destinations in Yunnan

Stages	Indicators	Shilin	* ¹ Banna	Dali	* ² Lugu Hu	Shangrila
Exploration	Large percentage of allocentrics				✓	✓
	Little infrastructure					✓
	Authentic culture and nature					✓
Involvement	Local investment				✓	
	Tourist season				✓	
	Investment in infrastructure				✓	
Development	Growth in number of tourists			✓	✓	
	Visitors outnumber residents	✓	✓	✓		
	Artificial attractions are built	✓		✓		
Consolidation	Slowing growth rates		✓			
	Organized packaged tours dominate	✓	✓			
	Large number of psychocentrics	✓	✓	✓		
Stagnation	Peak visitor numbers reached	✓				
	Area is no longer fashionable	✓				
	Capacity level has been reached	✓				
Decline	Decrease in markets	✓				
	Collapse of tourism infrastructures					
Rejuvenation	Complete renewal of the attraction					
	Addition of artificial attractions	✓				
	Untapped natural resource are used					

*¹ Xishuangbanna, *² Luoshui in Lugu Hu

information in less developed regions where there are challenges in verbal communication and time limitations. Third, secondary data about tourism flows in the region was obtained from the provincial tourism organization to compare the growth rates of tourism in each destination as number of tourists is a factor central to Butler's tourist area lifecycle model. Lastly, during the one-month long field study, the researchers also conducted participant observation recording their observations through journaling and photography (DeWalt, DeWalt & Wayland, 1998).

All of interviews were audio taped with the consent of the interviewees. Information collected in NGT and PRA interviews were recorded in flipcharts. Descriptive statistics were used to summarize and compare secondary tourist flow data. All data were translated to English from Mandarin by two independent native Chinese speakers. The two translations were later compared to ensure the accuracy of the data.

Results and Discussion

Examination of the data revealed that the various destinations studied exhibited a wide spectrum of

growth levels, tourism impacts, tourist types, and resident attitudes. When compared, it was apparent that each destination studied appeared to be at a consecutive stage of Butler's tourist area lifecycle. Following is a characterization of each destination.

Shi Lin (Stone Forest), symbol of ethnic tourism of Kunming, appears to have reached the stagnation or even decline stage. The original local residents, the Yi people now account for 30 percent of the local community due to the influx of Han immigrants to work in the local tourism industry. The peak numbers of visitors has been reached and may have started to decline. Typical of destinations at the stage of development, Shi Lin has continuously added artificial attractions to the original appeal of the destination - natural wonder of unusual rock formations and the unique cultural features of the Yi ethnic group. Currently, this destination has a well-established image centered in the Yi people's colorful ethnic background and the legend of Aishma, a Yi girl portrayed in a traditional legend.

Xishuangbanna appears to have reached the consolidation stage. Dai (Thai) people live in this region characterized by romance and exoticism.

The region became very popular after poets, artists and scholars in exile during the Cultural Revolution produced art describing the wonders of the region. As typical of destinations in this stage of tourism development, the local economy relies heavily on tourism. Most tourists arrive in organized packaged group tours and the number of visitors to the area appears to have reached a plateau.

Dali is at the development stage. The Bai people govern this region and, contrary to many of the other destinations, they appear to maintain control in the local tourism industry. An interesting finding was that most Bai people now think of their culture as a commodity and are willing to change traditions to fit the market needs - an example is their desire to change the way they serve food from banquet style to western style due to greater efficiency. Large-scale bus tours dominate tourism in Dali. Modern lodging facilities have been recently built in the new section of the city providing accommodations for the ever growing influx of organized mass tourists.

Luoshui in Lugu Hu natural area has characteristics of a destination at the involvement stage. Luoshui is a Mosuo village situated next to the Lugu Hu (lake). Villagers maintain close control over the tourism industry regulating how many families may benefit from tourism, imposing a mandatory dress code for tourism workers and supervising the distribution of revenues from the industry equally among the village families. The lodging is provided mostly in homestay accommodations offered by local families, although there are already a couple of outside investors building hotel-style accommodations in the areas surrounding the village. The number of visitors in to Luishui has increased substantially in the last decade. The village is approximately 10 hours of mountain driving from the nearest airport; therefore, the majority of the visitors are still foreign (mostly Asian) tourists in small groups.

Shangrila appears to be at the exploration stage. The residents in this area are Tibetans. This destination is still visited by a small number of visitors, mostly allocentrics (many from western countries, but some from other Asian countries). Lodging is still scarce and of unpredictable quality in this area, although a number of tourism groups have begun to build large hotels in anticipation of

the projected growth of the industry in the region. As typical in destinations at this stage, the major difficulty is that local residents still do not understand tourists' needs. There are still limited souvenirs, most guides are from different areas, and there are limited opportunities to experience representations of the local food and culture.

Butler's model appeared to have some limitations in explaining the role of external and internal factors that may accelerate or delay the rise and collapse of ethnic tourism industry. In this study it was evident that local involvement in tourism was intimately related to religious beliefs, political control, and traditional family structure. The Mosuo people, for example, have maintained control of the tourism industry whereas the Naxi have remained as tourees despite the longer history of tourism in their region (Walsh, 2001). The same contradiction was observed between the Bai and the Dai people in Dali and Xishuangbanna respectively. In addition, the tourist area lifecycle's focus on a limited geographic area limited its usefulness to examine ethnic tourism due to the expansionistic character of this type of tourism (Cohen, 2001). The data suggested that as with other ethnic tourism destinations, tourism in Yunnan progressed geographically from one destination to the next. Namely, ethnic tourism in Yunnan begun in Shi Lin with the increased interest in the Yi culture and the geological formations in the Stone Forest. Soon after the growth of that destination, however, tourists begun to explore other exotic regions "untouched" by the Cultural Revolution. After Shi Lin came Xishuangbanna, then Dali, Lijiang, and Lugu Hu. Currently, the Shangrila region is being marketed to explorer tourists looking for an authentic experience off the beaten path.

Conclusions

In sum, this study suggests that, despite some limitations, Butler's tourist area lifecycle may be useful in understanding how ethnic tourism development occurs in Yunnan. The "youngest" tourism destinations presented characteristics that fit Butler's exploration and involvement stages (ShangriLa and Lugu Hu). Dali was clearly at the development stage with heaving infrastructure investments and increased control by tour groups and national tourism corporations. Finally, Xishuangbanna and Shi-Lin were clearly at the

other end of the continuum with stagnating or declining numbers of visitors and distinctiveness.

An important addition to this model is that ethnic tourism in this area expands geographically to ever more remote areas. Today, ShangriLa is marketed primarily for allocentric tourists; however, there are already tourists looking beyond this destination for the really untouched villages deeper in the mountains. As access in the region improves and as globalization diminishes bureaucratic barriers to foreign visitors, it is expected that this expansion will continue.

Another important finding was that the level of local involvement in tourism does not follow a predictable cycle. As discussed earlier, the Mosuo and the Bai have maintained some control of the tourism industry in their regions. In most cases, however, the tourism industry is almost completely controlled by Han outsiders (national tourism groups and "tourism immigrants"). The data appears to suggest that this discrepancy may be due, at least in part, to the openness of the dominant religion. The Bai believe in the Basu religion - a religion known for being very adaptable to political and religious influences. Subsequent studies should examine this notion.

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PERCEPTIONS OF TOURISM DEVELOPMENT: THE CASE OF MICANOPY, FLORIDA

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Abstract: This study examined the perceptions of the present level of tourism and future tourism development held by three groups of residents (government officers, residents, and entrepreneurs) in Micanopy, small town in Florida. This study collected the data in depth interviews from each group member as well as participant observation techniques. The impetus for this study was that Micanopy was allocated \$5000 for the purpose of tourism development. Several meetings between various groups were held in Micanopy to decide how to spend the \$ 5,000 to attract more tourists and encourage them to stay longer. The meetings used for this study were "Meeting of Town Commission", "Meeting of Micanopy Historical Society" and "A Visioning Meeting" with residents. The results indicated that each of the three groups (government officials, residents and entrepreneurs) have different perceptions about the current level of tourism development. In addition, all three groups had different opinions about future tourism development. Most importantly, residents tended to have a negative attitude regarding tourism development in Micanopy. The government officers were the most supportive group. The results suggest that understanding each host groups' perceptions is absolutely necessary for the development of tourism in small town.

Introduction

In rural communities throughout the United States, the growth of tourism has been recognized as a regional economic development tool (Liu &

Vari, 1986). However, only some communities can achieve the positive impacts expected through tourism. For the development, successful operation, and sustainability of tourism, the support of the host city is essential (Jurowski, Uysal & Williams, 1997).

The goals and strategies of tourism development must reflect or incorporate host's views to ensure community consensus on development policies and programs. If resident's perceptions and preferences do not support tourism development policies and programs, then programs are likely to fail or be ineffective after their implementation (Pearce, 1980). If government employees and decision makers are in disagreement with the public and business community regarding the type and extent of tourism development, then it is unlikely that politicians will be reelected. For the successful development of tourism, understanding host perceptions is necessary and this is even more important in small communities.

With the recognition of the importance of host perceptions and attitudes in communities, numerous studies of perceptions toward either tourism in general or to a specific tourist destination have been conducted. However, most of them have focused on residents (Liu & Var 1986; Pizam & Milman 1986; Allen, Long, Perdue & Kieselbach 1988; Ap, 1992; Ross, 1992; McCool & Martin 1994; Snepenger. et. al 1998; Andereck & Vogt 2000) and few have investigated the perceptions different groups who are directly involved in the tourism industry: the residents, visitors, government officials and entrepreneurs (Lankford 1994; Kavallinis & Pizam 1994). Also, many studies have focused on resident perceptions about the impact after tourism development (Liu & Var 1986; King, Milman & Pizam, 1988, Allen Long, Perdue & Kieselbach, 1988; Ap, 1992; Ross, 1992; Kavallinis & Pizam, 1994). There is little research conducted on perceptions and attitudes about proposed tourism development (Mason & Cheyne, 2000). Further, there is almost no research that has included both perception of present tourism levels as well as attitudes about future development.

Reallocation of the Alachua County Visitor Convention Bureau (ACVCB) budget allowed for a new focus on "small towns." Each small town

was designated \$5000 for tourism development and/or promotion. The question became "how will the \$5000 be used to promote Micanopy as a tourism destination? In order to decide how to spend the \$5000 the input of different groups within the community was sought. This was important because (1) understanding host perception is necessary for successful tourism development; (2) most research has focused on resident perceptions rather than examining differences between groups of residents. The questions guiding this particular study were: (1) what are the perceptions of the present level of tourism held by three groups of residents (Government officers, Residents, and Entrepreneurs) in Micanopy? (2) What are the perceptions of future tourism development held by three groups of residents in Micanopy?

Literature Review

Numerous studies of host community tourism perceptions and attitudes have been conducted over the past few years (Murphy, 1980, 1983; Sheldon & Var, 1984; Pizam & Pokela, 1985; Allen, Liu & Var, 1986; Liu & Var 1986; Milam & Pizam, 1988; Long, Perdue & Kieselbach, 1988; Keogh, 1990; Long, Perdue & Allen, 1990; Ross, 1992; Lankford, 1994; mason, Cheyne, 2000). With the purpose of identifying the attitudes and concerns of the "public" and special interest groups, many of these studies have focused on identifying differences in attitudes toward tourism among different types of local residents (Long, Perdue & Allen, 1990). These types have been identified on the basis of length of residence, attachment, economic dependency on tourism, distance of tourism center from the respondents, level of contact with tourists, and demographics characteristics.

A number of studies have indicated that the longer residents have lived in a community, the more negative they are towards tourism development (Allen, Long, Perdue & Kieselbach, 1988; Liu & Var, 1986; Sheldon & Var, 1984). Liu and Var (1986) examined residents' attitudes to the economic, socio-cultural and ecological impacts of tourism development in Hawaii and suggested among eight demographic categories (living place, gender, ethnicity, length of residency, income, education, occupation, and job type) length of residency had the most influence on support for

tourism. The community development literature suggests newer residents exhibited more negative attitudes toward increased community development (Ayers & Potter, 1989). McCool and Martin (1994) examined the attachment residents have for their community and investigated whether those with strong feelings were more negative towards tourism than those who were less attached. In their study they found that those with stronger attachment did have a stronger view relating to both positive and negative impacts, and that those with more attachment were more informed and hence more concerned. Residents (or their relatives, friends, and neighbors) who depend on tourism-based employment have been found to be more favorable toward tourism and tourists (Liu & Var 1986; Milam & Pizam, 1988; Pizam & Pokela, 1985; Perdue, Long & Allen, 1987). In addition, research has revealed that urban and rural residents and the distance they live from tourism centers accounts for some of the variation in attitude (Belisle & Hoy, 1980; Pearce, 1980; Sheldon & Var, 1984). In general, rural residents and those living further from the tourist center are more apathetic toward tourists and tourism. Brougham & Butler (1981) found that the level of contact with tourists influenced the residents' attitude toward tourism and tourists. Finally, Pizam & Pokela (1985) and Ritchie (1988) found that gender also influences support for tourism.

In spite of the importance of understanding perceptions and attitudes of the different groups in the community, such as the residents, visitors, government officials and entrepreneurs for appropriate community development and policy, there are limited studies that do this (Allen & Gibson, 1987; Lankford, 1994; Kavallinis & Pizam, 1994). Lankford (1994) examined the attitude of entrepreneurs, salaried government officials, elected/appointed officials, and residents of the 19 regions, and found that the residents vary from government officials and entrepreneurs with regard to the level of support for tourism development. He found residents were less supportive than the other groups with regard to the level of support for the tourism development. However, all groups agreed that tourism plays a major economic role in the community by providing jobs. Kavallinis and Pizam (1994) examined the different perceptions of residents, tourists and entrepreneurs toward the

Table 1. — Perception about the Present Level of the Tourism

Items	Gov't Officials	Residents	Entrepreneurs
Are you satisfied with the present number of tourists?	Very unsatisfied	Very satisfied	Very unsatisfied
Are you satisfied with the present tourism marketing activity in Micanopy?	Unsatisfied	Very Satisfied	Unsatisfied
Are you satisfied with the present level of tourism development?	Very unsatisfied (It is beginning)	Very satisfied	Not sure
What is the strength of Micanopy as a tourism site?	Accessibility	Historical resources	Environmental features
What is the weakness of Micanopy as a tourism site?	Restaurant/ Information/ Operation hour of shops	Nothing/ Every thing is great	Public facility (Restroom & sitting area)

Table 2. — Attitudes between Three Groups toward Future Tourism Development

Items	Gov't Officials	Residents	Entrepreneurs
How do you feel about experts being involved with tourism development in Micanopy?	Strongly agree	Strongly disagree	Strongly disagree
What are your ideas for \$5,000?	Website links/ Signboard/ Brochure	Disagree for marketing/ Using for preservation	Public restrooms/ Advertising/ Micanopy guide
Do you agree with more tourism marketing activity?	Strongly agree	Strongly disagree	Agree
What is your vision for tourism for the town of Micanopy?	Growth	Just like it is/ Preservation	Town will be bigger/ Expect more tourism

environmental impacts of tourism and found that there are perceptual gaps between tourists and the two other groups. Thomason, Crompton and Kamp (1979) examined the different perceptions of residents, entrepreneurs, and public sector personnel. They found entrepreneurs perceived visitors more favorably than the other two groups. Comparing perceptions of community life and services between residents and leaders, Allen and Gibson (1987) found residents were less satisfied than leaders on every dimension of community life. And they concluded that responses of community leaders are not generally congruent with the desires of the public regarding specific community issues and concerns. They also emphasized that efforts should be made to gather information directly from the residents through town meetings, public hearings, community-wide surveys, or other public involvement approaches.

Although a lot of research has been conducted about perceptions and attitudes of residents, most research has focused on how residents perceive impacts after tourism development (Liu & Var 1986; King, Milman & Pizam, 1988, Allen Long, Perdue & Kieselbach, 1988; Ap, 1992; Ross, 1992; Kavallinis & Pizam, 1994). Only a small number of studies have been conducted either prior to development or decision-making. As Keogh (1990) indicated, most studies of host attitudes have taken place in areas where this industry is already well established, and very few studies have examined the hopes, expectations, attitudes, and concerns of residents prior to the establishment of tourism development. Further, there is a paucity of research that has examined perceptions and attitudes of very small host communities. This is important in that smaller communities are more likely to experience greater threats to the status quo (Mason & Cheyne, 2000).

Study Site

Brief History

Micanopy is the site of the ancient Seminole Indian village of Cuscowilla and is one of the oldest American settlement in Florida, which became a United States territory in 1821. In the spring of 1821 Edward Wanton established a trading post at this Indian village. Settlers built their homes near the post, and in 1835 Fort Defiance was built. Farms and plantations developed in the area around the new settlement, which became a center of trades for cotton planters and, in the years to come, for citrus and vegetable growers (Smyth, 2001). It was first called Wanton's after the first white trader. Later it was called Micanopy's Town after Chief Micanopy, the principal chief of the Seminoles. During the second Seminole War (1835-42) there was fighting between the Americans and the Indians. As a result, the fort burned down. It was rebuilt in 1837 and called Fort Micanopy. Eventually, the town was simply called Micanopy.

Resident Demographics

The total population of Micanopy is only 653 (US Census Bureau, 2000). According to Fay Baird, a Town Commissioner, the number of residents within the last ten years has increased only 40 people. The population under 25 years old is 19.5%; however, the segment of people over 55 is 25.6%. Many older adults work in the community organizations in Micanopy (e.g., Micanopy Historical Society). An interesting fact is that there are only four American Indians living in Micanopy despite its history as an Indian settlement.

Most residents work in the educational, health and social services field (40.5%). Those who are employed in the retail trade comprise 10.6% of the population and those in wholesale trade make up 2.5%. Interestingly, very few people are employed in the travel and tourism industry. This fact was provided by interviews with shop owners and commission members. In addition, interviews with residents revealed that most shop owners live in Gainesville, and most Micanopy residents work in Gainesville. This fact can have significant effects on developing tourism in Micanopy because residents are not related to the tourism industry, and they do not want to encourage more tourists.

Visitor Characteristics

The visitor characteristics of Micanopy were examined by two different methods. One method was through conversations with locals at the visioning meeting, and the other was through analysis of secondary data (a portion of a larger county wide tourism study). According the residents at the visioning meeting, visitors to Micanopy tend to be: (1) educational tourists (2) elder hostel groups (organized type) (3) heritage tourists (IT) (4) sport tourists (participants in races or recreation clubs such as bicycle, car, motorcycle, and running) (5) festival goers (6) nature-based tourists (including outdoor recreation and state park visitors), (7) artists, such as photographers and (8) shoppers for antiques.

The visitor survey by Pennington-Gray (2002) showed specific visitor profiles in Micanopy. The total sample size was 97. According the results of the survey, tourists tended to be over 40 years of age (78.5%), with higher incomes (over \$ 50,000 of income, 76.7%) and college-educated (77.2%). Regarding the primary purpose of visitation, the largest number of visitors came for the purpose of outdoor recreation (38.9%). Most visitors indicated that they used information sources; typically these sources were friends and relatives (52.3%) and previous visits (42.0%). The majority people (82.6%) answered "shopping and antiques" as the most frequently participated in activity.

Methodology

Data Collection

The present study collected data in two ways. The first method involved in-depth interviews with each of the group members. While the second method, used participant observation in different kinds of meetings. During the research period for this study, Micanopy was allocated \$5000 for the purpose of tourism development by Alachua County VCB. Several meetings between various groups were held in Micanopy to decide how to spend the \$ 5000 to attract more tourists and encourage them to stay longer. The meetings used for this study are "Meeting of Town Commission", "Meeting of Micanopy Historical Society" and "Visioning Meeting" with residents.

At each meeting, the questions were: "Are you satisfied with the present number of tourists?" "Are you satisfied with the present tourism marketing activity in Micanopy?" "Are you satisfied with the present level of tourism development?" "What is the strength of Micanopy as a tourism site?" "What is the weakness of Micanopy as a tourism site?" Further, for the direction of tourism development (related to the \$ 5000 grant) several topics were debated, such as: "Who gets to decide how to spend the money or how tourism is to be developed in Micanopy?" "How do you feel about experts being involved with tourism development in Micanopy?" "What kind of marketing activity is needed in Micanopy?" What is your vision for tourism for the town of Micanopy?

Selection Subjects

The population of this study is government officials, residents and entrepreneurs in Micanopy. For selection of subjects, this study used the following:

- 1) Government officials (N=8)
This study selected the Town Committee as subject for government officials. The Town Commission is the main civic organization, and has eight members. The Town Commission members are elected for 3 years terms, and are the only salaried members among all the organization.
- 2) Residents (N=60)
Subjects for the residents were divided into two groups. First are the members of the Micanopy Historical Society, which is one of the biggest organizations. The members number between 90 and 100, and the average age of members is around 65. Second group of residents is attendants at the visioning meeting. The residents at the visioning meeting are people with more concern about the future of Micanopy.
- 3) Entrepreneurs (N=9)
This study limited the people have shop or business owner related to the tourism for subject of the entrepreneurs. Most of them are antique shop owners and some of them are restaurant owners.

Results

Perceptions about the Present Level of Tourism

Table 1 shows the perceptions between three

groups about the present level of tourism development in Micanopy. Generally, it appears residents are more satisfied with the all items regarding the level of tourism development than government officials and entrepreneurs. Specifically, regarding the number of tourists, only residents are satisfied and think growth should be minimized. In addition, residents indicated that they do not want more tourists. An interesting point is that the three groups perceived strengths and weakness of Micanopy as a tourism destination differently. Government officials thought the accessibility from the highway was a strength, whereas residents considered historical resources to be the greatest strength. Entrepreneurs on the other hand said that the environmental feature of Micanopy was the greatest strength as a tourism destination.

Perceptions about the Future Development

The results of questions regarding perceptions about future development revealed differences between three groups. First, only government officials were positive about experts being involved with tourism development in Micanopy? In addition, government officials agreed strongly that Micanopy needed more marketing or promotional activity. Entrepreneurs agreed with government officials about marketing and promotion but residents indicated they did not want any more marketing or promotions. In addition, residents said that they already have enough tourists and that they do not want festivals everyday. Each group had different opinions about how to spend the \$5000. Government officials wanted to spend the money on websites, signboards and brochures. Entrepreneurs wanted a public facility built such as restrooms and residents wanted to spend the money on preserving the local history or recreation for local people. The results showed that entrepreneurs wanted to encourage more development and promotion but did not want the involvement of experts from outside. Finally, government officials and entrepreneurs expected that the town would grow in the future and change as a result of the growth; whereas, residents refused to acknowledge the growth and insisted that the town not change but rather "stay just like it is."

Conclusion

The results indicated that each of the three groups (government officials, residents and entrepreneurs)

had different perceptions about the current level of tourism development. In addition, all three groups had different opinions about future tourism development. Most importantly, residents tended to have a negative attitude regarding tourism development in Micanopy and government had a positive attitude. The government officers were the most supportive group. Perhaps this is because they recognize the positive impact of tourism and have a desire to see the community grow for political reasons. Also, as a side note these members tended to have a jobs related to the tourism industry.

The residents (represented as the Historical Society members and participants at the visioning meeting) were the least supportive group. Perhaps this is because most of them were retired. Many did not see how increased tourism would have a personal benefit but rather increased tourism would result in higher property taxes and increased congestion, negative impacts of tourism. These results are not surprising.

These differences are very similar to the result of Lankford (1994) and Thomason, Crompton, & Kamp (1979) that found residents significantly differed from government employees and business owners with regard to the promotion and support of tourism. Interestingly, in previous studies, shop owners were more supportive than the other groups. However, the result of this study showed town commercial commissioners were more supportive than entrepreneurs. In addition, unlike the previous studies, most of the shop owners (entrepreneurs) lived outside the town, whereas most of the residents and town commissioners lived within the town.

One of the limitations of this study was that it had a small sample size. A community wide survey would be helpful to increase the size of the sample. A larger sample could allow for more rigorous analysis of comparing perceptions of different groups relative to length of residence and demographics.

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CASE STUDY OF THE RELATIONSHIP BETWEEN SOCIO-ECONOMIC EQUALITY AND SPATIAL DISTRIBUTION OF TOURIST SITES IN TAIWAN: AN APPLICATION OF GEOGRAPHIC INFORMATION SYSTEMS

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Abstract: Several authors have already addressed the issues of environmental justice and spatial distribution of destination sites; however, few have combined the two to explore possible geographic inequities in tourism development. The purpose of this study was to examine whether benefits from tourism development were equally distributed across geographic regions and socio-demographic groups in Taiwan. The results indicated that there is spatial inequality in the distribution of number of tourists with regards to average household income with a concentration of tourism numbers on peripheral areas with lower incomes; however, no spatial inequality was observed with respect to size of population and average personal traveling expenses. The findings also indicated that the data were geographically clustered and that consequently spatial regression was a preferable method in comparison with traditional OLS regression. Based on these findings destination managers and tourism planners are recommended to consider the impacts of tourism on local communities as tourism is predominant in peripheral areas in need of revitalization.

Introduction

The relationship between spatial distribution of tourist sites and socio-economic equality is of interest to tourism researchers because in 1994, President Clinton emitted an executive order asking all federal land management agencies to address the issue of environmental justice. This presidential initiative was the initial stimulus to examining whether or not national outdoor recreational sites represented local undesirable land use (LULU) (Porter & Tarrant, 2001). According to Porter and Tarrant (2001), the issue of whether tourist sites may represent locally desirable land use (LDLU) to local people needs to be further explored. In fact, most authors accept that tourism development typical brings positive and negative impacts to the region. On one hand, tourism may cause desirable land use because of its economic benefits and job opportunities for local residents (Holden, 2000; Slee, Farr, & Snowdon, 1997; O'Hare & Barrett, 1999). On the other hand, tourism may actually cause undesirable land use due to environmental and socio-cultural impacts such as increased crime and prostitution, cultural degradation, increased traffic and crowding (Tarrant & Cordell, 1999; Wahab, 1996; Wyllie, 2000).

A question central to the debate of spatial equity in tourism is whether or not tourism sites are distributed equally among areas with varying socio-economic characteristics. Most authors argue that, in fact, tourism is typically concentrated in the pleasure periphery (Turner and Ash, 1975) - regions with lower socio-economic status away from developed centers of production and consumption (Brown & Hall, 2000). This concentration of tourism development in less-favored areas has led authors to stress the need to look into how tourism is helping or hurting the host regions. Walford (2001), for example argued that "the policy context in tourism has been adjusted with a shift of emphasis from the dominant post-war tenets of expansion and modernization to diversification, environmental protection and extensification" (p. 332). That is, environmental, social, cultural, and market factors must be simultaneously considered in tourism planning (Formica & Uysal, 1996). Similarly, Slee et al. (1997) proposed that any definition of tourism might be insufficient if it does not consider the impacts of tourism on the economic, socio-cultural and bio-physical environments.

Most research dealing with the unbalanced spatial distribution of tourism development has been conducted at the international tourism level, typically looking at the flow of tourists from western developed countries to southern developing countries (Backman & Morais, 2001). Few studies have looked at the spatial distribution of tourism development at the national level even though in most countries domestic tourism is usually as important as, or more important than, international tourism. One important study examining spatial distribution of tourism was conducted by Porter and Tarrant (2001). These authors found that census units with low household income, and predominant blue-collar occupations were more likely to live near a tourist site. Moreover, Nicholls and Shafer (2001) supported that the distribution of neighborhood parks in urban areas was equitable in regards to the age groups of interest, but inequitable with respect to income. In addition, Tarrant and Cordell (1999) documented that average household income might be utilized to predict the proximity of outdoor recreation sites. According to their results, the census block groups (CBGs) with a higher proportion of lower income households were significantly more likely to be situated within 1,500 meters of a wilderness area, campground, and/or good fisheries habitat than CBGs with higher income.

In sum, although many authors have argued that tourism usually entails the movement of people from developed areas to peripheral areas with lower socio economic status, there is little empirical evidence that this is true. This lacuna in the literature is particularly important because it lays at the basis of the popular sustainable development movement - tourism must not be a tool to further exploit developing regions. Therefore, the purpose of this study was to examine whether benefits from tourism development were equally distributed across geographic regions and socio-demographic groups in Taiwan. The analysis presented in this paper is of an exploratory nature. The following research questions guided the study.

1. What is the spatial distribution of tourism in Taiwan (number of tourists per site)?
2. Are socio-economic characteristics (size of population, average household income, and average

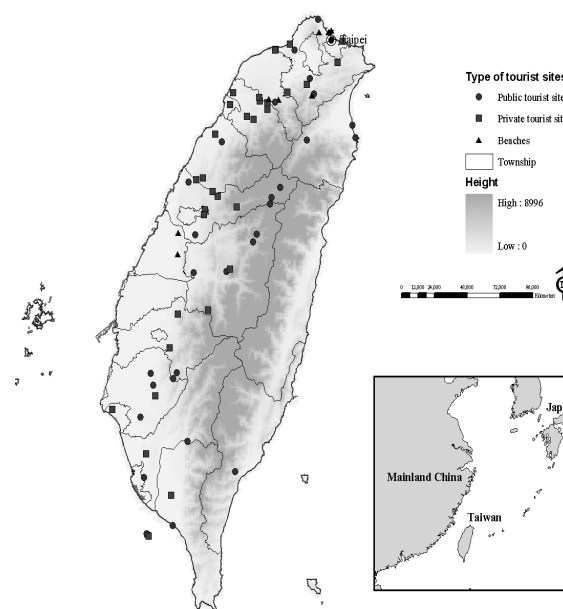


Figure 1. The distribution of three types of tourist sites in Taiwan

personal traveling expenses) of the census bloc group's predictors of the level of tourism development in that region?

Methods

Secondary data about location and tourist sites were gathered from the Taiwan Tourism Bureau (Taiwan Tourism Bureau, 2000). In this study three types of tourist sites were considered (i.e., public tourist sites, theme parks, and beaches) from a total of 72 tourist sites (see Figure 1). Other types of tourist sites were not included in this study because time-series tourist data was not available. Three socio-economic variables reported in 1997 were tested: the size of population, the average household income measured in Taiwan dollars per household, and the average household traveling expenses. These socio-economic data were retrieved from the Taiwan Census Bureau (2002), and were then grouped in CBGs and geographically associated to their respective tourist sites. A total of 21 out of 23 CBGs within the main Taiwan Island were selected.

Using ArcView software, version 3.3 (Environmental Systems Research Institute, 2001), the digitizing CBGs and tourist site maps were created and stored as a shape file. All CBGs were represented as a polygon with attribute of three socio-economic variables. Tourist sites were

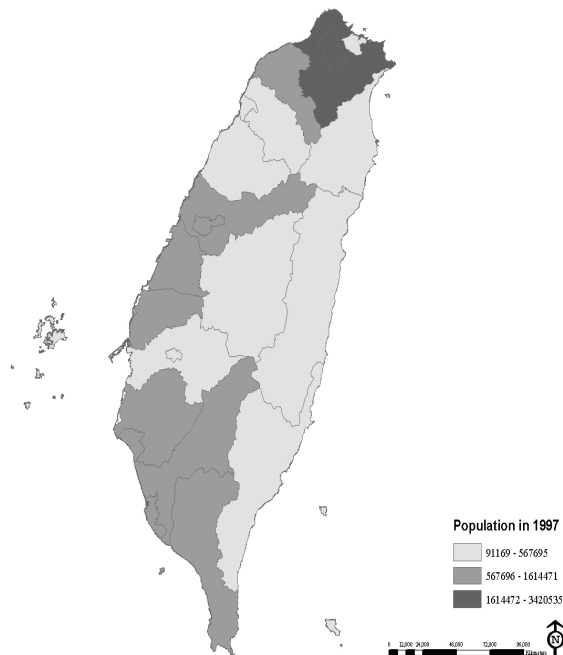


Figure 2. The distribution of population in each CBG

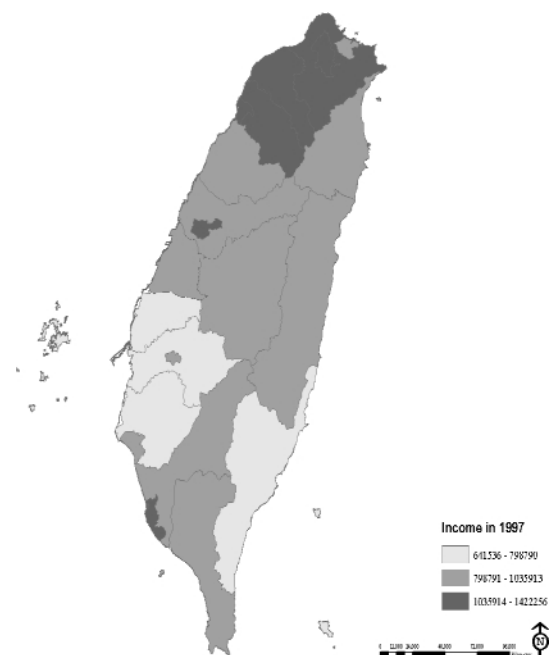


Figure 3. The distribution of household income in each CBG

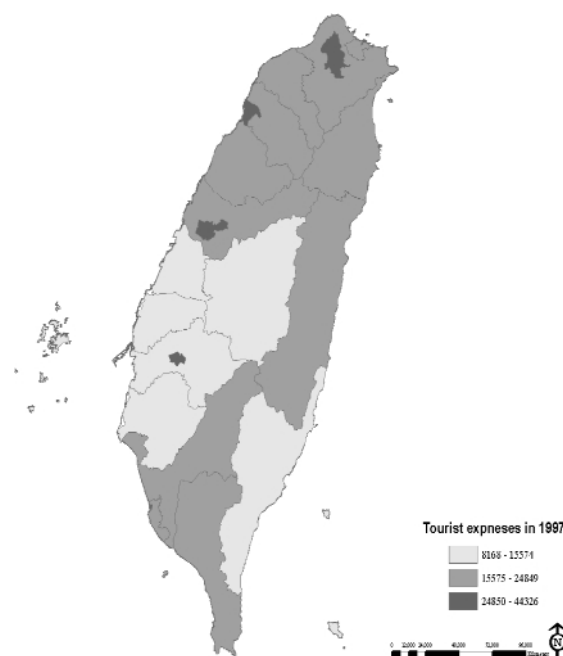


Figure 4. The distribution of average traveling expense

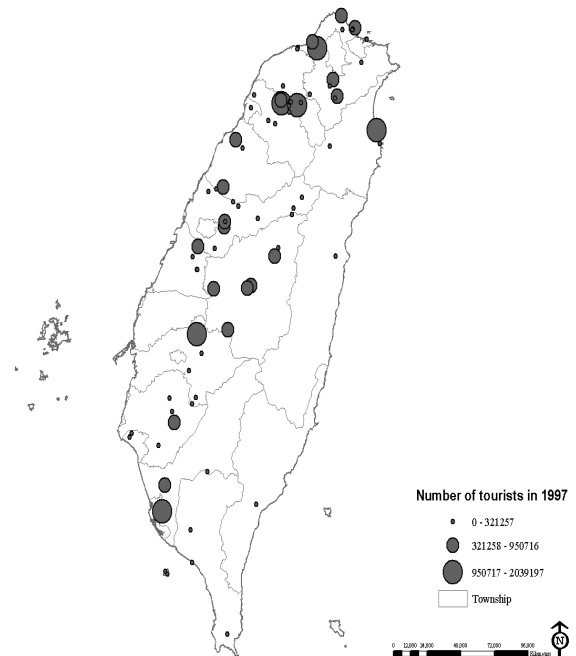


Figure 5. The distribution of number of tourist sites

represented as a point shape file with attribute information of location (x, y coordinate pair) and number of tourists.

Further, a distance analysis was performed to calculate the real distance between each pair of

tourist site and CBG. According to Walmsley and Jenkins (1992), the influence of distance on tourists' behavior may be a constraint on destination choices. In addition, in previous research the "friction of distance" in the gravity model was found as a central component of

Table 1. — Moran I based on first order spatial neighbors

Variable	Correlation	Variance	Std. Error	Normal Statistics	Normal p-value	Permutation p-value
Population.1436	.01985	.1409	1.358	.1746	.067	
Income .3465	.01985	.1409	2.797	.0052*	.004	
Traveling expense	.1592	.01985	.1409	1.468	.1421	.006
Number of tourists	.1399	.01985	.1409	1.331	.1832	.071

* Significant at .05 level

Table 2. — Geary based on first order spatial neighbors

Variable	Correlation	Variance	Std. Error	Normal Statistics	Normal p-value	Permutation p-value
Population.7596	.04977	.2231	-1.078	.2813	.263	
Income .3725	.04977	.2231	-2.813	.0049*	.000	
Traveling expense	.4637	.04977	.2231	-2.404	.0162*	.006
Number of tourists	.7904	.04977	.2231	-.9394	.3475	.297

* Significant at .05 level

Table 3. — The comparison of statistics values of SAR and MA model

Spatial Regression Model	Log-likelihood value	Rho value	Moran's I		Permutation
			Normal statistics	Normal p-value	
SAR	-312.9	.08290	.2819	.7888	.361
MA	-312.9	.09639	.2598	.2598	.368

Table 4. — Socio-economic Predictors of Number of Tourists in all tourist sites

Variable	Linear Regression Model		Spatial Regression Model			
	t-value	p-value	SAR Model		MA Model	
Population	-.7070	.4886	-.7369	.4712	-.6714	.5110
Average of household income	-1.4166	.1737	-2.2426	.0417*	-2.4447	.0348*
Traveling expense	.6628	.5159	.1813	.8582	.1637	.8719

* Significant at .05 level

modeling tourism demand (Kim & Fesenmaier, 1990). In this study, total number of tourists for each CBG came from cumulated number of tourists of 72 tourist sites, which calculated the proportional distance of each pair of tourist site and CBG. Finally, number of tourist data and socio-economic data in each CBGs were then exported through the interface of S-PLUS for ArcView GIS (Insightful Corporation, 1998) in order to be analyzed in S+SpatialStats as object files (Kaluzny, Vega, Cardoso, & Shelly, 1997).

According to Tobler's First Law of Geography, "everything is related to everything else, but near

things are more related than distant things" (Tobler, 1970, p. 236). In this study, this effect was regarded as spatial autocorrelation (Scott & Lloyd, 1997). Therefore, the neglect of spatial autocorrelation among geographical units might mislead the importance of the variables or the correlations among different variables (Bailey & Gatrell, 1995). The data contained in each CBGs were analyzed using the OSL regression model and spatial regression model in S-Plus software with SpatialStats module to explore linear relationship of one dependent variable (i.e., number of tourists), and three independent variables (size of population, average of household income, and

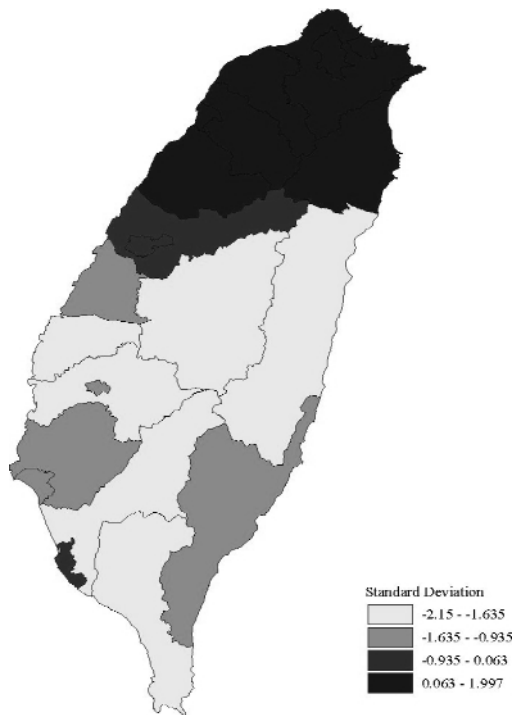


Figure 6. The autocorrelation of average household income

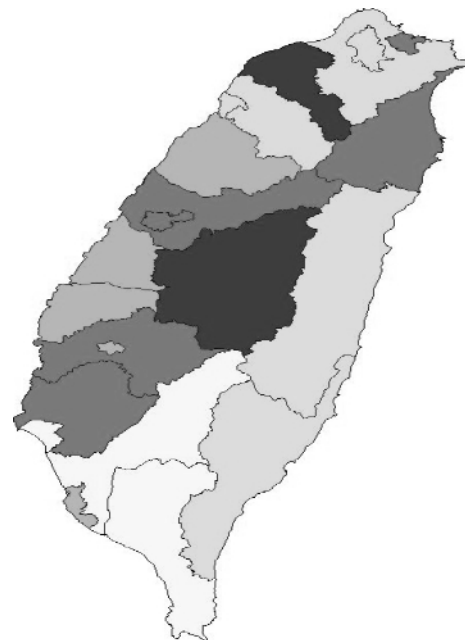


Figure 7. The distribution of residuals for OLS regression

traveling expense) in all CBGs. In total, three regression analysis (i.e., one OSL regression and two spatial regressions) were conducted.

Results

The distributions of population, household income, and traveling expense in each CBG were displayed in Figure 2, Figure 3, Figure 4 and Figure 5. As can be seen in Figure 2, highly populated areas are situated in northern urban areas and less populated areas are located in eastern rural areas. The higher average household income and traveling expense across the 23 CBGs was in north, middle, and south urban areas. Lower household incomes were found in south-middle and north-east rural areas (see Figure 3 and Figure 4). The highest numbers of tourists were found on the western region, and the least concentration of tourists were found in the east (see Figure 5).

OLS regression model

The measurement of spatial autocorrelation analysis (i.e., Moran I and Geary statistics) indicated that household income and traveling expenses might have higher spatial autocorrelation than other variables (see Table 1 and Table 2). As

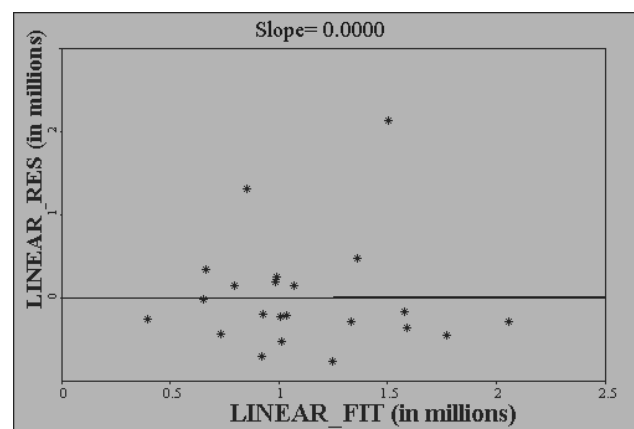


Figure 8. The scatterplot of residuals vs. fitted values for OLS regression

can be seen in Figure 6, higher average household incomes were clustered in northern urban areas. Furthermore, the analysis of the residuals obtained from the outcome of OLS regression model identified some spatial autocorrelation (see Figure 7). This result may invalidate the assumption of OLS regression that there is only first order (linear) variation. Moreover, the scatterplot of residuals vs. fitted values also indicated that there was no

constant variance in OLS regression (see Figure 8). Overall, we could not conclude that there was a statistically significant linear relationship of size of population, average household income, and traveling expense to number of tourists (see Table 4).

Spatial regression model

In both Simultaneous Autoregressive Models (SAR) and Moving Average Model (MA), the results indicated these two regression models were appropriate for the data ($\rho = .083$ in SAR model, and $\rho = .096$ in MA model) (see Table 1). And, the residuals of two regressions based on the Moran's I test indicated that there was no autocorrelation in these two models. Further, of three independent variables examined, the results indicated that only average household income was significantly negative related to number of tourists (see Table 2). This was consistent with previous research stating that the present location of tourist sites might be disadvantageous to people who were high household income (Nicholls & Shafer, 2001; Porter & Tarrant, 2001; Tarrant & Cordell, 1999). For example, people who lived in Taipei city might have less tourist sites than people lived in rural areas. That is, the spatial distribution of tourist sites was unequally distributed within CBGs with varying average household incomes.

Discussion and Implications

Is the issue of a relationship between socio-economic equality and the spatial distribution of tourist sites significant? The overall results indicated that there was a spatial inequality in the distribution of the number of tourists with regards to average household income; however, no spatial inequality was observed with regards to size of population or average of traveling expense. The findings indicated that CBGs with lower household income were likely to have greater number of tourists than CBGs with higher household income. This was consistent with previous research indicating that average household income might be a better predictor of environmental justice than other socio-cultural variables (Nicholls and Shafer, 2001; Porter & Tarrant, 2001; Tarrant & Cordell, 1999).

Finding that there is spatial inequality in Taiwan with respect to tourism development accentuates the importance of considering sustainability principles when planning tourism development.

While a conversion of spatial inequality based on tourism benefits occurs, tourism management may react to the policy guidelines including environmentally, economically, and socially sustainable goals. From the perspective of local residents, the spatial proximity of recreation opportunity spectrum may increase the attraction of the area and lead to more money and time spending for these destinations (Ashworth & Dietvorst, 1995; Clark & Stankey, 1979). Local residents should not refer to tourism revenues as a gift because they should continuously reinvest some economic revenues in the maintenance and improvement of the region in the attempt to turn tourism into a desirable land use.

In regards to the methodology of spatial analysis, we would argue that the utilization of spatial regression is more appropriate than traditional OLS regression when the data may be associated with geographic locations. In this study, for example, the findings were different when using spatial and linear analysis. Since the data were found to be spatially clustered, we concluded that the former were more accurate.

According to Driver, Brown and Peterson (1991), Tarrant and Cordell (1999), destination managers and tourism planners should recognize who and where benefits from tourism. Since people in lower income areas are more likely to receive tourists than people in higher income areas, it is important to assure that tourism is bringing relief to their lower socio-economic conditions. For example, non-local tourism businesses might need to pay higher taxes, or a higher percentage of tourism tax should be used for local development. In addition, since most tourists come from urban areas to visit rural destinations, tourism policies should promote a balanced and sustainable tourism development to help rural people increase their socio-economic standings or provide an incentive of establishing tourism facilities. As Holden (2000) suggested, "policy and planning need to reflect a balanced approach to how resources are used and include local communities in the development process" (p. 203), the tourism benefits brought by the development and allocation of resources should be evenly distributed for each group. Finally, this study reinforces the potential of using GIS as a tool to measure the socio-economic equality in the context of tourism. Owing to its powerful ability

to capture, store, and manipulate spatial data and aspatial data, the detailed databases of type of tourism resources (e.g., the heritage tourism, nature-based tourism, etc.) and tourist characteristics (e.g., the socio-demographics, past tourism experience, etc.) may help tourism managers to better develop balanced policies of tourism development.

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UNIVERSITY AND SMALL TOURISM BUSINESS PARTNERSHIPS: THE CASE OF THE ISLE OF SHOALS STEAMSHIP AND THE UNIVERSITY OF NEW HAMPSHIRE'S TOURISM PLANNING AND DEVELOPMENT PROGRAM

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Abstract: To date there has not been much of a focus on partnerships between educational institutions and small tourist attractions. This is unfortunate since small tourist attractions represent the heart and soul of the industry in many locations around the world. This paper examines the range of partnership activities that occurred between a Land Grant University and a local small tourist business (5-40 full and part-time employees). This paper uses a case study approach to provide a description of two "partners", an overview of the partnership activities, and the motivations for and benefits of the partnership. The paper concludes with a summary of the lessons learned about partnerships from the case study.

Introduction

There is increasing experimentation with the use of partnerships, alliances, and networks to design and deliver goods and services throughout the public, private and non-profit sectors (Brinkerhoff, 2002). Partnerships between institutions of higher education and for-profit, non-profit and public sectors with a focus on experiential and/or cooperative education have been around since the early 1900s (Wilson, 1971). Many hospitality and tourism programs require some type of experiential or cooperative learning (Downey, 1979). This type of learning has various names, such as internships, externships, field work, independent study project, class projects and cooperative education. These types of programs and initiatives offer a unique

opportunity to forge partnerships for the mutual benefit of all parties.

A majority of the top hospitality management and tourism programs at United States colleges and universities have experiential education components as a part of their education curriculum and a number have formal cooperative education requirements (Archer, 1991). In most cases the experiential education components are based almost entirely on the engagement of the faculty and their professional contacts. The major hospitality employers in private and public sectors sponsor co-op programs. For example, Marriott Hotels and Resorts and Walt Disney World Company have the most well recognized co-op programs in the country. In the public sector the Student Conservation Association has an excellent co-op/internship program. For the most part formal long-term co-op programs have been initiated by the industry focus on labor force development or coordination of volunteer workers.

There has been limited focus on the value of co-op programs and partnerships between small tourist attractions and educational institutions. This is unfortunate since this segment of the industry represents the heart and soul of the tourist industry around the world. This paper provides an overview of the partnership between the Isles of Shoals Steamship Company of Portsmouth, New Hampshire and the University of New Hampshire's Tourism Planning and Development Program. It will provide a preliminary understanding for of the range of experiential or cooperative education programs that have taken place over the course of a ten-year period. More specifically, this paper utilizes a case study approach to provide (1) a brief description of the each of the partners; (2) an overview of partnership activities; (3) a description of some of the motivations/benefits of the partnership; (4) a discussion of some of the challenges facing partnerships, and (5) the lessons learned about partnerships from the case studies.

The Partners

The Isles of Shoals Steamship Company: The Isles of Shoals Steamship Company (ISSCO) is the exclusive ferry to Star Island located five miles off the New Hampshire coast. ISSCO makes two trips daily to the Isles providing water, food and

supplies for the Oceanic Hotel that has been in operation since the turn of the century. ISSCO also offers a wide range of party ships (i.e., Rockin' on the River, Reggae on the River, Brews Cruise, etc.), lighthouse and sunset cruises, historic Portsmouth Harbor tours, lobster and clambakes, weddings and a wide variety of educational tours, non-profit fund raising events, corporate and private charters aboard the M/V Thomas Loughton. The M/V Thomas Loughton is a Victorian style Excursion boat with three decks (two fully enclosed and heated), a beautiful brass hand railed balcony with two full functioning bars and a top (open) deck tiki bar, two dance floor on the top and lower decks, galley services and many other amenities. M/V has a total passenger capacity of 348 people with interior seating for 150 (weddings/dinner cruises). ISSCO has a year round staff of four (Director of Marine Operations, Director of Cruise Operations, Office Manager, Director of Marketing and Sales). ISSCO has a seasonal full-time staff of 20 (season is from April 1st to January 1st) and an additional 10-20 part-time staff. ISSCO is located on state property administered by the NH Port Authority (and the Pease Development Authority). Portsmouth Harbor is a unique working port with tugboats, tankers, and the nation's oldest working navel yard, a closed castle-like prison, five historic forts, three lighthouses, and the fastest tidal river current in the east. ISSCO interacts on a daily basis with many federal, state and local agencies and organizations. ISSCO was named the Portsmouth Area Chamber of Commerce's Business of the Year because of its contribution to the people and resources of the Portsmouth, NH region.

The University of New Hampshire's Tourism Planning and Development Program: The University Of New Hampshire System Board Of Trustees approved the Bachelor of Science degree program in Tourism Planning and Development Program (TPDP) in 1993. The program is one of three bachelor of science degrees offered by the Department of Resource Economics and Development (i.e., Tourism Planning and Development; Environmental and Resource Economics; and Community of Development). The Department is the only social science department in the College of Life Sciences and Agriculture. The mission of the Tourism Planning and Development Program is to provide students

with the skills and knowledge necessary to plan, develop, market, and manage the human, physical and financial resources of tourism regions in an environmentally responsible manner. The program utilizes an interdisciplinary approach to provide students with a strong liberal education supplemented by a broad professional understanding of tourism with a specific focus on planning, marketing and economics. The program emphasizes the practical application of planning, marketing and economic theory to the development and management of tourism resources. Students study both the social and environmental sciences in order to better understand the complexity of natural and social systems. Upper division courses (e.g., Tourism Planning, Economics of Tourism, Social Impact Assessment, Marketing Tourism Places, etc.) include a "special project" component in cooperation with the public and private sectors of the tourism industry. The program requires that students complete both an independent study and a professional internship (500 hours/40hours a week). The program average enrollment is about 45 students for the past 7 years. The program has one FTE and another 1.5 FTE made up of faculty teaching seven required courses (Marketing, Economics and Planning).

Methods

This paper uses a mix of quantitative and qualitative methods to prepare this case study of the partnership activities between the Isles of Shoals Steamship Company (ISSCO) and the University of New Hampshire's Tourism Planning and Development Program. The primary source of information and insights for this paper are derived from the direct experiences of the President of Isles of Shoals Steamship Company (and owner of the M/V Thomas Loughton), Robin Whittaker and Coordinator of the Tourism Planning and Development Program, Rob Robertson.

Ms. Whittaker has a bachelor's degree in marketing from The Pennsylvania State University. She has worked for the ISSCO for the past 20 years and she has been the President/Owner for the past 10 years. She is a member of the Executive Committee of the Portsmouth Chamber of Commerce and was recently elected vice-chair and she will share the Chamber in 2004. She was a founding member and chair of the Tourism

Committee of the Portsmouth Chamber. She also serves on the Boards of Directors of a number of non-profit organizations with a focus community and environmental resources. She is a governor appointed member of the NH Workforce Opportunity Council Board.

Rob Robertson is an associate professor and coordinator of the Tourism Planning and Development Program at the University of New Hampshire. He has interdisciplinary degrees that blend the social science with natural and cultural resource management from Western Illinois University, Oregon State University, and the University of Illinois at Urbana-Champaign. He has been at UNH for the past 10 years prior to that he was an assistant professor at Iowa State University. He has wide range of life and work experiences including positions with the National Park Service, a county forest preserve system, a program for juvenile delinquent boys, bartending and spent four years in the US Coast Guard. His current position at UNH includes a research appointment with the NH Agriculture Experiment Station. His research focuses on the issues associated with the management and development cultural and natural resources and the application of social science research to the management and development of these resources. He is responsible for the instruction of undergraduate and graduate courses entitled; Introduction to Tourism Planning and Development, Tourism and Global Understanding, Coastal Tourism Development, Communication for Natural Resources and Community decision makers, Nature-based tourism development and Social Impact Assessment. He serves on a variety of technical boards and advisory committees that addresses a variety of marine and coastal development issues.

Overview of Partnership Activities

Small-scale tourism attractions and educational partnerships are important. There is considerable potential for mutually beneficial relationships across a wide range of topic areas. This section provides an overview of partnership related activities between UNH's Tourism Planning and Development Program (TPDP) and the Isles of Shoals Steamship Company (ISSCO). Initial contact between the TPDP and ISSCO occurred when the ISSCO leadership was invited to serve on the TPDP Industry Advisory Committee with the

creation of the TPDP at UNH in 1993. ISSCO's involvement with the advisory committee was minimal. Over the course of next ten years next three years there were a number of interactions that established the foundation for partnership. A brief description of each broad category of activities is briefly described.

- Internships. ISSCO is a site for internships across a variety of programs. Three TPDP students have completed an internship at the ISSCO. The student interns worked in the broad areas of marketing and sales or event planning/cruise directing. ISSCO paid the student interns and stressed the importance of treating interns like employees. The exit interviews between the student intern, TPDP faculty and ISSCO management staff provided an opportunity for constructive dialog about the student interns learning outcomes. It also provided a foundation of trust between the TPDP and ISSCO. The exit interviews also facilitated communication on the issues facing both entities and the many potential benefits of establishing the partnership. Each intern brought the relationship between the partners closer together.
- Research Site. ISSCO was the site for data collection for two projects. The first was a regional tourism assessment for the Route 1A/1B Corridor. ISSCO was one of ten sampling locations for an assessment of tourist behaviors, perceptions and evaluation of a wide variety of issues associated with tourism development in the seacoast region. TRPD faculty provided ISSCO with the final report and offered to do additional data runs specific to ISSCO customers. The second study was focused specifically on passengers who took cruises or whale watches within New Hampshire's coastal region. ISSCO management participated in the questionnaire design and sampling strategy. ISSCO provided access to their customer data base. The TPDP faculty shared the results from the study with ISSCO management. ISSCO reviewed the results and made some changes to interpretive programs aboard the M/V Thomas Loughton during sightseeing cruises. TPDP faculty prepared professional publications and presentation with data collected from these studies.

- Classroom participation. ISSCO staff has made numerous guest lectures in a variety of courses. ISSCO President Robin Whittaker guest lectures in Introduction to Tourism Planning and Development Course (150+ undergraduates from across campus). She shares stories about the “boat business”. The stories provided a real world context to the topics discussed in class. This real world context is important. The stories focused on relationships and interactions with regulatory agencies, radio stations, customers, staff, advertising companies, employees, State Liquor Commissioners, Newspapers, Coast Guard, Local Police Department, Banks, musicians etc. This evaluation was one selection out of three for the first and second “active learning exercise”. Only ten out of 150 took ISSCO up on its offer. ISSCO President made an offer of a free cruise to any student who signs up to complete a detailed class evaluation of the cruise experience. Those ten students each prepared a 6 to 8 page typed paper. ISSCO management shared the papers with staff and operational changes were implemented. As a result of the guest lectures, ISSCO hired two students, who developed an interest in ISSCO as a result of the presentation

The chief of Marine Operations for ISSCO made a presentation to an undergraduate/graduate course in Nature-based Tourism Planning. He spoke on some of his experiences with local and national governments in a variety of ports-of-call in a variety of exotic locations around the world. ISSCO staff also made guest lectures on “marketing” and “event planning” and they assisted in the planning of independent study projects.

- Independent Studies Projects. A number of students have completed Independent Study projects in cooperation with ISSCO. The Independent Study course requires that students to identify sponsors representing the tourism industry and the TPDP. Over the years ISSCO has been the sponsor of five independent projects.

For the first project, two students prepared a detailed study evaluating the feasibility of

ISSCO and TPDP sponsored education cruise up the Intercoastal Waterway from Daytona Beach, FL to Portsmouth, NH aboard the M/V Oceanic. The M/V Oceanic is a two-deck 110-passenger excursion boat with interior seating for 50. The feasibility study included an educational itinerary (a collaborative project with Penn State University), cost estimates, travel schedule, budget and funding mechanism (ISSCO would allow the program to sponsor a number of fundraising event of the boat and at the property). The project was determined feasible, but ISSCO elected to get out of the whale watch business and leave the M/V Oceanic in Daytona Beach permanently).

The second independent study project was completed by two students. It was a special event, sponsored by UNH Tourism Club, entitled “Halloween on the River”. The students organized the Halloween Party aboard ISSCO’s M/V Thomas Loughton for students and the general public. The event was a success with a small but well satisfied crowd. The income from the ticket sales were split between ISSCO and TPDP Tourism Club.

The third event was a Holiday Cocktail Cruise aboard the M/V Thomas Loughton. Two students planned, promoted and managed a “formal cocktail cruise” on board M/V Thomas Loughton for UNH students. Eighty UNH students attended the events. It was a great night and a good time was had by all. The ticket price included round trip bus transportation. The event lost a little money, but the student acknowledged that planning the event was the seminal event their degree program. An interesting but related outcome was about 50 or 60 of the students who bought tickets for the cruise had taken the introductory to tourism planning and development course. The cocktail cruise provided a valuable opportunity for an adult discussion about the course and their university education.

The fourth event was a graduation cruise. Two students planned, promoted and implemented a cruise on board the M/V Thomas Loughton (to include round trip bus transportation from

campus to the Portsmouth). The event attracted nearly one hundred students and still did not make any money, but the event did not lose any money (not counting ISSCO's contribution). The students prepared a detailed evaluation of the event and were extremely grateful for the opportunity. One of the students was hired by ISSCO as a seasonal cruise director position.

The final independent study project was a feasibility study for the educational wall that would educate ISSCO customers and the general public about the various governmental and non-governmental organizations with a focus on various attributes of the marine environment. This project was completed by a single student and included interviews with ISSCO management, TPDP faculty and other marine related non-profit organizations, the Port Authority, neighbors and other stakeholders. The wall was determined feasible and Ocean Bank contributed \$2000 and staff supervision to get the project started.

- Team Taught Courses. The President of ISSCO and TPDP faculty teamed together to teach a Special Topics in Tourism Development course entitled "Coastal Tourism Development". Twenty UNH students enrolled in the course. ISSCO President, Robin Whittaker donated her time to teach the course. The objective of the course was exposing students to the many different stakeholders with a stake in coastal tourism development and exposing the stakeholders to student. ISSCO facilitated meetings with a wide variety of leaders in NH Tourism industry and local government. The course included field trips throughout the seacoast. The course culminated with a "networking" cruise that brought together the various guest lecturers and UNH faculty. Only three UNH faculty and administrator attended (even though over 100 were invited) and 20 industry people attended (150 were invited). ISSCO donated the vessel and students secured donations for food and non-alcoholic beverages. Two students obtained full-time employment (with benefits) as a direct result of the course.

The ISSCO President and TPDP faculty also teamed together to offer a course entitled "Tourism and Global Understanding". Sixty-six students enrolled in the course. The course was experiential in nature and required a wide variety of "life seeing" tourism experiences. This course focused on getting student to think out of the "student" box and to see what life and world has to offer. A major course assignment required planning a special event. The course focuses on improved understanding of other cultures (domestic or international). A group of student organized, planned and implemented an "Italia Cruise" aboard ISSCO's M/V Thomas Loughton. The final essay exam asked student to critically evaluate the course. The exam suggested that this course fulfilled an important, but previously ignored role, getting students that there it is a big wonderful world if they open their minds to it.

- Class Projects. The TPDP course in "Marketing Tourism Places" completed a detailed image assessment of "Star Island" in cooperation with the ISSCO. ISSCO President provided the focus for the study and some financial resources (i.e., purchased the sample for a WWW survey). The students completed all phases of the research project, to include a final presentation to ISSCO staff and TPDP faculty. ISSCO has commissioned a television commercial based upon the results from the image study. One of the TPDP students who participated in the design and implementation of the image was hired as a marketing intern by ISSCO.
- Miscellaneous Activities. There are a number of additional partnerships or cooperative activities between the ISSCO and the TPDP. These activities include: (1) TPDP use of the M/V Thomas Loughton as a meeting location /research platform; (2) ISSCO sponsorship of TPDP student club; (3) Part-time work for TPDP undergraduates and graduate students; (4) joint proposal writing; (5) co-authoring presentations and professional papers at professional conferences and meetings from both the industry and academic perspective; and (6) integration of experimental research designs into routine ISSCO marketing programs/activities.

Motivations for and Benefits of the Partnership

The proceeding section provided a brief overview of the range of partnerships and collaborations activities between ISSCO and UNH's TPDP. This section provides some insights into the motivations for participating in these types of partnership activities. It will also include a very general discussion of some of the benefits of this partnership. ISSCO and TPDP share many of the same motivations for participation in the partnership. The following represents some examples of the motivations/benefits:

- Access to highly motivated part-time/seasonal employees. Undergraduate and graduate students need practical experiences relevant to their academic programs. With the cost of a four year education, students need to earn money while they go to school. Students can be highly motivated employees when the pay is fair and if they are able to make the connection between their position and their education. The University of New Hampshire has over 11,000 undergraduate students in five colleges. There are eight distinct programs with direct application to a small marine based tourism attraction in five separate colleges. The Hospitality Management, Business Management and Marketing Departments in the College of Business and Economics, the Department of Recreation Management and Policy in the School of Health and Human Services, the Tourism Planning and Development, Community Development, and Environmental and Resource Economics and Environmental Conservation Programs in the College of Life Sciences and Agriculture, the Department of Communication in the College of Liberal Arts, and Environmental Education Program in the College of Education. This many programs at a single university make it very difficult for a small business to navigate. As a result of this awareness, a TPDP faculty member organized a special session at NH's Governors Conference on Tourism. This session served to educate the industry on the wide range of programs with application to the tourism industry. An important advantage of students as part-time and seasonal employees, is that there is limited pressure to provide them with benefits, and they have a special skill sets.
- Access to Academic/Small Business Resources. The partnership activities serve to make each of the partners aware of the resources that are available to the mutual benefit of the partners. This is particularly true for this type of partnership. UNH and any other research university have a wide variety of resources that are typically difficult to access without a personal guide (e.g., academic programs, research an outreach faculty and staff, students, etc.). Likewise, small business, particularly small marine-based tourism attractions have access to a wide variety of resources (i.e., business contacts, meeting place, a vessel with a 300 passenger excursion boat, etc.). The partnership also provides access to potential customers for ISSCO. ISSCO has improved its access to UNH as an important customer base since the formation of the partnership (i.e., alumni association, student organizations, faculty and service groups, etc.). UNH is the largest employer in the NH seacoast.
- Market research and strategic planning support. The ISSCO and TPDP partnership provides a venue for creative application of applied research activities. For example, ISSCO obtains valuable data and strategic planning support, while the TPDP faculty and students have a venue to develop skills and apply research that often sits on the shelf. The partnership provides a mechanism for longitudinal studies (e.g., tracking products and outcomes) and experimental research designs with relevant dependent variables (i.e., sales, customers, students, etc.).
- Professional Development. ISSCO and TPDP are members of different professional organizations for different reasons. Both partners benefit from each others membership based or professional organizations. For example, the ISSCO is a member of the all the regional Chambers of Commerce and Tourism Associations, as well as the national Passenger Vessel Association (PVA) and the regional "Original Colonies" chapter of the PVA. While, the TPDP is actively involved with the Northeast Recreation symposium, the Rural Sociological Society, Northern New England Chapter of the American Planning Association and others. Both partners directly benefited

from expanded networking capability. These synergistic activities are further enhanced by the fact that a current member is introducing "new blood" with a unique (but relevant) perspective, interests and skill set. TPDP faculty and collaborators completed a study of PVA members to understand the perceived value of new ocean mapping technology. The President of ISSCO provides a breath (and much needed) fresh air to the staunch and some stagnant academic meetings.

The above are just a few examples of the many different motivations and benefits associated with small-tourist attraction and educational institution partnerships. This partnership served to stretch scarce resources and to advance programmatic and business goals through difficult times. In a very real sense, this small-scale partnership allows faculty to actually implement some of the activities that senior UNH Administrators are talking about but lack fiscal support to implement on a broader scale. Some of the greatest benefits of the partnership activities are related to self-confidence, and personal and professional growth. More specifically, it allows faculty to become better faculty and business owners to become better business owners.

Challenges faced by the Partnership

This section briefly highlights some of the challenges facing the small business-education partnerships. One of the first and foremost challenges encountered was small businesses owner's attitude towards academics (students, faculty and administration) and academic attitudes towards small businesses. Some of the most common perceptions were that faculty do not get the day to day challenges facing a small business, students don't know how to work, faculty have a lot of time on their hands, since they do not spend 8 hours a day in the classroom, and that the University is not a very good manager of their fiscal resources. Each of these attitudes is related to each other. From the other perspective faculty have a number of less than favorable attitudes or perceptions towards small tourist attractions. The first is that small businesses want something for nothing. Faculty think that small business view students and faculty as free labor and that businesses do not know how to get the most out of students and faculty. They view students, as free

labors because they will learn from the work experience and faculty are free because they are paid with "tax payer" dollars. There is a general belief among faculty that small businesses don't get the big picture of how different facets of the "community" integrate. A vast majority of the challenges are a direct result of lack of understanding and a lack of trust. The ISSCO and TPDP partnership have served to educate the partners on what it means to be a small-tourism business owner and what it means to be a university professor. This improved understanding serve to promote a more trusting relationship.

Summary and Final Remarks

This section briefly highlights some of the lessons learned about partnerships and collaboration between faculty and owners of small tourism businesses. First both faculty and business owners are independent thinkers who are more used to talking than to listening. The partners learned that it is important to listen and understand even when it is difficult. Listening allows the partners to understand each other's experience and expertise. A second major lesson related to listening is that both partners do not and typically will not lose track of their own interests and concerns. Not surprisingly businesses and faculty take different approaches to addressing their own issues and concerns. Partners must be sensitive to the fact that there will not always be equal benefits. Another important lesson is the dangers associated with stereotypes. All faculty and all business owners are not a like. Some faculty/business people are more involved and easier to engage than others. These lessons tend to conform in substance to the some of gaps in the education employment interface identified by Haywood and Maki (1991). In summary, this paper stresses the importance of partners understanding each other's needs and interests. It also makes clear the value of being honest, sincere, down to earth, willing to listen, open-minded, flexible, realistic and practical. The partners must be willing to commit some of themselves to this process. They must be aware that attempts at collaboration are not always going to work and the importance of building trust over a period of time. Business and faculty have diverse interests and perspectives, conflict will happen. It is very important to work through the conflict and to find creative ways to make the partnership work. Educators need to mentor small business owners

on what it means to be an educator. Likewise small business owners need to mentor faculty on what it means to own your own business.

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Specialized Recreation

GUIDED BIRDING TOURS: AN EXAMINATION OF THE MARKET, IMPORTANT TOUR PARAMETERS, AND PARTICIPANT DEMOGRAPHICS

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Abstract: Demographic and psychographic trends favor the future growth in the number of birders and their associated expenditures. Highly-committed birders, a subset of the larger bird watching population, are the target market for specialized guided birding tours marketed by commercial and non-profit entities. One non-profit entity, the Kalamazoo Nature Center (KNC), offers a limited number of guided birding tours to service current members, attract new members, and support its programs. With an eye towards increasing the number of participants on its current tours and potentially increasing the number of future tours, a study of regional (Great Lakes), national, and international birding tours offered by commercial and non-profit entities was conducted. Specifically, this study examined guided birding tours in terms of a number of parameters important to birders, including group size, guide experience, time spent birding, cost, services provided, and tour operator size and length of operation. This paper will present findings on those parameters as well as the participant demographics on the examined birding tours.

Introduction

Birding is a popular outdoor recreation activity in the U.S., which offers a setting for participants to interact with nature and with fellow birders, friends, and family members (Leo 1987). For some, it also provides a medium for competition in the sport of listing sighted birds. This paper will examine the participation and dollars involved in this popular, growing outdoor recreation activity, guided birding tours which appeal to a specialized subset of birders, important parameters in assessing birding tours, and international, domestic, and regional birding tours based on these parameters.

Birding: A Popular Outdoor Recreation Activity in the U.S.

Wildlife watching involves millions of people and generates billions of dollars in expenditures in the U.S. alone. According to the most recent 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, more than 66 million US residents, or 31% of the U.S. population 16 years old and older, fed, photographed and observed wildlife. They spent \$38.4 billion doing so, which equaled an average of \$738 per spender. 63 million people participated residentially or within one mile of their homes. Activities included feeding birds and other wildlife (54 million), observing wildlife (over 42 million people), photographing wildlife (14 million), and managing plantings for the primary purpose of benefiting wildlife (13 million). One-third of all wildlife watchers, or nearly 22 million people, took trips away from their homes for the primary purpose of participating in wildlife-watching recreation. In 2001, wildlife watchers spent \$8.1 billion on these trips, with food and lodging, transportation, and other trip costs such as land use fees and equipment rental respectively accounting for \$4.8 billion, nearly \$2.6 billion, and \$.75 billion of these costs (U.S. Department of the Interior and U.S. Department of Commerce 2002).

Wild birds in particular are the focus of much wildlife watching. In 2001, nearly 46 million of all wildlife watchers (69%) were wild bird observers. They spent almost 5.5 billion total days watching wild birds, which predominantly occurred at their residences (5.2 billion days). Still many traveled to observe birds. More than 18 million individuals took trips to observe, photograph, or feed birds, with 5.8 million traveling out-of-state. Of these out-of-state travelers, nearly 3.9 million viewed songbirds, 4 million viewed birds of prey, 4.3 million viewed waterfowl, 3.2 million viewed other waterbirds (i.e. shorebirds, herons), and 2.2 million observed other birds (i.e. pheasants, turkeys, etc.) (U.S. Department of the Interior and U.S. Department of Commerce 2002).

Not surprisingly, birding has become an economically important activity to states that host a large number and/or rare bird species. For instance, birders spend \$400 million annually in Texas, which hosts 600 bird species and which has

aggressively developed its bird-oriented tourism. In 1995, it established the 624-mile Great Texas Coastal Birding Trail, with marked birding sites and viewing areas, some of which have boardwalks, kiosks, and observation platforms (Barlow 1997; Crable 2001). The trail is the basis for the Great Texas Birding Classic, where teams from around the U.S. spend a week competing to spot the most bird species (Laird 1997). Birders' expenditures in areas near specific birding attractions are economically important too. A study of Texas' Santa Ana National Wildlife Refuge, High Island Audubon Sanctuaries and the Rockport Hummer/Bird Celebration found that out-of-state visitors spent \$168.3 million in a single year, generating a greater economic impact in the Rio Grande Valley than the citrus industry (Barlow 1997). Similarly, a Kirtland's Warbler festival brought 7,000 people who each spent \$50 a day on food, accommodations, and souvenirs to Mio, Michigan, the gateway town to the Kirtland's Warbler habitat in the Huron-Manistee National Forest where the per capita income is \$8,000 (Miller 1995). Birding tends to generate higher revenues per visitor than other forms of rural tourism as it necessitates overnight stays, since the best time to see birds is in the early morning and late afternoon (Leones, Colby, and Crandall 1998).

Birders include people from a wide range of commitment levels and income and age groups. The U.S. Fish and Wildlife Service categorizes birders as 1) highly committed birders, who watch regularly, use a field guide, keep a life list of birds seen and are able to identify a hundred or more species of birds; 2) interested birders, who are able to identify at least 40 species; and 3) casual watchers (Leo 1987). Residential bird watchers, who may fit any of these three categories, include both higher-income suburbanites who watch A&E and The Discovery Channel, as well as a larger, less-affluent group of customers who watch The Nashville Network and The Family Channel. Highly committed birders, most of whom would be both nonresidential and residential birders, skew toward higher income, age, and education levels. The American Birding Association (ABA) counts among its members the most committed birders, as 39% of its 14,000 members in 1994 had spent at least 51 days birding in the past year. 62% of members had family incomes over \$50,000. Their average age was 53 years (Dickinson 1996), a

figure that mirrors recent USDA Forest Service survey findings (Parker and Carpenter 2003). Surveys conducted at particular birding sites in the U.S. and Canada illustrate that birders are more educated and affluent than the general population (Hvenegaard, Butler, and Krystofiak 1989; Leones, Colby, and Crandall 1998).

Certain demographic and psychographic trends favor the future growth of birding as an activity and form of tourism. Two important market segments, baby boomers and seniors, have fueled upward trends in nature-based tourism and outdoor recreation, including birding. A Values and Lifestyles (VALS) survey conducted by Stanford Research International found that 30 million of the total 75 million American "baby boomers" born between 1945 and 1963 have psychographic characteristics emphasizing environmental concern, social awareness, a global view and personal growth. These "green" consumers, who are well-traveled, well-educated, professional, and have high income levels, are considered the core of the U.S. ecotourism market, of which bird-related tourism is a subset (Center for Tourism Policy Studies 1994). The aging of populations in advanced industrialized countries such as the U.S. also favors increased participation in soft adventure activities such as birding. As the median age of the population increases, active, dangerous recreational activities like skiing and rock climbing will become less attractive, while appreciative and passive outdoor recreational activities like bird watching, pleasure walking, pleasure driving, and sightseeing will become more popular. Out of all the forms of nature travel, "soft" adventure or "soft" ecotourism which most bird-oriented tourism can be categorized as will grow most from the aging population and its increasing demand to have contact with nature. Seniors are also a key market for bird tourism, given their disposable income and leisure time (Eagles 1995). While one estimate claiming that the number of American birders will grow to 127.8 million by the year 2050 (Hamilton 1997) may be overstated, demographic and psychographic factors will favor the growth of birding.

Guided Birding Tours

While the number of current birders is large and is expected to grow due to the aforementioned psychographic and demographic trends, the market

for guided birding tours is a smaller, specialized subset of the larger bird watching population. Mary Beacom Bowers, editor of Birdwatcher's Digest, estimates the potential market of "really hard-core birders who will pay money to travel to see new birds" is nine to ten million (Field 1992), not the significantly larger number of casual, residential birders. The hard-core birders may join specialized bird tours that cost thousands of dollars and involve traveling far off the beaten track, birding from daybreak into the evening in order to see nocturnals, and staying in modest accommodations available near where desired life-list birds can be seen (Field 1992).

To meet the demand of these highly committed birders, commercial and non-profit entities offer guided birding tours. The nature tourism industry, of which birding tourism is a subset, is dominated by large operators. The 35 largest outbound nature tour operators had 90% of the market. The five largest operators alone held 40% of the total market. Similarly, the market for specialized birding trips is currently dominated by three U.S.-based commercial operators: Victor Emanuel Nature Tours (VENT), Field Guides Incorporated, and Wings (Field 1992). In addition to the commercial operators, non-profit organizations, which include national organizations such as the ABA and the National Audubon Society, affiliated state Audubon organizations, and local zoos, nature centers, and museums, offer birding tours. These tours are offered to reward key supporters, service current members, attract new members, and support the institutions' activities through donations built into the tour fee. The birding tours offered by non-profit entities may have been developed in-house as in the case of larger institutions like the Audubon Society or by commercial entities. VENT has organized tours for non-profits like The Nature Conservancy, the World Wildlife Fund, the National Audubon Society, Cornell Laboratory of Ornithology, the ABA, local Audubon clubs and birding clubs, and Conservation International (Victor Emanuel Nature Tours 2001b). Given these linkages, commercial and non-profit birding tour operators cannot be considered direct competitors. Local non-profits, which have geographically localized memberships and customer bases for birding, likewise do not directly compete with commercial

operators that draw from a broad national and international market.

One local non-profit entity, the Kalamazoo Nature Center (KNC), offers approximately two to three guided birding tours per year. Tours provide a service to current members, which help support KNC development efforts; attract new members, as any non-members tour participants get a KNC membership; and support its Community Wildlife program through a tax-deductible donation. The tours are directly related to the KNC's mission, which is to inspire people to care for the environment by providing experiences that lead them to understand their connection to the natural world. The KNC has both developed its tours in-house as well as contracted through commercial operators. These tours, which are predominantly patronized by members of the KNC and/or the local Audubon chapter, have had a small set of loyal, repeat customers. When the KNC offers a tour, notice of that tour goes out to an approximately 75-person mailing list made up of past KNC tour clients and other self-identified interested birders. This mailing is sent to a fraction of the KNC's 3300-3500 members, the vast majority of whom have never gone on one of its birding tours and may not even be aware the KNC offers them. The KNC would like to expand its tour clientele, in part because the average age of its current birding tour participants is 68 years. From the KNC tour leader's and tour participants' past experiences, by the age of 75 many people find tour-associated walking and hiking for more than a mile very difficult.

With an eye towards increasing the number of participants on currently offered tours and potentially increasing the number of future tours, the KNC was interested in comparing its tours to those of commercial and non-profit entities in terms of a number of parameters important to birders. For instance while birders' proclivity to pay thousands of dollars for specialized, expert-led guided birding tours to see particular species is well-known, cost is still a factor when choosing a tour. But when looking at various birding tour operators' brochures, one cannot quickly assess the entire tour cost since the services included in the advertised tour prices vary. Some tours may include all meals, transportation costs to/from the

tour beginning and ending points, and all tips, but many do not include all of those services. As a result, the out-of-pocket expenses would increase the overall trip costs. To assess what other commercial and non-profit tours offered, as well as to evaluate commercial operators that may be used for future KNC tours, a purposive sample of commercial and non-profit tour operators was initially identified by the KNC's birding tour organizer/leader as industry-dominant or regionally-important. Additional commercial and non-profit operators were added to supplement the sample. In total, information on 52 regional (Great Lakes), continental U.S., and international¹ birding tours offered by 16 commercial and 8 non-profit operators was collected by examining brochures/printed marketing literature, web sites, and interviewing tour leaders and operator representatives.² Important parameters used to compare birding tours were identified from the literature, by the author, and by the KNC's birding tour organizer/leader. Information collected on these birding tour parameters is detailed below.

Birding Tour Parameters

Size of group factors

Keeping the size of the group small is important to birders as it will generally ensure that all clients will have a window seat on the ground transportation provided. Smaller groups also mean shorter lines to the spotting scope (Dunne 2001) and lower leader-to-client ratios which allow "everyone to pick the expert's brains." Unlike average tours, where there will be one expert for two bus loads of guests, luxury bird-watching trips provide "greater access to experts and their degree of expertise" (Field 1992). In addition to being desired by birders, small group size is important in limiting the environmental impact of this tourism. The National Audubon Society's Travel Ethic for Environmental Responsible Travel recommends that the leader-to-group size ratio never exceeds one to 25, and should be a lower one to ten,

¹ Including Hawaii and Alaska, given their higher costs than continental U.S. destinations

² Undergraduate students enrolled in the course, Geography of Travel and Tourism, during the Winter 2002 Semester assisted in collecting data on birding tours as part of their learning experience and class research.

depending on the fragility of the habitat (National Audubon Society 1995).

All except one of the 49 tours providing information on the number of tour participants kept them below the Audubon-recommended ratio for environmentally-responsible travel. The two tours with group sizes exceeding 20 participants were birding-oriented cruises. Keeping the group sizes small also facilitates each participant getting a window seat. Of the 33 tours that provided information on window seats, 25 noted that all participants would have a window seat. Six of the tours had the policy of rotating window seats among clients. Four other tours did not provide ground transportation, either requiring that participants use their own cars or carpool or that they walk from the accommodations used for the entirety of the tour. In addition to limiting group size, Field Guides and VENT used two 15-passenger vans if the group size exceeded seven and approached the specified maximum group size of 14 or 16 so that each client would have a window seat. The all-important leader-to-client ratios were small, with an average ratio of one leader to nine clients, thus facilitating client access to leader expertise. In particular, Field Guides noted it would add a second guide as tour size warrants for those tours that allowed up to 16 clients.

Tour leader experience

Tour leader experience in leading tours, with the visited habitats, and on the offered itineraries is crucial to helping guests achieve their primary goal of seeing birds. According to top bird lister Cliff Pollard, "A good (leader) can get you to see the bird really quickly, but can also handle the non-birding parts of the trip" (Koeppel 2000). Experienced leaders can help sort out look-alike shorebirds or the variety of different flycatchers as they are familiar with bird songs, calls, and subtle differences in plumage (Tveten and Tveten 1998). In dense forested habitats, the experience of the guide is vital. Limited guide experience and knowledge have affected the development of ecotourism in the Amazon, since about 70% of tourists to the Amazon want to see wildlife, but in the dense Amazon they may not see the rare birds they traveled thousands of miles and spent thousands of dollars for. Guides who may know less than the foreign amateur bird watchers contribute to this problem (Schemo 1999). The

National Audubon Society's Travel Ethic for Environmental Responsible Travel states that naturalist-leaders should have a solid background in the various habitats to be visited so as to answer visitors' questions on the flora and fauna, present relevant conservation issues, and limit visitors' impacts (National Audubon Society 1995).

In our evaluated tours, the tour leaders' years of guiding experience were generally extensive. Over 31% of tours indicated that the leader had 10-15 years of guiding experience, while 20% and 11.4% respectively had leaders with 16-20 and 21-25 years of experience. A large 25.7% of tours said the leader had over 25 years of leading tours (not just birding). Familiarity with the visited region was harder to identify and quantify, but nonetheless was an important part of companies justifying tour quality. Highlighted information included that a leader was native to, had lived for an extensive period of time, or had conducted graduate and post-graduate research in the region.

Emphasis on birding vs. other activities

Top bird listers and guiding experts recommend that individuals considering birding tours ensure that their interests and expectations about the amount of birding match that in a particular tour. Some tours concentrate solely on birds and seeing as many species as possible, while others focus on birds and broader ecological and/or cultural themes (Dunne 2001). The amount of time spent birding versus that spent on other guided activities and free time can similarly vary. Tours that emphasize seeing as many species as possible may mean late dinners and birding for nocturnals afterwards. According to Shirley Anderson, Vice-President of VENT, most of the company's customers are interested in birds only, not in free time. "They're up and in the field by daybreak and out there until lunch. They bird all afternoon, have dinner, and then go back out for the nocturnals. On a typical international trip, they'll do this for 18-24 days in a row." Anderson recommended that people should not take their trips unless they were interested in birds (Field 1992).

As most of the tours evaluated were designed for intense birders, clients should have a primary interest in birds. Over half of the tours surveyed said that birding took place all day. For these tours, almost no time was dedicated to other

guided activities or free time. Several tours mentioned occasional non-birding activities specific to the visited regions such as other wildlife watching, geology, or indigenous culture. However, the focus of the evaluated tours was overwhelmingly birding. The Asia-specialist KingBird Tours explicitly noted the importance of birding on its tours, so that potential customers would make an informed decision. It stated, "KingBird Tours exists to provide birding tours that cater to those whose main interest is to see as many of the birds as possible in the area covered. The itineraries are planned for birding to occupy most of the daylight hours of the tour, with some occasional owling as well...The main question to ask yourself when considering a KingBird tour is whether you'll be happy doing little else but birding. Your level of birding expertise is irrelevant. Our tour members range in birding experience from nearly none to extensive, with most folks falling in between. What they all share, however, is a keen interest in continuous birding. If you are not that keen, such intense birding can be boring. We've had a number of not so keen birders, and even non-birders on our tours and most were happy they came. However, those who enjoyed the experience were those who were able to derive pleasure from looking for and at birds all day, every day." While KingBird did allow individual clients to opt out of birding, it was geared towards continuous birding with rest days averaging a half-day per week on its 24-day tours, noting, "Anyone may simply take a day off from birding and relax or check out the sights or shop. We will be happy to assist any of the tour members in alternate activities...The daily birdwatch goes on regardless" (KingBird Tours n.d.).

Cost of Tour/Level of Services

While organized birding tours may present savings on a bird-for-the buck basis relative to birding independently, the cost of tours, which can run into thousands of dollars, is still a consideration in making trip decisions. Transportation costs are one factor affecting the final tour cost since some companies include transportation from the U.S., while others price them from an in-country airport/starting point. While Hector Ceballos-Lascurain wrote that birding tours to developing world destinations usually cost less than \$200 per person per day, which suggested that these tours did not featuring luxury accommodations but

rather spent clients' money on seeing birds, these prices excluded international airfare costs (Ceballos-Lascurain 1998). Likewise, some companies don't include meals for the first and last day of the tour, while others are all-inclusive and include all meals, tips, admission fees, ground transportation, etc. (Dunne 2001). In order to calculate total costs of evaluated tours, the advertised cost of a tour was obtained. Then the following estimated costs were added in if they were not included: 1) transportation costs to the starting point/from the ending point (assuming customers came from Kalamazoo), 2) any meals, 3) guide/escort tips, and 4) admission/entry fees. Then to compare tours of varying lengths, the average cost/day was calculated for our 23 international, 20 domestic, and 9 Great Lakes regional birding tours, which equaled \$326.86, \$260.54, and \$192.84 respectively.

Transportation costs to the tour starting point and from the tour ending point needed to be added for most tours. 49 out of the 52 examined tours did not include transportation costs to reach the tour. Only one tour examined, Michigan Audubon's Eastern Europe tour, included transportation to an overseas destination (from Detroit). In contrast to other international or domestic tours offered by operators with a geographically diverse customer base, only Michigan Audubon, whose members and tour customers predominantly came from Michigan, could logically offer transportation from a single location its customers could access. As such, it could negotiate a lower group airfare from Detroit to a more expensive European destination than travelers could find on their own. However, not all of Michigan Audubon's tours offered transportation from Michigan. Its Southeast Arizona one did not, in order to give customers the flexibility to use frequent flier miles, leisurely drive, and/or stay longer in the surrounding area, visit relatives or friends, or participate in programs such as Elderhostel.

Tours varied in the level of services included. Some provided all meals during the tour, while others only included those meals specified in the itinerary. All except one tour included admission and entry fees in the tour price. This tour, which had the lowest cost per day, did not include admission or ground transportation to Point Pelee Provincial Park. All tours did include accommodations,

which in approximately 70% of the evaluated tours were in hotels or motels, rather than in resource-based ecolodges or intimate, adventure-type accommodations that ecotourists are interested in (Wight 1997). Birding tours provide comfortable, if not rustic or first-class, accommodations that are available in the sometimes out-of-the-way places rare bird species can be found.

The inclusiveness of tips for tour leaders, local guides and escorts proved to be the most ambiguous cost. Some tours indicated that guide tips were not included or were optional. Others did not list guide and leader tips in the tips that were included in the tour price. Thus for these tours, a \$4 per leader/per day tip was added to the cost of the tour. Other tour tipping policies were somewhat fuzzy. For instance, VENT's tour itineraries noted, "Tipping (restaurants, porters, drivers, and local guides) is included on VENT tours. However, if you feel your VENT leader(s) or any local guides have given you exceptional service, it is entirely appropriate to give them a tip. We emphasize that such tips are not expected and are entirely optional" (Victor Emanuel Nature Tours 2001a). KingBird's tipping policy also was ambiguous, stating on one hand, "All gratuities to hotel staff, waiters, local guides, drivers, etc. are included. Your tour leader is paid a salary and does not expect tips. Thus, it is not necessary to tip anyone on the entire tour." But then this statement is followed by, "However if you wish to tip anyone for special services or because you like them, it is quite all right" (KingBird Tours 2001). Given the ambiguous message on tipping, for these tours the \$4 per leader per day tip was also added. Only on tours which stated that leader tips were included, were unambiguously all-inclusive, or specifically directed that tips not be given (i.e. Smithsonian Study Tours stated that "The Smithsonian study leader and representatives are professionals who do not receive tips.") were no tips added to the advertised tour cost. While tipping is a personal choice, when expected as a norm for guides or leaders that depend on them for remuneration, tips can add a few hundred extra dollars to the out-of-pocket costs for longer tours with multiple leaders and local guides.

Company size and length of operation

The size of the birding tour company and its length of operation impact both tour costs and the

level of service. According to Pete Dunne, smaller companies can offer lower rates because they have fewer staff members and less overhead. But on the other hand, larger companies can offer a higher level of service, organization, and security. Dunne notes that large companies have the clout to obtain rooms in hot birding spots with temporal peaks in visitation (i.e. during times of migration or ideal weather). The length of time a company has been in operation is usually directly correlated to quality and success (Dunne 2001). Given the relatively low barrier to entry especially since the advent of the World Wide Web, the length of operation can separate long-term success stories from new entrants with limited expertise that stay in business for a few years. Length of business operation also reflects customer satisfaction leading to repeat business, which is important to profiting from this high-end tourist niche.

Evaluated tours included both small and large operators. On one end of the spectrum, large dominant operators such as VENT, Wings, and Field Guides, which were represented in the international, national and Great Lakes region tour categories, have been providing guided tours for 27, 30, and 17 years respectively. These operations have separate office and field staff. With smaller operators, the owners, tour leaders, and office staff were the same individuals. These smaller operators were niche players that specialized in particular regions, types of birds, or additional cultural or ecological themes. Non-profits ranged from nationwide organizations like the ABA and National Audubon Society, state organizations (i.e. state Audubon chapters), to nature centers with local membership bases.

Age/Fitness Level of Tour Participants

From the literature and our evaluated tours, birding is an activity driven by the baby boomers and seniors. While some of the surveyed birding tours indicated that adults of all ages go on their tours so as to not limit their potential clientele, overwhelmingly the average tour clientele consisted of baby boomers through seniors. On certain tours such as Field Guides' Virginia and the Carolina Capes and Montana Dude Ranch Birding, the average ages of tour participants ranged from 60-70 years and 70-80 years respectively. These individuals had the time and disposable income for birding tours.

Given the mature clientele, tour operators indicated the level of physical activity involved in their tours so that participants could make appropriate vacation decisions. Choosing a tour appropriate to one's fitness level can foster participants' enjoyment and safety. Tours indicated physical activity consisted of moderate, leisurely walking or more strenuous hiking. In the case of Field Guides' France: Camargue & Pyrenees tour, more detailed information was provided. This tour would be easy-going in Camargue and LaCrau, but would involve some steeper sections in the Pyrenees. However, the pace would be slow enough in the latter so as to present little difficulty to anyone in reasonable health and used to some regular walking (Field Guides Incorporated n.d.). In addition to indicating the level of physical exertion, KingBird additionally noted that its tours could be tiring as one could spend a half-hour standing quietly when a special bird shows up and as there is no letup to the birding, long days, and long drives to get to birds (KingBird Tours n.d.). From the information provided, clients can decide whether the tour would be appropriate given their health and fitness level.

Policies Regarding Children on Tours

Guided birding tours have varying policies regarding allowing children on tours. The intense nature of birding tours, requiring patience, attention and quiet in order to see desired bird species, may make these tours fit imperfectly into the trend towards multi-generational travel (Gardyn 2001). Of the evaluated birding tours, 60% of respondents (27 tours) gave a conditional yes to allowing children on tours depending on children's 1) age (above 8, 12, 14, or 18 years and accompanied by adults) (21 tours), 2) not being disruptive (2 tours), 3) being interested/dedicated birders (2 tours), or depending on 4) the approval of the leader (2 tours).

Of the big three birding tour operators, the enthusiasm for having children on tours varied. Wings appeared guarded regarding including children saying, "Tours are geared to adults and adult attention spans. Most children, even teenagers, don't have the attention span or staying power to withstand the pace, activities of our bird watching tours. There is the rare teen who is a keen birdwatcher and who would enjoy our tours, and we actively encourage young birdwatchers, but

generally, we ask anyone considering bringing a child on a tour to call and discuss it with us.” Wings noted one of its tours “really isn’t a milieu that most children would enjoy or do well in.” VENT indicated that children over 14 when accompanied by their parents could go on tours, but suggested that “Most children go on designated family tours (especially the cruises) geared toward families with children 8 years and over. VENT also offers youth birding camps in the summer.” Field Guides noted that they have allowed some older children (>12 years of age) who were keen birders to go on tours, but that its tours were not appropriate for small children or children not interested in birding all day, every day. While multi-generational travel is a growing trend in leisure travel, most birding tours were planned with adults in mind. The major birding tour operators wanted to ensure the core customers indicated by 40 of the evaluated tours, couples and/or singles without accompanying children, were satisfied seeing birds. If children were not mature or dedicated birders, they could be bored and disruptive, thus scaring off birds the adults paid thousands of dollars to see.

Conclusions

Birding, one of the most popular outdoor recreation activities in the U.S., will continue to grow given psychographic and demographic trends. The subset of dedicated, affluent birders who go on specialized birding tours can select from options offered by commercial and non-profit operators that will enable them to see desired life-list birds. One non-profit offering birding tours to its geographically localized membership, the KNC, was interested in how birding tours rated on factors such as size of the tour group, leader-to-client ratios, tour leader experience, emphasis on birding versus on other activities, tour cost, and tour operator size and length of operation. Participant demographics were also examined.

In our purposive sample of regional (Great Lakes), continental U.S., and international birding tours, group tour sizes were small, which facilitated access to windows and to leaders, most of whom had more than 10 years of guiding experience. These tours were designed for intense birders, as they involved birding all day and into the night with little time devoted for other guided activities or free

time. The tour cost and level of services included in the tour price (i.e. transportation to the tour meeting point/from the tour ending point, tips, and meals) varied widely. The dominant tour operators had large staffs and longer-term operations relative to the smaller, niche operators. Average tour customers were baby boomers or seniors, traveling alone or as part of a couple without accompanying children. A majority of tours allowed children on a conditional, if unenthusiastic, basis. For the KNC, knowing what other commercial and non-profit tours offer will help it improve its marketing and development of future birding tours.

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MEASURING BIRDWATCHER PREFERENCES THROUGH IMPORTANCE- PERFORMANCE ANALYSIS

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Abstract: The Wings Over Water celebration is an annual event held in October on the coastal and Outer Banks regions of North Carolina. Wings Over Water (WOW) offers educational programs for birders, nature enthusiasts, and wildlife photographers of all ages and skill levels. A mail-back visitor survey was administered to all registered participants by the Department of Recreation & Leisure Studies at East Carolina University. This survey addressed issues relating to personal expenditures, perceptions and satisfaction rankings of various aspects of the event, demographic information, and finally, a comparison of the Wings Over Water celebration with other popular birding events. The primary purpose of this survey was to better understand who is attending this yearly birding event in terms of demographics, skill level and ability, and satisfaction levels of those in attendance. To examine the relationship between WOW specific attributes and personal preferences, an importance-performance analysis was employed. Respondents rated how important a series of individual site attributes were to their decision to visit a specific birding locale. Second, respondents rated the performance of each attribute at the site where they engaged in a WOW program. These ratings were measured on a seven-point Likert scale with a ranking of 1 being not important, 4 being neutral, and 7 being very important. Gap scores between these measures were plotted and analyzed for incongruities between importance preferences and actual performance (site-specific) attributes. Discussion focuses on the relationships between visitor demographic variables and reported importance-performance criteria.

Introduction

This paper is part of a larger study funded by North Carolina Sea Grant under the National Oceanic and Atmospheric Administration. The initial purpose of this study was to document the economic impact, and reported perceptions and satisfaction levels of the birding population visiting Eastern North Carolina. Visitor demographic information was also obtained, as well as comparative information between the overall quality of the Wings Over Water celebration and other popular birding events. The primary focus of this paper is to explore birdwatcher preferences and quantitatively measure these data through importance-performance analysis.

Eastern North Carolina is a popular region for viewing wildlife along the Atlantic Seaboard. A variety of climates and geographical landscapes offer habitat to numerous species of birds, mammals, and marine organisms. Such landscape variations include sandy beaches, pocosins, salt marshes, maritime and inland forests, and blackwater swamps. A combination of local, state, and federal agencies are responsible for the management and administration of the nearly forty wilderness/natural areas within the region.

Birdwatchers are a population segment particularly drawn to North Carolina's coastal and barrier island regions. This area is well known for its nearly 400 avian species of the Atlantic Flyway. Popular species in the area include several types of ibis, heron, and egrets, as well as brown pelicans, snow geese, tundra swans, and red-cockaded woodpeckers.

October is generally a quiet month in Eastern North Carolina relating to recreational and tourism activities. One highly popular event at this time, however, is the Wings over Water (WOW) festival: a celebration of wildlife and wildlands in Eastern North Carolina. With the high volume recreational beach season over for another year, excellent opportunities exist for those interested in nature related recreational activities. WOW offers a variety of environmental programs over a period of six days to participants of all ages and skill levels. Programs range from amateur to serious birding excursions, wildlife photography, blackwater canoeing and sea kayaking, and numerous natural history activities.

The WOW festival is a cooperative event sponsored by several state, federal, and local government agencies, as well as non-profit groups. Headed by North Carolina Sea Grant, additional participating agencies include the National Park Service, United States Fish & Wildlife Service, North Carolina Division of Parks and Recreation, North Carolina Department of Environment and Natural Resources, Outer Banks Chamber of Commerce, the Carolina Bird Club, and the Coastal Wildlife Refuge Society (CWRS). The CWRS is a regional fundraising group for the National Wildlife Refuge system. These agencies contribute to the festival's success by providing staff and volunteers, knowledgeable trip and activity leaders, financial support, and pristine wilderness areas for wildlife viewing, including access to some areas that are normally prohibited.

Review of Literature

Overview

Birdwatching is defined as a nature tourism activity. Scott (1998) defines nature tourism as discretionary travel to natural areas that conserves the environmental, social, and cultural values while generating an economic benefit to the local community. Prominent forms of nature tourism include both consumptive recreational activities such as hunting and fishing, and non-consumptive activities such as camping, hiking, and rock climbing. To qualify as a nature tourist under the aforementioned definition, one must travel a minimum of fifty miles from home to engage in the activity.

There are several societal benefits associated with nature tourism activities. A primary benefit is that participants gain a greater awareness of the values of biodiversity and conservation of natural resources. Participation in birdwatching and other nature tourism activities have also shown to improve the economic and environmental well-being of local communities (Scott, 1999; Vincent & Thompson, 2002). Additionally, public recreational and educational programs foster local and national incentives for successful protection of our natural and wilderness areas (Sekercioglu, 2002).

Birdwatcher Demographic Trends

In 1989 birdwatching was identified as the second-fastest growing recreational pastime in the country (McMath, 1989). Birdwatching is currently

reported as the fastest growing recreational outdoor activity in the United States (Cordell & Herbert, 2002). With the marked surge in birdwatching popularity, it is important that birder demographics, preferences, and behavior patterns are better understood. Overall, birders are a group of people that display high levels of loyalty to their hobby. Through hours of nature interaction and focus, there are many who experience a heightened sense of awareness and greater levels of philosophical thought relating to the natural world (Pieper, 2000; States, 2000).

A primary source of related demographic data is the U.S. Fish and Wildlife Service's National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Department of the Interior, 2001). This survey has been conducted approximately every five years since 1955. The survey provides data relating to total participation, economic expenditures, and time spent engaged in fishing, hunting, and other wildlife-associated activities. The survey is the only nation wide study of its kind that provides individual comparative data for all fifty states.

In total, a reported 82 million people over the age of 16 participated in some form of wildlife-associated recreational activity during 2001 in the United States. Of this number, just over 66 million reported participating in some form of wildlife watching activity, which includes animal feeding and photography. Total wildlife associated recreational expenditures totaled \$108 billion which is equivalent to 1.1% of the United States Gross Domestic Product. The wildlife watching segment was responsible for \$38 billion in related expenses. Birdwatchers represent the largest consumer group for binoculars. Currently, birdwatchers are responsible for 30% of total binocular sales (Dolesh & Baicich, 2003). The U.S. Fish and Wildlife Service survey also provides certain comparative information between the 1996 and 2001 survey findings. A total of 31% of the U.S. population reported wildlife watching related activities in 2001. This was a 5% increase since 1996. Although the U.S. has experienced an overall population rise, it still remains a significant increase.

To better understand birdwatcher demographic composition, a study was conducted comparing waterfowl hunters and birdwatchers in Texas

(Adams, Leifester, & Herron, 1997). The research identified certain similarities between the two groups. Both groups must stalk the animals they seek. Related to this, both groups keep trophies whether in the form of a species addition to a bird list or a successful kill. Additionally, both groups have established goals, have the ability to degrade natural habitats if present in large numbers, and are willing to spend considerable amounts of money related to their leisure pursuits. Demographic information revealed the mean age of birders as 56. Approximately 1/3 of birders were over the age of 65. Nearly 100 percent of birders and waterfowl hunters were White. Of the <1 percent of other respondents, none were Black. Over 74% of birders reported having a bachelor's degree or higher level of education, and 53% of birders reported family incomes of >\$50,000 per year (Adams et al, 1997).

While there is certainly a large population of serious birdwatchers, many novice birders also find enjoyment in the activity but do not necessarily view it as a serious leisure activity (Kim, Scott, & Crompton, 1997). This group can be categorized as casual birders. Specifically, a casual birder is one who finds enjoyment in birdwatching related travel and activities, but prefers to combine it with other activities such as shopping, dining, or special events. With the large number of casual birders, the majority of birdwatcher activities occur close to home (Scott, 1999). As a result, local parks and natural areas receive a large portion of birders. Park staff should take every measure to ensure a satisfied birder population. Birders have been reported as some of the greatest park assets: "they don't litter, they report unsafe conditions, and they are some of the best volunteers" (Dolesh & Baicich, 2003, p. 48). Certain park related equipment and materials have been correlated to increased birder satisfaction. Outdoor related items include well-marked, accessible trails, quality signage, observation towers, and observational blinds. Other related items include quality, detailed maps, site-specific bird checklists, and postings of recently sighted species in the area.

Importance-Performance Analysis

Importance-Performance Analysis is an evaluative tool originally created to further develop effective marketing strategies (Martilla & James, 1977). The creators claim that there is a need to take a

two-part approach to customer satisfaction: first, determine what attributes are important to customers, and second, determine how well the agency performs on the same attributes. Several outdoor recreation-related studies have been conducted using Importance-Performance Analysis as a monitoring mechanism to ensure high levels of customer satisfaction (O'Leary, Adams, & Parker, 1981; Guadagnolo, 1985; Hollenhorst, Olson, & Fortney, 1992; Hudson & Shephard, 1998).

Study Methods

Study Area

The WOW festival area is dispersed across several hundred square miles of Eastern North Carolina's mainland and outer banks regions. The festival sites extend from Corolla to Ocracoke Island from north to south, and from Creswell to Cape Hatteras west to east. The National Park Service hosts many activities at locations on Cape Hatteras National Seashore, including the Ocracoke Island Lighthouse, Oregon Inlet, Cape Hatteras Lighthouse, and Bodie Island Lighthouse. The U.S. Fish and Wildlife Service also hosts several activity sites at the Alligator River, Pea Island, and Mattamuskeet National Wildlife Refuges. Under the management of the North Carolina Division of Parks and Recreation, Jockey's Ridge State Park serves as both an activity host site and the festival information and registration center. Additionally, several area schools and community centers were utilized for WOW programs and meeting points. Strategic planning is required on the part of program participants in terms of driving time from site-to-site. Driving time ranges from a few minutes to several hours between activity sites. WOW participants are reminded consistently throughout the festival to plan ahead for the logistical challenges of traveling to the remote wilderness areas in Eastern North Carolina.

Visitor Survey

Data was collected by means of a mailback questionnaire. The surveys were distributed to the participants as part of their registration packet of materials on the day they arrived to the festival (N=141). Following each session, trip leaders would remind participants of the importance of the survey and encouraged them to complete it following their last scheduled activity. Trip leaders also offered to collect any completed surveys before the participants returned home. Several drop-

boxes and collection points were also set up throughout the festival area to assist in survey collection. The surveys were self-addressed for the convenience of the respondents. Several additional mailings were administered to all non-respondents. Using a modified Dillman approach (1978), a total of 63 mailback questionnaires were obtained. This yielded an overall response rate of 44.7 percent.

The survey instrument was composed of several items relating to the WOW festival. Demographic data was collected regarding gender, ethnicity, education, age, and annual household income. Second, an economic impact section attempts to break down total expenditures into specific individual categories. Categories include site specific expenditures such as registration fees, food and beverages, souvenirs, and birding items. Expenditures recorded outside of the festival were also recorded. Items include lodging, food and beverage from grocery stores and restaurants, gifts and souvenirs, and vehicle related items such as fuel, oil, and repairs. Finally, visitors were asked to rank the importance of 32 specific variables relating to their preferences in wildlife based recreation. Variables focused on aspects of nature, travel, hospitality/amenities, and recreational activities. These items were ranked on a seven-point Likert scale with 1 = not important, 4 = neutral, and 7 = very important. Following, participants were asked to report how satisfied they were at the WOW festival region based on the same 32 variables. Again, items were ranked on a seven-point Likert scale with 1 = very dissatisfied, 4 = neutral, and 7 = very satisfied. Gap scores between these measures were plotted and analyzed for incongruities between importance preferences and actual performance (site-specific) attributes. Gap scores were obtained by subtracting the reported performance scores from the importance scores. If the difference was positive, performance fell short of importance. If the difference was negative, performance exceeded importance. If there was no difference, performance was equal to importance.

Study Findings

A profile of the sample population, including age, gender, group size, distance traveled, and first-time visitor status is shown in Table 1. The mean age of the sampled group was roughly 57. Approximately sixteen percent of participants reported ages greater

Table 1. — Visitor Sample Profile

Age	People Surveyed	%
25 or less	2	1.6
26-35	4	3.3
36-45	4	3.3
46-55	40	33.1
56-65	52	42.9
>65	19	15.7
Mean age = 56.77		
Gender	People Surveyed	%
Male	55	44
Female	70	56
Group Size	People Surveyed	%
By Self	9	14.3
2 people	45	71.4
3 people	1	1.6
4 people	5	7.9
5 people	1	1.6
Mean Group Size = 2.08		
Travel Distance in Miles	People Surveyed	%
<100	2	4
100-150	5	9
151-200	9	15
201-250	7	13
251-300	9	15
301-400	7	13
401-500	1	2
>500	16	29
Median Travel Distance = 300 miles		
First Time Visitor	People Surveyed	%
Yes	44	72
No	17	28

than 65. Conversely, only six respondents (4.9%) were under the age of 35. A total of 45 respondents (71.4%) reported traveling in groups of two. Of the groups of two, nearly all were composed of one male and one female. Gender response was nearly proportionate with 44% male and 56% female. It is possible that female response rate was higher due to the high level of male-female groups of two. Many of these couples were likely husband and wife. For these groups, often only one survey was returned and it was completed by the female member. As expected the most popular state of residence was North Carolina (44%). Virginia followed with 21% of responses. Over a third of participants were from states other than North Carolina and Virginia. Other prominent resident states included Pennsylvania, New York, Georgia, and Texas. Median travel

Table 2. — Items of High Importance

Item	Imp	Perf	Gap
Places to view wildlife	6.59	6.63	-0.04
Variety of wildlife to see and/or hear	6.49	6.49	0.00
Clean Air	6.33	6.40	-0.07
Places to go on nature walks	6.12	6.36	-0.24
Friendly and helpful people in the community	5.93	6.25	-0.38
Crime-free communities	5.86	6.19	-0.33
Scenic beauty along the way	5.52	6.05	-0.53
Good restaurants	5.25	5.78	-0.53
Availability of interesting places to visit	5.12	6.04	-0.92
Ease of parking	5.02	5.84	-0.82

Table 3. — Items of Moderate Importance

Item	Imp	Perf	Gap
Places to observe wildflowers	4.98	5.24	-0.26
Close to the water	4.93	6.42	-1.49
Availability of motels	4.92	5.22	-0.30
Availability of nature education programs	4.88	5.81	-0.93
Good roads	4.83	5.53	-0.70
Availability of 24-hour medical facilities	4.68	5.11	-0.43
Quaint small towns	4.53	5.30	-0.77
Driving time	4.47	4.71	-0.24
Places to photograph wildlife	4.41	5.76	-1.35
Availability of historic sites	4.40	5.45	-1.05
Availability of marine life tours	4.22	4.85	-0.63

distance to the WOW festival was 300 miles. The majority of participants (87%) traveled distances farther than 200 miles to visit the WOW festival. Approximately 30% of visitors traveled distances 500 miles or greater. There was a high rate of first-time visitors (72%).

Table 2 identifies items that were reported as highly important by WOW participants (scores > 5). As can be seen from the gap scores, performance (Perf) equaled or exceeded all visitor importance (Imp) rankings. Items of high importance are primarily possessing natural themes, such as places to view wildlife, variety of wildlife, clean air, and places to go on nature walks. Other areas focus on attributes of the host communities, such as friendliness of people, low crime rate, ease of parking, and good restaurants.

Table 4. — Items of Low Importance

Item	Imp	Perf	Gap
Places to canoe and/or kayak	3.86	5.62	-1.76
Availability of local crafts	3.33	4.69	-1.36
Places to shop	3.21	4.84	-1.63
Availability of 24-hour banking	3.04	4.51	-1.47
Availability of bed and breakfasts	2.52	4.15	-1.63
Availability of antique dealers	2.05	4.03	-1.98
Places to go fishing	2.00	4.62	-2.62
Availability of recreational vehicle camping	1.91	4.30	-2.39
Places to golf	1.61	4.22	-2.61
Availability of primitive camping	1.53	4.24	-2.71
Places to go hunting	1.11	3.92	-2.81

Items possessing moderate importance to visitors possess scores ranging from 4.00 -4.99. These items are a mix of educational opportunities (marine life, historic sites), and travel/hospitality related variables (good roads, driving time, quaint small towns, etc.). Certain items also relate again to natural components such as vicinity to water and places to photograph wildlife. Table 3 offers specific scores related to these items. Though the importance of these items was only reported as moderate, the level of performance exceeded importance scores.

Items of low importance range in score from 1.00 to 3.99. Several low importance items relate to shopping, such as places to shop, 24-hour banking, and availability of antique dealers. Other items relate to outdoor recreation, such as places to camp, fish, canoe, kayak, golf and hunt. A summary of low importance items can be observed in table 4.

Several nature/environmental related items were found to possess the highest importance and performance levels of WOW participants. The highest ranking variables on both axes were variety of wildlife, places to view wildlife, and places to go on nature walks. No nature related item possessed a score less than 4 or performed below a score of 5. Figure 1 is a plot of all nature/environmental items under observation.

Travel and amenity related items possess relatively high scores on all variables relating to performance. The only exception is the variable of 24-hour banking availability.

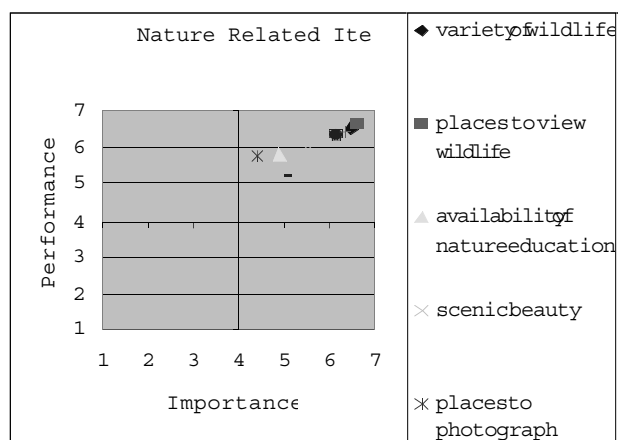


Figure 1. Importance-Performance Plot of Nature Related Items

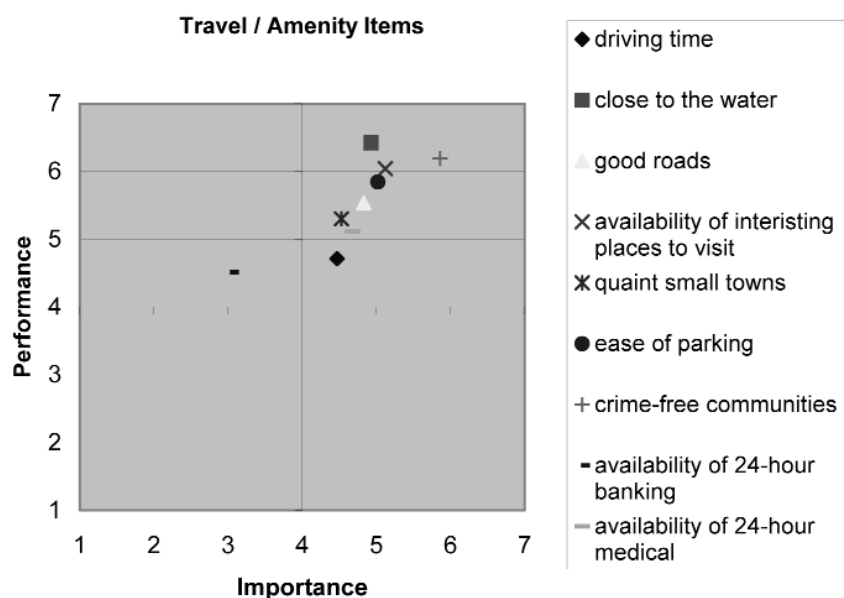


Figure 2. Importance-Performance Plot of Travel/Amenity Items

In regards to importance, all variables received somewhat neutral rankings. These items are plotted below in Figure 2.

Shopping and hospitality items are the first group where low scores are reported relating to importance. Variables relating to antique dealers, bed and breakfasts, local crafts, and places to shop are all neutrally important and perform neutrally as well. Items receiving the highest rankings in this category are friendliness of communities, good restaurants, and availability of motels. These items can be seen in Figure 3.

The final plot (Figure 4) relates to outdoor recreational variables. As shown, these items were reported as least important. The majority of these items performed neutrally as well. The only exceptions, with moderately high performance rankings were places to canoe/kayak, availability of historical sites, and availability of marine life activities. Variables of fishing, hunting, and golf possessed little importance at all to WOW participants.

Conclusions

Overall, WOW birders displayed relatively high satisfaction levels relating to all variables of the

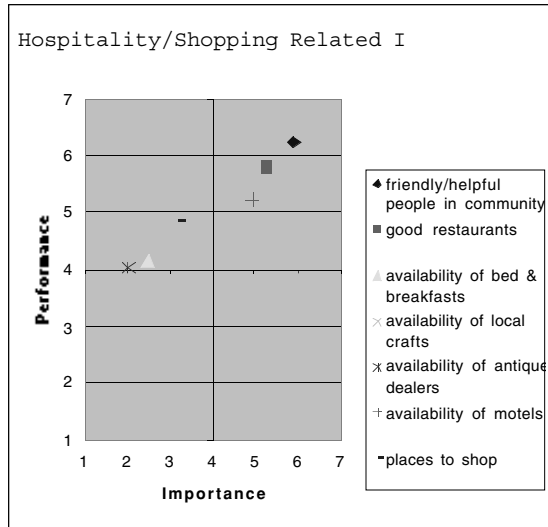


Figure 3. Importance-Performance Plot of Hospitality/Shopping Related Items

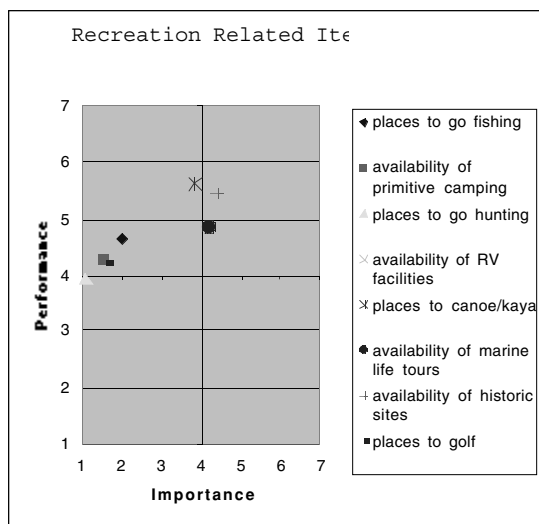


Figure 4. Importance-Performance Plot of Recreation Related Items

importance-performance analysis. The sample population is primarily composed of casual birders, and 96% are classified as non-residential birdwatchers (traveled a minimum of ten miles from their permanent residence to participate). Attributes most important to the WOW birding population related to natural settings, access to restaurants, and safe, friendly communities. Items possessing the least amount of importance to the sampled population were shopping and outdoor activities such as golfing, hunting, and fishing. Birdwatching is generally a non-consumptive, environmentally friendly activity. Perhaps this

population is deterred from more consumptive forms of outdoor recreation. Overall, there is a significant pattern of highly important attributes possessing high performance scores. These performance scores gradually decrease as attributes become less important to the participant.

Implications for Application

Although coastal/outdoor recreational activities were not found to be highly important in this study, they should not be discounted due to the multi-faceted nature of bird and wildlife watchers. The majority of the WOW population (59%) was over the age of 55, which perhaps influenced the preference for specific outdoor recreational activities. It is important for coastal resource managers and recreational service providers to understand the diversity of their potential customers and attempt to cater to the needs of all population segments. Community-specific variables such as friendliness and helpfulness of local citizens, cleanliness, and public safety are of tremendous value in creating satisfaction within the WOW birding community. It is fortunate that the North Carolina Outer Banks region performs highly in visitor satisfaction among the birdwatching community. However, a creative approach should be taken in the frequent changing of programs, outdoor excursions, and session leaders to offer incentives for repeat visitation to the Wings Over Water festival. Several written comments of the survey focused on certain programs being repetitive, or having the same content as previous years. This is a likely explanation for the overall high satisfaction, yet low repeat visitation with 72% of respondents reporting to be first time visitor.

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ONLY “REAL DIVERS” USE NEW YORK’S GREAT LAKES¹

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Abstract: Great Lakes divers pride themselves in being hardy, tough, and robust in order to dive under innately challenging environmental conditions, suggests qualitative focus group data collected from New York SCUBA divers. Since Great Lakes participants tend to dive in both fresh and saltwater, dive three or four seasons a year, belong to dive clubs, and subscribe to dive magazines more often than other divers, it was hypothesized that these segments of divers would report lower degrees of constraints. In 1999, a total of 869 New York State divers returned mail surveys (37% response rate). Divers with Great Lakes experience did report significantly lower constraint levels for 7 of 11 factors than divers who had not used these lakes. All other hypothesized relationships were also supported; divers using both fresh and saltwater tended to experience constraints to a lower degree (differing significantly on 6 factors), as did year-round divers (10 factors), dive club members (6 factors), and magazine subscribers (7 factors), with one exception: magazine subscribers experienced higher degrees of constraint for conflict with other users. These results suggest that Great Lakes divers are able to negotiate perceived constraints more successfully than other types of divers, supporting the notion that they are a hardier and more robust “breed.” In addition, dive clubs and magazines also seem to be associated with lower levels of constraint, suggesting their socializing, supportive, and educational influence on divers.

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Introduction

Self-Contained Underwater Breathing Apparatus (SCUBA) divers, tourism professionals, and community developers are concerned with the use of New York’s Great Lakes, where increased interest in diving has been credited to the presence of well-preserved shipwrecks and better water clarity. However, a number of factors may be inhibiting, limiting, or causing divers to cease participation. As viewed by Crawford, Jackson, and Godbey (1991), these leisure constraints can be hierarchically arranged at different levels (intrapersonal, interpersonal, and structural). Although constraints potentially affect leisure preferences and participation, they can be overcome or reduced; in theory, one level must be absent or negotiated before the next is faced.

In previous work, Todd and Graefe (2000) established a relationship between level of diving development and perceived constraints. First, Todd (2000) combined two theories (Bryan’s 1979 theory of specialization, and Stebbins’ 1992 concept of “serious leisure” and amateur/professional growth) to operationalize level of development as a single measure. A curvilinear relationship was established between a self-selected category and seven key variables. Mean index scores for equipment owned, knowledge, experience level, perceived skill, frequency of participation, commitment, and amateur/professional growth tended to increase from beginners to experts and then decrease for post-experts. Todd and Graefe (2000) then established a second curvilinear relationship: the mean degree and number of perceived constraints was highest for beginner SCUBA divers, steadily declined to experts, and then increased again for post-experts.

Diving inherently presents constraints related to intrapersonal physical health (e.g., strength to carry heavy specialized gear), the interpersonal necessity for partners (e.g., a diving buddy), and structural training (e.g., certification).

Additionally, the Great Lakes innately lack warm water temperatures, tropical views of colorful reefs or exotic fish, and easy access. In fact, qualitative data collected from six focus groups of New York Great Lakes Region divers suggest that Great Lakes divers pride themselves in being hardy, tough, and robust in order to dive under such conditions. One diver noted that a very small

percentage of people actually stay diving in the Northeast. “Down in Florida, dive shops are in every shopping mall. Here you’ve got to be more interested in it, have more dedication, to overcome the lack of ease to dive. Here you get cold, dirty water and shorter seasons; you could dig a hole in the ice, but you’ve really got to be dedicated!” In addition, an observer recorded the following: “These particular divers seemed to pride themselves on being hearty. Divers here also don’t seem to be as timid personality-wise as those who dive only in the Caribbean. One diver, referring to diving in the Caribbean, asked, ‘If it was that much easier, would we want to do it?’ He believes there is a real attraction to the risk, difficulty, thrill and challenge of diving here in the North.” Another diver summed it up by noting that resort divers (characterized as traveling to the Bahamas or the Caribbean to dive once or twice a year) are just not “real” divers.

Also touted by key informants was the influence of socializing structures (e.g., dive clubs and magazines) to help divers overcome various constraints. Focus group data included the following observations and direct quotes: After 5 to 20 dives, a diver is competent. This is where the industry fails people: there are no programs after the initial certification. There is where clubs fit in, by offering advanced courses and certifications to overcome basic skills. “You develop to a certain point and then you’re ready to move on.” The club helps hone skills and investigate other areas. Shops offer courses, but clubs offer opportunities for trips to let you “get wet and see what’s out there.” In order to keep developing, you need to stay involved with an organization. Development “fizzles” when you can’t get a group together to go with, can’t find a place to go, can’t get organized about what to dive for, etc.

In a related study, Todd and Graefe (2002) examined differences in environmental beliefs, ascriptions of responsibility, and management preferences for underwater cultural resources among various groups of SCUBA divers. They found that segmenting divers based on type of water (salt versus freshwater), previous diving experience in New York’s Great Lakes, dive club membership, and dive magazine subscription revealed different sensitivities to environmental beliefs and management preferences. Specifically,

Table 1. — Chi-square results: Level of development by previous diving experience in New York’s Great Lakes.

Count Column %	Has Gone Diving in NY’s Great Lakes during Lifetime		Row Total
	Yes	No	
Beginner	60 (11.7)	138 (41.3)	198 (23.4)
Intermediate	143 (27.9)	124 (37.1)	267 (31.5)
Advanced	193 (37.6)	57 (17.1)	250 (29.5)
Expert	72 (14.0)	5 (1.5)	77 (9.1)
Post-expert	45 (8.8)	10 (3.0)	55 (6.5)
Column Total	513 (60.6)	334 (39.4)	847 (100.0)

Number of missing observations: 22

Chi-square = 155.76 (p<.001)

Table 2. — Chi-square results: Type of water by previous diving experience in New York’s Great Lakes.

Count Column %	Has Gone Diving in NY’s Great Lakes during Lifetime		Row Total
	Yes	No	
Freshwater Only	117 (22.5)	85 (26.4)	202 (24.0)
Saltwater Only		69 (21.4)	69 (8.2)
Both Fresh & Saltwater	403 (77.5)	168 (52.2)	571 (67.8)
Column Total	520 (61.8)	322 (38.2)	842 (100.0)

Number of missing observations: 27

Chi-square = 131.50 (p<.001)

saltwater divers tended to be significantly more environmentally conscious and supportive of invasive management actions; divers who had used New York’s Great Lakes were more critical of government support, less environmentally conscious, and less supportive of invasive management actions; and dive club members and dive magazine subscribers held stronger beliefs about governmental management of underwater resources.

Table 3. — Chi-square results: Number of seasons by previous diving experience in New York's Great Lakes.

Count Column %		Has Gone Diving in NY's Great Lakes during Lifetime		Row Total
		Yes	No	
Number of Seasons Gone Diving in Typical Year	1	142 (27.6)	191 (58.6)	333 (39.6)
	2	99 (19.2)	77 (23.6)	176 (20.9)
	3	152 (29.5)	33 (10.1)	185 (22.0)
	4	122 (23.7)	25 (7.7)	147 (17.5)
Column Total		515 (61.2)	326 (38.8)	841 (100.0)

Number of missing observations: 28
Chi-square = 113.79 (p<.001)

Therefore, based on previous research and focus group comments, the purpose of this study was to investigate whether various types of divers differed significantly in terms of their levels of perceived constraints. Specifically, divers who had gone diving in New York's Great Lakes were compared to those who did not have previous experience in these bodies of water. In contrast to other divers, it was found that Great Lakes participants were more likely to have reached higher levels of development (38% advanced, 14% expert, and 9% post-expert compared to just 17%, 2% and 3% in the same respective categories for non-Great Lakes divers - see Table 1), dive in both fresh and saltwater (Table 2), dive three or four seasons a year (Table 3), belong to dive clubs (Table 4), and subscribe to dive magazines more often (Table 5).

However, since New York's Great Lakes divers were not exclusive to these categories, perceived constraints were also compared among those segments of divers. It was hypothesized that divers who are New York's Great Lakes-experienced, use both fresh and saltwater, dive four seasons, are club members and magazine subscribers would report experiencing lower degrees of constraints than other divers.

Methods

Data were gathered using two methods: focus group interviews and a mail survey. In June 1999,

Table 4. — Chi-square results: Club membership by previous diving experience in New York's Great Lakes.

Count Column %		Has Gone Diving in NY's Great Lakes during Lifetime		Row Total
		Yes	No	
Currently Member of Dive Club(s)	Yes	199 (38.9)	57 (17.2)	256 (30.4)
	No	313 (61.1)	274 (82.8)	587 (69.6)
Column Total		512 (60.7)	331 (39.3)	843 (100.0)

Number of missing observations: 26
Chi-square = 44.55 (p<.001)

Table 5. — Chi-square results: Magazine subscription by previous diving experience in New York's Great Lakes.

Count Column %		Has Gone Diving in NY's Great Lakes during Lifetime		Row Total
		Yes	No	
Currently Subscribes to Dive Magazine(s)	Yes	245 (47.6)	101 (30.9)	346 (41.1)
	No	270 (52.4)	226 (69.1)	496 (58.9)
Column Total		515 (61.2)	327 (38.8)	842 (100.0)

Number of missing observations: 27
Chi-square = 23.00 (p<.001)

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

Table 6. — Results of factor analysis of constraint items (principal components extraction, varimax rotation).

CONSTRAINT CATEGORY • Factor Name <i>Sample Items</i>	Total Number of Items	Eigen value	Proportion of Variance Explained	Mean Scale Importance Score ¹	Cronbach's Alpha
INTRAPERSONAL CONSTRAINT FACTORS	14		29.2%		
• Personal discomfort <i>Uncomfortable in the water and/or diving</i> <i>Lack of confidence, skill, knowledge, and/or experience</i> <i>Claustrophobia, fear, panic, and/or disorientation</i>	7	12.31	23.2%	1.42	.88
• Health problems <i>Health problems (asthma, diabetes, eyesight, ringing in ears)</i> <i>Age (too old)</i> <i>Lack of physical strength, stamina, conditioning</i>	6	2.08	3.9%	1.45	.81
• Burnout	1	1.13	2.1%	1.38	--
INTERPERSONAL CONSTRAINT FACTORS	11		9.8%		
• Conflict with other users <i>Interference from boaters/jetskiers</i> <i>Interference from fishermen</i> <i>Dive sites too crowded with other divers</i>	4	2.54	4.8%	2.55	.87
• Dive partner interference <i>Uncomfortable with dive buddy's behavior or skill</i> <i>Instructor's use of poor teaching techniques</i> <i>Can't find people to dive with</i>	4	1.36	2.6%	1.94	.73
• Family interference <i>Lack of on-site activities for non-diving spouses/children</i> <i>Lack of support/approval from family and/or friends</i> <i>Family obligations</i>	3	1.28	2.4%	2.53	.74
STRUCTURAL CONSTRAINT FACTORS	25		31.7%		
• Accessibility <i>Lack of cost of charter boats</i> <i>Lack of shore diving access</i> <i>Fees (entrance, docking, launching)</i>	8	4.21	8.0%	2.29	.84
• Water/weather conditions <i>Poor visibility/water clarity</i> <i>Currents and/or tides</i> <i>Bad weather (chop, wind, cloudy/overcast)</i>	5	2.88	5.4%	2.68	.85
• Lack of attractive features <i>Lack of shipwrecks in water depths I'm comfortable diving in</i> <i>Lack of pristine/protected dive sites</i> <i>Lack of interesting natural features (rock formations, fish)</i>	4	1.94	3.7%	2.30	.84
• Equipment issues <i>Equipment not working/in need of repair</i> <i>Cost of purchasing/renting equipment</i> <i>Equipment doesn't fit comfortably, is too heavy, or is bulky</i>	5	1.77	3.3%	1.93	.73
• Lack of time <i>Lack of free time</i> <i>Other hobbies/recreation/leisure activities</i> <i>Paid employment obligations</i>	3	1.18	2.2%	3.62	.51

¹Values are mean scores on a 7-point scale ranging from does not hinder me at all (1) to stops me completely (7).

Table 7. — Constraint factors analyzed by New York's Great Lakes experience.

Factor(n=842)	Total (n=520)	Has Gone Diving in NY's Great Lakes during Lifetime		
		Yes (n=349)	No t-value ¹	
INTRAPERSONAL CONSTRAINTS	1.43	1.36	1.55	4.17**
Personal discomfort	1.43	1.32	1.58	4.98**
Health problems	1.44	1.39	1.54	2.53*
Burnout	1.38	1.37	1.41	0.57
INTERPERSONAL CONSTRAINTS	2.32	2.29	2.37	1.12
Family interference	2.53	2.51	2.55	0.39
Dive partner interference	1.95	1.80	2.15	4.50**
Conflict with other users	2.53	2.61	2.46	1.41
STRUCTURAL CONSTRAINTS	2.47	2.31	2.69	6.14**
Accessibility	2.30	2.21	2.42	2.41*
Water/weather conditions	2.69	2.43	3.07	6.69**
Lack of attractive features	2.31	2.19	2.47	2.96**
Equipment issues	1.94	1.71	2.27	7.43**
Lack of time	3.62	3.56	3.71	1.64

Values are mean scores on a 7-point scale ranging from does not hinder me at all (1) to stops me completely (7).

¹ t-values are a result of independent t-tests (*p<.05, **p<.01).

This 16-page questionnaire was then mailed to a sample of 2850 New York State divers. To generate this sample, a database of approximately 6700 addresses was compiled from various sources, including a national certifying, a statewide organization, a dive symposium, a dive shop, a non-profit organization, and four dive clubs. Addresses were stratified by major regions across the state. Since primary emphasis from the funding agency (New York Sea Grant Institute) was placed on contacting divers closest to the Great Lakes, all names from some regions were included, while a random selection process was used for other regions. The first mailing took place in October 1999, followed at two-week intervals by reminder postcards and a second survey mailing to non-respondents.

For purposes of this study, respondents were asked to rank 53 diving-related constraints on a 7-point scale ranging from does not hinder me at all (1) to stops me completely (7). In previous work, factor analysis (principal components method of extraction, varimax rotation) reduced 50 of these constraints into 11 factors (explaining 62% of the variance and having acceptably high Cronbach's alpha scale reliabilities). As shown in Table 6, three of these factors were intrapersonal in nature: personal discomfort (containing 7 items), health problems (6), and burnout (1); three factors were interpersonal: conflict with other users (4), dive partner interference (4), and family interference

(3); and five factors were structural: accessibility (8), water/weather conditions (5), lack of attractive features (4), equipment issues (5), and lack of time (3). Three individual items were dropped from subsequent analysis due to low factor loadings and lack of congruity/reliability with emerging themes.

For independent variables, previous experience diving in New York's Great Lakes (an area operationally defined as the two Great Lakes that border New York State: Erie and Ontario, plus the two rivers that feed into them: the Niagara and St. Lawrence) was dichotomously coded as "yes" or "no." The variable type of water was created by recoding where respondents had gone diving during their lifetimes into three categories: freshwater only, saltwater only, or both fresh and saltwater. Respondents were also asked to identify which seasons they dive during a typical year; counts resulted in categories ranging from one to four seasons. Both current memberships in dive clubs and current subscriptions to dive magazines were also dichotomously coded ("yes" or "no").

One-way analysis of variance was used to determine if a difference existed among mean scores for each constraint factor by type of water as well as by number of seasons.

To compare the differences between mean scores for each pair of diver categories or segments, Tukey's Honestly Significant Differences (HSD)

Table 8. — Constraint factors analyzed by type of water.

Factor	Total only (n=202)	Type of Water Gone Diving in during Lifetime			F-value ¹	# of differences detected
		Freshwater only (n=69)	Saltwater (n=571)	Both waters (n=842)		
INTRAPERSONAL CONSTRAINTS	1.43	1.54a	1.50ab	1.39b	4.07*	1
Personal discomfort	1.43	1.60a	1.52ab	1.35b	8.61**	1
Health problems	1.44	1.47	1.53	1.43	0.60	n.s.
Burnout	1.38	1.41	1.24	1.39	0.98	n.s.
INTERPERSONAL CONSTRAINTS	2.32	2.44	2.23	2.28	2.30	n.s.
Family interference	2.53	2.61	2.55	2.51	0.42	n.s.
Dive partner interference	1.95	2.21a	1.92ab	1.83b	9.06**	1
Conflict with other users	2.53	2.53	2.32	2.57	0.86	n.s.
STRUCTURAL CONSTRAINTS	2.47	2.51ab	2.76a	2.40b	5.82**	1
Accessibility	2.30	2.34	2.41	2.25	0.79	n.s.
Water/weather conditions	2.69	2.50a	3.54b	2.64a	15.21**	2
Lack of attractive features	2.31	2.14a	2.67b	2.31ab	3.79	1
Equipment issues	1.94	2.34a	2.10a	1.76b	23.37**	2
Lack of time	3.62	3.81a	3.54ab	3.56b	3.01*	1

Values are mean scores on a 7-point scale ranging from does not hinder me at all (1) to stops me completely (7).

¹ F-values are a result of one-way analysis of variance (*p<.05, **p<.01); means with different superscripts are significantly different at the .05 level using Tukey-HSD post hoc test.

Table 9. — Constraint factors analyzed by number of seasons.

Factor	Total (n=842)	Number of Seasons Gone Diving during Typical Year				F-value ¹	# of differences detected
		One (n=327)	Two (n=172)	Three (n=180)	Four (n=143)		
INTRAPERSONAL CONSTRAINTS	1.43	1.54a	1.50a	1.30b	1.24b	10.19**	4
Personal discomfort	1.43	1.58a	1.48ab	1.27b	1.15c	14.69**	3
Health problems	1.44	1.51ab	1.55a	1.33bc	1.30c	4.72**	3
Burnout	1.38	1.39	1.39	1.35	1.40	0.11	n.s.
INTERPERSONAL CONSTRAINTS	2.32	2.39a	2.39a	2.40a	2.03b	5.44**	3
Family interference	2.53	2.65a	2.48ab	2.64a	2.23b	3.36*	2
Dive partner interference	1.95	2.10a	2.11a	1.80b	1.55b	10.83**	4
Conflict with other users	2.53	2.48ab	2.59ab	2.82a	2.36b	3.04*	1
STRUCTURAL CONSTRAINTS	2.47	2.67a	2.65a	2.33b	1.93c	31.09**	5
Accessibility	2.30	2.37a	2.49a	2.30a	1.85b	8.55**	3
Water/weather conditions	2.69	3.05a	2.95a	2.42b	1.89c	30.26**	5
Lack of attractive features	2.31	2.52a	2.48ab	2.18bc	1.80c	10.83**	3
Equipment issues	1.94	2.24a	2.07a	1.67b	1.36c	29.98**	5
Lack of time	3.62	3.73a	3.83a	3.53ab	3.28b	5.89**	2

Values are mean scores on a 7-point scale ranging from does not hinder me at all (1) to stops me completely (7).

¹ F-values are a result of one-way analysis of variance (*p<.05, **p<.01); means with different superscripts are significantly different at the .05 level using Tukey-HSD post hoc test.

was used as a post hoc test if the F-value was significant ($p < .05$). Independent t-tests were used to compare mean scores of each constraint factor for the dichotomous categories of previous New York's Great Lakes diving experience, club membership, and magazine subscription.

Results

By January 2000, 869 of 2360 deliverable surveys were returned for a 37% response rate. A non-respondent bias check conducted by phone revealed that non-respondents did not differ significantly in level of development, number of

Table 10. — Constraint factors analyzed by dive club membership and dive magazine subscription.

Factor	Total (n=842)	Currently Belongs to Any Dive Clubs/Organizations			Currently Subscribes to Any Dive Magazines		
		Yes (n=256)	No (n=587)	t-value ¹	Yes (n=346)	No (n=496)	t-value ¹
INTRAPERSONAL CONSTRAINTS	1.43	1.35	1.47	2.38*	1.31	1.52	4.40**
Personal discomfort	1.43	1.31	1.47	2.71**	1.29	1.52	4.21**
Health problems	1.44	1.39	1.47	1.28	1.33	1.52	3.39**
Burnout	1.38	1.32	1.41	1.29	1.31	1.43	1.77
INTERPERSONAL CONSTRAINTS	2.32	2.27	2.34	0.93	2.30	2.33	0.55
Family interference	2.53	2.48	2.55	0.67	2.40	2.62	2.21*
Dive partner interference	1.95	1.70	2.04	4.15**	1.80	2.05	3.20**
Conflict with other users	2.53	2.68	2.48	1.77	2.72	2.42	2.90**
STRUCTURAL CONSTRAINTS	2.47	2.23	2.55	4.86**	2.33	2.54	3.27**
Accessibility	2.30	2.08	2.38	3.26**	2.24	2.31	0.90
Water/weather conditions	2.69	2.50	2.75	2.39*	2.58	2.73	1.48
Lack of attractive features	2.31	2.03	2.41	3.74**	2.30	2.29	0.02
Equipment issues	1.94	1.57	2.08	6.31**	1.57	2.17	8.01**
Lack of time	3.62	3.54	3.65	1.17	3.42	3.75	3.56**

Values are mean scores on a 7-point scale ranging from does not hinder me at all (1) to stops me completely (7).

¹ t-values are a result of independent t-tests (*p<.05, **p<.01).

years spent diving, education level, age, or gender; however, significantly fewer non-respondents than respondents were certified or active divers.

While 80% of the respondents were male, the average diver was 43 years old, highly educated (i.e., 75% had attended college), and fairly affluent (i.e., 50% earned at least \$60,000 in household income). Nearly 60% of the respondents had gone diving in New York's Great Lakes during their lifetimes. While only 8% of the respondents dove in saltwater only, one-quarter were freshwater divers only, and two-thirds had used both environments. Although 40% typically dove just one season per year, the other 60% were approximately equally distributed among two (21%), three (22%), and four seasons (17%). Only 30% belonged to dive clubs, and 40% subscribed to at least one dive magazine. However, as previously noted, divers with New York's Great Lakes experience were significantly more likely to dive in both fresh and saltwater than other divers (78% vs. 52% - refer back to Table 2), dive during three or four seasons a year (53% vs. 17% - Table 3), belong to dive clubs (40% vs. 17% - Table 4), and subscribe to dive magazines (48% vs. 31% - Table 5).

When examining descriptive statistics of the dependent variables, constraint scores were found to be generally low on the 7-point scale, averaging just 1.4 for all intrapersonal constraints, 2.3 for

interpersonal constraints, and 2.5 for structural constraints. As shown in Table 7, however, divers with Great Lakes experience reported significantly lower constraint levels for 7 of the 11 factors than divers who had not used these lakes.

Hypothesized relationships were supported by all other analysis as well. When compared by type of water, divers differed significantly on 6 of the 11 constraint factors. Although results varied, divers using both fresh and saltwater tended to experience constraints to a lower degree than freshwater-only or saltwater-only divers (Table 8). Freshwater-only divers recorded significantly higher mean scores for four factors (personal discomfort, dive partner interference, equipment issues, and lack of time), while saltwater-only divers (who perhaps qualified as "vacation-only" or "resort divers," previously referred to as not "real" divers by focus group members) yielded significantly higher scores for water/weather conditions and lack of attractive features.

The most discriminating variable was number of seasons, where year-round divers recorded the lowest levels of constraints for 10 of the 11 factors (see Table 9). Dive club members and magazine subscribers also reported lower constraints than non-members and non-subscribers for 6 and 7 factors, respectively, with one exception: magazine subscribers experienced higher degrees of constraint for conflict with other users (Table 10).

It is interesting to note that one factor, burnout, never differed among any diver segments and was consistently rated low among all divers. On the other hand, the three factors labeled personal discomfort, dive partner interference, and equipment issues were the most sensitive constraints; diver segments differed significantly on these factors across all analysis (Great Lakes experience, type of water, number of seasons, club membership, and magazine subscription).

Conclusions and Implications

These results suggest that Great Lakes divers (who tend to use both fresh and saltwater, dive four seasons, are club members and magazine subscribers more so than other divers) are able to negotiate perceived constraints more successfully than non-Great Lakes divers. Thus, the notion that Great Lakes divers are a hardier and more robust “breed” is supported. In addition, dive clubs and magazines also seem to be associated with lower levels of constraint, suggesting their socializing, supportive, and educational influence on divers. Interestingly, conflict-related constraint is the only exception. Magazine subscribers rate this constraint significantly higher, suggesting that this particular medium could be communicating or educating divers in a way that propagates negative perceptions of boaters, jetskiers, fishermen, and high concentrations of other divers.

These results could help important socializing agents (e.g., dive shop owners, instructors, club organizers, dive magazine editors, charter boat operators, tourism and community planners and developers) identify various segments of divers who could benefit most from possible strategies to adapt or overcome various structural, interpersonal, and intrapersonal constraints. By doing so, all participants’ experiences, progress, and growth in diving could be facilitated. However, if marketing the Great Lakes to new users is a goal, socializing agents need to remember that these divers may need to be “toughened up” since, after all, only “real” divers use New York’s Great Lakes!

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FLYING FUN: AN EXPLORATORY EXAMINATION OF SERIOUS LEISURE

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Abstract: In recent years the serious side of leisure has gained attention in research. This study included participants of experimental light aircrafts and remote control model airplanes in an exploratory examination of Stebbins' (1992) notion of serious leisure. Most of Stebbins' (1992) serious leisure characteristics were supported by the results of the study. Additionally, it was discovered that participants' experiences of serious leisure vary in terms of years of participation, frequency of participation, club membership, equipment value, and age.

Introduction

A long time ago, Dumazedier (1974) had pointed out that many people place a high priority on recreation and leisure in their lives. The devotion to leisure can lead to personal growth and cultural development such as arts and scientific discoveries. To many people, a hobby is more than just a pastime, but an earnest pursuit. Their attitudes are serious, and their behaviors hard core. Stebbins (1992) identified six characteristics of serious leisure: perseverance, personal effort, career, self-identity with the activity, unique ethos, and durable benefits. Stebbins (1992) suggested that hobbyists, amateurs and volunteers exhibited serious leisure traits. Subsequent research has associated serious leisure with fishing (Yoder 1997), wildlife viewing (Cole & Scott 1999, Scott, Baker & Kim 1999), the game of bridge (Scott & Godbey 1994), and college football games (Gibson, Willming & Holdnak 2002). It is possible that many other recreational activities possess qualities of serious leisure, and there is still much to be learned about the construct and meaning of serious leisure.

It was the purpose of the study to verify the characteristics of serious leisure proposed by

Table 1. — Description of the Sample

	Mean	Freq.	%
Years of participation	9.4		
Annual frequency: 1-5 times		53	29.6
6-10 times		14	7.8
More than 10 times		112	62.6
Activity duration: less than 1 hour		41	21.9
1 – 3 hours		56	29.9
3 – 5 hours		54	28.9
5 – 7 hours		24	12.8
more than 7 hours		12	6.4
Travel distance: less than 100 km		177	94.7
100-199 km		2	1.1
200-299 km		3	1.6
300-399 km		3	1.6
400km or more		2	1.1
Company: family (1)		3	1.6
Friends, colleagues (2)		22	11.8
other hobbyists,			
members (3)		83	44.4
other (4)		5	2.7
(1+2)		13	7.0
(1+3)		15	8.0
(2+3)		42	22.5
(1+2+3+4)		4	2.1
Club membership: yes		158	84.0
No		29	15.4
Equipment value: less than 10k \$300		16	8.6
10-50k \$300-1,500		27	4.5
50-100k \$1,500- 3,000		25	8.1
100-150k \$3,000- 4,500		21	11.3
150-200k \$4,500- 6,000		19	10.2
200-500k \$6,000-15,000		33	17.7
500-1,000k \$15,000-30,000		26	14.0
over 1,000k over \$30,000		29	15.6
Gender: male		178	97.3
Female		5	2.7
Age: under 20		5	2.7
20-29		29	15.4
30-39		75	39.9
40-49		47	25.0
50-59		23	12.2
60 or higher		9	4.8

Stebbins (1992). Specifically, there were two research questions: (1) which characteristics of serious leisure can be supported, and (2) if experiences of serious leisure vary among participants.

Method

A focus group meeting was conducted to obtain initial insights into the world of flying and to aid the development of a questionnaire. This was followed by a questionnaire survey. The questionnaire was developed from Stebbins' (1992)

description of serious leisure. There were 27 serious leisure characteristics, ranging from natural conditions being important to the activity to personal satisfaction. A seven-point rating scale, from strongly disagree to strongly agree, was used to obtain responses. Personal history of activity participation and demographic background, such as years of participation and frequency of participation, were also included in the questionnaire as participant variables. Flying was the theme of this study, including flying experimental light aircrafts and flying remote control model airplanes. Data were collected during a two-day convention event of experimental aircrafts where 52 questionnaires were completed on site. Additionally, the questionnaire was mailed to members of flying clubs. A total of 91 questionnaires (80% return rate) returned from pilots of experimental aircrafts, and 100 (49% return rate) returned from enthusiasts of remote control airplanes.

Table 2. — Differences between Two Activities

Variables	Mean		F	Sig.
	Exp. Aircrafts	RC Airplanes		
Natural conditions	5.42	5.25	.507	.477
Beliefs & values	5.98	5.81	.889	.347
Ethics	6.46	6.40	.163	.687
Physical difficulties	5.91	5.94	.017	.897
Fatigue/injury	4.34	3.54	5.824	.017 *
Mental anxiety	4.83	4.54	.476	.491
Personal effort	6.47	6.21	3.683	.056
In control	6.09	6.06	.027	.871
Exploration	6.15	6.16	.004	.949
Accomplishment	6.25	6.26	.004	.947
Importance	6.01	5.80	1.654	.200
Speak seriously	6.16	6.14	.041	.839
Speak enthusiastic.	5.93	5.95	.014	.905
Speak frequently	5.52	5.45	.0148	.701
Speak to acquaint.	5.56	5.57	.005	.942
Favorite place	5.61	5.97	4.284	.040 *
Read magazines/books	5.86	5.91	.094	.760
Good skills	5.42	5.25	.680	.411
Know. of equip. ops	5.74	5.80	.132	.717
Know. of manufacturers	4.78	5.32	7.220	.008 *
Know. of tech.	5.28	5.38	.225	.636
Do repairs	5.01	5.26	1.508	.221
Personal expression	5.99	5.42	.877	.350
Personal identity	5.69	5.57	.627	.430
Personal image	5.28	5.18	.285	.594
Use abilities	5.88	5.98	.423	.516
Personal satisfaction	6.13	6.17	.063	.802

* $p < .05$

Table 3. — Experiences of Serious Leisure

	Exp. Airplanes		RC Airplanes		Total	
	N	Mean	N	Mean	N	Mean
Natural conditions	89	5.42	99	5.25	188	5.33
Beliefs & values	91	5.98	98	5.81	189	5.89
Ethics	91	6.46	99	6.40	190	6.43
Physical difficulties	92	5.91	99	5.94	191	5.93
Fatigue/injury	92	4.34 *	98	3.54 *	190	3.93
Mental anxiety	90	4.83 *	98	4.54 *	188	4.46
Personal effort	92	6.47	99	6.21	191	6.34
In control	92	6.09	99	6.06	191	6.07
Exploration	92	6.15	99	6.16	191	6.16
Accomplishment	91	6.25	99	6.26	190	6.26
Importance	92	6.01	99	5.80	191	5.90
Speak seriously	85	6.16	96	6.14	181	6.15
Speak enthusiastic.	85	5.93	96	5.95	181	5.94
Speak frequently	85	5.52	96	5.45	181	5.48
Speak to acquaint.	84	5.56	96	5.57	180	5.57
Favorite place	85	5.61	95	5.97	180	5.80
Read magazines/books	85	5.86	94	5.91	179	5.89
Good skills	84	5.42	95	5.25	179	5.33
Know. of equip. ops	84	5.74	96	5.80	180	5.77
Know. of manufacturers	85	4.78 *	96	5.32	181	5.07
Know. of tech.	85	5.28	96	5.38	181	5.33
Do repairs	85	5.01	94	5.26	179	5.14
Personal expression	85	5.99	96	5.42	181	5.69
Personal identity	85	5.69	95	5.57	180	5.63
Personal image	85	5.28	95	5.18	180	5.23
Use abilities	85	5.88	96	5.98	181	5.93
Personal satisfaction	85	6.13	96	6.17	181	6.15

* mean scores < 5.0

Findings

As shown in Table 1, the sample was mostly experienced enthusiasts with an average of nine years of participation. More than half of the sample participated in the activities more than 10 times a year (63%). Travel to activity sites was mostly short distance (95% less than 100 km). Other hobbyists were the most likely type of companion (44%). Most of the participants were males (97%), middle aged (65% between ages 30 and 50) and members of a club relating to the activity (84%).

Participants of the two activities (experimental aircrafts and remote control airplane models) were compared with respect to the 27 serious leisure characteristics (Table 2). ANOVA indicated that the two sets of participants were not significantly different in 24 of the 27 items. There were significantly different in terms of experiencing physical fatigue or injury, having a favorite place for the activities, and knowledge of equipment manufactures.

Participants of the two activities showed relatively high serious leisure scores, as seen in Table 3. Participants of experimental aircrafts responded with 24 of the 27 items achieving a 5.0 mean score or higher, showing a high degree of seriousness. Three items fell below 5.0: suffering fatigue or injury, suffering mental anxiety, and knowledge of equipment manufacturers. Remote control airplane flyers rated 25 items above a 5.0 mean score, with the exception of suffering fatigue or injury and suffering mental anxiety. With these relatively high mean scores in serious leisure characteristics, the results suggested that most of the serious leisure characteristics (24 items for experimental aircrafts, 25 items for remote control airplanes) were good measurements of serious leisure, thus answering research question 1: which characteristics of serious leisure can be supported?

A series of ANOVA was performed to test differences among the sample in regard to years of participation (Table 4), frequency of participation, club membership, equipment value, and age (Tables 5). A significant difference ($p < 0.05$) was detected regarding years of participation in seven items: having a favorite activity place, reading activity related magazines or books, having good skills, being knowledgeable about equipment operations, about equipment manufacturers, about equipment technology, and doing repairs. Table 5 shows that participants were significantly different in five serious leisure characteristics regarding frequency of participation, in six characteristics regarding club membership, six characteristics in terms of equipment value, and 10 characteristics in terms of age. The results provided an answer to research question 2: if experiences of serious leisure vary among participants? i.e., participants' experiences, measured by the 27 serious leisure characteristics, varied in terms of years of participation, frequency of participation, club membership, equipment value, and age.

Implications and Future Directions

As seen in Table 3, in both experimental aircrafts and remote control airplanes there was a relative low mean score (less than 5.0) in physical fatigue/injury and mental anxiety. The finding indicated that these two recreation activities were not inherently risky or competitive. Other activities, such as running marathon and rock climbing, may be serious leisure and high in these areas.

Table 4. — Differences due to Years of Participation

Variables	F	Sig.
Natural conditions	1.057	.398
Beliefs & values	1.399	.095
Ethics	.830	.725
Physical difficulties	1.100	.342
Fatigue/injury	.837	.715
Mental anxiety	.783	.788
Personal effort	1.202	.231
In control	1.168	.265
Exploration	1.107	.334
Accomplishment	1.096	.348
Importance	1.412	.089
Speak seriously	1.153	.281
Speak enthusiastic.	1.180	.253
Speak frequently	1.289	.159
Speak to acquaint.	1.091	.354
Favorite place	1.645	.026 *
Read magazines/books	1.683	.021 *
Good skills	2.370	.000 *
Know. of equip. ops	2.425	.000 *
Know. of manufacturers	2.855	.000 *
Know. of tech.	2.573	.000 *
Do repairs	2.876	.000 *
Personal expression	1.392	.098
Personal identity	1.188	.245
Personal image	1.319	.139
Use abilities	1.227	.209
Personal satisfaction	1.067	.385

* $p < .05$

In Table 5, results showed that participants, across a spectrum of variables including years of participation, frequency of participation, club membership, and equipment value, were significantly different in terms of reading about the activities, perceived skills, knowledge of various subject areas, and repairs. The finding implied that there might have been a cognitive dimension of serious leisure that separated participants into those doing the activities and those not only doing but also knowing about the activities, by way of knowledge and skills.

In conclusion, results of the study verified Stebbins' (1992) notion of serious leisure. This study represented a small sample from two activities amid a near infinite number of recreation pursuits each may be a medium of serious leisure. There is much more to be discovered about the construct and meaning of serious leisure, thus more research is needed.

Table 5. — Results of Differences at a Glance

Variables/ Significance	Years	Freq.	Member	Eq. Value	Age	Activities
Natural conditions	.398	.263	.746	.588	.147	.477
Beliefs & values	.095	.706	.534	.110	.147	.347
Ethics	.725	.181	.683	.439	.131	.687
Physical difficulties	.342	.582	.328	.110	.493	.897
Fatigue/ injury	.715	.110	.444	.766	.059	.017 *
Mental anxiety	.788	.783	.099	.142	.777	.491
Personal effort	.231	.947	.648	.750	.147	.056
In control	.265	.707	.704	.896	.820	.871
Exploration	.334	.877	.701	.794	.003 *	.949
Accomplish- ment	.348	.428	.551	.862	.045 *	.947
Importance	.089	.181	.343	.096	.026 *	.200
Speak seriously	.281	.118	.674	.228	.148	.839
Speak enthusiastic.	.253	.270	.423	.453	.269	.905
Speak frequently	.159	.610	.259	.487	.543	.701
Speak to acquaint.	.354	.669	.469	.312	.026 *	.942
Favorite place	.026*	.161	.338	.969	.402	.040 *
Read magazines/ books	.021*	.044 *	.013 *	.000 *	.027 *	.760
Good skills	.000*	.001 *	.019 *	.000 *	.252	.411
Know. of equip. ops	.000*	.000 *	.033 *	.000 *	.058	.717
Know. of manufacturers	.000*	.016 *	.019 *	.004 *	.028 *	.008 *
Know. of tech.	.000*	.099	.030 *	.017 *	.002 *	.636
Do repairs	.000*	.007 *	.041 *	.001 *	.004 *	.221
Personal expression	.098	.429	.356	.463	.711	.350
Personal identity	.245	.183	.283	.268	.006 *	.430
Personal image	.139	.699	.093	.863	.102	.594
Use abilities	.209	.473	.338	.591	.079	.516
Personal satisfaction	.385	.170	.611	.578	.028 *	.802

* p < .05

It was suggested that valid and reliable instruments be developed and tested for exploring various dimensions of serious leisure. Secondly, it is possible that participants of serious leisure are diverse, such as their activity participation patterns and degrees of seriousness, that a typology of participants can be constructed. Thirdly, as Stebbins (1992) pointed out that hobbyists, amateurs and volunteers were people of serious leisure, it is possible that activities can be grouped in types, so studies of in-group similarities and inter-group differences may reveal more insights into the world of serious leisure.

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Recreation and the Community

SOLITUDE, NATURE, AND CITIES

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Abstract: Solitude is an important motive for participation in many leisure activities. This paper reviews the evidence about the psychology of solitude experiences obtained from two studies conducted with University of Massachusetts students. The first study identified three independent dimensions of solitude: inner-directed, outer-directed, and loneliness. The second study, which differentiated between positive (inner-/outer-directed) and negative (loneliness) solitude, found that episodes of both kinds were common: 2 to 3 times per week, typically lasting from 4 to 16 hours. Positive episodes tended to occur during the day, while negative episodes occurred at night. The implications for various park and recreation agencies are explored.

Introduction

Humans are a naturally social species; we live, work, and play together in small groups, communities, and even large cities. The density of these communal groupings will likely increase in the future as the U.S. population is expected to double by 2050 (U.S. Census Bureau 2003). However, the very density of urban living can produce serious pathologies (e.g., Milgram 1968) and even the most social of us may desire time by himself or herself to be alone to reduce the level of social interaction. At the other end of the spectrum, loneliness is a persistent by-product of urban life and creates its own unique problems (Ernst & Cacioppo 1999). Solitude—the state of being alone—is thus something of a conundrum: it can be among the most sublime of human experiences, and among the most terrifying.

Throughout history, solitude has been linked with both creativity and spirituality. Artists, composers, writers, and poets have all made solitude part of their creative regime, while major religious figures—Jesus, Mohammad, and the Buddha—all spent long periods in the wilderness (Storr 1988). Indeed, solitude is recognized as an important motive for wilderness visits even today, and the Wilderness Act of 1964 provided a legal basis for wilderness preservation in order to preserve solitude (Shafer & Hammitt 1995). Yet no attempt was made to specify exactly what solitude is or what might be entailed in its experience (Hammitt & Madden 1989). Often, the research literature relates solitude to privacy, or defines it negatively in the sense that it is treated simply as the absence of other people. In this paper, by contrast, we view solitude as a psychological state, much like Hollenhorst and Jones (2001) who define solitude as psychological detachment from society in order to cultivate the inner word of the self and experience self-discovery, self-realization, meaning, wholeness, and an enhanced awareness of one's deepest feelings and impulses.

Such a definition, however, can apply only to positive solitude. Solitude, particularly in the form of loneliness, can be a terrifying state, and solitary confinement is one of the worst punishments that society can confer. According to a recent reanalysis of market research data (Fetto 2003), 12% of Americans spend Friday night alone and they are 1.5 times more likely to say they feel “very alone in the world” than are those who spend Friday night with others. They spend their evening watching TV or a video, sleeping, eating, reading a book, surfing the web, doing housework or other work, or listening to the radio. Women are twice as likely as men to read, while men are twice as likely as women to spend time catching up on work.

Results such as these suggest that loneliness is a serious problem for many people. Not surprisingly, therefore, much contemporary psychological research has treated solitude as problematic and focused on ways to alleviate its negative effects (see review by Ernst & Cacioppo 1999).

It is clear, then, that solitude can be a joyous state linked deeply to creativity and spirituality, or it can be negative and problematic. In this paper, we summarize the results of two preliminary studies of

Table 1. — Solitude Concepts

Concept	Definition
Self-discovery	Focusing attention on yourself gives insight into fundamental values and goals, personal strengths and weaknesses
Anonymity	When alone, you can act however you feel without concern for what others think.
Inner peace	While alone you feel calm, relaxed, and free from everyday pressures.
Creativity	Being alone helps stimulate novel ideas or innovative expression.
Problem solving	Aloneness allows thinking about problems or decisions you face, and you attempt resolution
Intimacy	Although alone, you feel close to someone you care about (absent friend, lover, deceased relative, etc.); the person's absence only strengthens your feeling of closeness.
Spirituality	While alone, you have a mystic-like experience (i.e., transcending everyday concerns, being part of a greater whole) which can be interpreted religiously (close to God) or secularly (part of the natural order).
Loneliness	You feel self-conscious, anxious, or depressed, longing for interpersonal contact.
Diversion	You fill time alone by watching television, reading, surfing the Internet, or engaging in other distracting activities.

solitude designed to identify the varieties of solitude, the frequencies and durations with which they occurred, and events preceding an episode, the activities people engaged in during it, and the outcomes they obtained from it. Full details of these studies and the statistical analysis that support them can be found in Long (2000), Long et al. (2003a) and Long et al. (2003b). After describing study methods and results, we suggest a variety of policy implications, particularly for municipal park and recreation programs.

Methods

Our analysis of solitude draws upon two studies, both conducted using undergraduate student volunteers from the University of Massachusetts, Amherst. In the first (Long et al. 2003a), 320 students (80% female; median age = 20, range 18 to 56) received a questionnaire that described nine different types of solitude abstracted from previous studies. These included solitude as anonymity, as creativity, as diversion, as inner peace, as intimacy, as loneliness, as problem-solving, as self-discovery, and as spirituality (see Table 1). Using Likert-type scales, participants rated each type on the frequency with which they experienced it, the effort they were willing to extend to experience it, and the extent of its influence on their lives. A variety of personality measures also were employed to assess individual differences in the capacity for, or predisposition to, solitude. The questionnaire presented the types of solitude in three randomly assigned orders to guard against order effects.

In the second study (Long et al. 2003b), 206 student volunteers (median age = 20, range 18 to 48) completed a 51-item solitude questionnaire in

which they described either a positive solitude experience (n = 105, 76% female) or a negative experience (n = 101, 73% female). The initial parts of both questionnaire versions were the same, asking participants to describe two episodes of solitude that they had experienced in the past year—one positive and one negative. Positive experiences were defined as having been generally worthwhile, although some aspects may have been painful at the time. The negative experience was to have been neither beneficial nor pleasant, but did not have to be entirely negative. Each experience was to have lasted more than an hour but less than three days. Then, depending on the version, the next 30 items focused on either the positive or negative experience using: (a) 7-point scales that assessed participants' overall evaluation of the experience before, during, and after the episode; (b) checklists of specific thoughts, feelings, and actions related to the experience; and (c) open-ended items that provided additional detail about the experience. The final portion of the questionnaire described participants' general conceptions of solitude, plus demographic data, and was the same for all participants. The data were analyzed using t-tests and binary correlation coefficients for dichotomous variables.

Results

Study One

The respondents in the first study identified problem solving, inner peace, and self-discovery as the three most important types of solitude, and ranked them second, third, and fourth in terms of frequency of experience, although even spiritual episodes were fairly common, occurring almost once a month (n = 3.52). The most common

Table 2. — Location of Solitude Episode

Solitude Type	Setting (% experienced)		
	Home	Public Place (Mall, museum, etc.)	Natural Setting
Inner-Directed Positive:			
Self-discovery	62	12	26
Anonymity	83	13	5
Inner peace	53	6	42
Creativity	61	19	20
Problem solving	72	11	18
Outer-Directed Positive:			
Intimacy	70	13	17
Spirituality	23	10	67
Negative:			
Loneliness	70	28	2
Diversion	95	4	1

place for all kinds of solitude episodes to occur was at home (including dorm or apartment) (Table 2). The exception to this was spirituality which, when it did occur, was far more likely to have occurred in a natural setting (woods, park, beach, mountains, etc.) than at home (67% vs. 23%). However, many participants also identified natural environments as important in the experience of inner peace (42%), self-discovery (26%), and creativity (20%). Loneliness (28%) and creativity (19%) were the only solitude experiences judged likely to occur in public places like malls, museums, libraries, coffee shops, etc.

We subjected the varieties of solitude to a factor analysis based on their mean ratings of importance, a scale derived from combining the influence and effort scales (how much influence has this type of solitude had on your life; how much effort would you be willing to exert to have such an experience). The factor analysis identified three general types of solitude: inner-directed, outer-directed, and loneliness. The details of the analysis are presented in Long et al. 2003.

Inner-directed solitude is characterized by self-discovery, inner peace, and anonymity (freedom from social constraints). It also was associated with creativity and problem solving. By contrast, outer-directed solitude includes intimacy and spirituality, both of which suggest connections to others not specifically present. These could include other people, nature, or God (however conceived). The final factor—loneliness—proved to be independent of, rather than opposite to, the first two factors.

Thus it is possible to be both lonely (or not lonely), creative, and spiritual all at the same time, as opposed to one set of feelings dominating or suppressing the others.

Study Two

Solitude, in all its varieties, is a common experience: Most respondents (57%) reported a solitude experience once or more a week, with the modal response being two or three times per week. Respondents estimated (retrospectively) that half their solitude episodes over the past year had been positive and half negative. Although it is not essential to be alone to experience solitude, most respondents reported that they had been, both for positive (67%) and negative (68%) experiences. Those not actually alone reported settings that “felt” alone—eating alone in a restaurant, etc. Seventy percent said that the episode had lasted from 4 to 16 hours. Positive episodes were more likely than negative episodes to occur during the day, outdoors in a natural setting that could be beautiful or awe-inspiring, and in comfortable, relaxing places where respondents felt free of responsibility. Negative episodes, by contrast, were more likely to occur at night, at home (or in one’s room), and in dull or boring places. Those describing negative episodes also felt they had considerably less control over their situations than did those who described positive episodes.

Typically, both positive and negative episodes of solitude were preceded by a sense of stress associated with job or school difficulties, questioning priorities, and thinking about the past. However, those who described positive experiences tended to be in a positive mood before the episode, experiencing feelings of freedom, happiness, and independence, while negative episodes were often preceded by feelings of depression, sadness, and uncertainty. Those describing positive episodes also said they felt extremely busy with little time to be alone (62%) and were actively seeking solitude (64%) when the episode occurred.

During both kinds of episodes, a majority of respondents spent time contemplating personal issues and questioning priorities. However, those experiencing negative solitude reported spending significantly more time in diversionary activities like watching television, reading, or surfing the internet. They were more likely to consider the

episode boring, lonely, and anxious. Those describing positive episodes, characterized them as times of happiness, relaxation, freedom, and optimism, as opposed to feelings of sadness, loneliness, and emptiness.

Respondents also assessed the outcomes of the episodes. Those experiencing positive episodes were more likely to rate them as being beneficial than those experiencing negative episodes. However, the groups did not differ significantly in the amount they said they learned from the episode. Many said they had gained new perspectives on a problem (44% for positive episodes, 37% for negative) and were stronger as a result (40% positive, 30% negative). The major benefits of positive solitude were goal clarification (70%), increased self-understanding (58%), and a sense of self-renewal. While nearly a third of respondents describing negative episodes reported increased clarification and understanding, they also believed that they overanalyzed problems without reaching a solution (55%), focused on things that couldn't be changed (52%), and found the experience to be tiring and draining (51%).

Discussion

Solitude is a complex, multifaceted state. Although often equated in the research literature with privacy, or conceptualized as the simple absence of other people, the data from these two studies suggest it is better conceived of as a psychological state that, while usually occurring in the absence of immediate others, can also occur in diverse, and sometimes even crowded settings.

Perhaps the most important of the above findings are the frequency (2 to 3 times per week) and duration of solitude episodes. These findings suggest that solitude in both positive and negative forms, is primarily a local problem and that municipal parks and recreation agencies may play key roles in the provision of positive solitude opportunities and even in the alleviation of negative solitude states. While most positive solitude episodes tended to occur at home, it is evident that natural environments can be significant facilitators of positive solitude.

Seeking solitude is a long-standing, well recognized motive for wilderness visits (Dawson, Newman, and Watson 1997; Hendee et al. 1968).

Obviously, wilderness visitors anticipate a positive experience. However, our research suggests that the two types of positive solitude—inner-directed and outer-directed—may represent different kinds of motives that may engender different kinds of behavior. For many, wilderness use is a social experience that typically occurs in small groups of two, three, or four. The “solitude” these people seek clearly is outer-directed: to be alone in the wilderness with highly significant others. On the other hand, there are still some who enter the wilderness alone, perhaps in search of the contemplation associated with our inner-directed solitude. Krakauer (1996) writes movingly of some of these people; often, those he describes seem idealistic, a bit dreamy and ethereal, perhaps better in touch with their own internal reality than with the external world, with potentially disastrous consequences. Krakauer's account was not a scientific study, however, and the people he describes are not necessarily representative of those seeking inner-directed solitude. In fact, our preliminary results can only suggest the need for further documentation with representative samples that examine differences in actual behavior in addition to motives.

Wilderness aside, our results suggest that municipal parks and programs also may plan a significant role in providing solitude opportunities. In particular, the frequency of solitude episodes (2 to 3 times per week) and their duration (4 to 16 hours) suggest that solitude is a common experience that occurs in the places where people lead their daily lives. While most episodes reported occurred indoors, a significant minority emphasized nature or natural environments.

In local communities, these may be most readily available through landscape-type public parks (as opposed to parks that emphasize athletic facilities). It is a common experience to want a break during or after a period of high stress work, and local parks offer one potential alternative. Our results are only suggestive, of course, and require further empirical verification, but it may be possible to link solitude with park design features. For example, More (1985) suggests that the intrusion of surrounding streets can be minimized through careful park design.

Future research also should examine potential links between solitude and social class. Wealthy people

can afford to purchase large, multi-room homes with yards that permit temporary escape to achieve some degree of solitude. As one descends the economic ladder, however, living densities increase and the availability of alternative “private” space decreases. Consequently, public space may play a significant role in providing solitude opportunities for low-income people. In fact, there is ample historical evidence that suggests that urban parks have traditionally fulfilled this role (Taylor 1999).

Public parks and programs also may have a role to play in alleviating negative solitude—loneliness. Specific groups that suffer from loneliness—shut-ins, newcomers to a community, the elderly—are well known and are served by a variety of municipal programs. Senior centers and recreation activity programs are designed to stimulate interaction among these groups. Parks, too, may serve as social nodes. In fact, Whyte (1991) argues that the best urban parks are designed like a series of rooms, so in some parks it should be possible to accommodate both opportunities for positive solitude and social nodes. The difficulty is that our respondents often described negative episodes as occurring at night, making both gender and budgets constraining factors.

We advocate treating our results cautiously—as suggestions for further consideration and empirical verification rather than as established fact. For example, we relied on the self-reports of student volunteers; students tend to live very social lives in a high-density situation. Clearly, there is a need for representative samples of different kinds of people living in various circumstances before we can begin to make definitive statements about solitude. In the meantime, however, our results do suggest that solitude is a common experience that can be either positive or very problematic, and which is attained in a wide range of environments.

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WEB-BASED SURVEYS IN OUTDOOR RECREATION PLANNING: A NEW HAMPSHIRE CASE STUDY

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Abstract: Statewide Comprehensive Outdoor Recreation Plans (SCORPs) in the United States are used to assist states and territories in qualifying for federal funds that can be used for the acquisition and updating of outdoor recreation facilities in the state. The Land and Water Conservation Fund (LWCF) mandates that public input is a required component of a SCORP. For New Hampshire's 2003-2007 SCORP, multiple methods of public participation were utilized to make the process as open as possible. These include two different advisory committees; a web-based survey; regional meetings; a SCORP website; and public comments. This paper will examine the web-based survey as a tool for helping to identify issues of importance throughout the state as perceived by outdoor recreation-related stakeholder groups and individuals, as well as New Hampshire residents. Of the six methods of public participation offered during the development of New Hampshire's 2003-2007 SCORP, the web-based survey involved the most amount of people, therefore receiving the greatest amount of public participation.

Introduction

Outdoor recreation planning can be described as a process that integrates outdoor leisure activities and decision making that deals with the allocation of resources to ensure that the short and long-term leisure needs of the population and natural environment are met (Gold, 1980). Ibrahim and Cordes (1993) illustrate the fundamental difference

between recreation and outdoor recreation, where recreation is focused on playing, whereas outdoor recreation is centered on involvement with the natural environment. Related to outdoor recreation plans, these definitions are combined to take into account both organized and non-organized outdoor recreation activities. Planning is intended to establish and update policies to ensure sustainable land use in the long-term. Outdoor recreation planning can then be defined as the preservation and updating of existing outdoor recreation facilities for current and future use. Created by the United States Congress in 1964, the Land and Water Conservation Fund (LWCF) provides "money to federal, state and local governments to purchase land, water and wetlands for the benefit of all Americans" (United States Forest Service LWCF Information, 2003). Administered by the National Park Service through matching grants, the LWCF is "intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the U. S." (National Park Service Land & Water Conservation Fund [NPS LWCF] Information, 2003).

To qualify for LWCF funds, states and U. S. territories must create and regularly update a statewide recreation plan, frequently referred to as a Statewide Comprehensive Outdoor Recreation Plan (SCORP). NPS requests that these plans be updated every three to five years. The National Park Service says that SCORPs should address three main topic areas: first, the demand for and supply of local, state and federal recreation resources within a state; second, identify needs and new opportunities for recreation improvements within a state; and third, to set forth an implementation program to meet the goals identified by its citizens and elected leaders (NPS LWCF Information, 2003). Throughout the U. S. and its territories, the Statewide Comprehensive Outdoor Recreation Plan has been used to help states and communities to acquire and develop outdoor recreation areas and facilities (NPS LWCF Information, 2003).

Allocation of LWCF monies to states began in 1965. Distribution of the funds peaked in 1979 when \$369 million was appropriated, but received no monies from 1996 and 1999. As a result,

nearly all SCORP planning processes ceased. Since 2000, however, Congress designated increasing amounts of funding for LWCF grants, ranging from \$40 million in fiscal year 2000 to \$200 million in FY 2003 (proposed) (NPS LWCF Information, 2003). Joel Lynch from the National Park Service says that since then, states and U.S. territories have been working hard to develop new SCORPs (personal communication, February 11, 2003).

The Land and Water Conservation Fund (LWCF) requires public participation in some form or another for SCORPs (National Park Service [NPS], 1992). No guidelines are set for receiving this input, and it is up to each state to conduct and interpret the input as it pertains to their SCORP document. Consequently, public participation techniques used in the development of SCORPs varies greatly. These include the establishment of advisory committees, conducting surveys (to determine supply and demand issues, recreation trends, etc.), holding public meetings, and offering the public the opportunity to comment on the SCORP process and document.

The last New Hampshire SCORP was created in 1994, for implementation during 1994-1999. According to New Hampshire Division of Parks and Recreation, since the LWCF was established, New Hampshire has received over \$32 million in LWCF monies (Land & Water Conservation Fund [LWCF] Information, 2003). These funds have been used to complete over 600 projects all over the state, including the purchase of 50,000 acres or land, and the construction of more than 200 recreation areas (LWCF Information, 2003). Of the state's annual funds received from the LWCF, 60% is distributed to local communities through a matching grants program, while the other 40% goes to state parks (LWCF Information, 2003).

During FY 2002, some of the projects that received LWCF monies in New Hampshire included land acquisition and development of recreational facilities for water-based recreation activities, as well as for organized sports, like baseball and soccer. Also, several greenways and related trail systems were established. Additionally, a few of the projects involved updating facilities for ADA compliance (LWCF Information, 2003).

Study Objectives

This study has three objectives. The primary objective is to provide state agencies with a snapshot of outdoor recreation-related trends and issues in New Hampshire, as identified by outdoor recreation-related stakeholder groups and individuals from around the state. Two secondary objectives exist for this study. The first of these is to provide a description of the steps taken to identify outdoor recreation-related stakeholders for this study, as well as how participation was sought from both stakeholders and the general public. Lastly, this study will provide a detailed discussion of trends and themes as identified by survey participants.

New Hampshire Outdoor Recreation

Planning Survey

The most recent SCORP in New Hampshire was undertaken in 2002, and intended to be applied during 2003-2007. The public involvement process for New Hampshire's 2003-2007 SCORP (called New Hampshire Outdoors 2003-2007) was a multi-dimensional process. The process was a combined effort between New Hampshire's Office of State Planning (OSP), New Hampshire's Department of Resources and Economic Development (DRED), the University of New Hampshire, as well as the University of New Hampshire's Cooperative Extension program. It involved the creation of two committees representing a wide variety of interests, the creation and distribution of a survey to outdoor recreation-related stakeholders and New Hampshire residents, a series of public meetings throughout the state, a public comment period, and a website. Between May 2002 and January 2003, the SCORP document went from being a goal to a thorough statewide plan.

Throughout the Steering Committee and Public Advisory Committee meetings, it became apparent that a only small group of interests and individuals were being reached for input and participation in the SCORP update process. Given the limited time and resources allowed for this process, it was determined that a survey would be the most efficient way of reaching a broader audience. The New Hampshire Outdoor Recreation Planning Survey was the primary and most widespread method of public involvement for New

Hampshire's 2003-2007 SCORP, and was unique because it provided all New Hampshire residents with internet access the opportunity to participate, unlike public involvement methods used by other states, where input is aggressively sought from a predetermined number of respondents.

Through a cooperative agreement between New Hampshire's Office of State Planning and the University of New Hampshire, a survey called the "New Hampshire Outdoor Recreation Planning Survey," was created and distributed statewide. The survey was initially intended for stakeholder groups, but was also made available to the general public for input. This public input tool was designed to provide outdoor recreation-related stakeholder groups and individuals in New Hampshire the opportunity to participate in the SCORP development process by replicating the first Public Advisory Committee meeting. This survey was intended to replicate the first Public Advisory Committee meeting, while offering this public input opportunity to a broader group, i.e. recreation-related stakeholder groups and residents of New Hampshire.

Two versions of the internet-based survey were created—one intended for completion by a member of organization leadership, and the other intended to be completed by organization membership and the general public. The two surveys differed only in questions relating to specific organization information and respondents' recreational behaviors and preferences. The purposes of the survey were to gather information, provide an opportunity for public participation, and communicate to the citizens of New Hampshire relating to recreation perceptions, behaviors and observations throughout the state (NH OSP, 2002). In the end, 573 completed surveys were received from outdoor recreation-related stakeholder representatives (n=259) and New Hampshire residents (n=314) alike.

Internet Searches

At the same time the survey was being developed, broad internet searches were conducted to identify recreation-related stakeholders in New Hampshire. These stakeholder groups did not necessarily have to be based in New Hampshire, but their primary recreation activities should occur within the state. To begin this process, a database was constructed

containing contact information about recreation-based clubs, organizations, associations, and similar groups in New Hampshire. These include: animal clubs (sled-dog, horse, dog, etc.); biking; business (guide services, gear rental, etc.); conservation commissions (local conservation commissions, conservation districts, etc.); economic development (Main Street programs, Chambers of Commerce, local economic development groups, etc.); environmental education (Audubon Centers, educational centers, interpretive centers, etc.); environmental/land conservation (land trusts, conservation associations, etc.); government agency (municipalities, state agencies, school districts, planning boards, planning commissions, etc.); hiking/trail (hiking, walking, running, rail-to-trail groups, etc.); historical/cultural preservation (museums, historical societies, etc.); hunting and fishing (sportsmen's clubs, fishing clubs, etc.); local athletic associations (adult and youth associations, community athletic associations, local YMCAs, etc.); motorized sports (ATV, OHRV, 4-wheel, etc.); recreation committee/commission (recreation committees, recreation departments, etc.); tourism (lodgings, campgrounds, etc.); water protection (lake associations, river protection groups, etc.); winter sports (skiing, snowshoeing, snowmobiling, etc.); and other (local fairs, gardening, metal detecting, etc.). This database contained several fields, including organization name, interest (ski club, snowmobile club, conservation commission, etc.), contact person, that person's relationship to the organization (director, president, contact person, etc.), website address, organization email address, mailing address, and mission statement.

Further Stakeholder Identification

In addition to the internet searches, contact information was collected from members of the SCORP Public Advisory and Steering Committees relating to groups and individuals that Committee members felt would provide important input to the SCORP. In total, 3,400 recreation-related stakeholder groups and individuals were identified from over twenty broad interest groups. From the database, a postcard was mailed to the head or contact person of each organization with an available address. The postcards included the internet addresses for both the organization and public surveys, as well as information for a toll-free phone number where organization respondents could request a paper copy of the survey. A few

weeks after the postcard mailing, an email was generated and sent to over 800 stakeholder groups with available email addresses, informing and reminding groups of the survey. Two weeks later, a final reminder email message was sent to all of the email addresses. At this point, the importance of this database should be discussed. The creation of this database was the first such broad collection of recreation-related stakeholder groups and organizations in New Hampshire. Since its creation, requests have been made to New Hampshire's Office of State Planning relating to this database (or information relating to it) by several groups.

General Public Participation

For the general public and organization membership, participation was sought through public service announcements on New Hampshire Public Radio, as well as articles in seven regional newspapers that provided information about the SCORP and the internet address for the public survey. Additionally, information was distributed by the organizations to their membership, providing the internet address and other information about the SCORP through a variety of methods, including message boards, word of mouth, newsletters, and emails.

The main data collection period lasted nearly six weeks (from August 16, 2002 to September 27, 2002), and 245 organization leaders and 296 members of the public completed the survey. The overall data collection period ran until December 6, 2002, when both websites were shut off, effectively ending the data collection process. In total, 259 organization leaders and 314 members of the public completed the survey. It should be noted that the intent of this survey was not to provide a representative sample of New Hampshire residents, but to offer the survey to the maximum diversity of stakeholder groups and individuals in terms of interests and perspectives.

Survey Framework and Data Analysis

The surveys consisted of both multiple-choice and open-ended questions. At the end of the survey, participants were given the opportunity to be contacted when SCORP public meetings were planned in their area. For the multiple-choice questions, a report was generated and delivered to the Steering Committee and the Office of State

Planning. In this report, the organization and public responses were analyzed and presented independently of each other, and provided response frequencies and trends for the data. The additional contact information was made available to the Office of State Planning, to be used at a later time in the SCORP update and public involvement process.

Another report was generated that summarized a content analysis of the open-ended questions asked in the survey. Survey participants were asked to identify actions and barriers relating to four topic areas: (1) Recreation Opportunities for All; (2) Public Use and Resource Conservation; (3) Community Recreation, Health and Well-Being; and (4) Recreation Corridors and Linkages. These responses were coded and categorized using SPSS TextSmart, a text-based coding tool designed to group open-ended data. Here, each response was placed into one (or more) of twelve categories: planning (included topics relating to planning, growth, management, and zoning); legislation (policy changes, legislators, and leadership); access (restrictions on, improvements to, and opportunities); agencies (federal, state, and local); collaboration (cooperation, conflict, and partnerships); land acquisition (land and water acquisition, conservation, easements); funding; education (outreach, advertising, public relations, awareness, and educating public/private agents); enforcement; research; participation (public participation, more users, and volunteerism); and other (all uncategorized comments). Responses were sorted by their general content, including positive or negative sentiment. For example, for these two responses—"too much funding" or "too little funding"—both would have been placed in the "Funding" category. Several responses encompassed more than one category, and the categorization reflected those. From the TextSmart results, a report was generated and delivered to the Office of State Planning and the SCORP Steering Committee, noting trends among broad categories, and providing actual comments from respondents that captured the essence of the category. The Office of State Planning was also supplied with a complete list of all open-ended responses for each survey. Also, the OSP made each of these reports available to the public by posting them on their SCORP website.

Each of the twelve categories were derived from an

initial review of the responses in an effort to identify common themes that would aid in the categorization and interpretation process. However, given that these broad categories were designed to capture a wide range of responses for both “actions” and “barriers” across the four topic areas, the category placement varied somewhat, depending on the reviewer’s interpretation of the response.

Many of the individual responses touched on more than one category and were reflected accordingly in the response counts per category. Responses in the “barriers” section of the survey did not clearly fall into the above-mentioned categories, but several themes were present, both in the organization and public responses. There was no significant difference in responses between the general public and stakeholders’ perceptions on specific actions or barriers.

Actions. Education, access, and funding were common categories that were identified as important actions for all four topic areas across cohorts. Responses were mainly in support of increased education for the general public, environmentalists, planners, and lawmakers. Participants indicated that workshops and informational sessions were needed regarding a variety of subjects, like user etiquette, ecological awareness, and the benefits of preservation (both land and water). Issues relating to access ranged from increased/improved access to decreased access for specific recreation activities. There were also comments relating to the need for disabled access, and recognition of multi-purpose recreational sites. Funding was another popular category amongst survey respondents, and had specific comments relating to grants and the redistribution of funding mechanisms within New Hampshire.

Barriers. Common themes amongst respondents relating to barriers in each of the four topic areas included limited funding, lack of information/knowledge, lack of planning/management, and the need for a balance to be found between uses/interests. Some comments include: “helping folks understand the \$ and sense of open space and the need to NOW set land aside before the cost becomes prohibitive thereby necessitating huge bond articles in the future to save threatened lands”; “convincing local budget committees and

selectmen or city councilors that recreation is a priority”; “lack of local government interest and support of preserving open space for conservation/recreation”; “increased demand due to greater number of users cause deterioration faster than can be repaired”; and “No evidence of a comprehensive plan or ‘vision’ guiding the state’s management of its lands. State Parks and Forests should be managed in a coherent way, to protect what makes them valuable.”

Summary of Quantitative Results

This section will provide a brief summary of the quantitative survey results. Of the 573 New Hampshire residents that completed the “New Hampshire Outdoor Recreation Planning Survey,” 259 identified themselves as stakeholder group representatives, and 314 were organization members and/or New Hampshire residents. Among the stakeholder respondents, 36.1% identified themselves as executive directors or directors of their organization; 46.4% of the groups had a local geographic scope; 15.0% represented tourist groups and another 14.5% of participants represented government agencies; 61.5% of participants were male; and 38.9% of stakeholder respondents had at least a Bachelor’s Degree (either BA or BS).

Three hundred fourteen New Hampshire residents completed the public New Hampshire Outdoors survey. 66.8% were male, and 34.2% had at least a Bachelor’s Degree (either BA or BS). 41.2% identified the White Mountains region as their favorite outdoor recreation destination in New Hampshire, while the Dartmouth-Lake Sunapee (5.1%) and Merrimack Valley (5.7%) regions were the lowest rated destinations. Many of the respondents to the public survey identified themselves as members of a voluntary conservation organization (34.7%) and/or members of a motorized recreation club (33.1%) and/or members of a voluntary outdoor recreation committee (32.2%).

One of the most important pieces of information that can be taken away from this study is that so few New Hampshire residents indicated that they were aware of the SCORP or the LWCF programs. About half of stakeholder group participants said that they were not familiar with New Hampshire’s SCORP, while 54.5% of public participants

indicated that they were unfamiliar with the SCORP. 27.2% of stakeholder group participants were not familiar with the LWCF, while 32.9% of public participants were unfamiliar. Both groups felt that the issues presented in the four broad topic areas had all improved in New Hampshire in the last 10 years. Funding priorities were similar across cohorts, including a low funding priority for motorized recreational trails, a medium funding priority for the development of a wide range of recreational opportunities for those who are disabled, and a high funding priority for the maintenance of existing park facilities and trails, among others. Responses were also similar for several land acquisition scenarios, in that both groups agreed with the statements.

Summary of Qualitative Results

This section will provide summaries of the open-ended responses provided for the four broad topic areas in the survey. In this part of the survey, the respondents were given the opportunity to provide input on four broad topics relating to recreation in New Hampshire: recreation opportunities for all; public use and resource conservation; community recreation, health, and well-being; and recreation corridors and linkages. Survey participants were asked to read through the descriptions of each topic area, and think about the conditions, barriers, challenges and potential actions in New Hampshire related to that specific issue. They were then asked to rate the recreation-based issue, and invited to share their comments relating to each question in as much detail as possible.

Recreation Opportunities for All. This section of the survey deals with the challenge of providing and maintaining a wide range of recreation opportunities for all citizens, regardless of socioeconomic circumstances. Specifically, “a wide range of recreational preferences exist across age, ability, etc. Issues exist related to the roles of state lands, federal lands, and local lands in providing these different, often competing, opportunities as well as understanding the role of private lands in public recreation provision. Park and facility maintenance, as well as self-funding of State Parks, are also important issues.”

57.5% of the organizations (n=148) felt that the overall range of outdoor recreation opportunities in New Hampshire over the past 10 years has

improved, while only 13.3% (n=34) indicated that they believe that these opportunities have declined. After rating the range of outdoor recreation opportunities in New Hampshire, participants were asked to describe why they responded in that way. 229 people provided comments relating to the rating of this issue. One respondent said that “Access and up-keep have improved overall. It is apparent when I visit many facilities that an effort is being made to promote our resources to visitors.” Another said that “Opportunities for wide range of recreational activities seems to have grown.” On the other end, another summed up their opinion by saying that “Sprawl, lack of funding to upgrade, conflicts between users for limited space” helped to shape their opinion. Nearly three-quarters of stakeholder respondents (73.8%, n=169) indicated that there are specific barriers or challenges, and provided 391 comments relating to this issue. Common themes in these comments included finding a “balance between various users to minimize environmental impacts”; a variety of “conflicts”; “costs” and “money”; “education”; “funding”; “lack of access”; “lack of knowledge” on the part of the public; and “staffing.” Also, over 80% (n=163) of stakeholder respondents said that there are specific actions that could be taken to address this topic, and offered 357 comments, including “access to all land and water”; “better access to state resources”; “acquisition of lands” for a variety of purposes; “better cooperation between agencies”; “education”; “incentives”; “better planning”; “money” and “funding”; “provide more publicity,” and “restrictions” on development and land use for recreation.

Nearly 35% of the public participants (n=108) felt that the overall range of outdoor recreation opportunities in New Hampshire over the past 10 years has improved, while 26.5% (n=82) indicated that they believe that these opportunities have declined. After rating the range of outdoor recreation opportunities in New Hampshire, participants were asked to describe why they responded in that way. 269 people provided comments relating to the rating of this issue. One respondent said that “Development has basically destroyed the opportunity for non-organized outdoor activities in the southern part of the state. Virtually all biking/hiking trails south of Concord seem to have been built on.” Another said that

"Different groups are fighting for the same uses of land instead of cooperating." This participant identified several barriers: "Poor management and overuse exhibited; more "forcing" of incompatible activities squeezed within trail system. Non-motorized modes of activities cannot compete with OHRV users. More upland hunting areas posted." On the other end, another summed up their opinion by saying that "Fish and Game has done a super job (since I was a kid), where as in the 60s and 70s things were not very well managed. Plus law enforcement has been stepped up around illegal activities around recreation and the environment." Over 80% of the respondents (n=229) indicated that there are specific barriers or challenges, and provided 494 comments relating to this issue. Common themes in these comments included finding a "lack of access" to land and water, for disabled people, and to information; "lack of coalitions among interested groups"; "lack of communication to public about activities"; "limited funding"; "poorly maintained" state access facilities; "population growth"; and the increase of "private land being posted." Also, over 90% (n=222) responded that there are specific actions that could be taken to address this topic, and offered 443 comments, including the acquisition of "more public lands" and of "building rights to land"; the designation of specific "recreational sporting areas"; "education" of the public and uneducated environmentalists; federal and state "funding"; "improve public access sites"; "improve disabled access"; and implement "user fees."

Public Use and Resource Conservation. This section of the survey deals with balancing the conservation and value of natural and cultural resources with public recreational access and tourism. More specifically, "this topic might include issues related to land and water conservation, open space protection, public recreational access, and balancing public use and resource conservation for public lands. Recreational access includes both motorized and non-motorized recreation. This topic also includes sustainable tourism development and the importance of natural and cultural resources in attracting tourism to New Hampshire. Resources include wetlands, lakes, rivers, coastal areas, forests, cultural/historic resources, rare/endangered species, etc."

Almost 80% of the stakeholder participants (n=200) indicated that the relationship between public recreational use and resource conservation in New Hampshire over the past 10 years has become more of an issue, while less than 1% (n=2) of respondents felt that it has become less of an issue. 212 respondents provided statements describing the way that they rated public use and resource conservation. Opinions included "Increased development has put pressure on natural and cultural resources." On the other hand, another participant said that "I don't think it's much of an issue. A very good job has been done." Another respondent said that "LCHIP, and other funding/awareness initiatives have made this a more important topic." Over 80% (n=166) of participants felt that specific barriers or challenges exist, and 334 comments were provided on this issue, like "competing interests"; "education" of environmentally-conscious individuals, across agencies, and town planning, conservation, etc. boards and officials; "communication"; "funding"; "lack of enforcement personnel"; and "politics." Over 85% (n=155) of respondents indicated that there are specific actions that can be taken to address this topic. 286 action-oriented recommendations were made by respondents. For example, "communication"; "education" of ATV riders, conservationists and the public; "increased funding"; "limit use" and access; "more public participation"; and implement or increase "user fees" were popular suggestions.

Over 80% of the public respondents (n=243) indicated that the relationship between public recreational use and resource conservation in New Hampshire over the past 10 years has become more of an issue, while only 2.3% of respondents (n=7) said that it has become less of an issue. 240 respondents provided statements describing the way that they rated public use and resource conservation. One participant said that "Increased public awareness, increased demand due to population, accessibility, income, and free time" all helped to shape their opinion, while another said that "More fees, less access. Trailhead parking fees, high registration fees." Conversely, a respondent felt that "There is a more balanced approach and more appreciation of the others perspective." 84.0% (n=204) felt that specific barriers or challenges exist, and 374 comments were provided on this issue, like "balance" between a variety of

interests; “education”; “funding”; “growing population”; “growing tourism”; lack of “public access,” “public information,” and “maintenance”; lack of “law enforcement”; “property rights”; and public “misconceptions,” “misinformation,” “perceptions,” and “opinions.” Over 87% (n=186) of respondents believed that there are specific actions that can be taken to address this topic. 334 action-oriented recommendations were made by respondents. For example, “education,” the “improvement” of interagency cooperation, “regulations,” and “land conservation” were popular suggestions. Community Recreation, Health and Well-Being. This section deals with the promotion of livable, healthy communities (and people) and supporting community-based recreation opportunities close to home. To be more specific, “this topic includes understanding local priorities for Land and Water Conservation Fund monies, maintaining existing local facilities, developing new local recreation sites, and securing sufficient funds for local recreation needs. This topic also includes the importance of outdoor recreation in promoting healthy communities and families, with a focus on the relationship between land use and the quality of life.”

Over 35% of stakeholder respondents (n=89) indicated that community-based recreation, health and well-being in New Hampshire over the past 10 years has improved; 31.0% (n=75) believe that it has stayed about the same; and 19.0% (n=46) say that it has declined. 188 additional comments were offered by the participants. One said that “Communities are being designed for auto travel and not walking.” Another said that “Increased growth and development is eating up open space and diminishing access to private land and the rural quality of life.” Someone else said that “There seems to be more awareness of the importance of physical well-being, and livable/walkable communities.” Over 75% of respondents (n=133) said that specific barriers or challenges exist, and provided 249 comments, like “adequate funding and planning”; “cost,” “finances,” and “lack of funding”; “lack of education”; “lack of good zoning and planning”; “no local support”; “no social capital”; “loss of sense of place”; “population pressures” and “sprawl”; and that “recreation funding at local level not a priority.” Also, over 80% (n=105) believed that there are specific actions that can be taken to

address this topic, and provided 197 recommendations relating to community recreation, health and well-being. Some of these recommendations include “adequate funding” for transportation/transit-related issues; “better planning” at local and regional levels; “better local zoning and growth ordinances”; “education”; “increase funding”; “plan based on long term sustainability rather than short term gain”; and to “promote this issue more in the state.”

31.4% of public respondents (n=89) believed that community-based recreation, health and well-being in New Hampshire over the past 10 years has improved; 30.7% (n=87) believed that it has stayed about the same; and 22.3% (n=63) said that it has declined. 189 additional comments were offered by the respondents. One respondent said that “Continued development of open space has neutralized many of the improvements made by communities.” Another said that “I see more parks in local areas but also much more urban sprawl in the southern part of the state.” Another participant said that “In my area, state funding has been decreasing, but local efforts are keeping resources available. It is a fragile and unsatisfactory solution. Consistent state funding is important.” Over 70% of respondents (n=131) said that specific barriers or challenges exist, and provided 230 comments. Common themes include “lack of funding”; “growth and sprawl”; improving “mass transit” and “urban planning” and “education.” Also, over 75% (n=115) believed that there are specific actions that can be taken to address this topic, and provided 204 recommendations relating to community recreation, health and well-being. Some of these recommendations include “better education” and “better communication”; “increase funding sources”; “public awareness”; “land use planning” to control sprawl; and “zoning restrictions.”

Recreation Corridors and Linkages. This section deals with the promotion of recreational/conservation corridors and linkages within a community, as well as linkages between communities and regions. More specifically, “this topic includes recreation and conservation issues related to trails, recreation corridors and greenways, across a range of motorized and non-motorized recreational activities. This topic also includes the role that trails play in linking and connecting

places within a community and between communities and regions. These corridors also play a role in promoting healthy communities and families, and making more livable/walkable communities, with a focus on the relationship between land use and the quality of life.”

Over 45% of the organizations (n=112) said that the quantity and quality of recreation corridors and linkages in New Hampshire over the past 10 years have improved; 25.3% (n=60) felt that they have stayed about the same; and 12.2% (n=29) believed that they have declined. 187 comments were provided, including “Development has eliminated many unofficial corridors and linkages. In the planning and development process this is usually not considered.” Another respondent said that “Efforts to improve linkages like the Heritage Trail seem to be moving slowly.” Someone else said that “I have seen little improvement in recreational corridors (i.e. bike lanes, trails) despite increased press coverage and local advocacy (in Seacoast area). Some new construction includes bike access, but then doesn’t link with trails on either side.” Over 80% of respondents (n=138) believed that specific barriers or challenges exist, and provided 241 comments. Common themes among these comments include “education” of property owners, public officials and trail users (ethics); “funding”; “inadequate enforcement”; “inadequate penalties”; “lack of coordination” between towns and between state agencies; “lack of regional planning”; “lack of zoning/planning regulations”; “sprawl”; and “un-smart growth.” Over 80% of respondents (n=101) said that there are specific actions that can be taken to address this topic, and provided 159 recommendations relating to the quantity and quality of recreation corridors and linkages. Some of these include “coordination”; “create master plans for recreational uses”; “education”; “enforcement”; “increased funding” for a variety of state programs; “regional planning”; and “smart growth planning.”

Almost 40% of the public respondents (n=112) said that the quantity and quality of recreation corridors and linkages in New Hampshire over the past 10 years have improved; 22.8% (n=64) felt that they have stayed about the same; and 26.4% (n=74) believed that they have declined. 207 comments were provided, including “I see little if any improvements, and no linkage between or within communities.” Another participant said

that “Highway construction, parks, et all must meet the needs of the pedestrians, handicap, bikers, etc. There must be opportunities for all.”

Alternatively, another said that “In Amherst and surrounding towns, wildlife and recreation corridors have been specifically addressed and considerable progress made.” Almost 85% of respondents (n=163) believed that specific barriers or challenges exist, and provided 272 comments. Common themes among these comments include “public awareness”; “development and lack of planning”; “education”; “funding” for a variety of actions; “lack of awareness” and “knowledge”; “lack of leadership” at the state and community levels; “lack of cooperation” between recreation clubs and between landowners; “local planning regulations”; and “population growth” and “sprawl.” Over 86% of respondents (n=141) said that there are specific actions that can be taken to address this topic, and provided 219 recommendations relating to the quantity and quality of recreation corridors and linkages. Some of these include “education” of landowners, the public, communities and state agencies; encourage private land to be “opened up” to public use; “funding” to purchase land; “more planning”; and “more public awareness.”

Summary

Many of the trends and themes identified by stakeholder representatives and public participants were very similar, and helped to identify important issues, either locally, regionally, or statewide. These comments offered the SCORP Steering Committee important insight into outdoor recreation-related issues around the state that may not have otherwise been obtained. Many of the Steering Committee members, however, chose to not read the reports that were provided to them by UNH, which leads to the supposition that the survey results did not provide members of the Steering Committee with much insight into recreation trends and issues experienced by stakeholders and residents in New Hampshire.

The public participation techniques used for the development of New Hampshire’s 2003-2007 SCORP document allowed residents from all social, economic, educational, and political backgrounds the opportunity to provide input towards the SCORP development process. Over 600 residents provided input in some form or another, whether they completed the online survey,

attended regional meetings, provided comments to OSP, visited the SCORP website, or were on a committee. It can be presupposed that these residents likely would not have participated had these opportunities not been so abundant and accessible. By using multiple forms of media to inform and attract participation (internet, newspaper, and radio), it is unlikely that as many residents would have participated had no media been used.

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OPEN SPACE PLANNING AND THE MASSACHUSETTS COMMUNITY PRESERVATION ACT

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Abstract: Open space protection is a primary concern for recreation planners. As the Northeast grows in population and the threat of urban sprawl accelerates, open space protection and creation needs attention. This paper summarizes the findings of a survey administered to the citizens of Southwick Massachusetts for the preparation of a Community Open Space and Recreation Plan. Southwick is a “bedroom” community within commuting distance to Springfield, Massachusetts to the east and Hartford, Connecticut to the south. And as such, the rural fabric of the region is threatened by urban sprawl. Citizens were asked in the Fall 2002 elections if they wished to participate in the Community Preservation Act (CPA) passed by the Massachusetts State Legislature. This act helps communities plan for controlled growth and development. Question 4 passed, and illustrates the citizen’s acceptance of a 3% property tax surcharge to fund the CPA. The election results mirror the findings in our survey. Additional findings to be discussed include the public’s acceptance of alternative funding opportunities for open space acquisition, strategies for controlling urban sprawl, an assessment of quality of life factors, visitation patterns at the local park resources and identification of future parks and recreation needs. Keywords: Open Space Plans, Quality of Life, Massachusetts.

Introduction

The Massachusetts Community Preservation Act (CPA) was signed on 14 September 2000. The Act allows communities to establish a funding mechanism dedicated to open space, historic

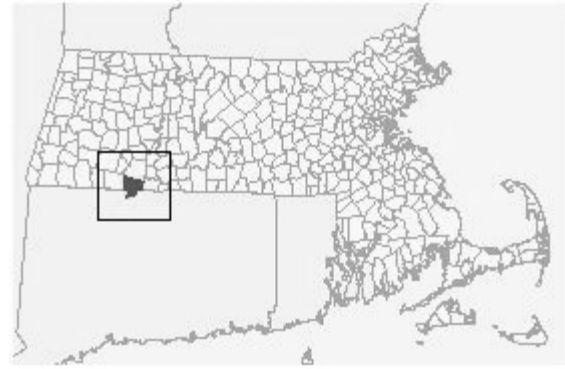


Figure 1. Location of Southwick Massachusetts (Source: Massachusetts Community Preservation Act WebPages).

preservation and affordable housing. While the vast majority of permanently protected open space is found in Western Massachusetts, pockets of growing residential communities still exist. Thus planned growth and the protection of recreation lands are essential to preserve the rural character and sustain a high quality of life. One community that has seen recent growth in population is Southwick, the town that juts into Connecticut seen on state maps (Figure 1). Having a population of nearly 9,000 in 2000, should the community “buildout” to the maximum permitted by current zoning, one might find almost 29,000 in the town! Thus, this town is at a good stage to explore the potential advantages of open space protection.

The Town of Southwick, Massachusetts voted to implement the CPA on 5 November 2002 by a slim margin (Union News 2002). Question 4 asked the citizens to support a 3% property tax surcharge to fund the CPA. In preparation of the vote, the Conservation Committee contacted the project leader for assistance in the preparation of the Open Space and Recreation Plan. Westfield State College would assist the community by administering and analyzing the user demand survey. The survey was designed to solicit community opinions on the preservation, planning and use of open space and recreation areas in Southwick.

A team of 18 students conducted telephone interviews in early November 2001. Over eight evenings, the students obtained 251 completed surveys out of a total of 892 calls yielding a decent 30% response rate; fine for telephone surveys.

The authors next tabulated the results and conducted statistical analysis for the report (Bristow et. al 2002). In the next two sections, the reader will find information on the Community Preservation Act and the sampling and data collection scheme. Next the reader will note the results of the analysis. Lastly, a discussion of some of the more insightful findings will take place. An estimated 160 hours was devoted to this project.

Background

The Community Preservation Act enables a community, through a ballot referendum, to create a fund dedicated to historic preservation, affordable housing and open space. Revenue for the fund is to be generated by a surcharge of up to 3% on the local property tax. As a further incentive, the Commonwealth of Massachusetts will match up to 100% of the locally raised money (Commonwealth of Massachusetts 2003a). For open space, lands can be purchased for active and passive recreational uses. This might include community gardens, trails, youth and adult sport areas. For example, CPA funds have been used to create a skate park (Commonwealth of Massachusetts 2003b). Typically, this surcharge is expected to be a modest increase for most homeowners. For Southwick, the surcharge will average about \$16 a year for a \$200,000 home and about \$32 a year for a \$300,000 home (Community Preservation Coalition 2003).

Data

During the early part of the Fall 2001 Semester, the project leader met with members of the Southwick Open Space Committee to prepare a survey instrument that could be administered via the telephone. The survey instrument was modeled after questionnaires used in previous community open space and recreation surveys and tailored to meet the needs of Southwick. The instrument solicited information about household characteristics (length of residency, number in family and age), preferences for strategies to protect open space and recreation resources in the community, visitation patterns for local resources and information about needed expansion and/or provision of recreation opportunities. A copy of the survey instrument is found in Appendix A.

A random telephone survey was utilized for this project for several reasons. First, it generally

Table 1. — Dates and Totals of Phone Surveys

Day	Date	Total Calls Made	Total Surveys Completed	% Response
Sun	11/04/01	66	24	36.4%
Mon	11/05/01	98	26	26.5%
Tues	11/06/01	110	30	27.3%
Wed	11/07/01	110	31	28.2%
Sun	11/11/01	77	27	35.1%
Mon	11/12/01	73	27	37.0%
Tues	11/13/01	249	57	22.9%
Wed	11/14/01	109	29	26.6%
GRAND TOTALS		892	251	30.0%

provides a fast and efficient way to gather information. Second, other than staffing expenses, it is inexpensive; the Westfield State College Foundation provided the telephones and the College paid for the telephone access. Thirdly, a two-way exchange of information can take place, should the household need an explanation of a question. The disadvantage with telephone surveys is that households without telephones or with unlisted numbers are excluded from the survey. Thus, one could call this survey a stratified (by listed residential telephone numbers) random sample.

The Southwick Open Space Committee and WSC notified the press of the impending survey to alert the public of the project. All in all, nearly 900 phone calls were made with 251 surveys completed. This yields a respectable 30.0% response rate. See Table 1 for the sampling dates and number of completed surveys.

Given the population of Southwick is 8,835 residents and 3,318 households, (2000 Census: <http://www.census.gov>) the 892 total calls made represent a 26.8% attempt rate of contacting the residents of Southwick. Further the sample size of 251 represents an overall sample of 7.6% of the population. Generally samples in excess of 3% have been found to be representative of urban populations.

Results

In this section of the report a summary of key responses, question by question will be found. Again, the reader is directed to the survey instrument found in Appendix A for the wording of the questions.

Residency

The first question on the survey asked the respondent how long they have lived in Southwick. The minimum amount of time any given participant lived in Southwick was one month, while the longest amount of time being 75 years. The mean was 18.7 years.

Importance of Land Use Strategies

In the second question, households were asked to rank the importance of four land use strategies on a 1 to 5 scale. The four strategies are 1.) preserving farmland, 2.) preserving places of historical value, 3.) conserving land, natural and open spaces, and 4.) creating new or expanding current recreational areas.

Preserving farmland yielded a 'most important' response from 125 households (49.8%). In the preserving historical places strategy, 120 households (47.8%) specified that this is most important. For conserving land, natural and open space areas, 154 households (61.4%) showed that this is most important. The last strategy, creating new or expanding current recreational areas, 65 households (25.9%) felt that this is most important. Thus conserving land, natural and open space is the most important factor land use strategy for the community.

Growth

The next question examined the type of growth desired by the people of Southwick. The participants were asked to indicate their preference (yes or no) about five types of growth: residential, conservation and open space acquisition, business/commercial, industrial/manufacturing, and no growth at all.

Southwick Citizens were most receptive to growth in the area of Conservation and Open Space Lands (90.8%), and Business and Commercial development (58.3%). The least interest in growth was found in the categories of Residential (39%), Industry/Manufacturing (38.3%) and No Growth (32.4%). Note also, that the residents uniformly supported the preference for Growth in Conservation and Open Space; a standard deviation of 0.29 indicates this wide support. The remaining growth strategies yield higher standard deviations (e.g., 0.46+) indicating greater variation in the responses.

Table 2. — Annual Visitation Patterns to Southwick's Resources

	N	Minimum	Maximum	Mean	Std. Deviation
Public Schools	243	0	365	39.35	73.013
Congamond Lakes	245	0	365	34.70	93.502
Southwick Rec. Center	244	0	700	17.36	66.440
Boys & Girls Club	244	0	255	6.79	30.793
Golf Courses	245	0	200	4.96	17.519
Granville Gorge	245	0	365	4.93	27.825
New Town Beach	245	0	365	2.86	23.686
Old Town Beach	244	0	12	.52	1.836

To Preserve Open Space

The fourth question asked households what they would do in order to preserve the open space in Southwick. Six statements were presented in which the respondent would answer yes or no.

A majority of residents support the notion of Strengthening Zoning Laws in the Community. Next, citizens favor land acquisition as a mean to preserve open spaces. The four remaining strategies were equally approved and each received an approximate 50 percent approval. For the details, while 206 households (82.1%) are in favor of strengthening zoning/development restrictions on wetlands and floodplains and 179 households (71.3%) supported land acquisitions, only 122 households (48.6%) would sell and/or donate land to the town. Donating money or increasing taxes to preserve open spaces were options favored by only 51.8% and 37.5%, respective. The last statement refers to the creation of real estates sales tax to establish a land bank. The results indicated that 132 households (52.6%) are in favor of the creation of this type of real estate sales tax. Coincidentally, the acceptance of the real estate tax in our survey mirrors the election results (51.9%).

Public or Private Recreational Facilities

This particular question addressed how many times each participant and their families have attended the given recreational areas within the last year. Out of all the possible choices, public schools had the most visitors, with a mean of 39.35 visits per

Southwick's Open Space

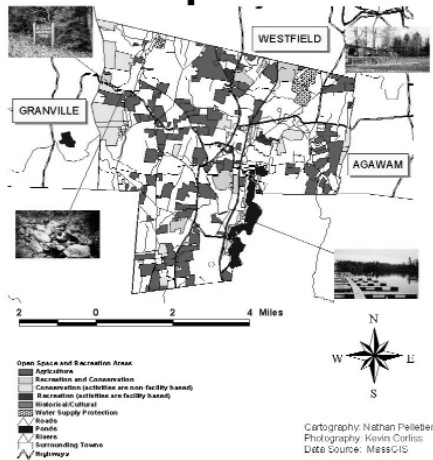


Figure 2. Southwick's Open Space.

year, whereas the Old Town Beach received the least visitors, with a mean of .52 visits per year. Table 2 summarizes the visitation patterns. A map of the protected open space lands in Southwick is found in Figure 2.

Quality of Life

In question number six respondents were asked to rate eight specified Quality of Life conditions as good, fair or poor. On average, Southwick citizens ranked the living conditions as fair or better. To get a sense of how citizens favor conditions, the majority (mode) replies are listed below.

One hundred and eleven households (44.2%) rated housing costs as fair. In the case of housing conditions, 142 households (56.6%) rated the condition as good. A majority of households (146 or 58.2%) rated the conditions of parks/playgrounds as good. And the vast majority of households (213 or 84.9%) rated the police service as good. Regarding the question of condition of streets, 115 households (45.8%) rated the condition as good. Public Schools had 147 households (58.6%) that rated the schools as good. For fire protection, 198 households (78.9%) rated the protection as good. Lastly, the category of shopping facilities had 98 households (39.0%) who rated the facilities as good and 99 households (39.4%) who rated the shopping opportunities as fair. As one will see, the majority of citizens feel the services are good in the Town, while for housing costs and shopping opportunities, the citizens rank them as only fair. Given the steadily

increasing costs of homes in the region, no further exploration in this area is warranted.

Conservation Land Use

The seventh question pertained to the manner in which Southwick's conservation land should be used. The respondents were requested to answer yes or no to three ways in which the land should be used: 1) keep in a natural state, 2) develop as a passive recreational area, and 3) develop as an active recreational area. The surveyors also solicited other possible uses for the conservation land.

A majority of Southwick residents or 216 households (86.1%) agreed that the land should be kept in its natural state. There are 187 households (74.5%) who believe that land should be developed as passive recreational areas. Finally, the last type of land use strategy asked if people preferred the land to be developed as active recreational areas. Only 98 households (39%) favored this type of development. It is apparent that the citizens do not favor active recreation development.

Expansion of Recreational Facilities

This particular question asked the household if they favored the expansion or development of the 15 specified recreational facilities. The top five facilities that the participants wanted to see expanded or developed are listed next. The facility of most concern is the bicycle trail. A clear majority or 199 households (79.3%) felt the town needed to expand/develop the trail. Nature trails followed with 195 households (77.7%). The third facility is one that supports art/cultural events, with 171 households (68.1%) in favor of expanding/developing this opportunity. The fourth facility that is favorable for expansion is that of parks, with 160 households (63.7%). Finally, picnic areas came in fifth, with 145 households (57.8%) wishing for expansion or development. The survey respondents were able to suggest additional facility development and recommended a public pool and roller blade/skate board opportunities in the community.

Household

Our ninth question, how many people live in your household, yielded the following results. The maximum is 24 people per household, minimum is 1 person, and the average is about 3 people per household.

Ages of Household Members

The last question of the survey sought to find out the distribution of the families by age. It is best to provide data from the 2000 Census. The Median age is 37.9, with 20.8% of the Southwick citizens in the 35-44 year bracket. Other demographics provided by the Census indicate the racial makeup (97.4% white), occupied housing units is 3,318 (93.9%), owner occupied housing 2,699 (81.3%) and the youth of Southwick (14 years and under) make up 21.6% of the population.

Discussion

In sum, one could describe the citizens of Southwick in the following manner. Citizens support a land use strategy that develops new or expanded recreation areas. Growth in this area is also supported, and seconded by some additional business and commercial growth. How recreation and open space is paid for is another matter, for citizens do not support additional taxes, but do support strengthening zoning and to have the Town acquire lands. Visitation patterns are high for the Congamond Lakes and the public school lands, so these areas demand the highest attention. The quality of life is good for the citizens, although some concern for affordable housing and shopping opportunities are evident. Citizens prefer that conservation lands be kept in a natural state, and the town should consider developing a bicycle trail, nature trails, an arts center and the general expansion of parks and picnic areas.

A final interesting statistic is considered. One might expect that citizens would value open space differently based on the longevity of residence. That is, new residents might value recreation and open space opportunities different than long time residents. A statistical test of association Chi-Square was performed on several questions in the survey and found that length of residency did not matter in valuing open space issue in the community. Therefore, one could conclude these issues are valued uniformly by all citizens in Southwick.

What is the next step? Given the recent acceptance of the CPA by the citizens of Southwick, we must wait until the taxes are collected for the second half of 2003. Once the revenue and matching funds are obtained, one will hope that this report will serve as a guideline for expenditures in Open Space and Recreation opportunities in the community. Thus, time will tell regarding the usefulness of this report. In either case, the CPA is a low cost funding opportunity to protect open space lands in the Commonwealth of Massachusetts.

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Environmental Issues Facing Managers

ENVIRONMENTAL RESPONSE TO NATURAL RESOURCE MANAGEMENT REGIMES: TWENTY YEARS OF VISITOR IMPACTS IN THE BOB MARSHALL WILDERNESS

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Abstract: In the summer of 2002, 19 campsites within the Bob Marshall Wilderness were examined to determine the amount of recreational impact occurring on these sites. The findings from this study were compared with findings from a study undertaken by Cole in 1981. Both studies utilized the same sites and the same methods. Comparison of the two studies was conducted to determine if any trends were occurring on these campsites over the 21-year span. Campsites were compared according to their use type, whether stock use or backpacker. Sites classified in 1981 as horse use sites incurred the most impacts, such as increased tree damage, while sites classified as backpacker sites showed general improvements. However, without knowledge of the actual use patterns on these sites, it cannot be assumed that a particular user group is the primary cause of the impacts. Leave No Trace ethics practiced by backpackers insist on using already impacted sites, and this may account for some of the findings found in this study. Visitor education may provide managers with a means to decrease visitor impacts. Tree damage, such as that caused by tying stock to trees or visitors cutting branches off for firewood, remains the greatest impact found on these sites. Educating visitors in proper stock handling practices, as well as encouraging visitors to search for firewood away from the campsite could decrease the amount of tree damage found on these campsites.

Introduction

The Bob Marshall Wilderness Complex (BMWC)

comprises the Bob Marshall, the Great Bear, and the Scapegoat Wilderness Areas. These wilderness areas contain 1.5 million acres of lands that remain relatively untouched by man. Opportunities for recreation abound in these Wilderness areas with backpacking, horse packing, river rafting, fishing, and hunting as the primary activities that attract visitors to the BMWC. These areas are preserved according to the 1964 Wilderness Act, which states that wilderness areas are places where it, "...generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." (P.L. 88-577).

Recreational use in the BMWC has increased since its inclusion into the National Wilderness Preservation System (Lucas 1980; Cole 1983; Cole and Hall 1992). With this increased use, keeping the resource protected as prescribed under the 1964 wilderness act has become a challenge. In response to this, managers of the Bob Marshall Wilderness Complex adopted the "Limits of Acceptable Change" (LAC) in 1981. The LAC process focuses mainly on detecting changes in key indicators of resource conditions, such as camp area, bare soil, and trampled vegetation. An unacceptable change in the indicator's condition, for example bare soil exceeding the acceptable limit, triggers a management action to address the causes of the changes. Since much of the impact caused by recreational use occurs at the campsites, inventorying and assessing campsite impacts are a vital component of the LAC process.

An initial collection of campsite impact measurements within the Bob Marshall Wilderness was conducted in 1981 as part of the LAC planning process (Cole 1983). For that study, Cole located and monitored thirty-five campsites. Although the overall conditions of campsites were found to be comparable with those found in similar backcountry settings, Cole noted that: "Campsites were unusually large...and tree damage was severe. Such impacts were particularly pronounced on sites used by outfitters and large parties with stock" (1983).

In keeping with the LAC planning process, Cole and Hall (1992) reexamined 29 of the original 35 sites in 1990. They noted that: "The general trend [in condition] on established campsites was one of slight improvement. However, most improvement

occurred on sites that had not yet been used during the 1990 season. The types of impact that are continuing to increase are enlargement of campsite area and, perhaps, an increase in tree damage..." (1992).

Cole and Hall reported a 34% increase in campsite area in the intervening years with an average increase of 29 square meters (Cole and Hall 1992). With no subsequent monitoring of campsite impacts, managers of the Bob Marshall Wilderness cannot identify whether these sites are still increasing in size.

Study Area

The study area included 19 of the original 35 sites studied by Cole in 1981. These campsites were located in low elevation forests and grasslands located along the South Fork of the Flathead and the Danaher Rivers in the Bob Marshall Wilderness Complex. Five of these campsites are used primarily by backpackers, thirteen campsites are used by private parties with stock, and one is a seasonal outfitter camp (Cole 1983).

Methods

Methods used in this study repeated those of Cole and others in 1981 and 1990. Center points for the campsites were located using witness trees. For each site, maps from the 1981 study identified three witness trees per site and included the azimuths and distances from those trees to the center points. A pin locator was used to confirm the center point by locating a 40-penny nail, which was left at the centers in 1981. A GPS reading was taken at the center point of each camp to allow managers to locate these sites with more accuracy in future studies.

Campsite area and the devegetated central core were identified for each campsite by measuring to the outer edge of the impacted campsite and to the first significant amount of vegetation (respectively) every 16 degrees from the center point (figure 1).

Quantification of tree damage were then conducted within the established campsite boundary by counting the number of exposed roots, broken and cut branches, scars, and nails evident on each of the trees found within the campsite. A count of felled trees and seedlings was also taken within the campsite.

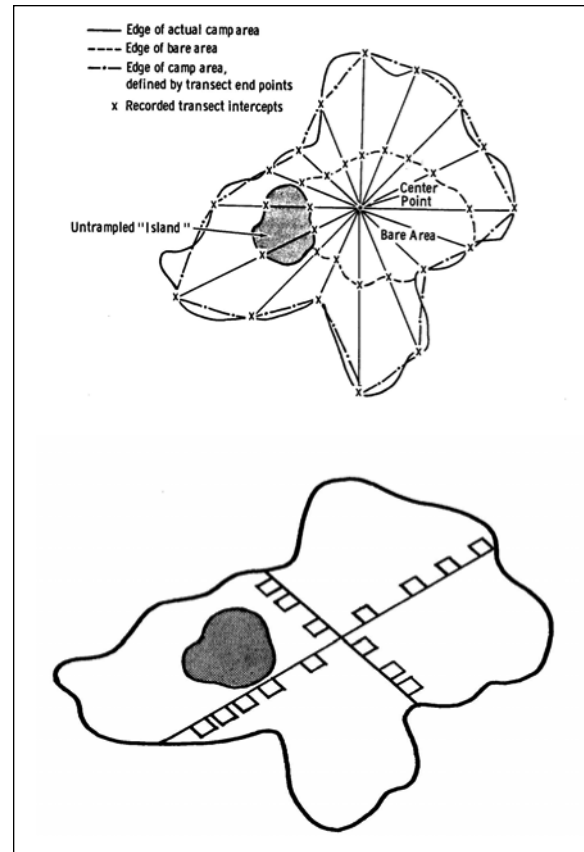


Figure 1. Radial transect method used to determine camp area and barren core & layout of 15 quadrats to assess percent cover of bare soil, rock, root/tree, and vegetative cover.

To assess the condition of each campsite, a maximum of 15 one square meter quadrats were established along two transects on each campsite (figure 2). This was accomplished using two cloth tapes that were laid perpendicular to one another. The intersection of the two tapes covered the center point of the campsite. Within each quadrat, the percent cover of bare soil, rock, root/tree, and vegetation were recorded. Vegetation composition, as well as their respective percent cover, was also identified. Duff depths were also taken within each quadrat. Quadrats provide a means to assess the condition of the entire campsite by taking up to 15 random samples from across the campsite.

Comparisons of campsite conditions were done using the SPSS statistical software package. Due to the small sample size, Nonparametric Tests were used. The Wilcoxon Signed Ranks Test was used to determine the significance of campsite condition changes within each classified use type between

1981 and 2002. For example, the camp areas of all backpacker sites in 1981 were compared to the camp area of those same sites in 2002. The Two-Sample Kolmogorov-Smirnov Z Test was used to determine significance of campsite condition changes between the campsites of the two different user type classifications. For example, the percent of vegetation cover observed on backpacker sites was compared to the percent vegetation cover observed on the horse use sites. This comparison was computed separately for the conditions in 1981 and in 2002.

Results

Within use classification use types

Analysis of the backpacker sites indicated no significant changes in the amount of tree damage on the sites from 1981 to 2002. For this study, tree damage is defined as the presence of nails in the trees, ax marks, carvings, exposed roots, scars, and other miscellaneous damage. Horse use sites are on the other end of this spectrum. The number of exposed roots on these sites increased 161% over the intervening 21 years. In 1981 the mean number of exposed roots on the horse use sites was 8.2 ± 7.8 . By 2002, that number jumped to 21.4 ± 23 incidents per site. The number of trunk scars less than 1ft² also increased on the horse use sites. In 1981, the average number of scars per site was 5.6 ± 5.13 and in 2002 the number increased to 13.1 ± 8.4 , a 132% change. However, not all indicators of tree damage increased on the horse use sites.

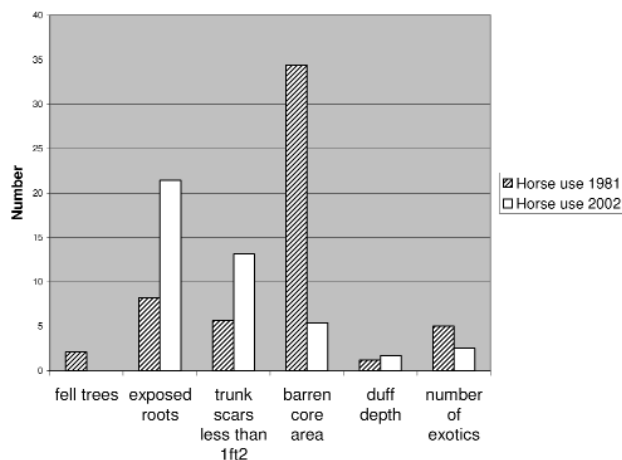


Figure 2. Significant changes on horse use sites between 1981 and 2002.

The number of fell trees decreased by 100%, changing from an average of 2.1 ± 2.1 fell trees in 1981 to 0 in 2002. Backpacker sites and horse use sites showed no significant changes in campsite area between 1981 and 2002. However, horse use sites did experience a 56% decrease in the barren core area over that time period, decreasing from a mean of 34.4 ± 26.8 m² in 1981 to 5.4 ± 11.8 m² in 2002.

Analysis of campsite conditions were evaluated using the percent coverage of bare soil (not barren core), living trees and roots, stone, total vegetation, as well as the duff depth.

Out of these, backpacker sites only showed significant changes in the percent of total vegetation coverage. In 1981, backpacker sites indicated a mean of $16.8 \pm 15.3\%$. This percentage increased by 37% in 2002, with the sites experiencing a mean of $27.9 \pm 20.9\%$ vegetative cover. Horse use sites showed improvements over the intervening years in regards to campsite conditions. The percentage of bare soil across the entire campsite decreased 53%. In 1981, the percentage of bare soil on these sites averaged $19.5 \pm 20.8\%$, and in 2002 that percentage decreased to $9.15 \pm 20.8\%$. Duff depth also improved on the horse use sites. Comparison of these sites across the 21 years indicates a 39% increase in the amount of duff present on these sites.

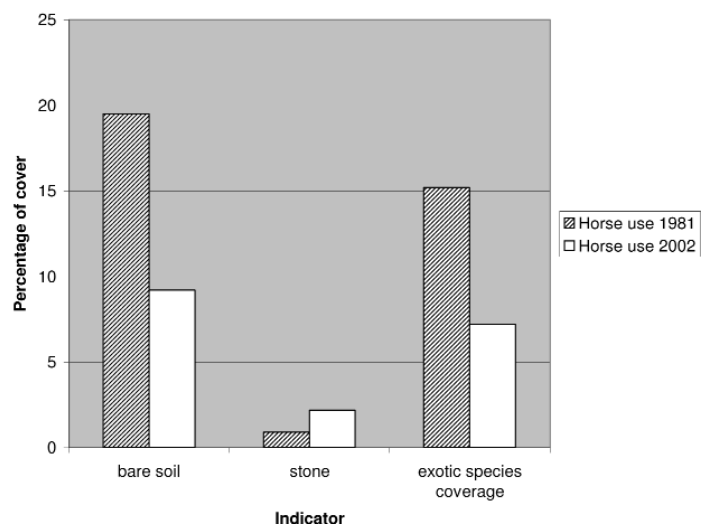


Figure 3. Significant changes in percent cover of three campsite condition indicators on horse use sites between 1981 and 2002.

The sites improved from a mean duff depth of 1.2 ± 1.6 cm in 1981 to 1.7 ± 1.6 cm in 2002. However, not all of the indicators improved for the horse use sites. The percentage of rocks found on the site increased by 145%. In 1981, the mean percentage was $.9 \pm 5.4\%$ and in 2002 that percentage increased to $2.2 \pm 4.6\%$.

The final analysis that was conducted within each use category was the change in the number and percent coverage of exotic species on the campsites. While backpacker sites indicated no significant changes over the 21-year period, horse use sites experienced a decrease in both the numbers of exotic species and their respective vegetative cover. In 1981, these sites had an average of 5 ± 2 exotic plant species per site, resulting in a mean coverage of $15.2 \pm 10.6\%$. In 2002, the number of exotics decreased to a mean of $2.5 \pm .9$ plants and their resulting vegetative cover similarly decreased to an average of $7.2 \pm 5.6\%$.

Between classification use types

Comparisons of campsite impacts observed in 2002 were conducted between the two classified types of use (table 1). For tree damage, the only indicator that was significant between the backpacker and horse use sites was the number of cut branches found on trees within the campsite boundary. Horse use sites incurred more cut branches than backpacker sites did. Backpacker sites experienced an average of $.5 \pm 1$ cut branch per site while horse use sites indicated a mean of 11.3 ± 8.4 incidents of cut branches per site in 2002.

Campsite area was also significantly different between the two use type classifications. In 2002, all of the horse use campsites were larger than the backpacker sites. The average horse use campsite is 257.4 ± 98.7 , with the smallest camp area observed being 98.7m^2 . The average backpacker campsite area in 2002 is 64.1m^2 , with the largest camp area measuring 89.7m^2 . On average, the backpacker campsites are one-fourth the size of the horse use sites.

Backpacker sites and horse use sites did not differ significantly in regards to the number of seedlings, the number of trees, the number of trees that were mutilated, the number of trees with cut branches, the number of dead stumps, or the number and respective coverage of exotic species. These two

classifications of campsites also showed no significant differences in percent vegetative cover, bare soil, stone, living trees and roots, or the depth of the duff layer.

Table 1. — Significance of difference in indicators between classified use types using Kolmogorov-Smirnov Z test.

Statistic		Type of use		Significance
		Backpacker	Horse	
Camp area (m ²)	1981	110	235	0.039
	2002	64	257	0.006
Cut branches	1981	11.5	13.2	.981
	2002	.5	11.3	.016

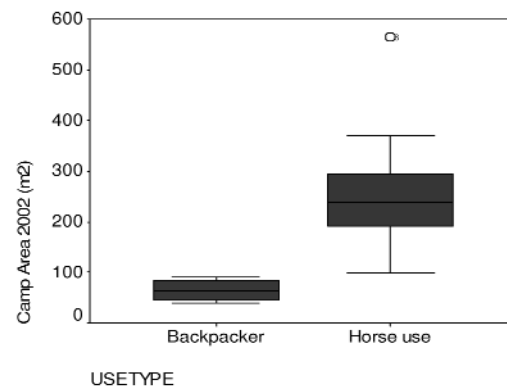


Figure 4. Box plots of camp areas based on the classified use type.

Discussion

Given the small sample size for the sites classified as backpacker campsites, any changes between 1981 and 2002 would have to be extreme in order for them to indicate statistical significance. Some of the changes observed may have shown significance had the sample size been larger. As a result, the only statistically significant change within the backpacker sites was a 37% increase in vegetative cover. Sites classified as horse use did not have this problem due to the larger sample size.

Sites that were classified as horse use sites in 1981

are still receiving the greatest amount of impacts. Tree damage on these sites is still the largest impact, and it is cumulative, meaning that any damage that occurs during the year adds to the damages caused from the previous seasons of use. Much of this damage is attributed to visitors tying their stock to trees. Not only does this pose the potential for girdling of the trees, it also increases the amount of exposed roots from the stock trampling the soil surrounding the base of the tree.

Barren core area appears to be decreasing on both use types. This decrease is more pronounced on sites that are classified as horse use sites. One possible reason for this is the lateness of the summer season in 2002. When examined in early July, only one fifth of the sites appeared to have any use, so seasonal revegetation may be accounting for the decrease in barren core area.

Campsite location, in relation to site ecology, also played a role in the revegetation seen between the two use type classifications. Parties with stock often tend to use sites classified as grasslands with a greater abundance of graminoids present. "Sites located under an open forest canopy and dominated by graminoids were highly resistant, while those under a closed canopy and dominated by forbs were less resistant" (Marion and Cole, 1995). This could prove to be an important factor for managers deciding on which campsites to allow stock use on.

Results indicate a decrease in the amount of exotic species present on the campsites. Management actions implemented in the intervening 21 years could account for this finding. Since 1981 the requirement for certified weed seed hay has been implemented in the national wilderness system. Also active weed management techniques such as spraying of camp areas and meadows near trails have been implemented by the Flathead National Forest (Ash, 2003).

Sites classified as horse use sites are also experiencing a decrease in the amount of bare soil present across the entire camp. Data from the study does not provide support for a concrete explanation for this, but one possibility is a change in use patterns that has led to the increased camp areas of these sites. Use patterns on these sites may have shifted from the campsite centerpoint

established in 1981. By this analogy, as the camp size increases, the visitors are spread their use over a greater area, resulting in dispersed rather than concentrated impacts to the soil. Had the camp areas remained the same size, increased use levels would have decimated the vegetation, resulting in an increase in bare soil and decrease in vegetation.

One important aspect to mention is that these sites were classified according to use types in 1981. Since then, backcountry ethics have changed the way visitors use the areas. Some of the sites classified as horse use also receive backpacker use (Ash, 2003). Results indicate that the conditions on these two types of campsites are at different ends of the spectrum, with backpacker sites showing either improvements or no change at all, and horse use sites increasing in size and amount of tree damage. What our data doesn't provide us with is an estimation of the use levels these sites receive, or the percentage of each use type that camp on sites previously classified as horse use. One possibility for the lack of change on backpacker sites is that an increased number of backpackers use the already impacted sites when traveling through the Bob Marshall. Leave No Trace camping ethics urge backpackers to use already disturbed sites when traveling rather than creating new sites. This shift in the use of campsites could account for the growing gap between sites classified as backpacker and horse use.

Conclusions

Implications for managers from this study indicate that while most indicators and impacts are remaining stable there is still room for improvement, as impacts such as tree damage appear to be increasing. Are the impacts that appear to be increasing indicative of a certain type of user or use? A visitor use study, repeating the methods used by Lucas in 1985 will provide managers with a more complete picture of type of use occurring. In 1985, Lucas concluded that backpacking use was increasing while parties traveling with stock were decreasing in numbers, however findings from this study do not support that conclusion. Increases in certain types of impacts, such as tree damage are more indicative of increasing stock use in the Bob Marshall. Also, the backpacker sites showed little change while the horse use sites received the largest amount of impacts. The LAC plan has capped outfitter use

and required outfitters to dismantle large camps. Outfitters have been encouraged to adopt techniques that reduce amount of impact they produce, such as turning stock out away from camp when not needed. A visitor use study would determine if other use types, such as private parties with stock or backpackers are responsible for the increasing impacts found in this study. Understanding use levels and types will give managers a clearer target as to where to concentrate their education efforts.

Techniques that parties with stock could utilize to reduce these impacts would be to turn their stock out away from camp by using electric fences and hobbles. This would reduce the amount of tree damage and exposed roots occurring in these camps. Leave No Trace wilderness ethics have had positive effects with backpackers reducing their impacts, the same could be applied to parties traveling with stock, with a concentrated educational program.

Managers can also reduce impacts through selecting campsites for heavy use in areas that are more resilient. Open canopy grassland sites would be better suited for larger parties traveling with stock as the seasonal recovery is greater on these sites as opposed to closed canopy sites with primarily forbs present. Also concentrating use on already impacted sites reduces the overall amount of impact occurring. Especially given that most of the impact that occurs on a campsite occurs the first few times it is used.

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PREDICTORS OF PERSONAL RESPONSIBILITY TO PROTECT THE MARINE ENVIRONMENT AMONG SCUBA DIVERS¹

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Abstract: This paper examines predictors of personal responsibility for the protection of the marine environment among scuba divers (n=300, 97% response rate) in the Florida Keys, summer 2002. A predictive framework of personal responsibility was used as a guide for this investigation. A diver personal responsibility index was created from four measures of feelings of personal responsibility for appropriate diving behavior. Eighteen independent variables categorized, as diver background, environmental attitudes and specific issue variables comprised those indicators hypothesized to predict personal diver responsibility. Regression analysis found five predictors of personal diver responsibility accounting for 38% of the total variance. No diver background variables predicted personal diver responsibility. Perceived knowledge about marine environmental issues was the strongest predictor, followed by motivation, environmental beliefs, and attitude about enforcement and dive expectations. Results imply that belief in a balance between humans and nature, certain experience preferences pertinent to the recreational activity, positive attitudes toward enforcement and perceived knowledge of environmental issues are socio-psychological factors that may influence personal responsibility to act pro-environmentally while engaged in diving as a leisure activity.

¹ This paper is a result of research supported by the Florida National High Adventure Sea Base, Boy Scouts of America.

Introduction

Personal responsibility refers to the quality or state of being responsible such as moral, legal, or mental accountability; something for which one is responsible (Stubbs, 2003 online). In psychology and in mental health circles, buzzwords are used; personal responsibility is one such buzzword for the 1990s. What does personal responsibility mean and how does one become responsible? Personal responsibility is something that all individuals have for their actions, whether conscious of that fact or not. Consequently, feelings or attitudes toward responsible behavior vary in context and degree. All societies consist of people that have difficulty being accountable for their actions. "It wasn't me; or it was my alter ego." "My actions are not a major problem and I can't control what others do." Those are just a few of the many reasons given. Whatever actions or behaviors we do, we are still accountable and personally responsible for those actions. More importantly whether we own the responsibility or not, it exists and belongs to each of us respectively.

As it pertains to the pro-environmental behavior literature, personal responsibility refers to perceived feelings of duty or obligation of the respondent toward the environment (e.g., personal responsibility felt for reducing water pollution) (Hines, Hungerford, & Tomera, 1987). Hines et al. argues that people who feel some degree of personal responsibility toward the environment are more likely to engage in appropriate behavior than people with no such feelings of responsibility. For example, if a person understands that taking a piece of coral from the reef could result in further damage to the vary resource that he/she came to see, then they might take a personal interest or responsibility to not partake in that behavior.

Schwartz (1968) implies that for an action to occur, some degree of ascription of responsibility (AR) is necessary. Along with AR he argues that an awareness of the consequences (AC) of the action as it affects the welfare of others is also necessary. It is only when awareness of interpersonal consequences and acceptance of responsibility occur together that norms governing these consequences are likely to influence behavior, except insofar as other pressures supporting them are brought to bear. He argues that the opinions of others (peer influence) about an individual's

actions will greatly increase an ascription to responsibility, which, in turn, will significantly influence actual behavior. For example, compliance with regulations regarding appropriate diving behavior may depend to a significant degree on whether divers are aware of the impacts their actions may have on the environment and on the health and safety of other divers, and whether they are willing to accept responsibility for those impacts.

Given the varying strength of AC and AR in explaining environmental behaviors, researchers have explored other variables that might influence a behavioral model's predictive power (Stern, Dietz, & Kalof, 1993; Tarrant & Cordell, 1997). For example, in situations where individuals feel committed to resolving impact problems, they are likely to engage in responsible behavior (Hines et al., 1987; Hungerford & Volk, 1990; Sivek & Hungerford, 1989/90). Individuals who are aware of the consequences of their actions and feel some level of responsibility are likely to identify with the issues and develop a personal interest in helping to solve the problem. Thus, behavioral commitment (sub-dimension of personal responsibility) refers to an action strategy that might be reflected in financial donations to help resolve a problem situation, or specific actions designed to reduce impacts on the environment.

Personal (behavioral) Commitment

Once some level of personal responsibility develops towards an object, it is more likely an individual will personally commit to that object. According to Hungerford and Volk (1990) and Hines et al. (1987), personal commitment to an issue or an action strategy refers to the degree to which individuals identify with issues, thereby depicting a feeling of ownership or personal interest in the issue. What generates or empowers individuals to acquire a feeling of ownership? Bardwell (1991) argues that people are not inherently apathetic towards getting involved and that people are, indeed, eager to understand and interact with their surroundings. She states "people's active participation, however, depends on several factors: concern-how one understands and responds to the issue; competence-whether one feels capable of addressing the issue; imagery-what ideas or alternatives one has for what to do" (p. 6). People are more apt to respond to an object or situation

that encompasses some degree of familiarity to them. Thus, they are more likely to develop an interest in something if the information touches on their past experience, leading to concern. However, Bardwell (1991) argues that action is based on more than concern. She states "knowledge of action strategies leads to feelings of competence which influences participation" (p. 7). The lack of any one of these factors could lead to a feeling of helplessness or apathy. Personal commitment is treated in this study as an underlying dimension of personal diver responsibility with one commitment item loading on the personal diver responsibility factor (e.g., I make an effort to enhance my skills with practice before diving to have better control when diving).

Locus of Control

According to Marcinkowski (1988, p. 114)), "a review of the social learning theory, expectancy theory, and locus of control literature ... indicates that locus of control has been shown to correlate with, as well as have a substantial effect on, intention and behavior" as well as on responsible environmental behavior. Locus of Control, both external and internal, "...refers to an individual's belief in being reinforced for a certain behavior" (Hungerford & Volk, 1990, p. 12) and "...to an individual's perception of their ability to bring about change in a particular situation" (Marcinkowski, 1988, p. 60). Internal locus of control refers to someone's belief that what he or she does will make a difference. External locus of control alludes to a persons' belief that his or her action(s) will not make a difference (p. 12). Hines et al. (1987, p. 5) state that "those individuals who have an internal locus of control were more likely to have reported engaging in REB than were individuals exhibiting a more external locus of control." Although not directly used as a variable in this study, some indicators of locus of control are used in the operationalization of personal diver responsibility (e.g., I feel I can influence through my behavior and effort the solution to the protection of the marine environment).

In conclusion, developing attitudes about an issue depends upon the strength of those variables within the cognitive component. In essence, attitudes portray one's beliefs. The stronger the belief tendency the greater the level of personal responsibility will be to an issue (e.g., I feel

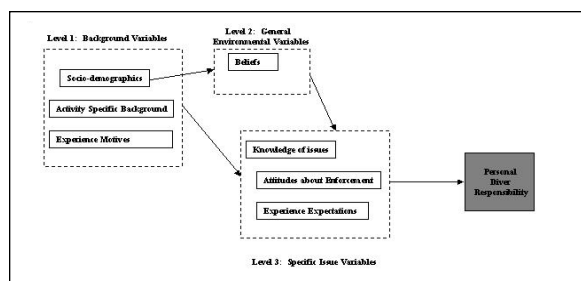


Figure 1. Predictive Framework of Personal Diver Responsible (adapted from Cottrell, 2002)

responsible for the consequences of my behavior while diving). As level of personal ownership evolves for an issue, one will be more likely to display personal or verbal commitment to that issue.

Purpose of the study

The purpose of this paper is to examine predictors of diver personal responsibility for the protection of the marine environment. A predictive framework of personal responsibility (Figure 1), adapted from prior predictive models of responsible behavior (Cottrell & Graefe, 1997; Hungerford and Volk, 1990; Hines et al., 1987), was used as a guide for this investigation. The background variables (Level 1) and environmental beliefs (Level 2) are hypothesized to precede and interrelate with more specific attitudinal variables (Level 3) while combined in the prediction of personal diver responsibility (see Figure 1). In the model of responsible environmental behavior tested by Cottrell & Graefe (1997), personal responsibility was shown as a level 2 general environmental attitudinal variable which would serve to predict general responsible behavior. We use it as the dependent variable and add two new variables to the predictive model, motives for diving (Level 1) and expectation of dive experience outcomes (Level 3). Expectancy-value theory (Fishbein & Ajzen, 1975) indicates that people have a variety of motives for participating in a leisure activity. Further, motivations are determined by the attractiveness of outcomes and that expected outcomes would be a result of participation (Todd et al., 2001). According to Fishbein and Ajzen (in Todd et al., 2001) the belief that achieving desirable outcomes leads to a positive attitude and intention to perform a specific behavior. To test these propositions, we placed diver motivations as a level one variable assuming that motivations preclude beliefs and expectations.

Table 1. — Diver profile.

	Frequency	Percent
Age Categories		
13-19	72	24
20-35	74	25
36-44	78	26
45-64	71	24
Total	295	100
Gender		
Female	63	21
Male	236	79
Total	299	100
Level of Education		
Currently in HS	57	19
HS graduate	17	6
Some College education	66	22
BS degree	84	28
MS degree	43	15
Ph.D. or professional degree	29	10
Total	296	100
Dive group type		
Regular US divers	206	69
Boy Scouts	78	26
International divers	16	5
Total	300	100
Diving Experience Rating		
Beginner	75	25
Intermediate	117	39
Advanced	69	23
Expert	28	9
Post expert	10	3
Total	299	100
Years Diving		
Less than one year	31	12
One-two years	94	35
Four to six years	50	19
Seven to 10 years	33	12
11 to 15 years	18	7
16 to 40 years	40	15
Total	266	100
Number of dives logged		
No Dives	8	3
One to 10 dives	95	33
11 to 25 dives	60	21
26 to 50 dives	40	14
51 to 100	30	10
100+ dives	54	19
Total	287	100

Meanwhile, diver experience expectations have been placed as a level 3 specific issue variable as an indicator of personal responsibility.

Table 2. — Factor Analysis results of Environmental Attitudinal Items

Rotated Component Matrix	Balance of Nature	Personal Diver Responsibility	Factor 3	Factor 4
13.4 Mankind is severely abusing the environment	.729			
13.5 Humans must live in harmony with nature in order to survive	.723			
13.6 Plants and animals exist to be primarily used by humans	.698			
13.7 Humans have the right to modify the natural environment to suit their needs	.682			
13.9 I make an effort to enhance my skills and practice before to have better control when diving		.792		
13.8 My personal buoyancy control and control of fins, gauges and other equipment are all ways to prevent damage to the coral reef.		.749		
13.2 I feel responsible for the consequences of my behavior while diving.		.513		
13.3 I feel I can influence through my behavior and effort the solution to the protection of the marine environment		.441		
13.10 If I don't take an artifact as a souvenir someone else will someone else will			.771	
13.1 I am informed about marine environmental issues and reef protection			.626	
13.12 Information about shipwreck locations should be made easily accessible to the public				.828
13.11 There should be stiff penalties for people who take valuable historical artifacts				.402
<i>Eigenvalue</i>	2.19	1.90	1.33	1.27
<i>% Variance Explained</i>	18	16	11	11
<i>Reliability</i>	.69	.65	.26	.19
<i>Scale Mean</i>	3.88	4.49		

Factor loadings in bold used to compute factor indexes for Factors 1 & 2.

Items measured on a five-point Likert agreement scale 1=strongly disagree and 5=strongly agree.

The dependent variable, personal diver responsibility index, was the sum of four items measuring feelings of personal responsibility for appropriate diving behavior. Eighteen independent variables categorized as diver background variables (age, education, skill level, # dives logged, years diving experience), six diver motivation indices (based on indicators from Todd et al., 2001 adapted from Driver et al.'s (1991) Recreation Experience Preference scales - REP), environmental attitudinal variables (belief in the balance of nature), and specific issue variables (perceived knowledge of marine environmental issues, attitude towards penalty enforcement, diving experience expectations) comprised those indicators hypothesized to predict personal diver responsibility.

Methods

During summer 2002, 300 divers ranging from beginner to post-expert completed a pre and post dive survey while enroute to and from the dive site (97% response rate) on a dive boat in the Florida Keys. The purposive sample (nonrandom) included boy scouts participating in the Florida Sea Base diving program, US and international divers on vacation in the Florida Keys. Members of the Boy

Scouts of America participating in the Florida High Adventure Sea Base scuba program formed one group. This group represents a homogeneous sample of white middle class youth between the ages of 13-18 attending Sea Base in groups of eight for one week diving in the Florida Keys. Their diving schedule was very structured and organized under the guidance of dive masters and instructors in the context of a diver educational training program. Divers visiting the Keys either on a packaged dive trip or on an individual dive vacation make up the other two groups who were diving with one of four dive operators in Key West, Key Largo, or Islamorada, Florida. The Florida Keys was the location selected for the study since the area plays host to the third largest reef system in the world and the BSA Florida Sea Base was interested in sponsoring a study of diver motivations and expectations for diving.

For the purposes of this study, divers were asked to respond to diver participation (Todd et al., 2001), environmental attitudes (Cottrell, 1993), motivations, and expectation items (Fluker & Turner, 2000) in a two-part survey while on a dive boat. A secondary analysis of data collected for a

Table 3. — Factor Analysis results of Diving Motivation Items

Rotated Component Matrix	Diver Experience	Skill	Escape	Interest	Social	Personal Challenge
M20 To gain an experience I can look back on	.701					
M18 To look at underwater animal and plant life	.690					
M5 Because it is stimulating & exciting	.681					
M16 To explore things	.679					
M19 For the adventure of it	.678					
M17 Because of the sense of discovery involved	.655					
M25 For fun	.564					
M15 To learn more about the underwater environment*	.531				.413	
M4 Because I think it will be a challenge		.777				
M1 To show myself that I can do it		.739				
M3 To develop my diving skills and abilities		.671				
M2 Because it's sort of an impressive thing to do*		.552				.491
M27 To forget the pressures of my daily work for a while			.732			
M26 To experience the tranquility here			.697			
M28 For a change from everyday life			.598			
M7 For relaxation			.578			
M23 To study underwater geological formations				.753		
M22 To see shipwrecks				.681		
M21 So I can do something creative such as take pictures or videos				.568		
M24 To help keep myself physically fit*			.485	.532		
M13 To be with others who enjoy the same things I do					.776	
M12 So I can be with my friends & family					.765	
M14 To meet new people					.649	
M9 To share my diving skills and knowledge						
M8 For a chance to control things						.741
M10 Because of the risk involved						.673
M6 Because I think there is a lot of action here*	.480					.498
M11 To use my equipment					.408	.469
Eigenvalue	4.24	2.79	2.50	2.45	2.44	2.34
% of Variance Explained	15	10	9	9	9	8
Reliability	.83	.76	.74	.68	.72	.60
Scale Mean	4.26	3.02	3.89	3.24	3.52	1.95

Items in bold used to compute factor indexes.

Items measured on a five-point importance scale.

*Items loading on two factors >.40 were not included in index computation.

MSc thesis (Meisel, 2003) was conducted to assess predictors of diver responsibility. SPSS software was used for the analysis of data, which included descriptive statistics to determine a diver profile, factor analysis to operationalize motivation, expectation, and personal responsibility indices, and stepwise multiple regression to determine which of 18 independent variables were the strongest predictors of personal diver responsibility. Diver profile items included years diving, number of dives logged, diver skill level, age and education. Diver motivation items were based on a 5-point importance scale;

environmental items and expectations were based on a 5-point Likert agreement scale.

Results

Descriptive profile

Of the 300 divers surveyed, 26% were boy scouts, 69% national and five percent international divers. A majority of divers were male (79%) with 24% age 13-19, 25% 20 to 35, and 51% 36 years or older. This group was relatively well educated with more than 50% having a BS degree or greater. Twenty-three percent were beginner followed by 32% intermediate, 30% advanced, 9% expert, and

6% post expert divers. More than 60% have been diving for four or more years. Nineteen percent have been diving 100+ times, 10% 51 to 100 times, 14% between 26 and 50 dives, and 54% between 1 and 25 dives, and three were diving for the first time (Table 1). An examination of relationships among diver profile variables and motivation, importance, and expectation items were presented in another paper at the NERR 2003 conference (see Meisel & Cottrell, 2003).

Factor analysis

Principal components factor analysis was conducted to operationalize indices for beliefs in the balance of nature (Table 2), personal diver responsibility (Table 2), diver motivation (Table 3), and diver expectations of the experience (Table 4). Reliability analysis of factor items per factor was used to determine internal consistency of various items used in index computation. First, a factor analysis of 12 environmental attitude statements were used to assess various aspects of an attitudinal construct including environmental beliefs (Dunlap & van Liere, 1978), locus of control, personal responsibility (Cottrell, 1993), professed knowledge of environmental issues (Cottrell & Graefe, 1997), and diver specific attitudes (Todd, Graefe, and Mann, 2001). Of the four factors determined, items loading $.40$ on factors 1 and 2 were used to create two variables for further analysis. Factor one with four items represents one dimension of Dunlap & Van Liere's (1978) New Environmental Paradigm, Balance of Nature (Scale Mean=3.88, Reliability $\alpha=.69$). Factor 2, the dependent variable, diver personal responsibility index, was the sum of four items measuring feelings of personal responsibility for appropriate diving behavior (Scale Mean = 4.49, Reliability $\alpha = .65$). Items loading on factors three and four were not interpretable as a domain and the internal consistency of each was very low, thus two of the items identified as specific issue variables (level 3 in Figure 1) similar to the Cottrell and Graefe (1997) model were used as single item measures for further analysis: knowledge of marine issues (Item 13.1) and attitudes about enforcement (Item 13.11).

Next, a factor analysis was conducted on 28 items drawn from Driver et al.'s (1991) recreation experience preference items and motivation items from Todd et al.'s (2001). Similar to Todd et al.

(2001) six factors resulted accounting for 60% of the variance; however, how the items loaded and the order of strength of factors was quite different than Todd et al. Factor 1 includes seven measures we refer to as diver experience motives (15% of variance, reliability=.83) as compared to Todd's Personal Challenge factor (29% variance, reliability=.81). Factor 2 with three items grouped together as diver skills motives (Reliability=.78) (Todd et al. was stature). Factor 3 representing escape and change from daily life and Factor 4 (Interest) to learn, see and do marine specific activities were similar to Todd et al. Factor 5 diving for social interaction was the 6th factor in the Todd paper. Factor 6 was the weakest of all the factors including two measures of Personal Challenge. From an exploratory perspective, all six motivation domains were computed as the sum of the items loading on each factor to include as independent variables in a regression equation. Reliability alphas for the factors ranged from $.78$ to $.60$ indicating an acceptable level of internal consistency per factor (Table 3). Items loading on more than one factor with a factor loading greater than $.40$ was not included in an index. Other than diver experience factor explaining 15% of the variance with the highest scale mean (4.3), the % explained variance for the other factors ranged from 10% to 8%. The weakest and least important factor was personal challenge (8% variance, reliability=.60, Mean=1.9) for these divers.

Next, a factor analysis (Table 4) was conducted on 18 items drawn from Fluker and Turner's (2000) expectancy valuation study of white water rafters resulting in four factors accounting for 60% of the variance. Factor 1 includes eight measures we refer to as service expectations (Reliability=.86). Factor 2 has three items grouped together as safety expectations (Reliability=.84). Factor 3 represents dive experience expectations with three items and factor 4 we labeled as personal challenge expectations. Four expectation indices were computed as the sum of the items loading on each factor to include on an exploratory basis as independent variables in a regression equation. Reliability alphas for the factors ranged from $.86$ to $.63$ indicating an acceptable level of internal consistency per factor. The most important diver expectation was dive experience expectations (Mean=4.6) followed by dive safety (Mean=4.4) and service (Mean=4.36).

Table 4. — Factor analysis results of diver expectation items

Rotated component matrix	Service	Dive Safety	Dive Experience	Personal Challenge
14.2 staff will be competent	.756			
14.4 trip will be well organized	.701			
14.9 staff will be friendly	.675			
14.11 will learn new skills	.659			
14.3 will be informed	.655			
14.1 will get value for money	.641			
14.10 will get to know nice people	.592			
14.8 equipment will be good	.468			
14.7 will not get injured		.787		
14.5 will feel safe		.767		
14.6 will be comfortable		.759		
14.14 will see nice fish			.855	
14.15 will see coral			.831	
14.13 will have fun			.583	
14.17 will be physically challenged				.845
14.16 will take risks				.778
14.18 will get scared				.625
14.12 will get cold				.418
Eigenvalue	3.9	2.5	2.1	2.1
% of Variance Explained	22	14	12	12
Reliability	.863	.839	.785	.633
Scale Mean	4.36	4.43	4.56	2.46

Items measured on a five-point Likert agreement scale – 1=strongly disagree and 5=strongly agree.

Personal challenge was the lowest expectation (Mean=2.46) domain similar to its importance as a motivation preference.

Variables in regression model

To test the model (Figure 1), a stepwise multiple regression analysis including 18 independent variables was used to assess the predictive strength of personal diver responsibility (Table 5). It is hypothesized that more attitude specific variables (Figure 1 - level 3) will be stronger predictors of personal responsibility than demographic, diver participation (level 1), or belief in the balance of nature (level 2). Table 5 presents the descriptive statistics of all the variables in the regression model, bivariate correlations, and standardized Beta coefficients of the significant predictors of personal responsibility. Of the 18 independent variables, 12 were positive correlates including two dive experience variables (skill level and total dives logged), four motivation indices (in decreasing order of strength - experience, social interaction, change, and interest in environment), balance of nature, knowledge of marine issues and stiff penalties, and three of the diver expectation indices

(service, dive experience, and safety expectations) were found. Interestingly, personal challenge expectations was a negative correlate of personal diver responsibility; however, note (see Table 4) that two index items “will get scared and cold” were negative personal comfort items which might have influenced the negative direction with an overall scale mean of 2.4. Surprisingly, age, education, nor total dives logged was a correlate.

Results of the multiple regression found five predictors of personal responsibility accounting for 38 percent of the total variance ($R^2=.382$; F -value=25.8, $p=.001$) (Table 5). Perceived knowledge about marine environmental issues was the strongest predictor ($B=.350$, $p<.001$, 21% of variance explained). Belief in the balance of representing one dimension of Dunlap & van Liere’s (1978) New Environmental Paradigm) was the second most significant predictor nature ($B=.215$, $p<.001$, 9% of variance) followed by the diver experience motivation index ($B=.194$, $p<.001$, 5% of variance), attitudes towards stiff penalties for taking marine artifacts ($B=.138$, $p<.05$, 2% of variance), and diver service

Table 5. — Variables in stepwise regression model predictive model of personal diver responsibility (n=215)

	Mean	Std	Correlation r-value ¹	Beta Coefficient	R ² Change
Level 1 variables					
Socio demographic variables					
Age	33.17	12.97	.017		
Level of Education	3.45	1.57	-.058		
Dive Experience variables					
Diving Skill Level*	2.27	1.03	.185**		
Total dives logged	164	616	.116*		
Year since scuba diving	6.64	8.11	.054		
Diver motivation indices					
Diving Experience Motives	4.26	0.60	.358***	.194**	.048
Specific Interest in environment motives	3.00	1.04	.203***		
Skill/Status Motives	2.75	0.97	.107		
Change from everyday reality motives	3.87	0.86	.253***		
Social Interaction	3.54	0.98	.319***		
Seeking Action/Challenge motives	1.94	0.94	-.061		
Level 2 variables					
Balance of nature belief**	3.83	0.73	.336***	.215***	.085
Level 3 variables					
Informed about marine environmental issues/reef protection	4.20	0.79	.464***	.350***	.215
Stiff penalties for people who take valuable historical artifacts	4.08	1.10	.212**	.138*	.020
Diver expectations indices					
Service expectations	4.34	0.51	.358***	.136*	.014
Safety expectations	4.44	0.55	.202***		
Experience expectations	4.56	0.52	.229***		
Challenge expectations	2.42	0.82	-.213***		
Dependent variable					
Personal diver responsibility	4.48	0.50			

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

¹ One-tail test of significanceStandardized Beta coefficients in bold represent significant predictors (R²=.382; F-value=25.8, p=.001)

Note - 75 cases missing due to missing values

expectations (B=.136, $p<.05$, 1% of variance). Surprisingly, none of the diver background variables predicted diver personal responsibility. Results imply that perceived knowledge of environmental issues, belief in a balance between humans and nature, certain experience preferences pertinent to the recreational activity, positive attitudes towards enforcement, and diver expectations of good service are socio-psychological factors that may influence personal responsibility to act pro-environmentally while engaged in a leisure activity.

Conclusions and Discussion

The overall goal of this paper was to examine predictors of personal diver responsibility adapted from Cottrell & Graefe (1997). Six motivation to participate in the specific leisure activity indices as background variables (Level 1) and four expectations for goal attainment indices as specific

issue variables (Level 3) were introduced to the model (Figure 1). Model placement of these variables was based on theoretical implications drawn from expectancy value theory (Fishbein and Ajzen, 1975 reviewed by Todd et al., 2001). Four motivation indices were correlates of personal responsibility, which moderately supports Fishbein and Ajzen's (1975) notion that motives for a leisure activity will relate to expected outcomes, likewise to certain attitudinal intentions to perform a specific behavior. Recall that the personal responsibility index includes both personal commitment and locus of control, items-both which are considered as indicators or sub-elements of behavioral intentions (Ajzen, 1991; Ajzen & Fishbein, 1973, Fishbein & Ajzen, 1974/75). Meanwhile, all four of the diver expectation indices were correlates supporting claims given in the expectancy-value theory (Fishbein & Ajzen, 1975)

that beliefs in achieving desirable outcomes leads to a positive attitude and intention to perform a specific behavior (in Todd et al. 2001). Furthermore, one motivation scale (dive experience) and one expectation scale (service expectation) were moderate predictors, justifying inclusion in a predictive model. However, diver motivation was a slightly stronger predictor than expectations, thus not supporting assumptions that expectations will be stronger indicators of personal responsibility than motivations.

As it pertains to the model presented in Figure 1, assumptions were that specific issue variables (Level 3) would be stronger predictors of the dependent variable. This assumption was weakly supported in that knowledge about marine pollution/reef protection issues was the strongest predictor. However, belief in the balance of nature as a level 2 variable was the second strongest predictor prior to both attitudes toward stiff penalties and diver expectations of level 3. Perhaps motivations should be moved forward in the model to level 3 since the items are activity specific or move it to a level of its own. These findings lend credence to further examination of relationships among these variables; thus, structural equation modeling is recommended for further testing. In this case, a recursive model with two or more dependent variables is suggested such as diver motivations and personal diver responsibility. In retrospect, 75 cases were omitted in the regression equation due to missing values, which alludes to some caution or generalization of results due to a small sample (n=215) with a proportionally large number of independent variables (18) in the analysis.

Reasons to continue this line of research is to find interventions to help encourage a change in behavior - referred by Geller (2002) as behavior-based intervention. Geller raises a practical point - "internal person dimensions like attitudes, perceptions, and cognition's are all difficult to define objectively and change directly. So stop trying!" (p. 528). Geller (p. 529) argues that "We don't have the time, education, training, or experience to do so effectively. Why not focus on the more manageable actions that we can actually observe and look for external factors that influence behavior independent of feelings, attitudes and perceptions." What people say and what people do are different as evidenced in prior research showing verbal commitment

scores higher than actual behavior scores (Cottrell, 1993 & 1997). Personal responsibility is a measure of a construct that comes closer to an actual behavior than perceptions or attitudes. Schwartz (1968) and others (Todd et al., 2000) refer to this variable as ascription to responsibility. In this study, several indicators were predictors of the construct including the wish for stricter fines, motivations for diving, knowledge of marine environmental issues and expectations of expected outcomes.

In conclusion, personal responsibility is something every human being must take for his or her actions and choices. It is not something someone gives to us. Each individual must choose to see their responsibilities and live up to them. It isn't easy, and isn't always fun. In the long run, it can make the difference between a greater depletion in environmental quality or a move forward. None of us are responsible for the direct actions of others, however, our example and influence might influence appropriate decisions of others, especially in leisure behavior. In reality, we are responsible for our children and ourselves, and for breaking our old behavior patterns. Some of us may live up to that responsibility and some may not.

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NON-CONSUMPTIVE OUTDOOR RECREATION, ACTIVITY MEANING, AND ENVIRONMENTAL CONCERN

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Abstract: Many have hypothesized and intuited a relationship between participation in outdoor recreation and concern about the state of the environment. It is believed that participating in outdoor recreation can influence environmental concern by exposing people to specific instances of environmental degradation and increasing their concern about such degradation on a broader scale. Research examining this phenomenon has found moderate to weak support for a direct connection between outdoor recreation participation and environmental concern. Using structural equation analysis, we examined whether the meaning of non-consumptive outdoor recreation to recreationists mediated the relationship between non-consumptive outdoor recreation participation and environmental concern. A mail-back survey of Washington State residents (n = 900) found that outdoor recreation meaning was a better predictor of environmental concern than measures of participation. However results also suggest that the relationship between environmental concern and the meaning of non-consumptive outdoor recreation was not a particularly strong one and that meaning is likely one of many factors that might influence environmental concern.

Introduction

In the 1960s, environmental quality emerged as a major social concern in our society. Peaking with the first Earth day in 1970, environmental concern saw a gradual decline during the 1970s. Since then, concern for the environment has enjoyed a

significant increase, reaching unprecedented levels in the 1990s (Dunlap 1992). For example in 1990, 40% of American households contained someone who either donated to or was active in a group that worked to protect the environment; up from 15% in 1987. In the early 1990s, three-fourths of the public perceived themselves as environmentalists (Gallup and Newport 1990). Subsequent studies have reported that at least 70% of the public perceives themselves as "environmentalists" (Kempton, Boster, and Hartley 1995).

An important factor in the increased public awareness of and concern about environmental issues may be the growth of outdoor recreation that has occurred since World War II. With growing urbanization, outdoor recreation is the primary connection that many Americans have to the natural environment. Participating in outdoor recreation can influence one's conservation ethic by exposing people to instances of environmental degradation where they recreate and increasing their concern about such degradation on a broader scale. While this relationship makes intuitive sense, research results have been mixed. Dunlap and Heffernan (1975) found that participation in non-consumptive activities (e.g. backpacking, wildlife viewing, and nature study) was related to concern for the environment. Other research, however, has found only moderate or weak correlation between outdoor activity and environmental concern (Van Liere and Noe 1981; Jackson 1987; Theodori, Luloff, and Willits 1998). It is apparent that the connection between outdoor recreation participation and environmental concern is more complex than originally thought.

The relationship between non-consumptive outdoor recreation participation and environmental concern may be clarified by taking into account the nature of outdoor recreation participation. By the nature of outdoor recreation, we mean going beyond merely analyzing the activities that individuals engage in, to examining the underlying meanings those activities hold for people. Since the same activity may mean something different for two individuals, it is reasonable to suspect that differences in meaning may contribute to the ambiguous findings about the relationship between outdoor recreation and environmental attitudes.

We examined the extent to which the meaning of a non-consumptive outdoor recreation activity provides a better explanation or prediction of environmental concern than participation. We hypothesized that the direct relationship between non-consumptive outdoor recreation participation and environmental concern will be mediated by the meaning of the non-consumptive outdoor recreation activity.

Previous Research on Outdoor Recreation and Environmental Concern

Dunlap and Heffernan (1975) hypothesized that a positive relationship between environmental concern and outdoor recreation participation existed. However, their study found a weak relationship between these two factors. Activities were generally associated with concern for protection of forest and natural areas but associations weakened as the study examined more broad scale issues such as pollution control from various sources. They also found that participation in nature appreciative activities was associated with environmental concern. Re-examining the Dunlap and Heffernan (1975) hypotheses, Geisler, Martinson and Wilkening (1977) found no significant relationship between activities and concern. They concluded, "It may be individual characteristics rather than recreational habits which account for most of the environmental concern..." (p. 247). Reasons for engaging in an activity, or meaning, might represent these characteristics.

Several similar studies followed these initial examinations. Pinhey and Grimes (1979) noted that although participants in outdoor recreation activities exhibited slightly more concern than non-participants, the hypothesis that activity participation was related to increased concern was not supported. Thus, the findings of their studies support Geisler's et al (1977) assertion that little or no relationship exists between activity and concern. Van Liere and Noe (1981) found only a weak relationship between environmental attitude and activity and concluded that a more complex relationship may exist between outdoor recreation and environmental attitude. Van Liere and Noe postulated that social factors arising from specialization in an activity lead a user from consumptive to appreciative behavior and "give an activity meaning." (p.513).

Results of other studies supported the Dunlap-Heffernan thesis that outdoor recreation activity is related to environmental concern. Jackson (1986) found that outdoor recreation users who engaged in appreciative recreational activities exhibited a higher degree of pro-environmental attitudes than did those who chose consumptive activities. However, none of the correlations reported were, in the author's words, "particularly large" (p. 19). The researchers did conclude that there was a stronger relationship between the outdoor recreation activity engaged in and attitudes toward protection of the resources necessary for engaging in the activity than between the activity and more general environmental attitudes. Theodori, Luloff, and Willits (1998) also identified a positive relationship between pro-environmental behavior and outdoor recreation activity.

Taking results of previous research together, there is a lack of consensus with respect to the relationship between recreation participation and environmental concern. Even studies that support the relationship do so with mixed or weak results. In addition, a number of studies disconfirm the hypothesis that outdoor recreation behavior is positively related to environmental concern. Our study sought to determine if the meaning of the non-consumptive outdoor recreation activity is a more important factor in influencing the relationship between activity and environmental concern.

Data and Methods

Sampling and Questionnaire Administration

Two methods were used to select samples of Washington state residents. First a private sampling firm provided a random sample of the names, addresses, and telephone numbers of 1000 residents of the state of Washington. Second, given that less than one-fifth of the US population over 16 years old participate in hunting (7%) or fishing (19%) (Statistical Abstract of the United States 1994, internet source), we randomly selected 1000 names, addresses, and telephone numbers from Washington state hunting and fishing licenses held at the Washington Department of Fish and Game. Steps were taken to ensure that an individual was not included in both samples.

A mail-back questionnaire was sent to potential respondents. After 10 days, a postcard was sent to those who had yet to respond. The postcard was

followed 10 days later by a second questionnaire. Of the 2000 questionnaires mailed, 364 were undeliverable and 900 were returned (55.0% return rate). Telephone contact of 50 nonrespondents found no significant differences in outdoor recreation participation between respondents and nonrespondents.

Factor Measurement

The mail-back questionnaire measured participation in outdoor recreation activities, the meaning of those activities to the individual, and environmental concern.

Non-consumptive outdoor recreation participation

Respondents were provided with a list of 35 outdoor recreation activities and asked to indicate which they had participated in at least one time within the previous 3 years using a binary scale (0 = didn't participate, 1 = participated). Respondents could check all applicable activities. Respondents were then asked to indicate the three outdoor recreation activities that were most important to them. After identifying the outdoor recreation activities most important to them, respondents' indicated their experience history in each of the three activities by estimating how long (in years) they had been participating in that activity and how often (times per year).

To compute recreation participation, responses to the experience history questions were standardized and the mean of the two items were calculated. The mean was multiplied by the dichotomous (0 or 1) participation variable, creating a non-consumptive outdoor recreation participation variable for each of the three activities deemed to be most important. Prior to addressing the study objectives, the principal component method of factor analysis and varimax rotation was applied to the measures of participation in each outdoor recreation activity. This simplified analysis by creating fewer activity categories.

Outdoor recreation meaning. Outdoor recreation meaning was measured as recreation experience preferences. Items used were based on the meta-analysis of motivations by Manfredi, Driver, and Tarrant (1996). Respondents were asked to think about the important recreation activities already identified and indicate how important each of 45 recreation experiences was when participating in

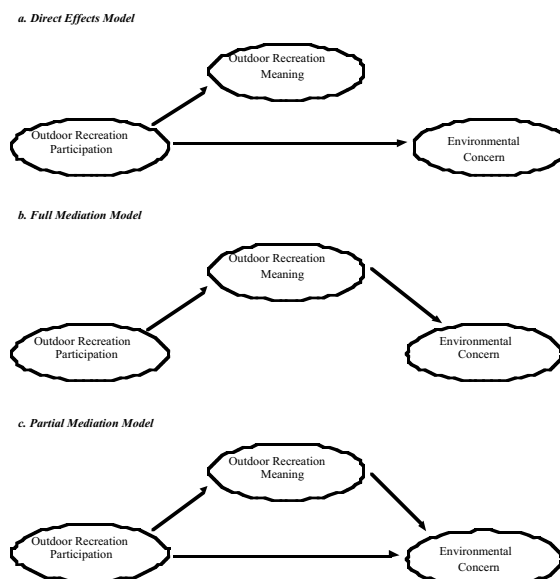


Figure 1. Direct effects, full mediation, and partial mediation models used to examine the mediation of meaning on the recreation participation / environmental concern relationship.

those activities. A 5-point unipolar importance scale was used. Internal consistency of items in experience preference domains (Manfredi et al. 1996) was examined using Cronbach's alpha for domains with three or more items and Pearson's correlation for domains with two items. Respondents' score on each domain was the mean of the items making up that domain and represented the various aspects of meaning that the activity held for the participant.

Environmental concern. The New Ecological Paradigm (NEP; Dunlap, Van Liere, Mertig, & Jones, 2000) was used as a single-factor measure of environmental concern. Respondents indicated if they agreed or disagreed with 15 NEP items using a 7-point Likert scale. Confirmatory factor analysis of the NEP tested a single factor environmental concern model. Prior to CFA, individual items of the NEP were coded such that high scores on the latent variable in the structural equation analysis represented a biocentric focus of environmental concern while low scores represented an anthropocentric focus.

Analysis

Mediation analysis (Baron and Kenny 1986) was conducted to determine if the meaning of outdoor

Table 1. — Results of Factor Analysis on Participation in Outdoor Recreation Activities (N = 900)

Recreation Activity	Outdoor Adventure	Assisted Physical	Hunting	Fishing	Nature Appreciation
Rock climbing	.701	.144	.112	.068	-.038
Mountaineering	.615	.081	-.083	.138	.066
Ice climbing	.756	.069	-.068	-.114	.025
Whitewater boating	.641	.144	.088	.035	-.044
Flatwater floating	.556	.256	.095	.147	.226
Backpacking	.644	.136	.155	.180	.071
Hiking	.638	.088	.166	.146	.112
Bicycling	.120	.668	-.086	-.041	.146
Mountain biking	.111	.612	.049	.188	-.063
X – country ski/snowshoe	.158	.514	-.116	.255	.141
Downhill ski/snowboard	.183	.536	-.132	.101	-.196
Outdoor photography	.074	.068	-.055	.215	.585
Auto sightseeing	-.065	.112	-.025	-.312	.638
Wildlife viewing	.152	-.089	.223	.185	.612

recreation mediates the direct relationship between outdoor recreation participation and environmental concern. Mediation of the relationship between 2 variables requires 3 conditions (Baron and Kenny 1986). For this study, the first condition is that a direct relationship exists between non-consumptive outdoor recreation participation (the predictor variable) and environmental concern (the criterion variable). The second condition is that a direct relationship exists between non-consumptive outdoor recreation participation and outdoor recreation meaning. A direct-effects model illustrates the first two conditions (figure 1c). This model posits a direct relationship between outdoor recreation participation and environmental concern and constrains the relationship between outdoor recreation meaning and environmental concern to zero. The third condition requires that the relationship between non-consumptive outdoor recreation participation and environmental concern becomes zero when the zero-value constraint on the relationship between outdoor recreation meaning and environmental concern is removed; the full mediation model (figure 1b). It is possible that allowing outdoor recreation meaning to affect environmental concern would not eliminate the relationship between the non-consumptive outdoor recreation participation and environmental concern as suggested by the full mediation model. A partial mediation model (figure 1c) allows for both non-consumptive outdoor recreation participation and

meaning to influence environmental concern.

The existence of mediation of the outdoor recreation participation/environmental concern relationship by outdoor recreation meaning was tested using structural equation analysis (Arbuckle 1997). For each outdoor recreation activity category we compared the direct effects model with the full mediation model using the change in chi-square statistic. A high X^2 suggests that there is a significant difference between the data and proposed model, relative to a low X^2 . Therefore, if there was a significant difference in the X^2 statistics of the two models, the model with the lowest chi-square was considered the best fit of the data. Following this, the better of the direct effects and full mediation models was compared to the partial mediation model using the same change in chi-squared analysis to determine which model was the best fit of the data.

Results

Respondents were predominantly (73%) male. This is attributed to the fact that 1/2 of the sample was drawn from applicants for hunting and fishing licenses in Washington. The mean age of respondents was 50.9 years (SD=15.5; range = 18 - 79 years). The sample was 92% Caucasian while Asians, American - Indians and Alaskan - Natives, Hispanics, African - Americans, and multi - racial individuals each individually comprised 2% or less of the sample. Median household income was in

the \$25,000 - \$49,000 range. Most (65%) respondents attended some college and an additional 29% completed their education with a high school or technical degree.

Results of Factor analysis

Table 1 shows the factor analysis for non-consumptive outdoor recreation participation. The purpose of this procedure was to simplify the analysis by grouping specific outdoor recreation activities into smaller groups based on participation. Three groups of activities were identified. "Outdoor Adventure" activities included backpacking, rock and ice climbing, mountaineering, whitewater and flatwater boating, and hiking. "Assisted Physical" activities included mountain biking, bicycling, cross-country skiing, and downhill skiing. "Nature Appreciation" activities included outdoor photography, wildlife viewing, and auto sightseeing.

Confirmatory factor analysis supported a single factor of the New Ecological Paradigm based on an anthropocentric/biocentric continuum ($X^2/df = 1.38^1$; GFI = .973; RMR = .165; Cronbach's alpha = .839). The validity of our choice to sort REP items into their theoretical REP domains was performed using correlation. Cronbach alpha was used to examine domains with 3 or more items and Pearson's correlation was used for domains with only 2 items. All domains had high reliability/correlation to allow for the creation of indices ($a = .744$ to $.819$; $r = .600$ to $.799$).

Identifying Potential Mediators

Prior to hypothesis testing, partial correlations between experience preference domains (outdoor recreation meaning) and non-consumptive outdoor recreation participation were conducted (table 2). If an experience preference domain was significantly correlated with an outdoor recreation category, the experience domain was considered a potential mediator of the outdoor recreation participation / environmental concern relationship. The "Outdoor Adventure" category was significantly correlated with a desire for Achievement and Stimulation, Learning, Nature Enjoyment, and Physical Fitness. "Assisted Physical" category was correlated with a desire for Achievement and Stimulation, Autonomy, using one's Equipment, Learning, Nature Enjoyment, and Reduced Risk. The "Nature Appreciation" category was related to a desire for Learning and Nature Enjoyment.

Hypothesis Testing

To test our hypothesis the direct effects, full mediation, and partial mediation models for the non-consumptive outdoor recreation activities were compared. The study hypothesis predicted that the direct relationship between non-consumptive outdoor recreation participation and environmental concern would be mediated by outdoor recreation meaning. Using structural analysis, we first determined if the data fit the full mediation model better than the direct effects model for each outdoor recreation category. The better of these 2 models was then compared to the partial mediation model. The hypothesis was supported if the full mediation model provided the best fit of the data. If the partial mediation model was the best fit, the hypothesis was supported with reservation. If the partial mediation model did not provide a significantly different fit of the data than the full mediation model, the more parsimonious full mediation model was presumed to be superior. This result suggested that outdoor recreation participation did not add any useful information to the prediction of environmental concern. Table 5 also presents the goodness of fit statistics for each model tested. A high goodness of fit for a model (denoted by GFI > .90 and $(X^2/df < 5.00)$ (Arbuckle 1997) suggested that the model was an acceptable model for predicting environmental concern. Unacceptable fit suggests that other factors provide a significant amount of predictive power of environmental concern. Figure 2 presents path coefficients for the models that represented the best fit of data for each activity. Positive coefficients between outdoor recreation meaning domains and environmental concern represent a direct relation to a biocentric focus of environmental concern while negative coefficients represent a direct relation to an anthropocentric focus.

Outdoor Adventure. For outdoor adventure activities, the data fit the full mediation model better than the direct effects model (Comparison 1: $\Delta X^2 = 70.14$; $p < .005$). In addition, data did not fit the partial mediation model better than the full mediation model (Comparison 2: $\Delta X^2 = 0.02$; $p = .999$), supporting the study hypothesis. Fit indices (GFI < .90 and $(X^2/df > 5.00)$ suggested that none of the models for outdoor adventure represented a strong fit of the data. The extent to which individuals participate in non-consumptive outdoor adventure activities for the purpose

Table 2. — Partial Correlations between Outdoor Recreation Activity and Experience Preference (N = 900)

Non-Consumptive Outdoor Recreation Activity	Outdoor Adventure	Assisted Physical	Nature Appreciation
Achievement/Stimulation	.090*	.108*	-.045
Autonomy	-.040	.121*	-.028
Risk Taking	-.064	-.011	-.048
Equipment	-.037	.158*	-.318
Family Togetherness	.016	.010	-.030
Similar People	-.090	.039	-.069
New People	-.061	.008	.013
Learning	.108*	.097*	.138*
Enjoy Nature	.154*	.108*	.161*
Introspection	.007	.059	.002
Creativity	-.044	.049	.018
Nostalgia	-.060	.027	-.015
Physical Fitness	.108*	.033	-.060
Physical Rest	-.024	.068	.046
Escape Personal Pressure	.054	.049	-.020
Escape Physical Pressure	-.067	.064	.006
Social Security	-.067	.044	.014
Risk Reduction	-.042	.077*	-.011
Teaching Others	-.061	-.001	-.012

of achievement/stimulation, learning, or enjoying nature was directly related to a biocentric focus of environmental concern (figure 2).

Assisted Physical. The study hypothesis was supported for assisted physical activities. Data fit the full mediation model significantly better than the direct effects model (Comparison 1: ($\Delta X^2 = 73.66$; $p < .005$), while the partial mediation model was not an improvement over the full mediation model (Comparison 2: ($\Delta X^2 = 0.72$; $p = .981$). Fit indices showed an unfavorable fit of all three models with $GFI < .90$ and $(X^2/df > 5.0$. Participating in assisted physical activities for the purpose of learning or enjoying nature was directly related to a biocentric focus of environmental concern. Participating for autonomy, using equipment, or reducing risk related to an anthropocentric focus (figure 2).

Nature Appreciation. For nature appreciation, the data fit the full mediation model better than the direct effects model (Comparison 1: ($\Delta X^2 = 60.77$; $p < .005$). The partial mediation model was not a

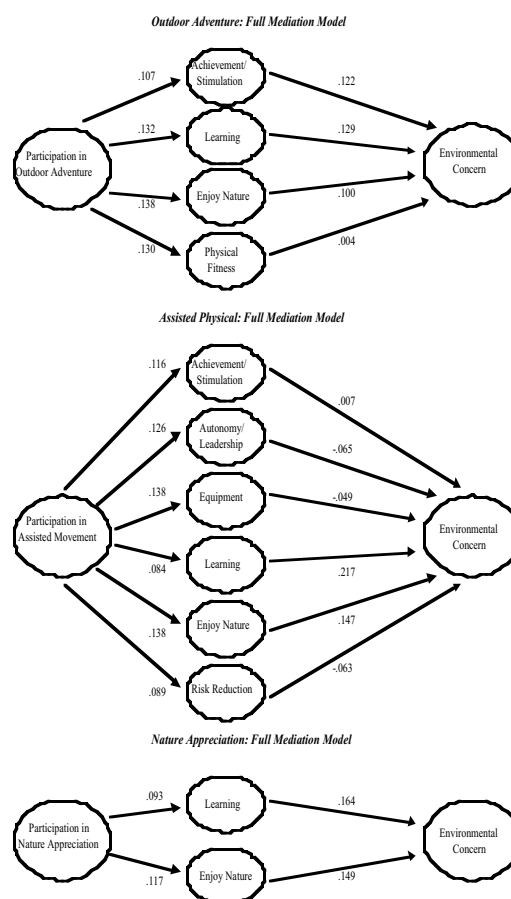


Figure 2. Best fit models of the relationships among non-consumptive outdoor recreation participation, meaning, and environmental concern.

significant improvement over the full mediation model (Comparison 2: ($\Delta X^2 = 0.60$; $p = .345$) supporting the study hypothesis for nature appreciation. Data was not an acceptable fit of the three structural models ($GFI < .900$ and $(X^2/df > 5.0)$. Participating for learning or enjoying nature was directly related to a biocentric focus of environmental concern (figure 2).

Discussion

The general hypothesis that the meaning of non-consumptive outdoor recreation to people would mediate the often-proposed relationship between participation and environmental concern was generally supported in this study. For outdoor adventure, assisted physical, and nature appreciation, the relationship between participation and environmental concern was completely mediated by the meaning of those activities. These

results support our contention that the meaning of non-consumptive outdoor recreation to people does provide some explanation as to the nature of their concern for the environment, and in most cases supplants any predictive value that simple participation may have.

Enhancing the role that the meaning of non-consumptive outdoor recreation participation has on predicting environmental concern is the consistency of effects of each dimension of meaning across activity category. For example, obtaining achievement and/or stimulation in an outdoor recreation activity was directly related to a biocentric focus of environmental concern, regardless of the activity for which it was engaged in. Learning about the activity/nature and enjoying nature were similarly connected to a biocentric focus of environmental concern for all relevant outdoor activity categories. It is important to note, however, that results of this study are limited to recognizing a mediating effect of meaning on the relationship between non-consumptive participation and environmental concern. It is possible that the specific relationship between meaning and environmental concern will differ across studies depending on how precisely recreation activity categories are defined.

Another important finding of this study centers on the quality of fit of the models. In nearly all cases, the data fell short of an acceptable fit of the direct effects and full mediation models. This is not only illustrated by the specific indices used in this study to test goodness of fit, but also by an examination of the general strength of the relationships proposed by each model. Overall, only 2 meaning/environmental concern relationships showed regression weights greater than .200. Many fell between .100 and .200 with several hovering just below .100. This supports the notion that the relationship between environmental concern and non-consumptive outdoor recreation, whether it is operationalized as participation or meaning, may not be a strong one. Clearly other factors play a role in how an individual views the natural environment beyond one's leisure lifestyle.

Conclusion

This study supported the notion that while a relationship between non-consumptive outdoor recreation and environmental concern exists, it is

tenuous, and other factors may affect the relationship. Mediation analysis supported the idea that if non-consumptive activity is related to environmental concern, it is through the meaning of rather than participation in the activity. Dunlap's and Heffernan's (1975) suggestion that outdoor recreation users constitute an untapped group of environmental advocates still remains a debatable issue, especially when the focus is on comparing specific types of outdoor recreationists. Many of the non-consumptive outdoor recreation activities in this study were directly related to biocentric foci of environmental concern, depending on the meaning that was salient.

Several important considerations related to the study call for additional research in this area. One involves the ethnic makeup of the study respondents. Nearly 3/4 of the respondents were male and more than 9 of 10 were Caucasian. This severely limits the ability to make any generalizations toward the general population. That women, African - Americans, Hispanics, Asian - Americans, and Native - Americans might differ from male Caucasians in the activities participated in and the meaning of those activities is a clear observation. Additional research should be conducted to identify these differences in outdoor recreation participation and meaning across sex and ethnicity and how these differences play out in examining environmental concern.

Another important consideration involves measuring outdoor recreation meaning. Our decision to think about meaning as experience preferences and history represented a use of two commonly measured factors that examine outdoor recreation participation beyond simple participation. Other researchers might identify other factors that represent "meaning" such as place attachment, specialization, involvement, the role of an activity as "serious leisure", benefits desired, among others. Research on the role of outdoor recreation meaning would benefit from efforts to uniformly define, develop, and validate measures of meaning. Finally, our use of truncated groups of activities was done to simplify analysis by identifying groups of activities that individuals participate in. Future research should identify specific outdoor recreation activities to connect with environmental concern in order to begin to develop a theory about the connection between the

way someone thinks about the environment and the hows and whys of outdoor recreation participation.

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ENVIRONMENTAL SENSITIVITY AND YOUTHFUL PARTICIPATION IN OUTDOOR RECREATION

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Abstract: The purposes of this study were to determine the relationships between level of environmental sensitivity and outdoor recreation experiences, specifically activity preferences as a youth and adult, as well as claimed influences on environmental sensitivity. Based on existing literature and experts in the field, an instrument was developed to accurately measure these variables. The instrument was administered to 84 students in the recreation program at a university in the northeast. Based on responses to an environmental sensitivity (ES) item, subjects were grouped or classified as having “very high”, “high” or “low-moderate” ES. Influences of variables were studied using a one-way ANOVA and Chi square with Cramer’s V. ES groups differed significantly in how involved in outdoor recreation they had been as youths. They did not differ in adult involvement in outdoor recreation or in what they thought contributed to their level of ES.

Introduction

Over the last 25 years, a number of researchers have attempted to understand what makes people care about the environment or what underlies “environmental sensitivity.” Some early researchers focused on individuals’ claimed

influences on environmental sensitivity based on “significant life experiences,” while others attempted to find an association between outdoor participation and environmental concern. These studies were inconclusive.

Early research on significant life experiences of environmental activists suggested that such appreciation began at a young age and in outdoor settings (Tanner, 1980; Peterson, 1982). Tanner’s research on “Significant Life Experiences” was the pioneer study in the area of influential factors on the development of environmental concern. He stressed the importance of knowing the kinds of experiences that produce an active and informed citizenry, working to achieve the ultimate aim of environmental education: to maintain a resource-rich planet for future generations. Tanner selected his sample from multiple citizen groups, those he thought to be representative of active and informed citizen conservationists. Subjects self-claimed influences on their environmental sensitivity. The respondents revealed “outdoors” to be the most influential life experience on environmental sensitivity, followed by “habitat” and “parental” influence. For many of the respondents there was a continuous growth from childhood through adult life.

Following Tanner’s lead, Peterson (1982) expanded the topic of life experiences significant to the development of environmental sensitivity. Peterson conducted interviews of 22 environmental educators in an attempt to isolate variables perceived by professional environmental educators as being of prime importance in developing environmental sensitivity. Like Tanner (1980), Peterson found “interaction with the outdoors” as well as “parental influence and other role models” important influences in the development of environmental sensitivity. Besides revealing that the major influences in the development of environmental sensitivity were on going and long-term, her study also documented that they began at an early age (on average, 12 years old).

Few studies have been as informative as the Tanner (1980) and Peterson (1982) studies regarding influences on environmental sensitivity (e.g., Palmer, 1993; Peters-Grant, 1986; Scholl-Wilder, 1983; Sward, 1996). Of those that have researched this topic, findings remain inconclusive.

It has been suggested in theory and research that involvement in outdoor recreation activities can create an awareness of environmental problems. Multiple studies have attempted to link involvement in outdoor recreation activities with increased environmental concern (Dunlap & Heffernan, 1975; Geisler, Martinson, & Wilkening, 1977; Pinhey & Grimes, 1979, Theodori, Luloff, & Willits, 1998; and Van Liere & Noe (1981)).

Dunlap and Heffernan (1975) researched the association between participation in nature-based recreation and environmental concern. In an attempt to measure "public values," the authors presented a list of governmental expenditures focused on protecting natural resources and controlling pollution and asked respondents to assign priorities. Participation in outdoor recreation activities was measured by presenting respondents with a list of leisure activities and asking them to indicate their rate of participation. Dunlap and Heffernan's results indicated weak support for their hypothesis, but they noted the association between outdoor recreation participation and environmental concern needed further investigation. They maintained that "strong personal attachment to an outdoor recreation activity can lead to an equally strong commitment to protect those features of the environment which contribute directly to enjoyment of the activity" (Dunlap & Heffernan, 1975, p. 26).

Other studies researching the association between outdoor participation and environmental concern have found no relationship (Geisler, Martinson, & Wilkening, 1977) or only weak to moderate relationships between outdoor activity and environmental concern (Jackson, 1987; Theodori, Luloff, & Willits, 1998; Van Liere & Noe, 1981). More recently, Bright and Porter (in press) examined whether the "meaning" attached to outdoor recreation participation would help clarify what it is about outdoor recreation that appears to affect people's environmental sensitivity.

This study sought to clarify the factors influencing environmental sensitivity (ES) by comparing three groups with different levels of ES on several variables: (a) claimed influences on their level of ES (b) involvement in outdoor recreation as youths,

and (c) involvement in outdoor recreation as adults. In keeping with previous research, it was hypothesized that groups with higher ES would be more likely to cite outdoor recreation experiences as influencing their level of ES and that higher ES groups would report being more involved in outdoor recreation as youths and as adults.

Methods

Because this study intended to identify the possible influences of activity preferences and claimed influences on levels of environmental sensitivity (ES), a causal-comparative design was chosen. Subjects were 83 upperclassmen and graduate students majoring in recreation and leisure studies. Of these, 35% were concentrating in environmental and outdoor education and the remainders were pursuing concentrations less related to the environment (i.e., management or therapeutic recreation). Nearly two-thirds were female. Although most were 21-30 years of age, nearly 19% were between 31 and 60.

Subjects completed an instrument that included sections measuring ES, subject-claimed influences on ES, and preferred outdoor recreation activities. ES and environmental concern were measured by five Likert scaled items selected from the New Environmental Paradigm (Dunlap & Van Liere (1978) and a nine point ES self rating, ranging from "very low" to "very high," taken from Peterson (1982). Subject-claimed influences on ES were taken from Tanner (1980). Youth and adult activity preferences were open-ended and later assigned to activity categories used by Rossman and Schlatter (2000).

The instrument was reviewed for face validity by professors with expertise relevant to the topic and method of the study. The reliability of the instrument was assessed in two ways. One method was the test-retest reliability assessed through a pilot study. For the environmental sensitivity variable, the Pearson correlation coefficient was .67, $p = .003$. The remaining variables (claimed influences on ES and recreation preferences) were measured at the nominal level. Rather than ignore the issue of reliability, a test-retest analysis of nominal data was performed by determining the number of times subjects gave the same answer to the same question when completing the instrument for the second time. For each

respondent, researchers compared “test” and “retest” entries to determine the number of “agreements” and “disagreements.” A test-retest reliability percentage was calculated by adapting the formula used for “inter-rater reliability” or “inter-observer agreement” in behavioral research, i.e., number of agreements ÷ (number of agreements + number of disagreements) x 100 = reliability percentage. The results were acceptable or better for all three variables: “claimed influences on ES” (64.7%), “activity preferences as a youth” (80.4%), and “activity preferences as an adult” (88.2%).

The second reliability analysis of the instrument measured the internal consistency of subscale items of the instrument. Using data from the 83 subjects of the principal study, Cronbach’s alpha was calculated for ES variable (alpha = .62).

Three comparison groups were formed based on subjects’ self-rating of their level of environmental sensitivity on a 1 to 9 Likert-type scale. Reflecting a negatively skewed distribution, groups were named as follows: low/medium ES (n=21), high ES (n=36), and very high ES (n=26). The responses of these three groups to questions about formative influences on their environmental sensitivity were analyzed using Chi Square and described with Cramer’s *V*; the comparisons of recreation participation were made using one-way analysis of variance and Tukey’s HSD post hoc test..

Results

When subjects ranked the three most important influences on their level of environmental sensitivity, the most frequently selected was “outdoor experiences as a youth” (50.0%, see Table 1) followed by “outdoor experiences as an adult,” (see Table 2) “parental influence,” and “solitude found in nature,” which were each ranked by 42.0% of subjects. Among the less frequently cited were “other adults” (14.5%), “peer/friends” (15.8%), and “books, magazines, movies, TV” (21.1%). Cross-tabulating “claimed influences” by ES groupings yielded only one significant relationship. “Books, magazines, etc.,” which was selected by 8% of very high ES, 18.8% of high ES, and 42.1% of low-moderate ES, had a Cramer’s *V* of .319 ($X^2 [2] = 7.732, p = .021$). In sum, the inclination to claim “outdoor experiences as a youth” or “as an adult” as an influence on environmental sensitivity was not found to be

related to level of environmental sensitivity. Rival influences were likewise not found to be related to level of environmental sensitivity.

Subjects were asked to list their three most preferred recreation activities as a youth and their three most preferred activities as an adult, which were recoded into Rossman & Schlatter’s (2000) activity taxonomy categories of (1) sports and athletics, (2) arts, crafts, and hobbies, and (3) outdoor recreation. For youth and adult recreation preferences, regardless of environmental sensitivity grouping, outdoor recreation activities were most often preferred, followed by sports and athletics, and then arts, crafts, and hobbies. Comparing the ES groups, they differed only in their preference for outdoor recreation activities as youths ($F [3, 80] = 3.16, p = .048$), as seen in Table 3. Post-hoc analysis revealed that the “very high” group differed significantly from the “low-moderate” ES group.

Discussion and Implications

This study sheds some light on the relationship between outdoor recreation and environmental sensitivity. Past studies on this subject have shown weak support for the association between [adult] outdoor recreation and environmental sensitivity (Dunlap & Heffernan, 1975). Furthermore, none of the past studies even considered age as imperative to understanding the relationship between outdoor recreation participation and environmental sensitivity. This study provides support for the need for further research on these relationships.

In earlier descriptive and correlational studies, “outdoors” and “parental” influence, sometimes emerges as a factor worth noting. Unlike Tanner (1980) and Peterson (1982), who both found “outdoors”, followed by “parents” to be the most frequently claimed influences on environmental sensitivity, this study descriptively found “youthful outdoor experiences” followed by equal responses for “outdoor experiences as an adult,” “parental influence,” and “solitude found in nature.” Although subjects self-claimed these influences on ES, higher and lower ES subjects did not differ in the influences they claimed. Both Tanner (1980) and Peterson (1982) distinguished “outdoors” strictly as an interaction with natural areas and the like. While this study, defined “outdoors” as an interaction with natural areas at a particular time in life (i.e., as a youth, as an adult). Peterson also

Table 1. — Claimed Influences on Environmental Sensitivity as Youths

Influence on Environmental Sensitivity (Column %)	Level of Environmental Sensitivity Frequency (Valid Percent)			
	Low (n=19)	High (n=31)	Very High (n=24)	Total (N=74)
Claimed				
“Outdoor experiences as a youth”	6 (31.6)	16 (51.6)	15 (62.5)	37 (50.0)
Did not claim				
“Outdoor experiences as a youth”	13 (68.4)	15 (48.4)	9 (37.5)	37 (50.0)

Chi Square (2, N = 74) = 4.615, p = .10;

Cramer's V = .246

Table 2. — Claimed Influences on Environmental Sensitivity as Adults

Influence on Environmental Sensitivity (Column %)	Level of Environmental Sensitivity Frequency (Valid Percent)			
	Low (n=19)	High (n=31)	Very High (n=24)	Total (N=74)
Claimed				
“Outdoor experiences as an adult”	7 (36.8)	14 (45.2)	10 (41.7)	31 (42.0)
Did not claim				
“Outdoor experiences as an adult”	12 (63.2)	17 (54.8)	14 (58.3)	43 (58.0)

Chi Square (2, N = 74) = .560, p = .756;

Cramer's V = .086

**Table 3. — Activity Class Preferences as Youths:
ANOVA Using Mean Scores of Respondents with Different Levels of Environmental Sensitivity**

Activity Class		Level of Environmental Sensitivity			F	p	# of Differences Detected
		Low- Moderate (n=21)	High (n=36)	Very High (n=26)			
SPORTS AND ATHLETICS	.8554	1.0476	.8611	.6923	1.373	.259	n.s.
ARTS, CRAFTS, AND HOBBIES	.4699	.5238	.4444	.4615	.081	.922	n.s.
OUTDOOR RECREATION	1.6024	1.1905a	1.6667ab	1.8462b	3.156	.048	1

NOTE: For each activity category, subjects had a score ranging from 0 to 3 and reflecting the number of their three most preferred activities that fit the category.

**Table 4. — Activity Class Preferences as Adults:
ANOVA Using Mean Scores of Respondents with Different Levels of Environmental Sensitivity**

Activity Class		Level of Environmental Sensitivity			F	p	# of Differences Detected
		Low- Moderate (n=21)	High (n=36)	Very High (n=26)			
SPORTS AND ATHLETICS	.6024	.7143	.6389	.4615	.806	.450	n.s.
ARTS, CRAFTS, AND HOBBIES	.1687	.2857	.1111	.1538	1.470	.236	n.s.
OUTDOOR RECREATION	2.1928	1.8571	2.2500	2.3846	2.899	.061	n.s.

NOTE: For each activity category, subjects had a score ranging from 0 to 3 and reflecting the number of their three most preferred activities that fit the category.

found that major influences to the development of environmental sensitivity were on-going and long term and began at an early age.

Considering these distinctions and findings of outdoor experiences, the importance of influences on environmental sensitivity is not necessarily what individuals claim to be influential, but more importantly, what the individual actually did in the past. This causal comparative study found that people with high ES and lower ES both attribute their ES level to outdoor recreation as a youth, but they differed significantly in their preference for participation in outdoor recreation as youths. While descriptively higher ES subjects remained more involved in outdoor recreation as adults, the differences were not significant. In continuing this line of inquiry, researchers may need to focus less on what people attribute their ES to and more on how higher and lower ES subjects differ in their past experiences. In addition, further research is needed to determine more about the character of outdoor recreation experiences that appear more strongly related to higher levels of environmental sensitivity. This would include such variables as setting preference, experience preferences, and activity preferences. These findings would have important implications for educators and recreation practitioners who seek to foster environmental sensitivity, indicating the importance of getting youngsters to regard outdoor recreation activities among their favorites.

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Management Issues in Outdoor Recreation

ATTITUDES TOWARD FEES AND PERCEPTIONS OF COSTS OF PARTICIPATING IN DAY-USE OUTDOOR RECREATION

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Abstract: Personal interviews were conducted at day use areas on six recreation sites in South Carolina. This was the second of two planned surveys on the sites, and its purpose was to provide insight into attitudes toward fees, and perceptions of costs of participating in day-use outdoor recreation activities. The first survey was conducted in 1998 and collected information about what participants liked and disliked about the sites. The first survey did not mention fees, but included open-ended questions in which participants could cite fees and other costs if they considered them important. Participants who appeared sensitive to costs tended to have lower incomes than those who were not sensitive to costs. In contrast to the first survey, the second asked specific questions about attitudes toward and consideration of fees and other costs. This paper compares the two surveys and presents results from the 2002 survey. Although the two surveys were conducted the same way and at the same time of the year, there were several important differences in responses to them. The response rate for the 2002 survey was about 65%, considerably less than the 89% rate for the 1998 survey. Total number of respondents was 604 in 1998 and 98 in 2002. The lower response rate and number of respondents was due, in part, to changes in the

sampling methodology, characteristics of sites, fee structures, and weather. However, much of the difference in response to the two surveys remains unexplained.

Introduction

Access fees on public lands can reduce use as well as generate revenue, and may be controversial for several reasons, including equity or fairness (Harris and Driver 1987, Warren and Rea 1998, Binkley and Mendelsohn 1987). Public reaction to fees on public lands is of great interest to public land managers as well as private firms that provide outdoor recreation opportunities in nearby areas (Chavez 1998, Lime et al, 1998).

This paper reports the second phase of a project designed to investigate the effect of fees on recreation site choice. Of particular concern was the extent of site switching in response to fees, and the role of substitute sites in site choice. This study was initiated because a recreation site in northwestern South Carolina was scheduled to begin charging fees in 1999, and we wanted to monitor responses to that change, including the possible shifting of some use to other sites. The study was designed as two personal interview surveys; the first occurring in 1998 (before fees were implemented), and the second occurring after fees were implemented. The first survey was conducted in 1998 as planned. Subsequently the District Ranger who made the decision to implement a site-use fee transferred to another state. The new District Ranger reversed the previous Ranger's decision regarding fees at that site. Because the decision had been reversed once, we delayed conducting the second survey as long as possible in case the decision was reversed again (i.e., to charge a fee). The decision was not reversed, and the second survey was conducted in 2002.

The objective of the 2002 survey was to identify attitudes toward and sensitivity to fees and other costs associated with day use areas on 6 recreation sites in South Carolina. This paper presents the results of the 2002 survey and compares selected aspects of both surveys (1998 and 2002). Results of the 1998 survey were reported in Marsinko (2000) and Marsinko et al. (2001).

Study Area

The primary study area is the Andrew Pickens District of the Sumter National Forest in the mountains of northwestern South Carolina. Recreation sites in this part of the state are operated by the U.S.D.A. Forest Service; the South Carolina Department of Parks, Recreation, and Tourism; the Pendleton District Historical, Recreational, and Tourism Commission; the county (primarily Oconee County); the U.S. Army Corps of Engineers; and local municipalities such as the city of Walhalla. The South Carolina Department of Natural Resources operates a fish hatchery in the study area adjacent to one of the study sites. Clemson University maintains a locally popular site on the University Forest and another at its Botanical Garden. Duke Energy Corporation operates a picnic area nearby at the site of a power plant and education center. The South Carolina Forestry Commission has a limited involvement in providing opportunities for outdoor recreation, but not primarily in the study area. A detailed description of the study area is given in Marsinko (2000).

Six primary sites and two roadside picnic areas were chosen for the study. The primary sites are: Yellow Branch (U.S.D.A. Forest Service), Stumphouse Tunnel Park (operated in 1998 by the Pendleton District Historical, Recreational, and Tourism Commission and operated by the city of Walhalla in 2002), Oconee State Park (South Carolina Department of Parks, Recreation, and Tourism), Chattooga Picnic area and Fishing Pier (known to most local recreationists as the Fish Hatchery - U.S.D.A. Forest Service), High Falls County Park (Oconee County), and South Cove County Park (Oconee County). All of these sites provide day use opportunities. Due to low use levels in 1998, the two roadside picnic areas surveyed in 1998 were not surveyed in 2002.

Methods

Personal interviews were conducted on weekends on the six primary sites (Yellow Branch, Stumphouse Tunnel Park, Oconee State Park, the Fish Hatchery, High Falls and South Cove County Parks) from July through November 2002. The focus was on participants in day use activities, primarily picnicking and walking/hiking, activities common to all sites. Four of the sites were thought to be substitutes for each other because they were along the same road, were in relatively close

proximity, and provided opportunities for similar activities. When the project was initiated, it was hypothesized that most users of these facilities would come from the nearby town of Walhalla or from areas east of Walhalla such as Seneca, Clemson, and Greenville, SC. During the first two weeks of the 1998 survey, it became apparent that users did come from these areas, and two additional sites east of Walhalla were selected as possible substitutes, bringing the total study area to six primary sites.

Two interviewers, who are permanent employees of Clemson University, including the senior author of this paper, worked on both the 1998 and 2002 surveys. Different student interviewers worked on each survey. The 1998 survey used mostly undergraduate students. However, a graduate student intensively sampled a key site that had low participation, and a graduate who was not a student worked early during the 1998 survey. The 2002 survey used undergraduate students. No site was intensively sampled in 2002. After allowing for methodological differences, the planned sampling effort in 2002 was about 10% greater than that in 1998, even though we contacted fewer individuals in 2002.

"Fee" was not mentioned in the 1998 survey because we wanted to see if individuals would bring it up. Many of the questions were open-ended, allowing respondents to include fees in their responses if they wished. The 2002 survey used a similar open-ended approach for some questions, but specifically addressed fees toward the end of the survey in order to collect sufficient information about attitudes toward fees and to test the different question formats (open-ended vs. specific fee questions). Information about responses to other costs was collected in like manner in the two surveys. In 1998, respondents were asked what costs they considered when they participated in this type of outing (they could list fees if they wished). In 2002, respondents were asked if they considered specific costs (e.g., food, gas, fees).

Results

Comparison of Responses to the 1998 and 2002 Surveys

In the 1998 survey, 701 on-site interviews were attempted and 604 were completed. Of those that were not completed, 18 had been surveyed

previously, 7 did not speak English, 14 were just leaving, and 58 refused to be interviewed for various other reasons. We did not want to resurvey previous respondents and were unable to survey the 7 who did not speak English. The response rate was 86% based on all observations and 89% calculated without those who were previously surveyed and those who did not speak English. Response rates varied by site from 84% to 95%.

In the 2002 survey, 158 on-site interviews were attempted and 98 were completed. Of those that were not completed, 5 had been surveyed previously, 2 did not speak English, 26 were just leaving, and 27 refused to be interviewed for various other reasons. The response rate was 62% based on all observations and 65% calculated without those who were previously surveyed and those who did not speak English. Response rates varied by site from 57% to 80%. The best site response rate in 2002 was lower than the worst site response rate in 1998.

There were substantial differences between the two surveys in the number of individual on-site contacts and the response rate. The lower number of contacts (158 in 2002 compared to 701 in 1998) can be partly accounted for by changes in sampling methodology between the two surveys. Fees were supposed to be implemented on Yellow Branch, and this site had very few visitors in 1998 when there was no fee. Therefore, we intensively sampled this site in 1998 in order to get sufficient background information for evaluating the response to newly imposed fees. Because fees were not implemented on the site, we treated this site the same as the others in the 2002 survey. Less intensive sampling on that site accounted for about 37 fewer respondents in 2002. Two roadside picnic areas were sampled in 1998, but not in 2002 due to low participation in 1998. This accounted for about 22 fewer respondents in 2002. Other methodological differences accounted for approximately 50 fewer respondents in 2002. Thus, a reduction of 109 respondents can be accounted for by methodological differences between the surveys. Based on the 1998 response rate, this amounts to about 120 on-site contacts. However, there were 543 fewer contacts in 2002, leaving 423 unaccounted for. The 1998 survey ended at the end of October because Yellow branch was closed for the season at that time. This also

coincided with the fall foliage season in 1998. The 2002 survey was conducted for two more weekends. It ended in November because the foliage season occurred later and Yellow Branch was not closed for the season in 2002. This change should have increased the contacts in 2002.

The weather affected the number of contacts in 2002. The study area was in a drought in 1998, which began to end in 2002. Rain and the threat of rain appear to have reduced participation in 2002. In 2002, interviews could not be conducted on several days due to rain and interviews were curtailed on other days due to rain. The rains in 2002 tended to cover a much wider area and occur for longer time periods than the infrequent scattered showers that occurred in 1998. In 1998, no interviewing days were completely lost due to rain. Several other factors may have reduced the number of contacts in 2002. The tunnel at Stumphouse Tunnel Park was closed in 1998 and people tended to stand outside the barricaded entrance to the tunnel. In 2002, people tended to be in the tunnel or leaving the area and we were not able to contact as many at this site. One site changed its fee structure from a per car fee to a per person fee between 1998 and 2002, which could have affected visitation to the site. Also, it is possible that concerns following the terrorist attacks of September 11, 2001 may have had an effect on recreation in the area.

The lower response rate in 2002 may have been due to several factors, including reopening the tunnel between 1998 and 2002. People stood outside the barricaded tunnel in 1998 and participated in the survey, which gave them an opportunity to complain about the tunnel being closed. In 2002, we found fewer people at the site and those we found were usually in a hurry to leave after walking in the tunnel. In 1998, 14 (2% of contacts) refused to participate because they were just leaving, whereas in 2002, 26 (16% of contacts) gave this reason for not participating. The "just leaving" category accounted for almost half of the nonrespondents across all sites and for over 60% of the nonrespondents at Stumphouse Tunnel Park in 2002.

Other factors may account for the lower response rate across all the sites. More respondents in 2002 said that they considered time to be part of the cost

of their trip, which could have affected their willingness to spend time responding to the survey. The weather in 2002 was more likely to involve a threat of rain, which could also have affected recreationists' willingness to remain on site and respond to the survey. The lower response rate may also be linked to the fact that we had fewer contacts in 2002. In 1998, we were more likely to approach those who were enjoying their recreational activities than those who were packing up or otherwise preparing to leave. In 2002, we found fewer people at the sites, which probably increased our likelihood of approaching those who were preparing to leave. This may help explain the increase in the number of contacts citing "just leaving" as a reason for not participating.

There were also differences in the racial/ethnic makeup of the participants in the two surveys. The 1998 survey participants were 95% White, 2% African American, 2% Hispanic, and 1% Asian. The 2002 survey participants were 78% White, 10% African American, 9% Hispanic, and 2% Asian. About 500 fewer Whites were interviewed in the 2002 survey. An increase in ethnic diversity was especially apparent at the High Falls site in 2002. This was the most ethnically diverse site surveyed in 1998 and it was the site where we were most likely to encounter Hispanic recreationists. In 2002, the Hispanic population at High Falls was considerably larger than in 1998. This may have been partly due to an increasing Hispanic population in the general area, and a tendency for new arrivals to go to sites recommended by other Hispanic families. The Park Superintendent at High Falls felt it may also have been due to a change in the fee structure from a per car fee to a per person fee at Oconee State Park. This change may have caused more Hispanic families to switch to High Falls because Hispanic families in this area tend to travel in large groups in vans and thus benefit from a per car fee structure.

Income also differed between the two surveys. Median household income was \$45,000 in 1998 and \$35,000 in 2002. The means were closer at \$45,500 in 1998 and \$44,400 in 2002. Figure 1 shows the distribution of income for each survey. The income differences are due to several factors. Hispanics who participated in the study had lower incomes than Whites, and there was a higher proportion of Hispanics in the 2002 survey.

Whites who participated in 2002 had slightly lower incomes than Whites who participated in 1998.

Comparison of question formats

We feel that the way questions about fees are asked can have a significant influence on the response received. Consequently we varied the way that questions about fees were asked.

The 1998 survey asked, "Is there any place that you used to enjoy visiting for this type of outing that you no longer visit? If yes, why don't you go there now?" The primary reason for asking this question was to find out who would cite "fees" as a reason for not using a site that they previously used. It was felt that only those who were actually affected by fees would mention them in response to such a question. Very few (only about 3%) of the respondents reported that they were affected by fees, and they tended to have lower incomes than other respondents. The 2002 survey asked the identical question along with a specific fee question that was asked later in the survey. The purpose was to compare the two question formats within the 2002 survey. This was based, in part, on park managers' comments concerning most fee complaints coming from those who appear most able to afford fees.

Our hypothesis was that fees would be mentioned in an open-ended question if they were important enough to be part of the thought process of the respondent. Thus, we expected lower income respondents to cite fees under these conditions.

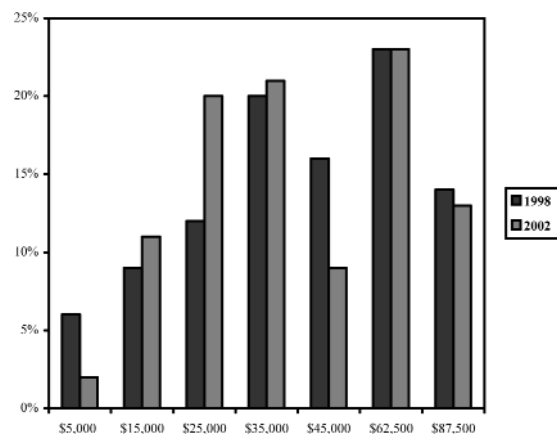


Figure 1. Household income of participants (1998 and 2002)

We felt that using the word “fees” in the question might generate protest responses. However, because of the small number of contacts and lower response rate in 2002, there were not enough responses to the open-ended question to analyze in 2002. Therefore, summary data are provided from similar questions on the 1998 and 2002 survey. We do not attempt to analyze these data, but present them to the reader because we feel the results are interesting. The questions being compared are “Is there any place that you used to enjoy visiting for this type of outing that you no longer visit? If yes, why don’t you go there now?” from the 1998 survey and “Have entrance/parking fees caused you to stop going to a site or to go less often?” from the 2002 survey.

In 1998, 71% of those citing “fees” had incomes of \$45,000 or less. In 2002, 75% of those who said fees caused them to stop going or to go less often had incomes of \$62,500 or more. Although the questions are not identical and the samples differed ethnically, the results are interesting and might suggest further study of which income groups are most likely to be affected by fees.

2002 survey

More than four-fifths of the respondents to the 2002 survey felt that fees were necessary and fair (Table 1), and only thirteen percent said they would go to a site less often or stop going due to fees. Thus, the majority of respondents who visit the study sites are in agreement with the concept of paying fees for the use of certain sites. Likewise, most reported that their participation behavior was affected little, if any, by fees.

Respondents were asked if they considered specified costs when on this type of day-use outdoor recreation trip. Those who did not consider a type of cost were asked why they did not. Fewer than half reported that they consider the cost of food, while slightly more than half reported that they consider the cost of gas (Table 2). The reason often given for not considering food was that respondents had to eat anyway (Table 3). Thus, they did not view food as an additional cost of the trip. Many did not consider the cost of gas because they felt it was low. Few considered the cost of lodging, primarily because they did not incur lodging costs on this type of trip.

Table 1. — Attitudes Toward Fees - 2002

	Yes %	No %
Should NOT have to pay fees	17	80
Fees are unfair	15	85
Fees are needed	85	14
Go less often or stop because of fees	13	87

Row percents do not total 100 due to “don’t know” responses

Only 13% considered automobile operating expense (e.g., 30 cents per mile). We expected this pattern of results based on the results of the 1998 survey. Costs most often reported as considered tend to be those that require a dollar outlay just before, or during, the trip.

Entrance/parking fees were considered by 45% of the respondents. Activity and shelter rental fees were considered by 33% and 21% of the respondents respectively. Common reasons for not considering entrance/parking and activity fees were that the fees were reasonable. Few considered shelter rental fees because few rented the shelters (although many used the shelters). Although we did not pursue details about activity fees, comments from some respondents indicated that they had strong negative feelings about these fees, and may have avoided sites that charge such fees. One respondent said he would never pay to swim. One study site has an activity fee for swimming, while most recreation sites in the area do not charge a fee to swim. However, the site with the activity fee for swimming provides a lifeguard while the others do not. Thus, those who pay to swim receive an additional benefit for their money. This may explain why some respondents did not consider activity fees as part of the cost of the trip because they felt these fees were reasonable.

When we study travel behavior as part of the site choice process, we often assume the time spent traveling is part of the cost of the trip.

Table 2. — Types of Costs Considered by Respondents – 2002

Cost	% of Respondents
Food	44
Lodging	19
Gas	55
Car Expense	13
Entrance/Parking Fee	45
Activity Fee	33
Shelter Rental Fee	21

Table 3. — Why Costs Are Not Considered by Respondents – 2002

Cost	Common Response
Food	Have to eat anyway
Lodging	Not used
Gas	Cost is low
Entrance/Parking Fee	Reasonable
Activity Fee	Reasonable
Shelter Rental Fee	Do not rent

Respondents were asked if they considered the time spent traveling to be part of the cost of the trip. Forty percent said they did. This question was asked the same way in 1998, and 31% reported at that time that they considered travel time as a cost. When the 1998 survey was done, many respondents qualified their answer by saying “no, but I would if” and gave various circumstances under which they would consider travel time as a cost of the trip. Typical circumstances included some type of time or distance threshold, or a heavy traffic condition. The 2002 survey attempted to collect more details about these conditions and to quantify them by identifying the thresholds. However, the small sample size and the wide range of threshold numbers given by respondents did not permit analysis of this part of the study. Reasons given about accounting for time in 2002 were generally consistent with those given in 1998. One respondent to the 2002 survey stated that he would consider his time as a cost if there were children in the car.

After finding few participants the first weekend of the 2002 survey, a question was added concerning the effect of the events of September 11, 2001 on participation. Most respondents (89%) said September 11 did not affect their participation. Those who were affected said they had become more cautious or stay in rural areas or closer to home (which is rural for most respondents). We surveyed only those who were at the sites, and therefore could not determine how many had stopped going to the sites because of September 11.

Summary and Conclusions

This paper reported the results of the second phase of a study designed to investigate the effect of fees on recreation site choice, and compared the first (1998) and second (2002) phase surveys. Although the studies were conducted in much the

same way over similar time periods during the year, we found substantially fewer people and a lower response rate across all study sites in 2002. Some of the differences in the number of contacts could be accounted for by methodological differences, different weather patterns, and changes in sites and their management.

The differences in results of the two surveys over a four-year period point out the significant changes that can take place in site choice and use over time in even a relatively small and homogeneous area. From the standpoint of site management, changes included who managed sites, the structure of fees and charges, and what facilities were open. Weather differed over the four-year period to include a drought and then wetter weather that helped compensate for the drought. The number of users was substantially lower than before, and there were changes in the characteristics of visitors, to include their incomes and their racial/ethnic backgrounds. These changes complicate efforts to compare the results of the 1998 and 2002 surveys; but also point out the dynamics of site choice and use, raising questions about the extent to which it is possible to generalize the results of one-time surveys of areas such as these. One would certainly get different perceptions of the study sites and their users from the surveys in 1998 and 2002.

Few respondents thought fees were unfair, and most thought fees were needed. Few reported that they allowed fees to affect their participation. With differences in results between the surveys, it was not clear which income groups were most affected by fees.

Many respondents did not consider the cost of food, gas, or fees when participating in this type of recreation. The primary reason is that they feel these costs are relatively low. Many respondents did not consider the cost of their time when participating in this type of recreation. Some stated they would consider time as a cost if they had to drive far enough, or for a long period of time, or if they had to drive in heavy traffic. This might be interpreted as considering this cost to be relatively low.

The perceptions of costs by respondents have potentially important implications for nonmarket valuation, particularly when the travel cost model

is used. This model estimates the value of the trip to the user based on actual travel expenses incurred. These expenses often include food and automobile expenses. Thus, the value of a trip based on actual expenditures may be inaccurate for participants who do not consider these costs when making decisions for certain types of trips.

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COMMUNITY PERCEPTIONS OF WILDLAND FIRE RISK AND FIRE HAZARD REDUCTION STRATEGIES AT THE WILDLAND-URBAN INTERFACE IN THE NORTHEASTERN UNITED STATES

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Abstract: This paper summarizes the results of a research project on community perceptions of wildland fire risk and fire hazard reduction strategies at the wildland-urban interface in the northeastern United States. The research consisted of the completion of a survey of residents and landowners within the Plymouth Pine Barrens of southeastern Massachusetts. The study area is characterized by the presence of inflammable pitch pine-scrub oak vegetation that is capable of supporting intense wildland fires on a frequent basis. The results indicate that residents have a low perception of the risk from wildland fire, but do support the use of fire hazard reduction strategies. The specific strategies include the use of prescribed fire, mechanical removal of trees and brush, and the construction of firebreaks. Respondents believe that the public should be involved in the development of fire hazard reduction plans. A major factor identified as influencing respondents' perception of risk from wildland fire is past experience with the occurrence of wildland fire. Those who reported having experienced fires in the past felt they were at higher risk than those who did not experience fires. Level of knowledge about the use of fire hazard reduction strategies appears to be an important factor in determining level of support for the use of fire hazard reduction strategies. Respondents who reported high levels of knowledge about the use of a specific fire hazard reduction strategy indicated a higher level of

support for the use of that strategy than did those who reported a low level of knowledge. Overall, respondents believe that actions should be taken to reduce fire hazard within the study area and would like to be involved in the development of fire hazard reduction plans.

Introduction

During the last two decades, the number of catastrophic wildland fires occurring across the United States has increased. At the same time, an increase in the number of people settling in wildland areas has placed more homes at risk from wildland fires. Since 1990, approximately 9,000 homes have destroyed or damaged by fires (Sampson, 1999). The severe wildland fire season of 2000 resulted in a reexamination of the nation's fire suppression policy and the development of a new National Fire Plan (U.S. Department of Agriculture, 2000). One of the key elements of the National Fire Plan is the reduction of fire hazard at the wildland-urban interface across the country through the use of both prescribed fire and mechanical removal of fuels. Fire managers plan to focus fire hazard reduction work on communities that have been identified as being at high risk from wildland fire. Although wildland fire risk is most commonly associated with the western United States, areas exist in the Northeast that are prone to destructive wildland fires. An example is the pitch pine-scrub oak barrens most commonly found in coastal areas.

This study examines community members' perceptions of wildland fire risk and fire hazard reduction strategies at the wildland-urban interface in the Northeastern United States through the completion of a case study of the Plymouth Pine Barrens located in the towns of Plymouth and Carver, Massachusetts. Pine barrens are one of the most common fire-dependent ecosystems in the Northeast. These barrens are typically found in areas of sandy, acidic soil occurring on glacial outwash and consist of an overstory of scattered pitch pine and an understory of scrub oak and other ericaceous shrubs (Irland, 1999). The Pine Barrens support numerous rare plant and insect species. It is a fire-adapted ecosystem that relies on repeated fires to prevent succession of vegetation to shade-tolerant forest types. The Plymouth Pine Barrens is approximately 50,000 acres in size,

much of which is within the boundary of Myles Standish State Forest. The Forest is a major recreational destination for residents of southeastern New England. A unique feature of the Forest is the presence of 156 leased cottages located around several of the Forest's ponds. Year-round and seasonal homes, agricultural land, camps, and numerous lakes and ponds surround the Forest.

Background

Reduction of wildland fire risk in the wildland-urban interface can be complex. Consensus exists within the fire community that to reduce the risk of catastrophic wildland fires, prescribed fire must be used in combination with the mechanical reduction of fuels (Mutch, 1994; Agee, 1999; Sampson, 1999; Pyne, 2001; and Wilkinson, 2001). Reasons cited for a combined strategy include the overwhelming amount of fuels present in forests and the difficulty of prescribed fire alone to reduce fuel conditions to prevent the occurrence of catastrophic wildland fires. Successful completion of prescribed fires is an inherently difficult task (Pyne, 2001). Proximity to developed areas can increase homeowners' concerns about the use of prescribed fire and mechanical treatments that alter landscapes. Community members' perceptions of fire risk and hazard reduction strategies can vary greatly depending upon geographic location, past experience with wildland fires, residential choice factors and residency status (Gardner and Cortner, 1985; Winter and Fried, 2000; Winter, Vogt and Fried, 2002). Understanding community members' perceptions at a site-specific level can assist land managers in developing and implementing successful fire hazard reduction strategies and fire prevention programs.

Public support for wildland fire management is crucial to the success of current and future management objectives. As "consumers" of wildlands through recreational use or as homeowners residing within wildlands, the public is a stakeholder in the success of wildfire management policies on publicly owned lands. Land managers must propose strategies that the public, especially within the wildland-urban interface, will find acceptable. Unfortunately, to date little is known about homeowners' perceptions of fire management issues in the wildland-urban interface (Winter and Fried, 2001).

Researchers have found that perceptions about fire risk and hazard reduction strategies varies geographically and can depend on factors such as environmental knowledge, past experience with wildland fire and length of residency (Cortner, Gardner, and Taylor, 1990; Winter and Fried, 2001). Manfredo and others (1990) found that the public appears poorly informed on prescribed fire policy and its effects. Researchers in Florida found that residents became more supportive of prescribed fire programs following educational outreach (Loomis et. al., 2001). Public support and preferences for fire hazard reduction strategies can depend upon additional factors such as trust in responsible agencies, whether efforts are well-planned and the mitigation of effects on adjacent homeowners (Winter, Vogt and Fried, 2002). These findings highlight the importance of building local support to ensure the success of wildland fire hazard reduction strategies.

Objective

The objective of this study is to determine community members' perceptions of wildland fire risk, knowledge of fire hazard reduction strategies, support for the use of fire hazard reduction strategies, and opinions about the role of the public in wildland fire management planning in the wildland-urban interface in the Northeastern United States. This information will provide local land managers with insights into public perceptions of fire management issues and will assist them in developing plans for reducing fire hazard. The results were compared with similar studies conducted in other parts of the United States.

Methods

To complete this research, a mail survey was distributed to 500 seasonal and year-round residents and landowners within a two-mile radius of the boundaries of Myles Standish State Forest in Plymouth and Carver, Massachusetts. The survey was sent to 12% of the approximately 4,240 households and landowners located within the study area. The survey contained a combination of Likert-scaled and open-ended questions designed to measure respondents' beliefs and attitudes towards wildland fire management issues. Specifically, the survey questions measured perception of risk from wildland fire, level of knowledge about the use of fire hazard reduction

strategies, level of support for the use of fire hazard reduction strategies, and opinions about the public's role in the development of fire hazard reduction plans.

Response: A total of 153 completed surveys were returned for a response rate of 32%. Although this is a relatively high response rate considering that no follow-up reminder was sent to encourage responses to the survey following distribution, the sample represents a small percentage of the area's population. In total, only 3.6% of the 4,240 households and landowners in the study area completed surveys. This small percentage of the residents of the study area should be taken into consideration when interpreting the results of the survey. Approximately 75% of the respondents are year-round residents of the study area while 25% are seasonal residents.

The demographics of the survey respondents were compared to the demographics of the study area using 2000 U.S. Census data in order to determine the representativeness of the survey sample. Demographic characteristics examined included gender, age, educational attainment, and income. Based on a comparison of demographic data, several differences are evident between the survey respondents and the general population of the study area. The survey respondents are older, more highly educated, and earn a higher income than the overall population of the Plymouth-Carver area. Also, the survey respondents are comprised of a higher percentage of males (61%) than is present in the general population of the study area.

Table 1. — Likelihood of damage/destruction from wildland fire

Wildland fire will damage/destroy property	% of respondents
Very unlikely or unlikely	45.4%
Somewhat likely	40.1%
Likely or very likely	14.5%

Results and Discussion

Perception of Risk from Wildland Fire: To measure community members' awareness of the risk from wildland fire, respondents were asked how likely it was that their property would be damaged or destroyed by wildland fire. A response that it is

likely or very likely that a fire will damage or destroy property was considered to be indicative of a respondent having a high awareness of the risk from wildland fire. Responding that damage or destruction was unlikely was considered an indicator of a low awareness of the risk from wildland fire. Site-specific conditions such as surrounding vegetation and the characteristics of buildings can affect the level of risk from wildland fire. Using this rationale, survey respondents did not have a high awareness of the risk from wildland fire (Table 1). Almost one-half of the respondents believe that it is unlikely or very unlikely that their property would be damaged or destroyed. Only a small percentage (14.5%) believe that it is likely or very likely that damage or destruction of their property will occur. The survey respondents did, however, demonstrate an understanding of how the surrounding landscape influences risk from wildland fire. Those who had a high awareness of wildland fire risk most often cited as a reason for their belief the fact that their home or property is located in a heavily vegetated area. Respondents who have a low awareness of wildland fire risk often indicated that since their property is cleared of vegetation or surrounded by natural or man-made buffers, fires would not affect their property. In general, respondents perceived clearings and natural barriers such as lakes and ponds as protecting their homes from wildland fire.

The survey results identified several differences in how survey respondents perceived the risk from wildland fire. Respondents who reported past personal experience with wildland fire have a significantly higher awareness of the risk from wildland fire than do respondents who reported no experience with wildland fire (Table 2). These findings contradict the findings of Cortner and others (1985), whose study revealed that residents of a Southern California community that had experienced an intense wildland fire perceived wildland fire as less of a risk following the fire occurrence. Winter and Fried (2001) reported findings similar to this study. They found that residents who had experienced a wildland fire had an increased awareness of the risk and believed that a fire would occur again.

Respondents who own leased-cottages in Myles Standish State Forest have a higher perception of the risk from wildland fire than do respondents

from outside the forest. This difference in awareness is most likely due to past experience with wildland fires and sensitivity to forest management issues. The majority of cottage leaseholders have resided in the area as seasonal residents for several decades. It is likely that fires that have occurred in the forest have affected their perceptions of risk. They are directly exposed to public recreational use of the forest and many of them expressed concern about the careless use of fire by forest visitors.

Almost one-half of the survey respondents reported having personal experience with wildland fire, although the experiences of respondents varied greatly. Most respondents' experience consisted of a fire burning close to their property and seeing smoke. Several respondents reported having memories of the catastrophic 1957 fire. A small number of respondents reported having assisted firefighters in extinguishing fires or having been evacuated from their homes.

Table 2. — Differences in perception of risk from wildland fire

Respondent Category	Mean	SD	t	Sig. (p)
Past experience				
with wildland fires	2.96	1.13	3.21	.005
No past experience				
with wildland fires	2.44	0.84		
MSSF Cottage				
Leaseholders	3.16	0.85	2.67	.01
Non-MSSF Cottage				
Leaseholders	2.58	1.01		

SD = Standard Deviation

Scale: 1= very unlikely 2= unlikely 3= somewhat likely

4= likely 5= very likely

Knowledge of Wildland Fire Hazard Reduction Strategies: Survey respondents were asked to self-rate their level of familiarity with the use of fire hazard reduction strategies based on a five-point Likert scale. Familiarity was equated with level of knowledge about the use of each strategy. The only information provided to the survey respondents was a brief definition of each strategy. Overall, respondents reported having some knowledge about the use of prescribed fire, mechanical removal of trees and brush and the construction of firebreaks to reduce the chances of

a catastrophic wildland fire. Respondents reported slightly higher levels of knowledge about the use of prescribed fire than they did for mechanical removal and firebreaks (Table 3). This difference may be attributed to recent publicity about the use of prescribed fire in Myles Standish State Forest by the Massachusetts Department of Environmental Management and The Nature Conservancy.

Differences in respondents' level of knowledge about the use of fire hazard reduction strategies appear to be influenced by past experience with wildland fires, age and residency status. Respondents who experienced wildland fires had a higher level of knowledge about the use of constructed firebreaks than did respondents that have not experienced fires. Younger respondents reported a higher level of knowledge about the use of prescribed fire than did older respondents. Seasonal residents appear to be less knowledgeable about the use of prescribed fire than year-round residents. Examination of survey respondents about the risks commonly associated with fire hazard reduction strategies indicates that respondents with a higher level of knowledge about strategies are less concerned with the associated risks. Respondents who consider themselves knowledgeable about the use of prescribed fire are less concerned about the effects of smoke on nearby residents, the appearance of burned areas following prescribed fires and the potential damage to wild animals and wildlife habitat. It is likely that those who have familiarity with prescribed fire understand that these risks can be mitigated.

Support for the Use of Fire Hazard Reduction Strategies: Survey respondents expressed support for the use of fire hazard reduction strategies on both public and private land (Table 4). The levels of support for the use of prescribed fire, mechanical removal of trees and brush and the construction of firebreaks were fairly consistent. Respondents did express significantly less support for the use of prescribed fire on privately owned land than for its use on public land.

The lack of difference in the level of support for the use of prescribed fire, mechanical removal, and constructed firebreaks may be influenced by site-specific characteristics. Shindler (1996) found that residents of northeastern Oregon had a higher level of support for the use of mechanical removal of

Table 3. — Knowledge of fire hazard reduction strategies

Strategy	Compared to Mechanical Treatment				Compared to Constructed Firebreaks	
	Mean	SD	t	Significance (p-value)	t	Sig. (p-value)
Prescribed Fire	2.93	1.09	3.832	.000	3.422	.001
Mechanical Treatment	2.60	1.13	--	--	-1.026	n.s.
Constructed Firebreaks	2.65	1.11	-1.026	n.s.	--	--

n.s. = not significant

Scale: 1= none at all 2=a little 3=somewhat 4=a lot 5=a great deal

Table 4. — Support for the use of fire hazard reduction strategies based on land ownership

Item	Publicly-Owned Land		Privately-Owned Land		t	Significance (p-value)
	Mean	SD	Mean	SD		
Constructed Firebreaks	3.75	1.13	3.25	1.33	4.461	.000
Mechanical Removal	3.51	1.17	3.56	1.20	-1.363	n.s.
Prescribed Fire	3.49	1.21	2.99	1.26	4.86	.000
Land Use Regulations	n/a	n/a	2.91	1.37	n/a	n/a
No Action	1.74	1.26	1.90	1.24	-2.771	.01

Scale: 1=none at all 2=a little 3=some 4=a lot 5=a great deal

trees and brush than prescribed fire. This preference was attributed to the importance of the forest products industry in the area and the belief that mechanical removal would spur the industry. The Plymouth Pine Barrens study area is mostly suburban and doesn't have a significant forest products industry. The majority of the land-use surrounding the Forest is residential. A goal of promoting a forest-based economy may not be a consideration for the residents surrounding the Forest.

Respondents were also asked to indicate their level of agreement with the use of fire hazard reduction strategies in various combinations and under certain circumstances (Table 5). Factor analysis of these various fire hazard reduction options was used to attempt to determine if respondents tended to support either prescribed fire or non-prescribed fire management options (Table 6). The analysis revealed that 65% of the survey respondents support (a score of 4 or 5 on the Likert Scale) the use of prescribed fire while 35% support the use of non-prescribed fire based fire hazard reduction strategies such as mechanical removal of trees and brush, the construction of firebreaks and the use of regulations.

Table 5. — Level of agreement with various fire hazard reduction options

Fire Hazard Reduction Option	Mean	SD
More firebreaks should be built around Myles Standish State Forest	3.63	1.25
Prescribed fire should be used in combination with mechanical removal of brush and trees	3.59	1.17
Prescribed fire should be used to improve wildlife habitat and manage forest vegetation	3.55	1.17
It is alright to use prescribed fire close to homes if safety precautions are taken	2.75	1.20
Local by-laws that require homeowners to remove vegetation should be implemented	2.43	1.41
The use of prescribed fire should be allowed on private land by owners	2.39	1.28
Only mechanical removal of brush and trees should be used to reduce fire hazard	2.26	1.35
Prescribed fire is too dangerous and should not be used at all	2.10	1.22

Scale: 1=none at all 2=a little 3=somewhat
4=a lot 5=a great deal

Table 6. — Factor Analysis results for various fire hazard reduction strategies

Fire hazard reduction strategy	Loadings	Mean	SD	Alpha
Support prescribed fire strategies		3.11	0.91	
It is alright to use prescribed fire close to homes if safety precautions are taken	.722	2.89	1.17	.737
The use of prescribed fire should be allowed on private land by owners	.586	2.56	1.33	
Prescribed fire should be used to improve wildlife habitat and manage forest vegetation	.647	3.59	1.18	
Prescribed fire should be used in combination with mechanical removal of brush and trees	.618	3.55	1.15	
Support non-prescribed fire strategies		2.62	0.96	
Prescribed fire is too dangerous and should not be used at all	.607	1.88	1.08	.675
Only mechanical removal of brush and trees should be used to reduce fire hazard	.740	2.25	1.31	
More firebreaks should be built around MSSF	.576	3.51	1.30	
Local by-laws that require homeowners to remove vegetation should be implemented	.520	2.5	1.38	
Scale: 1=none at all 2=a little 3=somewhat 4=a lot 5=a great deal				

Table 7. — Differences in support for fire hazard reduction strategies based on level of knowledge of the use of prescribed fire

Item	Level of Knowledge							F	Significance (p-value)
	None		Some		A Great Deal				
	Mean	SD	Mean	SD	Mean	SD			
Prescribed fire on public land	3.05	1.19	3.66	1.09	3.67	1.34	3.701	.05	
Prescribed fire on private land	2.56	1.21	3.00	1.18	3.41	1.32	4.366	.05	
Mechanical removal on private land	3.14	1.29	3.72	1.09	3.70	1.2	3.105	.05	
Scale: 1=none at all	2=a little	3=some	4=a lot	5=a great deal					

In addition to supporting the use of prescribed fire for the reduction of fire hazard, respondents also support its use for ecosystem management objectives. The specific ecosystem management objectives included in the survey are the improvement of wildlife habitat and the management of forest vegetation. Although no information was provided in the survey about the role of fire in pitch pine-scrub oak barrens, it is likely that the respondents have some knowledge of its importance. This knowledge is reflected in their support for the use of prescribed fire for ecological benefit.

The most significant factor that determines support for the use of fire hazard reduction strategies appears to be the respondent's level of knowledge about the specific strategy (Table 7). This is most evident in the case of prescribed fire. Respondents who described themselves as knowledgeable about the use of prescribed fire have a higher level of support for its use than do those

with little or no knowledge. The finding that support for fire hazard reduction strategies is influenced by level of knowledge about those strategies is consistent with the research results of others. Manfredo and others (1990, p.23) found that as knowledge about wildland fires and fire policy increases, support of prescribed fire policy also increases. This finding was found through the completion of a telephone survey of citizens from throughout the United States. Respondents who indicated that they were knowledgeable about wildland fire and fire management policy were more likely to support the use of prescribed fire.

Opinions about Public Participation in Fire Management Planning: Survey respondents' opinions about the role of public participation in the development of fire hazard reduction programs were examined by asking about their level of agreement with three different statements that described options for public participation.

Table 8. — Level of support for public participation in developing fire hazard reduction plans

	Mean	SD
Public education and outreach should be part of a fire hazard reduction program	4.51	1.15
Residents should take part in focus group discussions to help planners develop fire hazard reduction programs	3.95	1.11
Residents should serve on advisory committees to help develop fire hazard reduction plans	3.86	1.11
State and local officials should have sole responsibility for developing fire hazard reduction plans	2.51	1.28
Scale: 1=none at all 2=a little 3=somewhat 4=a lot 5=a great deal		

The options included no public participation, the inclusion of citizens in advisory committees and the use of focus groups to develop plans. Respondents were also asked if education and outreach should be part of a comprehensive fire hazard reduction program.

The results of the survey indicate that there is strong support for the use of public participation in the development of fire hazard reduction programs (Table 8). Significantly less agreement exists among survey respondents that state and local officials should have sole responsibility for developing fire hazard reduction programs than for the participation of residents in developing programs. Strong support exists for the use of either citizens' advisory committees or focus group discussions in the development of fire hazard reduction programs. Survey respondents also indicated strong support for the inclusion of educational programs for residents and property owners as part of fire hazard reduction plans.

Conclusions and Recommendations

The information gathered in this study provides insights into community members' attitudes and beliefs about the risk from wildland fire and options for fire hazard reduction in the southeastern Massachusetts communities of Plymouth and Carver. This information can be useful to local land and fire managers in the development of programs to reduce the chances of

catastrophic wildland fires and increase the education of residents about wildland fire risk and hazard reduction strategies.

The results of the survey indicate that community members' perceptions of risk from wildland fire are influenced both by experience and by beliefs about site-specific conditions that affect wildland fire risk. Actual risk from wildland fire can vary greatly over short distances based on factors such as vegetation type, vegetation density and the presence or lack of buffers such as areas cleared of vegetation and waterbodies. The analysis of survey results indicates that survey respondents used these site-specific considerations to justify their beliefs about wildland fire risk.

Due to the constraints of the survey instrument, it was not possible to assess actual risk from wildland fire to the property or home of each survey respondent. It is impossible to determine if respondents who believed that their home or property is not at risk are either 1) not aware of risk from wildland fire or 2) their home or property is actually relatively safe from wildland fire. This underscores the importance of educating homeowners about factors that can affect how vulnerable their property is to wildland fire. Ideally outreach should be conducted that would include assessments of risks from wildland fire. Local land and fire managers can apply the study findings to develop a risk assessment program for the Plymouth-Carver area. Because risk to property from wildland fire is influenced by many factors including topography and vegetation, it is important for managers to assess risks throughout a community to be able to develop effective management strategies. The understanding of how survey respondents perceive risk from wildland fire indicates that this assessment should be done at the individual residence scale. This will allow managers to identify areas at highest risk as well as educate homeowners about the risk and actions that can be taken to reduce it.

The results of this research project reveal that there is support among survey respondents for taking action to reduce the chances of catastrophic wildland fires in the Plymouth-Carver area. Respondents supported the use of prescribed fire, mechanical removal of trees and brush and the construction of firebreaks. Less support existed for

the use of regulations that would require homeowners to take steps to reduce the risk from wildland fire themselves.

A major factor in survey respondents' level of support for fire hazard reduction strategies was their level of knowledge about the specific strategy. Respondents who have a high level of knowledge about a specific fire hazard reduction strategy were more likely to support the use of that strategy. This indicates that the respondents' knowledge about the strategies most likely included positive impressions. Local land managers' could benefit from providing education about the use of prescribed fire, mechanical removal of trees and brush and constructed firebreaks in building support for the development of fire hazard reduction programs.

Respondents that reported past experience with wildland fire exhibit a higher level of support for the use of prescribed fire than do those who have not experienced wildland fires. This higher level of support may indicate that people who have witnessed fires in the past have become comfortable with them. It is possible that the use of demonstration scale prescribed fires that can be viewed by local residents may be helpful in building support for the use of prescribed fires.

Education about the use of fire hazard reduction strategies should include open discussion of the risks and limitations of the various methods. The survey instrument used in this research project did not provide information about the effectiveness of and risks associated with each method. Survey respondents were merely asked to self-rate their level of knowledge about each fire hazard reduction method. Therefore, it is unknown how much specific knowledge each respondent has about fire hazard reduction methods.

Survey respondents support citizen involvement in developing fire hazard reduction programs. As discussed earlier, this finding is consistent with current trends in natural resource management nationwide. It is in the best interests of land and fire managers to involve citizens in all stages of plan development and implementation.

The results of the survey administered for the completion of this research project can be helpful

in assisting land managers with developing an effective public participation strategy. Differences in perceptions and beliefs about wildland fire risk and fire hazard reduction strategies appears to be influenced by factors such as age, length of residency, residency status, the town in which the respondent resides and whether the respondent is a leaseholder of a cottage in Myles Standish State Forest. Land managers should develop public participation strategies that will involve stakeholders with diverse backgrounds to ensure that many different viewpoints are included.

The results of the survey indicate that there is little support for land-use regulations among respondents. It may be difficult to implement regulations mandating the use of certain building materials and clearing of vegetation from around buildings may prove to be difficult. Often, support for this type of regulation is highest following the occurrence of a catastrophic wildland fire (Sorvig, 2001). It has been several decades since this occurred in the Plymouth-Carver area.

A workable land-use control alternative may be to implement requirements for new construction. Both Plymouth and Carver officials indicated that they currently negotiate conditions for fire hazard reduction measures with developers during subdivision review. Currently, the success of this method is dependent upon the willingness of developers to agree to conditions. Revision of zoning and subdivision review bylaws may be possible within the study area. These revisions would give officials more power to require fire hazard reduction strategies. Possible requirements might include mandating public water supplies, plumbing connections compatible with fire department equipment, access for fire vehicles around structures, and clearing vegetation from around structures. Implementation of these regulation changes should be based on an assessment of wildland fire risk throughout the communities. The regulations could be applied to areas that are at high risk from wildland fire. Local residents may support these measures, because they would be applied to future development and not existing residents. Fire hazard reduction for existing structures could be done on a collaborative basis as discussed earlier.

The reduction of fire hazard in the Plymouth-

Carver area will be a lengthy process. Current efforts to introduce the use of prescribed fire are in their infancy and are seriously limited by a lack of resources and uncertainty about its effectiveness. Meaningful reduction of wildland fire hazard in the Plymouth-Carver area will require a sustained commitment of resources and public support. This research study indicates that there is currently support for the use of fire hazard reduction programs. It is likely, however, that the residents of the area do not have an understanding of the scope of what may be necessary to significantly reduce the threat of catastrophic wildland fire. Any large-scale efforts to reduce wildland fire risk will require a combination of fire hazard reduction strategies including both prescribed fire and mechanical removal of trees and brush. Public support may be helpful in obtaining additional funding and other resources to expand the use of fire hazard reduction strategies in the Plymouth Carver area.

To date, little work has been done to reduce fire hazard at the wildland-urban interface throughout the northeastern United States. As land managers begin to consider implementing fire hazard reduction projects, the insights provided by this study will be helpful in building community support. The variety of vegetation types found in the region results in the presence of widely scattered areas that are at high risk from wildland fire. Several large areas of pitch pine-scrub oak barrens exist within the Northeast including the New Jersey Pinelands and the Central Pine Barrens of Long Island, New York, which face a similar risk from wildland fire as the Plymouth Pine Barrens. The findings of this research can be useful in predicting community member's perceptions of wildland fire management issues in these areas. The research presented here can also be easily replicated for these areas.

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OUTDOOR RECREATION AND THE QUABBIN RESERVOIR: AN EXERCISE IN POLITICAL MANEUVERING?

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Abstract: The Quabbin Reservoir was built in the 1930's as a water supply for Boston. It is currently managed by the Metropolitan District Commission (MDC) as an unfiltered source of drinking water. In order to ensure that water quality remains high enough to avoid the installation of a multi-million dollar filtration plant, the MDC has limited public access to the reservoir and recreation use on its surrounding lands. As a result, the Quabbin is essentially undeveloped and wilderness-like in its current condition. As one of the largest bodies of freshwater in New England, the Quabbin has a recreational appeal not easily found elsewhere. Some activities, such as hiking, picnicking, birdwatching and shore and boat fishing are allowed. However, other user groups would like to recreate at the Quabbin, but cannot because of use restrictions. For example, swimming, off-road bicycling, canoeing, sailing and cross-country skiing are all prohibited. On the surface, the recreation policies of the MDC are puzzling and seemingly incongruent. For example, motor boats are allowed on the reservoir, even though the engines and users could contaminate the water, but sailboats and canoes are not. Hunters are allowed on an area known as Prescott Peninsula, but hikers are not. Logging operations using heavy equipment are conducted as part of watershed management, but camping is prohibited. The purpose of this paper is to examine the history of recreation at the Quabbin Reservoir. Particular attention will be paid to the science and politics

behind various management decisions. It will also examine the types of use sought and by whom and the potential for the Quabbin to accommodate such uses.

Introduction

Massachusetts is the third most densely populated state in the union. Yet, in the western part of the state there exists the largest tract of open space in Southern New England (MDC, 1996). This is the Quabbin Reservation. The Quabbin Reservation consists of 81,000 acres of undeveloped, forested watershed land and an 18-mile long reservoir with a surface area of 25,000 acres and 118 miles of shoreline. Within the reservoir are heavily forested islands and a 12,000-acre peninsula. The water of the reservoir is blue-gray and generally calm, yet there are days when strong breezes bring waves. Most visitors to the reservoir have at least one sighting of a wild animal such as a turkey, deer, coyote, songbird, loon or bald eagle.

This idyllic setting sounds like a haven for outdoor recreation enthusiasts. However, recreational opportunities are severely limited by the Metropolitan District Commission (MDC), the agency responsible for managing the reservoir. The MDC argues that too many visitors would compromise the true purpose of the reservoir - providing drinking water to over 2.5 million residents of Boston and surrounding towns. Too many visitors could jeopardize water quality directly, by contaminating the water, and indirectly by negatively impacting the forest in the watershed.

Due to the type of forest surrounding the reservoir, the water entering the reservoir and being sent to customers does not need to be filtered. Therefore, it is categorized as Class A water. The MDC wants the reservoir to remain unfiltered because the installation of a filtration facility would be a very costly prospect. In order to ensure a healthy watershed, and as a result an unfiltered source of water, the MDC strives to minimize human activity within the reservation. As a result, the Quabbin is essentially undeveloped and remains in a seemingly "natural state."

However, as one of the largest bodies of freshwater in New England, the Quabbin has a recreational appeal not easily found elsewhere. The managers

of the Quabbin recognize this and allow certain activities including hiking, picnicking, fishing, and bird watching in many areas of the reservation. However, many others would like to recreate at the Quabbin, but cannot because of use restrictions. Activities such as swimming, camping, cross-country skiing and ice fishing are prohibited. Furthermore, some of the policies of the MDC are seemingly incongruent. For example, motorboats are allowed on parts of the reservoir, but sailboats are not. Hunters are allowed on an area known as Prescott Peninsula, but hikers are not. Logging operations using heavy equipment are conducted as part of watershed management, but off-road bicycling is prohibited.

The purpose of this paper is to examine the history of recreation at the Quabbin Reservoir. Particular attention will be paid to both the science and to the politics behind various management decisions. It will also examine the types of use sought and by whom and the potential for the Quabbin to accommodate such uses.

Current Recreation Policy

The Quabbling Reservoir was built in the 1930's to supply the ever-increasing population of Boston with clean drinking water. Its main function is to supply drinking water to 2.5 million customers. The primary goals of the MDC are to protect water quality and quantity. The Swift River Act, passed in 1927, is the legislation that appropriated money for the construction of the reservoir. This 19-page act discusses almost every aspect of the establishment and running of the reservoir, except recreation. Thus, it has been left up to the MDC to develop and implement a recreation policy.

It wasn't until 1972 that the MDC Quabbin's recreation policy was codified. This legislation, known as the Kelly-Wetmore Act, made official the policies the MDC had been following for years. It disallows development of land in the reservation, hunting, and camping, as well as sets forth the rules for logging operations and allows for public access to reservation land with the exception of Prescott peninsula.

Seventeen years later the Quabbin Recreation and Public Access Policy and Plan took effect. This plan calls for limiting or minimizing new recreational activities or increased intensity of

existing access or activities in the public water supply watershed (MDC, 1998) of which Quabbin reservation is a part. It also allows for a controlled deer hunt and clarifies which recreational activities are allowed within the reservation. Currently, the following activities are allowed, with limitations, at the Quabbin reservation:

Bicycling = but only on paved roads so as to prevent soil erosion and to limit access to shorelines.

Sledding = allowed down hills in areas other than the reservoir, Prescott Peninsula, reservoir islands, the dam or the dike so as to protect these structures and because of the potential for injury due to the steep slope of the dam.

Hiking, walking, and snow shoeing = allowed in designated areas and/or during designated times because the MDC must limit access to sensitive areas to protect the drinking water quality from contamination by improperly disposed of sanitary wastes.

Shore fishing = allowed on approximately 50% of the shoreline, by foot during regular fishing season. This is allowed due to early legislation. The MDC feels that by limiting the access areas, it limits potential negative impacts to the water quality.

Boat fishing = allowed only with a valid Massachusetts fishing license or a one-day, five-dollar Quabbin license, on three-quarters of the west branch of the reservoir, and more than two-thirds of the middle branch of the reservoir. Boats are restricted to the area north of the intake valves which draw the water from the reservoir to be sent to consumers. Furthermore, the horsepower of the motors is limited to 20 hp for a two-stroke engine and 25 hp for a four-stroke engine. By limiting motor size, the MDC limits the potential for pollution from this source.

Kayaking and canoeing = allowed, but not on the main part of the reservoir. Only on a small pond that branches off from the reservoir. This is due to concern over human safety, increased usage and potential harm to water quality. It is only recently that kayakers and canoers have been given access to the Quabbin.

Night access = allowed for fishing purposes, with a night access permit.

Assemblies = gatherings of more than 25 people need to apply for a permit. When requested,

permits are usually granted to groups. For example, many people hold their wedding ceremonies at the Quabbin. This is allowed as long as cars are parked so as to avoid blocking the flow of traffic and nothing is put up that will be driven into the ground or a tree. Also, schools, scout troops, and camps, often apply for and receive permits for groups of 25 or more to hike into various gates for educational purposes.

Activities prohibited at the Quabbin reservation are:

Off-road motorized vehicles = cause excessive erosion and can leak fuels or other hazardous materials onto watershed land, which can end up in the public water supply.

Snowmobiles = again, this is due to the potential introduction of fuel and other harmful chemicals as well as a potential impact to the natural character of the area.

Cross-country Skiing = not allowed within the reservation due to the threat of illegal access onto the frozen reservoir and to protect public health and safety. MDC feels that cross-country skiing could potentially conflict with providing clean and abundant water to the public.

Hunting and trapping = with the exception of the annual controlled deer hunt.

Ice fishing & ice skating on the reservoir = due to concerns over sanitary and safety issues. Ice fishing is allowed on three small ponds that are within the reservation, but not connected to the reservoir. These ponds are shallow and their water does not flow into the Quabbin reservoir.

Fires & cooking = due to risk of forest fire. "... the majority of forest fires in the Quabbin Reservoir Watershed System have been started by camping fires" (MDC, 1998).

Sail boating and windsurfing = due to "potential public health, safety, and logistical problems" (MDC, 1998). Specifically, MDC personnel are worried about the impact on human health if human waste enters the reservoir. Safety concerns center around the ease at which these objects tip over. This is because the temperature in the main body of the reservoir is "fairly cold" year round (personal communication). Logistical problems stem from the fact that the MDC Quabbin does not have enough man power to patrol the entire reservoir and come to the aid of people stranded in the water in a

timely manner.

Swimming = because swimming in the reservoir or any of its tributaries increases the potential for contamination by pathogens, such as *Cryptosporidium* and *Giardia*.

Consumption of alcohol = due to the increased potential for those under the influence to disregard MDC's rules and regulations.

Organized sports = due to the potential for increased recreation in the Quabbin watershed.

Domestic animals = due to the potential for the introduction of *Cryptosporidium* and/or *Giardia*. Dogs, cats and cattle are carriers of these organisms. So are beaver, muskrats, and gulls. The MDC takes measures to control the occurrence of these animals near the intake valves. Other wild animals, such as deer and moose have not been found to be carriers of these organisms, although they can certainly pick them up from contact with infected feces of a carrier animal. Furthermore, dogs are a concern because they harass wildlife and other visitors.

Collecting and metal detecting = to protect historic and pre-colonial sites.

Camping, this includes tents, trailers, lean-to's, and motor homes = due to public health and safety concerns. Camping increases sanitation problems, fire issues and the number of users. Furthermore, it "would divert water management resources to conduct recreational management activities" (MDC, 1998).

Fishing derbies = due to the potential increase in visitor numbers.

Target shooting = "to preserve the apparent natural character in the system" (MDC, 1998).

Participants in various types of recreation want very much to gain increased access to the reservation. Specifically, sailboaters, canoers and kayakers want to be allowed on the main part of the reservoir. Hikers would love to have access to Prescott Peninsula. Mountain bikers and swimmers want to be able to recreate at the Quabbin. The dissatisfaction of these groups is expressed in phone calls and letters to the MDC Quabbin staff.

Potential Risks Due To Recreation

Nonetheless, there are some important data upon which the MDC bases its decision to limit recreational access. Surface water supplies are subject to much contamination. Any use of a reservoir or its surrounding watershed has the

potential to pollute the water. Recreation, however, is of particular concern when striving to maintain public health. Recent research, undertaken by various water resource authorities, has confirmed that recreation is a potential source of non-point pollution (AWWA, 1995; AWWARE, 1991 in MDC, 1998). In 1991, Rizzo Associates assessed all possible sources of water pollution for the Quabbin Reservoir and found recreational impacts to be a high public health risk (MDC, 1998). This is due to the “relatively high risk [of] introducing viral, bacterial, and parasitic pathogens into the water supply from human activity and the presence of domestic animals” (MDC, 1998). Furthermore, additional negative impacts from recreation include: shoreline erosion, fuel spills, destruction of vegetation, fires, trash, vandalism, and dumping of hazardous materials (MDC, 1998).

The main reason the MDC strives to limit public access is due to the potential human health threat from the *Giardia* and *Cryptosporidium* parasites. Both are very real threats to unfiltered, chlorinated surface water supplies such as the Quabbin reservoir (MDC, 2000). These pathogens are most often associated with human and animal waste. They can enter the water supply directly from improperly disposed of human or domestic animal waste or by infecting native wildlife which then swims in the reservoir and directly deposits the parasite into the water. If ingested by people, *Giardia* or *Cryptosporidium* can cause prolonged fever and diarrhea and can lead to death in those with a weakened immune system.

It is especially important for the MDC to prevent the introduction of these microbes into the water supply because above a rather low threshold of contamination, the water is made drinkable only by filtration (MDC, 2000). The threshold level is established by the Environmental Protection Agency (EPA). Furthermore, EPA's Surface Water Treatment Rule (SWTR) recommends that an aggressive watershed control program be implemented to effectively eliminate or limit contamination by these human enteric pathogens (MDC, 2000). The MDC chooses to err on the side of caution and limits, as much as possible, the activities they feel have the most potential to negatively impact water quality.

Thus, although it may seem that the MDC

implements recreation policies at will, there are in fact many guidelines they must follow and health risks they must consider. First and foremost, the MDC manages their lands and waters for “water quality protection, ecological reasons . . . administrative and maintenance purposes” (MDC, 1989). The MDC cannot allow uncontrolled access to the reservation as this increases the risk of disease causing biological borne agents contaminating the water supply. The MDC is tightly regulated by the EPA and must take stringent measures to protect the water quality so as to avoid having to install a \$180-million dollar filtration system (Press Release for Civil Action No. 98-10267-RGS, 2000).

Public Input

In forming public recreation policies, the MDC also tries to respond to the desires of various stakeholder groups by holding public meetings and involving the Friends of Quabbin, the Quabbin Watershed Advisory Committee (QWAC), the Water Supply Citizens Advisory Committee (WSCAC), the Sportsman Council, and the general public in the decision making process. There were two public meetings, and many advisory committee meetings held before the 1988 “Public Access and Recreation Policy and Plan” was revamped in 1998. The MDC's goal was to “solicit input from the local public regarding public access and recreation management issues in the Quabbin Reservoir Watershed System” (MDC, 1998).

In order to reach the greatest number of people before the public meetings, the MDC mailed copies of the draft of the 1998 plan, a press release, and a public hearing notice to watershed communities' Select boards and public libraries. Also, a press release was published in two papers and the advisory committees, state representatives, state environmental agencies, and environmental groups were notified. According to the MDC, the information garnered at the meetings was “incorporated into several of MDC's public access policies” (MDC, 1998).

Influence of Recreational Interests

Sometimes, MDC decision makers are swayed by various interest groups and allow certain recreation activities which they had previously not allowed. Demands of various stakeholder groups have

certainly influenced MDC's policies in the past. The first such example is the fishing program. Shore fishing was first allowed at the Quabbin in 1946 due to pressure from the fisherman's lobby (MDC, 1996). Furthermore, the Quabbin boat-fishing program began in 1952. The MDC objected to the program and expressed concern over the increased potential for harmful effects to the water quality. However, the Governor, responding to public pressure for fishing, introduced legislation making it legal to fish from a boat on the Quabbin reservoir. Since the start of the fishing program, the number of participants increased and peaked at 65,725 anglers in 1975 (MDC, 1998).

At present, there are three boat launch areas with between 30 - 50 rental boats per area and about 17 motors per area. The MDC limits boat fishing through rules and regulations, which include size limits on boats and motors, prohibited areas, and a relatively short season. The hope is that these limitations will minimize harmful effects to water quality.

Night fishing is another example of access gained against MDC's initial policy, due to pressure from a stakeholder group. Night access permits were first granted to fishermen in 1988. To this day the MDC still has concerns about trash, fires, vandalism and alcohol use, although none of these concerns have been realized.

Another example of the MDC accommodating stakeholders is in allowing canoes and kayaks on Pottapaug Pond. Granted, they are not allowed on the main body of the reservoir, but are now allowed on a small pond attached to the reservoir. This policy first came into being in 1998 at the request of the Quabbin Watershed Advisory Committee. The MDC limits canoeing and kayaking by establishing a minimum boat size, restricting access on the main reservoir, having a relatively short season and requiring that a canoer or kayaker have a Massachusetts state fishing license or a one-day five dollar Quabbin license.

The MDC Quabbin's environmental quality lab tests the water from the reservoir every day of the year. To date, no negative effects have been noted on the quality of Quabbin's water, or its watershed, as a result of the fishing program, the night access

program, or the increased access to Pottapaug Pond (personal communication). This leads one to believe that the MDC's recreation policies had been, and still may be, unnecessarily restrictive.

Management Derived Policies

The implementation of a Quabbin controlled deer hunt is another important example of the MDC modifying a previous access policy. While the hunt was instituted due to concern over water quality and not due to outside demands, it is important to recognize this change in policy and the minimal effect it has had upon the quality of Quabbin's water. For more than 50 years the MDC did not allow hunting at the Quabbin due to concerns about the negative impact on water quality from the increase in public access. The concerns stemmed from the idea that hunters could potentially increase soil erosion, decrease water quality by not following proper sanitary requirements, disobey MDC rules and regulations and behave in an unruly fashion.

However, by the late 80's after many decades without any form of population control, the deer herd inside the Quabbin reservation had grown so numerous it was endangering the water quality of the reservoir. The deer were overbrowsing the forest surrounding the reservoir leading to potential soil erosion, nutrient loading and eutrophication. The MDC concluded that in order to allow the forest to regenerate, the deer population had to be reduced and then maintained at a lower density. After consideration of various herd reduction methods, a controlled hunt was chosen as the most practical and fiscally responsible option.

It was practical because it would allow the MDC to closely monitor and minimize the impacts of the hunters' activities. Hunters could be required to attend an orientation session, told when and where they could hunt, and how many deer of each sex they could take. It was fiscally responsible because it would be the lowest cost option in the long run. Furthermore, hunters would be required to purchase a Quabbin hunting permit. Some of the revenue from this fee would be used to fund measures which prevent degradation of the watershed such as gates to prevent non-essential vehicular access, the planting of seedlings, fire suppression equipment and pollution control materials (MDC, 1989).

Another policy that seems incongruent with the MDC's rules and regulations is that of logging in the forest surrounding the reservoir. Logging uses heavy equipment that tears up the ground and potentially leads to soil erosion. Nonetheless, in order to maintain the diversity in tree species and age, which is necessary for a healthy forest and to protect water quality, trees must be selectively harvested. As part of forest management, the MDC allows selective cutting of trees to "increase quality water yields, maintain healthy, diverse forest and wildlife communities, and improve the scenic qualities of these watersheds" (MDC, 1989). The MDC closely monitors forestry operations and limits access by individually selecting and marking trees for harvest, contracting jobs out to private logging companies, making sure logging operations are supervised by a forester, and not allowing any trees to be cut within one hundred feet of any river or stream leading to the reservoir. Furthermore, in order to minimize potential damage from heavy equipment, the placement and layout of landings are carefully planned and dependent upon soils that will bear the equipment (MDC, 1995). Also, skid roads are carefully laid out with grade and distance kept to a minimum. "Skidder width and weight requirements are tailored to site conditions. Skidding is stopped when rains or thaws make the soils unable to support skidders" (MDC, 1995). Based on the close monitoring of the logging operations and the need for such operations to maintain a healthy forest, the detrimental effects of logging have not outweighed any benefits (personal communication).

Hunting and logging are management sanctioned activities that occur at the Quabbin. They have both been deemed necessary to aid in the protection of water quality. As previously mentioned, the quality of the reservoir's water is tested every day. To date, there have been no negative impacts on the quality of Quabbin's water, or its watershed, due to the controlled deer hunt or logging operations. Instead, the forest surrounding the reservoir is healthy, diverse, and composed of many age classes of trees. This demonstrates that with careful planning, seemingly harmful activities can occur at the Quabbin without harmful results.

Recreational Carrying Capacity of the Quabbin

The apparent willingness of the MDC to lessen certain recreation restrictions leads to the questions of what other recreation opportunities the public would like to enjoy at the Quabbin and how many of these can be allowed without affecting water quality. Currently there are many stakeholders that would like to see the Quabbin open to more recreation, including canoers and kayakers who want access to the main part of the reservoir, sail boaters, hikers who want access to Prescott Peninsula, campers, off-road bicyclists, and cross-country skiers who want access to the reservation.

Reluctance of the MDC to open the reservation up more may be due to a policy instituted by the American Water Works Association in 1965. This policy states that recreation on Class A reservoirs, of which the Quabbin is one, should be prohibited. Class A is a category which consists of watersheds that are "uninhabited or sparsely inhabited and for which no treatment other than disinfection is required" (Klar et al., 1983). However, there seems to be little direct evidence of the effects of recreation on the water quality of a reservoir like the Quabbin. "Quabbin and other drinking water reservoirs may be best maintained as minimal or single use resources but the rationale for doing so has not been developed with any degree of clarity or certainty" (Klar et al., 1983). Lawrence Klar et al. addressed this issue twenty years ago in a study, which quantitatively assessed the capacity of the Quabbin reservoir "to accept certain levels of human activity without impairing water quality and without incurring extra costs" (Klar et al., 1983). Klar et al. used surveys and mathematical models to determine the demand for additional recreation activities at the Quabbin, the carrying capacity of the Quabbin Reservation for these additional activities, and the financial costs associated with providing these additional activities. In addition to a willingness to pay for activities already provided (by 36.9% of respondents) such as hiking, picnicking, and fishing, Klar found much demand for canoeing, sailing, swimming, and camping (approximately 44% of respondents). A minority of respondents (24.3%) indicated a willingness to pay for ice fishing, snowshoeing, and cross-country skiing. When asked about recreational motorboating and waterskiing, however, willingness to pay declined.

Thus, at the time of the study, much demand did exist for permitted recreational activities as well as for canoeing, sailing, swimming, and camping.

The question remained as to the impacts these additional activities would have on the Quabbin ecosystem and the quality of its water. Using the activities for which a demand existed, Klar determined the pollutant loading rate of each one. These rates were plugged into a hydraulic model of the Quabbin Reservoir to determine the dispersal path of pollutants.

The potential impacts to the land and the amount of acceptable contamination varied by activity. Fishing from boats with outboard motors has been allowed at the Quabbin for many years. Today, there is negligible damage to the land from this activity as boat launches have been built. For pollution from this type of boating Klar et al. used existing literature. They found that pollution from outboard motors had been linked with a rather short-lived increase in turbidity levels. They also found reports of microbial contamination due to boating. They did not, however, include this in the model, as it was “obviously a result of discharge from onboard toilets” (Klar et al., 1983). Rather, Klar et al. assumed that these types of boats would always be prohibited on the Quabbin. Thus, the boat fishing program has had minimal impact on the land and water of the Quabbin reservoir.

In looking at the potential of the Quabbin to accommodate sailing, swimming, and camping, the most important measurements were of the amounts of soil and nutrients that could reach the water. “Nutrients contained in waste water generated from recreational activities pose the single largest threat to water quality” (Klar et al., 1983). Wear and resulting runoff and soil erosion result from trail use and campsites. Klar et al. noted that careful planning and mulching could control this. Using the Universal Soil Loss Equation they were able to calculate the maximum amounts of soil and nutrients that could reach the water without negatively impacting the quality of the Quabbin’s water. Then, they were able to determine the increased amount of recreation that could occur without harming the water quality.

After determining the level at which recreation would not harm the quality of the water, Klar et

al., performed a benefit cost analysis. Included in the costs were the cost of collection and removal of human waste from the reservation, the cost of expanding the parking and launching facilities at the boat launch areas, the cost of developing a beach-like shoreline for swimmers, and the cost of developing campsites and roads. Economic benefits were obtained from the cost per vehicle, which would depend on the activity in which the occupants were to participate. Camping fees would be \$14 and \$10 for hiking, picnicking, fishing, canoeing, sailing and/or swimming.

Assuming a low-density rate of recreation, it was estimated that per design day, 450 people would camp and 3,300 would participate in the other activities. The total net revenue would be \$7,500. A low-density rate of recreation was used even though it did not attain the economic optimum. It was, however, “found to be a feasible level of activity given the resources and constraints considered” (Klar et al., 1983).

Also, given the resources and constraints, Klar et al. (1983) pointed out that the various recreation activities should be dispersed among various areas of the reservoir. This would serve to avoid excessive wear in one area and to reduce or eliminate prospective conflicts among different groups of recreationists. The distribution of activities proposed in this study was: shore fishing along the west and north shores, boat fishing on the west branch and northernmost part of the middle branch, hiking along the southeastern and eastern section, and canoeing and sailing in a section of the east branch, and camping on 64 acres below the eastern branch.

Klar et al. performed a thorough study that looked at all aspects of increasing recreation at the Quabbin. The results of the study indicated that additional recreational activities, including swimming, sailing, and camping could be accommodated at the Quabbin without harming the water quality. However, the activities would have to be carefully zoned and some activities which are currently allowed, such as fishing and hiking, would be zoned to smaller areas than presently exist.

Discussion

The conclusions drawn in the 1983 study

indicated that demand for recreation at the Quabbin reservation far exceeded supply and that additional recreational activities could be accommodated without harming water quality. If this were true twenty years ago, it is most likely still true today. Travel costs have only increased, thus people are still looking for recreation opportunities close to home. Plus, technology has improved. Therefore, it seems likely that additional recreational activities could still be accommodated without harming water quality.

Nonetheless, in the 20 years since the study was published, very few limitations to recreation have been lifted by the MDC. The only new activities permitted in recent years are night fishing, canoeing and kayaking and only with restrictions. Night anglers must apply for a permit and pay a three dollar fee. Canoers and kayakers must have a fishing license, even if they are not fishing, and they are restricted to the 1.5 mile long Pottapaug Pond. This is hardly the great boating opportunity enthusiasts of these forms of recreation desire.

The reasoning behind the MDC's desire to severely limit recreation is open to conjecture, as no one from the agency has openly stated the thought process behind the policies. One cannot argue with the scientific data or EPA requirements limiting certain contaminants so as to protect human health. Nor can one argue with the limitations imposed to ensure human safety. However, questions remain as to whether or not the EPA imposed limits would be exceeded and human safety would be jeopardized, if recreational activities were to be increased at the Quabbin. Furthermore, one can't help but wonder why the MDC remains opposed to allowing more forms of recreation at the Quabbin reservation.

It is, inarguably, easier on the managing agency to maintain the status quo than to implement new policies. In addition to dealing with opposition from various stakeholders, they would have to institute new procedures and maybe even staff changes. One potential source of opposition to the changes proposed by Klar et al. is from those who currently fish at the Quabbin, both from boats and from the shore. The recreation plan proposed by Klar et al. severely limits access for both shore and boat fishing. Currently boat fishing is allowed on about two-thirds of the reservoir. In Klar et al.'s

plan, boat fishing is limited to approximately one-quarter of the reservoir. Furthermore, shore fishing is currently allowed from about three-quarters of the shoreline of the reservoir. The proposed recreation plan limits shore fishing to less than one-quarter of the reservoir's shoreline. Similarly, hiking, which is currently allowed within most of the reservation, would be limited to about one-fifth of the area around the reservoir. Thus, opposition could also come from hikers.

Another source of potential resistance is the consumers, or those who buy their drinking water from the Quabbin reservoir. Aukerman et al. (1977) pointed out "other water users, whether they be public or private, must be convinced that the amount and time of delivery of their water will not be affected, and that they will have something to gain from recreational use of 'their' water (Klar et al., 1983). It seems that it would be a difficult task to convince residents of the Boston area that they should allow more recreation to occur on the reservoir from which their water is drawn. Most consumers are about a two hour drive away from the reservoir and it is unlikely they will recreate there as often as people that live closer to the reservoir, but do not get their drinking water from it.

Surely, another part of the hesitancy of the MDC is the idea of losing control. That is, if they give an inch, would they eventually be forced to give a mile? If they give a mile, how long would it be before they exceeded the EPA imposed limits for microbial counts and are forced to install the \$180 million dollar filtration plant? Clearly, it is easier for the MDC to not allow any more recreation than to deal with such issues.

Another possibility is that the MDC does not want to open the reservation to more recreation because if they did, they would have to charge an entrance fee (to cover the costs of expanding recreation facilities). An entrance fee could be a hardship on lower income individuals and families thereby preventing them from recreating at the Quabbin. Perhaps, this hardship is a concern of the MDC.

Finally, it is possible that MDC Quabbin employees are basing their recreation policies on their values. That is, they could hold biocentric values for the area as opposed to anthropocentric. Thus, they would want to limit human access so as

to allow the wildlife and entire ecosystem to exist in as natural a manner as possible.

Conclusion

The huge expanse of open land surrounding the Quabbin reservoir is unlike anything else found in all of southern New England. With costs and concerns about travel rising, it seems that demand for recreational opportunities closer to home will only increase. The Metropolitan District Commission must be prepared to deal with this demand.

So far, the MDC has placed severe limits on recreation by relying on the EPA's stringent level of water quality control. It is certainly true that first and foremost the Quabbin reservoir is a drinking water supply for over 2.5 million people. Thus, there do need to be controls in place to ensure the health of those who drink the water of the Quabbin. Furthermore, the safety of those who utilize the Quabbin to recreate needs to be maintained. Still, throughout the history of the Quabbin, in small increments, it seems that more recreation is being allowed. First, shore fishing was allowed, then boat fishing, then night access, then a controlled hunt was implemented, and most recently canoers and kayakers gained access to a small part of the reservoir. When first proposed, all of these activities raised red flags in the minds of the MDC- Quabbin staff as to how to allow each activity and still maintain the high quality of the water. Yet, the MDC has proven that it can maintain enough control over these activities to allow them to continue without harmful effects upon the quality of the water.

Unfortunately, there are no recent studies and little direct evidence about the potential impact of increased recreation upon the Quabbin. Klar et al. performed a survey and used mathematical models to develop a recreation plan for the Quabbin. The plan allowed current activities for such as hiking, picnicking, and fishing, to continue as well as for new activities to be allowed such as canoeing, kayaking, swimming, camping, and sailing. During the 20 years since this plan was developed there has been little change in the recreation policies of the MDC, with the exception of the allowance of canoeing and kayaking on a small part of the reservoir.

It seems that the MDC would rather keep new

forms of recreation at bay. EPA mandated quality levels are used as a reason for not allowing more recreation. Nonetheless, when enough pressure is exerted, they do bend. This suggests that the recreation policies at the Quabbin reservation are more stringent than necessary. Instead, it seems that it is possible to incrementally open the Quabbin reservation up for more recreation while remaining vigilant that such an increase does not cause water quality to deteriorate below EPA set standards. The MDC could collect data and figure out exactly what level of demand exists for various recreational opportunities at the Quabbin and what level and types of recreational opportunities could be allowed without negatively impacting the quality of the water.

A survey of various stakeholder groups should be prepared to see what current sentiment is regarding the Quabbin reservoir. The last time such a study was undertaken was twenty years ago. Perhaps opinions have changed since that time. Furthermore, although the goal of the 1983 study was to "optimize recreational use of the Quabbin Reservoir from social, economic, and technical viewpoints" (Klar et al., 1983), the survey was admittedly lacking in one important aspect. The authors of the 1983 study discuss the fact that they did not measure the value of preserving the wilderness aspect of the area. Thus, any future study done on stakeholder groups' attitudes and opinions about recreation at the Quabbin should include non-use values as well as use values. Furthermore, the impacts of various recreation activities, in light of more modern technological advances should be examined. The results of such a survey and study would best allow the MDC to deal with current and increased demand for recreation at the Quabbin Reservation.

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Meanings and Places

PAST USE HISTORY AND PLACE BONDING AMONG AVID TROUT ANGLERS

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Abstract: Experience use history (EUH) was hypothesized to be linked to emotional place bonding. Avid trout anglers (n=203) of two Trout Unlimited chapters were surveyed (response rate = 71%) for EUH and place bonding. Four classifications (Beginners, Visitors, Locals, and Veterans) of EUH were formed and a 26-item scale was rated to form five dimensions of place bonding (Familiarity, Belongingness, Identity, Dependence, and Rootedness). The EUH classifications were shown to be good indicators of emotional bonding with Veterans and Locals having higher degrees of place bonding.

Introduction

Trout fishing is a wildland recreation activity that requires a specific, and limited, type of resource (i.e., high quality mountain streams). Because trout streams are often in limited supply, and are a special type of resource where a rather specialized activity takes place, a strong bond commonly develops between anglers and trout fishing places (Bryan 1979).

The bonding component of recreation resource use can become an important concern with resource specific activities because the resource users are commonly experienced individuals who have

developed a strong bond with resource places over time. Repeat-use areas commonly become "special", "favorite", and even "one of a kind" places for bonded recreationists. Place bonding or attachment is a common phenomenon where resource users become emotionally bonded to specific places over extended use of the area (Williams & Patterson, 1996). Thus, one could speculate that experienced trout anglers would be more bonded to high quality trout streams than less experienced, bonded anglers (Bricker & Kerstetter, 2002). Also, the character or dimensions of place bonding may differ according to level of experience use history (EUH). The purpose of this paper was to examine the relationship between the amount of EUH and the degree and character of place bonding behavior of trout anglers for a wild and scenic stream in the Southern Appalachian Mountains.

Related Research

Experience Use History

Experience use history (EUH) refers to the amount of past experience, usually measured in terms of years and frequency per year of participation with an activity and/or resource (Hammitt & McDonald, 1983; Schreyer, Lime, & Williams, 1984). EUH has been shown to have multiple dimensions; specific past experience with a particular study site, and past experience with other similar sites.

Experience use history research has been driven by the premise that experienced users have a substantially greater knowledge base concerning activities and resource places, and therefore a different frame of reference when evaluating resource settings and use (Schreyer et al., 1984; Manning, 1999). Use experience, by definition, is accumulative over time and some researchers have defined EUH as a continuum, where recreationists begin as novices and may become experienced veterans (Schreyer et al., 1984). Using the three river recreation use variables of: (1) number of times users floated the study river, (2) number of other rivers users had floated, and (3) total number of river trips taken, Schreyer et al. formed an index measure of EUH. Based on combinations of the three river use experience variables, six types of river users were identified, ranging across a continuum of novices, beginners, locals, collectors, visitors, and veterans. These six experience levels of recreationists were found to differ significantly in

terms of participation motivations, perceived conflicts, and attitudes toward management practices (Schreyer et al., 1984; Williams, Schreyer, & Knopf, 1990).

The study of past experience in relationship to recreation place bonding has been investigated by a few researchers (Bricker & Kerstetter, 2000; Moore & Graefe, 1994; Williams, Patterson, Roggenbuck, & Watson, 1992). In a study of trail users, Moore and Graefe found the best predictor of place attachment (in terms of place identity) was years of use, and though less important, frequency of trail use was a significant predictor of place dependency. Williams and colleagues have also found that the amount of past experience was highly correlated with the place attachment dimensions of identity and dependence.

Place Bonding

Resource place bonding suggests that over repeated exposures with a place and through transactional processes of place-people interactions that places take on an identity of their own (Fishwick & Vining, 1992). Recreation resource researchers have conceptualized resource place attachment and bonding as consisting of the two dimensions of place identity and place dependence (Williams et al., 1992; Moore & Graefe, 1994; Williams & Vaske, in press). Place identity has been defined as a “sub-structure of the self-identity of the person consisting of broadly conceived cognitions about the physical world in which the individual lives (Proshansky, Fabian, & Kaminoff, 1983, p.59). Place dependence is based on an individual’s or group’s assessment of the quality of a place and the relative quality of alternative places (i.e., substitutes). An individual’s awareness and familiarity with alternative places, travel, mobility, and the specificity of the resource place they require affects the place dependence assessment (Stokols & Schumaker, 1981).

Other researchers have proposed additional dimensions to the resource bonding concept (Hammit & Stewart, 1996; Jorgensen & Stedman, 2001). This current paper reports analysis of a five dimensional model of place bonding, consisting of place familiarity, belongingness, identity, dependence, and rootedness. Place familiarity refers to the initial stages of the bonding process, which involves a

sense of place knowing and cognition that results from acquaintances and remembrances associated with a recreation place. Place belongingness involves a more social level of bonding with a place in that one feels affiliated with the place, as though they hold “membership” and are a part of a resource place (Milligan, 1998). Place identity and dependence were both conceptualized as by previous researchers. The place rootedness dimension refers to the bonding situation where the recreationist is so emotionally bonded to a specific place that they long for no other place to recreate (Tuan 1980).

Methods

Study Area

Trout anglers were surveyed in 2001 for EUH and place bonding in reference to the Chattooga National Wild and Scenic River (CBWSR) in northwestern South Carolina. The Chattooga is located on the state border between South Carolina and Georgia in the Sumter and Chattahoochee National Forests, respectively.

Research Participants

Members of the Chattooga River (S.C.) and Rabun (GA.) Chapters of Trout Unlimited were targeted for study. These Chapters are the two that most use and are most involved with management of the River. The two Chapters have a combined membership of approximately 300 members. Two hundred and ninety-two active members were mailed questionnaires using a Dillman (2000) modified procedure (initial questionnaire mailing, post card reminder, second questionnaire mailing, final postcard reminder). Seventy-one percent returned usable questionnaires. Respondents were predominantly male (97.5%), college educated (88.6%), and averaged 54 years of age.

Data Collection and Reduction Analysis

Experience use history. EUH was measured using six questions, assessing years and frequency per year of using both the Chattooga River and other similar streams. Specific questions asked trout anglers how many total times, years and average annual frequency of fishing the study site, as well as the number of total times, years and annual frequency of fishing other streams. For the purposes of this paper, four variables were used to form EUH for the study river and other rivers. In order to account for various levels and combina-

tions of EUH on the study river and on other rivers, a ratio of EUH was computed and further divided into high and low experience use groups of trout anglers.

Computing EUH Ratio. The ratio for EUH was computed for each angler of the study river by summing the years of fishing the CNWSR with the frequency per year fishing the CNWSR and dividing by the maximum reported sum of the two variables. The resulting frequency of ratios was then divided into LOW and HIGH groups, based on the median value of the ratios. The same procedure was done for the years and annual frequency of fishing on other rivers. Thus, LOW and HIGH levels of EUH resulted for both the study river and other rivers. Four combinations of LOW and HIGH levels of EUH were possible for anglers. Based on the four combinations of LOW and HIGH levels of EUH, four classifications of anglers were identified, similar to those used by Schreyer et al. (1984):

Beginners - Anglers with low EUH on both the study river and other rivers.

Visitors - Anglers with low EUH on the study river but high EUH on other rivers.

Locals - Anglers with high EUH on the study river but low EUH on other rivers.

Veterans - Anglers with high EUH on both the study river and other rivers.

Resource place bonding. Two measures of place bonding were collected. Overall place bonding was measured with a single item, asking anglers "Overall, how would you characterize your feelings of attachment to the Chattooga River." A seven point rating scale (1=weak to 7=strong) was used to record angler overall bonding with the River. Secondly, a 26-item multi-dimensional scale was developed to measure the five conceptualized dimensions of place bonding (i.e., familiarity, belongingness, identity, dependence, rootedness). Items were rated on a five point agreement basis, where 1=strongly disagree to 5=strongly agree. The 26-items were then factor analyzed, using confirmatory factor analysis (Ullman, 2001), to reduce the items to the five dimensions of place bonding. The structure of the hypothesized recreation place bonding model was examined using the five dimensions as latent variables with corresponding scale items as indicators. Maximum

likelihood estimation was employed to estimate the model. The model when first tested yielded weak support: Chi-square/Degrees of Freedom Ratio ($\chi^2/\text{d.f.} = 2.20$), Comparative Fit Index (CFI = 0.91) and Standardized Root-Mean Squared-Residual (SRMR = 0.058). Post hoc modifications were performed in an attempt to develop a better fitting and more parsimonious model. On the basis of a LaGrange multiplier, two items were dropped from the scale, decreasing the $\chi^2/\text{d.f.} = 1.91$, increasing the CFI to 0.93 and maintaining a similar SRMR (0.06). All three values are in the acceptable range, indicating that the data fits the conceptualized five dimension bonding model.

Results

Experience Use History

The Trout Unlimited respondents were experienced anglers, both at the study site and at similar streams (Table 1). The mean number of total years trout fishing (anywhere) was 32. On average, the anglers had fished the CNWSR for 15 years, however, some had never fished the CNWSR while the longest anyone had fished it was 53 years. Respondents made an average of 10 fishing trips to the CNWSR in the last 12 months. In terms of trout fishing other streams, anglers averaged 18 years of participation, with a frequency of 21 trips in the last 12 months. The anglers trout fished an average of eight streams last year, in addition to the study area.

Place Bonding

Overall place bonding for the study site was fairly strong ($M = 4.95$, $SD = 1.47$) among trout anglers. This might be expected, since the two Trout Unlimited Chapters sampled were affiliated with the Chattooga River, members had fished the River for an average of 15 years, and nearly 25% felt the Chattooga was the best place for trout fishing.

Table 1. — Experience Use History for Trout Fishing the Chattooga National Wild and Scenic River (CNWSR) and Other Rivers

Experience Variable	Median	Mean
Total years trout fishing anywhere	31.50	31.53
Years trout fishing the CNWSR	11	14.70
Times trout fishing the CNWSR last year	4	9.84
Years trout fishing other local streams	15	17.54
Times trout fishing other local streams last year	8	20.81
Number of other local streams trout fished last year	5	7.71

The confirmatory factor analysis supported the five dimensional model of place bonding (Table 2). Only two items from the scale had to be dropped to achieve an acceptable model and all five bonding dimensions had acceptable reliability alphas (.79 to .91). Place Familiarity was the most reliable measure, followed closely by Identity and Dependence. The factor having the least internal consistency was Rootedness. Trout anglers agreed that they felt a sense of Belongingness and Identity to the Chattooga River, but not a bonding in terms of Dependence (factor $M = 2.55$) and Rootedness (factor $M = 1.83$). Four of the five dimensions differ significantly ($p < 0.05$) in terms of place bonding. Content interpretation of items within each dimension indicated that trout anglers had a fairly strong sense of fondness ($M = 4.21$) and connectivity ($M = 3.69$) to the study site (i.e., Belongingness), and that the Chattooga was a special place ($M = 3.95$) that meant a great deal ($M = 3.91$) to them (i.e., Identity). However, the trout anglers did not consider the Chattooga the only place to trout fish ($M = 2.34$). Thus, the anglers who are familiar with the study site have developed a fair degree of identity and sense of belongingness toward it, but are not dependent on nor feel a degree of rootedness with the place.

This latter finding might be explained by the fact that the participants were quite experienced anglers, and had knowledge and experience of other streams that can substitute for the study site. Use history data in Table 1 indicated that the anglers had fished eight local streams last year in addition to the Chattooga, at an average of 18 fishing trips.

Relationship Between Experience Use History and Place Bonding

Hypothesized Relationships. The following relationships were hypothesized for the four EUH classifications of anglers and place bond variables. Locals, because they have high experience with the CNWSR but lack much experience with other rivers, would have the highest level of bonding. Visitors, having the opposite EUH relationship, would have the lowest level of bonding. Veterans and Beginners would be in the middle, but Veterans would have a higher level of place bonding with the CNWSR because of their greater experience with it. Veterans, because of their high level of experience on all rivers, would have many

place bonding choices (as compared to Locals), and a somewhat lower bonding level than Locals.

Testing Hypothesized Relationships. Analysis of variance (ANOVA) was used to test for mean differences and patterns of mean values among the four EUH classifications for the dimensions of place bonding (Table 3). Six measures of place bonding were tested and all found highly significant among the four EUH classes of anglers. The pattern of means (i.e., order of levels) hypothesized was a perfect match (i.e., Visitors low, Locals high, Veterans high medium, Beginners low medium) for the variables of overall bonding and the bonding dimensions of belongingness, identity, and dependence. Familiarity was partially supported in that Locals ($M = 3.77$) and Veterans ($M = 4.01$) had the highest levels of place bonding and Beginners ($M = 2.73$) and Visitors ($M = 2.96$) the lowest levels, but the exact order predicted was not supported. Familiarity is the most cognitive/site knowledge based of the five bonding dimensions and this may explain why Veterans (i.e., high experience) scored highest on familiarity bonding. Rootedness was scored lowest by Visitors ($M = 1.66$) and highest by Locals ($M = 2.26$) as predicted. However, the predicted order did not hold up for Veterans and Beginners. Although the average degree of rootedness for the study areas was quite low for all classes of anglers, the finding that Locals were most rooted to the area was logical.

A cautionary note is in order concerning the relationship between EUH and place bonding. Even though all the bonding relationships tested were significant, and the hypothesized EUH relationships fairly strongly supported, many of the mean differences among the EUH classes were not significant (Tukey HSD test, $p < 0.05$). However, it was encouraging that the Locals and Veterans were significantly different from the Beginners and Visitors on most of the bonding variables (see Tukey results).

Discussion And Conclusions

Schreyer et al. (1984) postulated that EUH represents the amount, type, and diversity of information available to an individual through previous experience, and it represents the frame of reference through which people evaluate recreation places. Other authors have stated that the information gained and frame of reference

Table 2. — Factors, Items, Means, and Factor Loadings Resulting from Confirmatory Factor Analysis of a Five Dimensional Model of Place Bonding

Factored Dimension Item	Item Mean ¹	Factor Loading	Factor Mean	Factor Alpha
Familiarity			3.34	.91
I could draw a rough map of the Chattooga.	3.43	.86		
I have trout fished the Chattooga many times and I am quite familiar with it.	3.64	.87		
I know the Chattooga like the back of my hand.	2.96	.90		
Place Belongingness			3.52	.86
I feel connected to the Chattooga.	3.69	.84		
I am fond of the Chattooga.	4.21	.70		
The Chattooga makes me feel like no other place can.	3.09	.70		
When I am at the Chattooga, I feel part of it.	3.69	.71		
I feel like I belong at the Chattooga.	2.96	.82		
Place Identity			3.51	.90
The Chattooga is very special to me.	3.95	.77		
I am very attached to the Chattooga.	3.61	.90		
The Chattooga means a great deal to me.	3.91	.90		
I identify strongly with the Chattooga.	3.58	.88		
Visiting the Chattooga says a great deal about who I am.	3.03	.64		
I feel like the Chattooga is part of me.	3.00	.85		
Place Dependence			2.55	.89
The Chattooga is the best place for trout fishing.	2.81	.69		
Trout fishing on the Chattooga is more important to me than trout fishing any other river.	2.68	.78		
No other place can compare to the Chattooga for trout fishing.	2.34	.73		
I wouldn't substitute any other area for the trout fishing I do at the Chattooga.	2.37	.82		
I get more satisfaction out of trout fishing the Chattooga than from trout fishing any other river.	2.42	.90		
The trout fishing I do at the Chattooga I would enjoy just as much at a similar river or stream ² .	3.29	.48		
Rootedness			1.83	.79
The Chattooga is the only place I desire to trout fish.	1.96	.78		
I rarely if ever trout fish any place other than the Chattooga.	2.03	.76		
If I could not fish the Chattooga I would stop trout fishing.	2.98	.52		
I consider only the Chattooga when I go trout fishing.	1.45	.73		

¹Means based on 5-point agreement rating scale, where 1 = strongly disagree, 5 = strongly agree.

²Item reverse coded for analysis.

Model: χ^2 /d.f. = 1.91; CFI = .93; SRMR = .06.

formed through repeated past experiences can lead to an emotional bond with places (Low & Altman, 1992; Moore & Graefe, 1994; Williams et al., 1992). The purpose of this paper was to report the amount, type, and diversity of EUH, and resource place bonding among avid trout anglers, and the linkage among these variables.

This study expanded the operational definition of recreation place bonding beyond the dimensions of identity and dependence. Other authors have suggested additional dimensions to these two, and our results offer initial support for the additional bonding dimensions of place familiarity, belongingness, and rootedness. The confirmatory factor analysis of the bonding scale resulted in three or more items per factor and acceptable

reliability alphas for each factor (Cronbach's alphas = .79 to .91). Perhaps more importantly was the finding that each of the place bonding dimensions varied significantly when compared with level of angler EUH classifications. It should be noted that this study was designed to investigate the expanded place bonding dimensions with a very experienced group of recreationists (i.e., Trout Unlimited members) at a rather specific resource place (i.e., National Wild and Scenic River). This was done so that the more experience based dimensions like dependence and rootedness, in particular, might be examined. Still, rootedness with the study area was the weakest emotional bond, even for Local anglers ($M = 2.26$). This finding may exist because outdoor recreation places are areas people visit, not a home or community where one lives or spends

Table 3. — Mean Differences Between Experience Use History Classes of Trout Anglers and Place Bonding Behavior

Place Bonding Variables	Experience Use History				F	P
	BEGINNERS	VISITORS	LOCALS	VETERANS		
	Mean Scores ³					
Place Bonding						
Overall Bonding ¹	4.44 ^a	4.32 ^a	5.86 ^b	5.54 ^b	13.04	.000
Familiarity ²	2.73 ^a	2.96 ^a	3.77 ^b	4.01 ^b	26.09	.000
Belongingness	3.32 ^{ab}	3.26 ^a	4.00 ^c	3.74 ^{ba}	8.31	.000
Identity	3.22 ^a	3.18 ^a	4.04 ^b	3.83 ^b	12.38	.000
Dependence	2.47 ^{ab}	2.33 ^a	2.92 ^b	2.67 ^{ab}	3.09	.029
Rootedness	1.86 ^a	1.66 ^a	2.26 ^b	1.77 ^a	4.79	.003

¹ Means based on 7-point scale; 1 = weak, 7 = strong.

² Means for Familiarity to Rootedness based on 5-point scale; 1 = strongly disagree, 5 = strongly agree.

³ Means with different superscripts are significantly different; Tukey HSD, $p < 0.05$.

extended periods of time. Also, the anglers of this study had alternative places (substitute streams) to fish, rather than limiting use (rooted) to only one place. Thus, while aspects of rootedness may be associated with home and community attachment (Mesch & Manor, 1998; Tuan, 1980), it is less likely to be a strong emotional bond with recreation place, except perhaps for long term and inherited vacation homes (Kaltenborn, 1998). Also, the five dimensional bonding scale may not work as well with participants of less EUH and generalize activities that can occur in a generic outdoor environment (i.e., day hiking).

Based on the analysis of the EUH classifications and type and degree of place bonding, it is concluded that level of EUH is a good indicator of the emotional bond that can develop for recreation places over time. While it is extremely difficult to measure the developmental processes by which internal states of place bonding occur, EUH has the potential to serve as an indicator of the dimensions and degree of bonding (Schreyer et al., 1984). A logical next step in researching the linkage between EUH and place bonding from a developmental perspective would be to study place bonding over a continuum of EUH experiences (i.e., experiential and longitudinal sampling).

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A PROCEDURE FOR IMPROVING THE ACCURACY OF VISITOR COUNTS AT STATE PARKS

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Abstract: Visitation counts are the measures most widely used by park managers to demonstrate accountability and good stewardship of the public resources that legislatures invest in parks. This paper describes a procedure implemented in Texas State Parks for addressing the technical aspect of this important problem. To transpose raw axle count numbers into visitation estimates, two parameters have to be calculated: (i) the proportion of axles attributable to visitors, as opposed to officials, staff, vendors, or visitors re-entering the park on the same day; and (ii) the average number of visitors per axle. A study was conducted for a 12 month period in 92 Texas state parks, during which time observers diligently recorded the data relating to these variables. As a result of the study, these empirically-derived parameters could be used by each park site to more accurately transpose its axle counts to visitation estimates. Two major findings emerged from the study. First, the parameter estimates varied widely among the 92 parks, whereas, for years, the same values had been applied system-wide. Second, the empirical values were substantially lower than those which had traditionally been used by the agency. Empirical verification of the parameter values used in visitor estimation formulas can improve the veracity of patron counts and subsequently increase an agency's credibility in the eyes of legislators.

Introduction

Visitation numbers are a fundamental measure of

accountability which many park systems are required to report. They are central to development of efficiency measures used to provide benchmarks against which a park agency's annual performance can be measured. These efficiency measures often take the form of ratios such as the number of visitations per employee hour, or per \$1000 investment in the park. The integrity of visitation numbers is also important because, in some cases, they are used as a basis for allocating resources and because they may provide some indication of an agency's success in meeting constituents' needs.

Policymakers invariably regard acquiring an accurate visitation count as an elementary management task. Unfortunately, it is a complicated and difficult challenge. There are three elements to this challenge: human, logistical and technical. The human element refers to the temptation park managers may feel to inflate visitation numbers. These managers invariably feel a strong commitment to acquiring maximum resources for their parks and usually are a park's chief advocates. "Since attendance is used for evaluation and is frequently considered as a factor in the budgetary decision-making process, there is every incentive for managers to abuse the system" (Howard & Crompton, 1980, p. 317-318).

The logistical element of obtaining accurate visitation counts relates to the challenges in siting and maintaining traffic axle counters that are used to count vehicles entering the park. Problems result when a park access road is also used by through traffic that is not park related, or when a park has multiple access points that the same visitor crosses during the course of a single day. In these situations, sampling studies must be done to estimate the extent of visitor overestimation. Inaccuracies can also result from axle counters not functioning properly (Perales & Jackson, 1998).

Nonetheless, recognizing that these human and logistical elements complicate the task of collecting accurate visitation numbers, much of the challenge is technical in nature and this element constitutes the focus of this paper. The technical element refers to how the raw data from the traffic axle counts are transformed into visitor estimates, and this paper describes the results of a study commissioned by the State Parks Division of the

Texas Parks and Wildlife Department (TPWD) to examine the veracity of this process.

Each park superintendent is required to report monthly visitation estimates to the Division's central administration. The protocol for doing this offers a standardized and relatively simple method of collecting and reporting visitation statistics. In essence, a formula is applied to numbers recorded by a vehicle axle counter located at access points to each facility during a given period. A "visit" is defined as a visitor (not staff, vendor, or other official personnel) entering a park for the first time on a given day.

The formula is:

$$V_E = [(X_2 - X_1) / 2] * A * B + C$$

Where: V_E = estimated visitation;

X_1 = axle count recorded from the end of previous period (e.g. day, month, etc.);

X_2 = axle count recorded at the end of current period;
 $/2$ = adjustment for counting traffic entering and leaving the park (if access and egress is via the same lane);

A = percentage of vehicles attributed to visitors, as opposed to official vehicles or visitors re-entering the park on the same day;

B = average number of visitors per vehicle;

C = visitation by large groups as recorded by park personnel.

Three of the variables within this formula, X_1 , X_2 , and C , are directly observed by park personnel. The other two variables, parameters A and B , must be estimated. Their estimation was the objective of this study. For as long as anyone in the agency could recall, standard estimates for these two variables had been used. The estimate used for parameter A , the percentage of traffic attributable to visitors, was .90 (i.e. 90% of traffic was visitors entering the park for the first time that day). For parameter B , the average number of visitors per vehicle, an estimate of 3.5 was used. There were two weaknesses in these estimates. First, it was unclear how the values attributed to parameters A and B had been derived. Even if originally they did have an empirical basis, it seems likely that the values would have changed in the decades since they were derived. A second weakness was that applying the same values for these variables across all parks was unreasonable, given the likelihood of wide variations in the profile of park visitors at

different sites. The study reported here was commissioned to verify or revise the values assigned to parameters A and B in the visitor estimation formula.

Stimuli for Action

There were two stimuli which provoked this study. The first was a cumulative body of empirical evidence suggesting that reported visitation numbers were too high, while the second was a shift in agency culture.

The Empirical Evidence

The cumulative empirical evidence emerged from three studies commissioned by TPWD in the 1990s. In 1994, surveyors at Washington-on-the-Brazos State Historical Park evaluated the accuracy of the visitor estimation system as part of a study investigating the feasibility of expanding the park's array of services. On 35 days during a 90 day period, observers recorded by visual count the number of people per vehicle and the type of vehicle (visitor or official). Visitor numbers were then compared to those calculated using the park's standard visitor estimation procedure. The results showed that the standard procedure overstated attendance by approximately 25%. The sources of error were: (i) mechanical and operational errors in the counter itself; (ii) understatement of the percent of non-visitor traffic in the procedure; and (iii) overestimation in the formula of the number of people per car (Watt, Stribling & Currie, 1994).

Also in 1994, TPWD commissioned a study that examined the feasibility of changing from a per vehicle to a per person admission fee to Texas' state parks. As part of this study, projections were made of the additional income likely to accrue from this shift. These projections required that accurate attendance data be used. Using data from surveys of park visitors, camping transactions, and bus party transactions, the study suggested that TPWD's visitation numbers were overestimated by 28% (Wall & Crompton, 1995).

In 1998, an analysis of reported attendance was undertaken by outside consultants as part of their brief to develop a long-term strategic plan for the State Parks Division. This report concluded: "There is substantial evidence indicating that the daily attendance data collected in this way results in the reporting of substantially larger numbers of

visitors at facilities than were actually there” (Crompton, 1998, p. 3). There were unexplainably wide fluctuations in the annual visitation levels of individual parks. For example, in the six year period 1995-2000, the reported annual day visitation figures for Garner State Park were: 238,000, not available (which thus counted as zero when the system wide park totals were aggregated!), 803,000, 227,000, 420,000, and 14,000, respectively. The study suggested that the extraordinary volatility of the attendance figures at individual parks from year-to-year makes it difficult to accept the credibility of the data. The annual totals are reasonably consistent from year-to-year, but this overall picture is grossly misleading. Within the totals there are very large positive and negative fluctuations at individual parks which are partially self-canceling and this leads to the relatively stable totals (p. 4).

In May 1996, the State Parks Division implemented the shift from per vehicle to per person pricing. This enabled a surrogate audit procedure to be developed which offered an approximate assessment of the veracity of park visitation numbers. A review of monthly revenue from day admission fees reported by each park could be used to develop an approximation of the number of day visitors. For example, if the daily fee was \$3 and monthly revenue from a park came to \$9,000, then it suggested there were 3,000 day visitors to the park that month. This is an approximation because it ignores: (i) people who enter the parks at off-peak times when entrance fees are not collected; (ii) those who are legally exempted from paying fees or who pay less than the full fee (youth, seniors); and (iii) those who come in large groups such as bus parties or school groups. In addition, some visitors would be season pass holders who would appear on the traffic counter, but not on the park’s monthly day admission revenue reports. Despite these limitations, the surrogate audit procedure highlighted many glaring examples of visitation overestimation. For example, one park reported an average monthly attendance of around 40,000, but revenues suggested there were only 1500 visitors per month, i.e. they accounted for fewer than 4% of all visitors. Clearly, this was unreasonable (Crompton, 1998).

Shift in Agency Culture

Although the empirical evidence suggested that the

visitation numbers were too high, the adverse political consequences likely to be associated with substantially lower numbers meant that there was no culture in the agency supportive of rectifying the situation. Three events occurred whose aggregate impact was sufficient to provide the shift in political calculus needed to change this culture.

First, there was a change in leadership of both the State Parks Division director and the TPWD director. Both of the new leaders recognized that the lack of credibility of these numbers tarnished the agency’s reputation with legislators and other stakeholders. Thus, they were both adamant that it was essential to initiate a process which would result in accurate visitation numbers. The process had to be transparent so all would recognize the integrity of the numbers when the new process was in place.

A second source of pressure to address the issue came from the popular press in the major metropolitan areas which expressed skepticism. For example, a headline in the Houston Chronicle read, “State park attendance count a hit-and-miss affair” (Tompkins, 2002). The article was scathingly skeptical in its review of TPWD’s visitation numbers. Sample observations included: “Truth is, the San Jacinto Battle Ground State Historical Park sees nowhere near the million-plus visitors TPWD claims”; and “Davis Mountains State Park, a gorgeous park sporting wonderful Indian Lodge draws steady traffic. But there is no way the isolated park sees the 512,000 plus visitors (an average of more than 1,400 visitors daily) the agency claims visited there this past year”.

The third source of pressure was the state legislature and its official auditing agency. TPWD’s former director encountered considerable skepticism about the veracity of the state park visitation numbers when he appeared in front of the legislature’s Appropriations Committee in 1999. In response, he committed to reviewing the process by which the numbers were derived. The legislature was, in effect, enforcing a finding of the State Auditor’s Office which recommended in a September 1998 management audit that the Parks Division “develop more accurate measures of parks visitation data no later than August 2002, prior to the preliminary budget presentations to the Legislature and the Legislative Budget Board”

(Bomer, 2001). The imperative to do this was reinforced by another management audit of TPWD's business practices which was commissioned by the TPWD Commission, the policy board mandated by the legislature to oversee the department. Their evaluation was undertaken by a former legislator whose integrity and credibility were widely respected by the legislature. His report reiterated the need to develop a more accurate measure of visitation numbers (Bomer, 2001). Another recommendation of this report was that the Parks Division identify the economic impact of state parks on their local areas. A prerequisite for such estimates is that the estimate of the number of visitors to a park be accurate. If the visitation figure lacks credibility, then the economic impact figure also will lack credibility.

Research Procedures

A survey was conducted in 92 state parks from December 1999 through November 2000. During each month, data were collected for a one hour period every second weekday throughout the month with the start time advancing by one hour in each successive survey period. Thus, for example, in the first week, surveying could be undertaken on Monday, Wednesday, and Friday at 8 am, 9 am, and 10 am, respectively, for a one hour period. In week two, surveying could be on Tuesday and Thursday at 11 am and 12 noon, respectively. This pattern would be continued for the first four weeks in each month and repeated every month for the 12 month period. A similar rotation could be enacted on weekends with observations being recorded for at least one hour a day on every weekend day. Thus, at the end of each month for each park, surveys had been conducted on 10 weekdays and on 10 weekend days. This sampling approach to the project was intended to cover a "theoretical" entire weekday and weekend day.

The surveys were undertaken by staff or volunteers at each park who were positioned at a park axle counter where they had a clear view of each entering vehicle and its occupants. Using a daily recording sheet, they counted the number of axles on each vehicle that entered the facility (including attached recreational vehicles, trailers, etc.) together with the number of adults and children within the vehicle. If the vehicle was a park staff vehicle, vendor, or other non-visitor vehicle, occupants in

the vehicle were omitted from the count and "Dept" was recorded next to the number of axles. Similarly, if a visitor was re-entering the facility for a second (or more) time that same day, its occupants again were omitted from the count and "Reentry" was recorded next to the number of axles for that vehicle.

At the conclusion of each recording session, the data were summarized on the daily sheet and then were transferred to a single line on a monthly summary sheet. At the end of each month, the completed monthly summary sheet was faxed or e-mailed to the TPWD central office. Inevitably, some months were omitted by some parks, and there were some months for which only partial data were received reflecting that vehicle counts were observed on fewer than the 20 days that were mandated. However, on the whole, the park superintendents were extraordinarily diligent in respecting the sampling procedures, so the data set provided a strong foundation for developing accurate values for the two parameters of interest.

The data were entered into the Statistical Package for the Social Sciences (SPSS) 11.0 computer software to facilitate analysis. Each park was represented by up to 240 hours of data (12 months x 20 days per month) and the database contained the following variables:

- date - Date on which the data were recorded.
- park name - Park at which the data were recorded.
- time - Start time of 1 hour recording session (possible values ranged from 8 am to 6 pm).
- visaxles - Total number of axles attributed to legitimate visitors.
- adults - Total number of adult visitors.
- children - Total number of child visitors.
- dept - Total number of axles attributed to official vehicles.
- reentry - Total number of axles attributed to visitors re-entering the park on the same day.

The original formula used by TPWD estimated the percentage of vehicles attributed to visitors (parameter A) and the average number of visitors per vehicle (parameter B) on a per vehicle rather than a per axle basis. Per axle parameter estimates were used in this study for three reasons. First, as opposed to counting vehicles, the data collectors at each park recorded the number of axles entering

the park for visitors and non-visitors. Second, defining how many axles on the traffic counter equate to a vehicle is especially problematic in state parks because of the substantial proportion of RVs, towed trailers, and other multi-axle vehicles. Third, future estimates of attendance will be derived by applying the revised parameters to the number of axles entering a park during a given period, as recorded by the axle counter at the park's entrance. Hence, parameter estimates made on a per axle basis can more accurately be transposed into visit counts than those made on a per vehicle basis.

The percentage of axles attributable to visitors (parameter A) was calculated by dividing the total number of 'visitor' axles entering the park during a given period (excluding official vehicles or visitors reentering) into the number of total axles entering during that same period. Estimates of the average number of visitors per axle (parameter B) were derived by dividing the total number of visitors into the total number of visitor axles observed during the same time period.

Results

The study's results produced estimates of the percentage of axles attributable to visitors (parameter A) and the average number of visitors per axle (parameter B) for each park. The values for each parameter varied widely across parks. The range for parameter A was from 28% to 99%, while for parameter B the values ranged from 0.65 to 2.60.

Across all 92 parks, the average value of parameter A was 76%. In the existing formula all parks inserted a value of 90% for this parameter. This research indicated that this value was too high and that the practice of every park in the system using a common average value resulted in major inaccuracies in each park's visitation count because the values differed widely across parks.

In the original formula, parameter B measured visitors per vehicle rather than visitors per axle. Thus, a direct comparison is difficult between the traditional value of 3.50 persons per vehicle and the empirical per axle values derived in this study. However, the average number of visitors per axle across all 92 parks was 1.11. Thus, if all of the vehicles were regular two axle automobiles, the average number of occupants would be 2.22, while if they were all three axle vehicles the average

would be 3.33 occupants. Clearly, these occupancy rates are far below the 3.50 occupancy rate per vehicle which was used in the existing formula by every park in the system. Again, the wide range of values derived for parameter B indicated that the use of a single value for all parks also was a major source of error in the visitation numbers reported by each park.

For 2001, the officially reported annual aggregate visitation figure for all Texas State Parks was 17.54 million. Using the revised parameter values derived in this study, the authors estimated the aggregate visitation at all Texas State Parks in 2001 to be 11.74 million, a decrease of 33%.

Conclusions

This study makes at least three important contributions. First, it demonstrates the importance of using empirically derived values that are specific to each individual park site in formulas used to estimate visitation in parks based on axle counts. The use of a single value for these parameters for all parks will result in there being inherent inaccuracies in the reported data.

Second, a comprehensive sampling approach was described which was found to be workable in a field situation. Third, the study demonstrated the practicality of using park personnel to collect and subsequently analyze empirical data. This suggests empirical verification can be done periodically without incurring major costs in hiring external consultants. By empirically verifying these key parameters on a regular basis, say every seven years or so, shifts in the profiles of a park's visitors can be accurately captured in the visitor estimation formula.

This study demonstrated how to derive accurate values for the parameters in the visitor estimation formula. The empirically derived parameter estimates reported here will greatly increase the accuracy of visitor estimates, but several other logistical and technical issues remain to be resolved. The logistical problems are likely to result in overestimates, while the remaining technical problem is likely to result in underestimates of visitors. However, it would be erroneous to assume their effects serve are counterbalancing and can therefore be ignored!

Earlier in this paper, several logistical problems were identified that need to be addressed. First, studies should be undertaken at those parks with through roads traversing them to identify the proportion of traffic which actually visits the park. A sampling approach similar to that used in this study is likely to be appropriate. Second, at multiple entrance parks, studies are needed to identify the extent of double counting that occurs when visitors cross more than one traffic counter in a single day. This would involve interviewing samples of visitors. The third logistical problem is careful location of the counters and this can be resolved through inspections by agency managers.

The remaining technical problem is that the visitor estimation formula does not make provision for people who stayed for multiple nights within a park without reentering it. The axle count is of vehicles entering a park for the first time during a day. Thus, vehicles that are already in the park and never leave it are counted only once when they initially entered. For example, if a family of four camped in a park for three nights and never left so they did not reenter the park on days two and three, then the number of visitor days attributed to them is underestimated, being reported as four instead of twelve.

TPWD estimates the number of day visitors to a park by subtracting overnight visitors from total visits calculated by the visitor estimation formula based on traffic axle counts. Hence, estimates of day visitors are residuals. The overnight visits headcount is accurate because it is based on an actual headcount of campers entered in TPWD's Central Reservation System (CRS) when each reservation is made. However, overnight campers' visitor days will be underrepresented in the total visits estimate due to the problem described above. Therefore, subtracting accurate overnight visits from underestimated total visits is likely to produce day visit residual estimates that are low.

In parks that host large numbers of overnight visitors, this underestimate is likely to be significant. For example, Garner State Park's total visitation estimate for FY 2001 was 244,000. The CRS confirmed there were 230,000 overnight visitor days. Thus, total annual day visitation was only 14,000. It is widely believed that this is a substantial underestimation of day visitors to this park.

To rectify this technical problem, surveys of overnight visitors at each park with camping facilities need to be undertaken to ascertain how many times during their stay they exit and reenter the park. Thus, an additional parameter, parameter D, needs to be included in the existing visitor estimation formula, where the additional D value is derived by: Total visitor days accounted for by overnight campers (according to the CRS) minus the number of overnight stay visitor days captured by the traffic counter.

Estimating the number of visitors to a park is a challenging managerial task. When the task is to estimate the aggregated visitation to all units in the Texas State Park system, then the challenge is multiplied 130 times. The intent of this paper has been to describe the complexity of the problem and to demonstrate procedures for addressing it. It is not a subject which heretofore has attracted interest from researchers, even though it is a widespread problem confronting most park managers. The visitation count is the measure most widely used by managers to demonstrate accountability for the resources allocated by legislators for investment in parks. Legislators are increasingly skeptical of numbers which, intuitively, they believe are unreasonably high. Periodic reviews of procedures, incorporating the type of empirical validation described in this paper, would appear to be essential to remove legislative skepticism and to reassure legislators of the integrity of the agency's managers.

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A QUANTITATIVE SYNTHESIS OF PLACE ATTACHMENT RESEARCH: INVESTIGATING PAST EXPERIENCE AND PLACE ATTACHMENT

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Abstract: Place attachment has received a great deal of attention as an independent variable in many outdoor recreation studies over the past ten years. These studies can not only related information about recreation behavior, but also provide insight into the nature place attachment. In this study meta-analytic techniques were used to synthesize and investigate the relationship between past-experience and place attachment. Data were collected from original data sets and the results of published studies. Results found that overall synthesized associations between common measures of past-experience and Place Identity and Place Dependence were weak to moderate. Test of homogeneity across the relationships were found to be significant, indicating a great deal of heterogeneity in the relationships across the studies. Results indicate that factors such measurement difference, sample selection, and study design may play a role in the strength of the associations reported in each study.

Introduction

Within the recreation literature, the place attachment concept has received a great deal of attention over the past ten years. The measures for the constructs of place identity and place dependence have been refined through extensive testing of their psychometric properties (Williams & Vaske, In Press) and applied to the understanding of leisure behavior and the

management of recreation resources. For instance, place attachment has been employed to study recreation conflict (Watson, Niccoulucci, & Williams, 1994; Watson, Williams, & Daigle, 1991), management preferences (Williams, Patterson, Roggenbuck, & Watson, 1993; Warzecha & Lime, 2001), perceptions of wildfire (Hendricks, Chavez, & Phippen, 2002), and recreation specialization (Bricker & Kerstetter, 2000).

Despite this attention, little research has focused on the antecedent processes to place attachment (Kyle Graefe, & Manning, In Press). In the environmental psychology literature, some research has investigated how attachment develops. Korpela and associates (Korpela, 1992; Korpela & Hartig, 1996; Korpela, Hartig, Kaiser, & Furher, 2001) have been investigating the role of self-regulating behaviors as an antecedent to place identity. Other studies have examined the role of place in the identity process (Twigger-Ross & Uzell, 1996). In the recreation literature, there are a large number of data sets from applied settings that could yield information useful to gaining an understanding of how people become attached to places.

Most research on place attachment to recreation settings as acknowledged the influence of past-experience but few have specifically investigated the relationship. Measures of past-experience in places other than the home are unique to recreation data sets and two theories of experience could be employed using this data. Cognitive development theory (Williams, 1984) has already been employed to better understand how people develop preference and motivation in their recreation. The purpose of this paper is to use meta-analytic techniques to evaluate and aggregate data on the influence of past-experience on the development of Place Identity and Place Dependence in the outdoor recreation literature.

Past Experience

Tuan (1974) suggests that places are meaning centers based on experience. For instance, past research has shown that people can distinguish places on the basis of the behaviors associated with those settings. The behaviors are a component of the places' meanings (Genereux, Ward, & Russell, 1983). Use experience helps determine the ways a recreationist will perceive, evaluate, and act within a setting. The past experience acts as a frame of

reference through which the recreationist makes judgments about alternative resources and what is acceptable behavior in the setting (Hammitt, Knauf & Noe, 1989).

Past Experience and Place Attachment

Place attachment, as it has been applied in the context of outdoor recreation, has generally been investigated as Place Identity and Place Dependence. Place identity refers to a symbolic or affective attachment to a place. Place Dependence refers to a functional attachment to a place.

Place Identity, as it has been operationalized in the recreation literature, is an affective attachment to a place. Proshansky (Proshansky, Fabian, & Kaminoff, 1978) suggested that development of place identity would be based on an individual having more positively valenced cognitions than negatively valenced cognitions. But experiments in mere-repeated-exposure paradigm have shown that by simply exposing an individual to a stimulus, a preference for that stimulus will emerge (Zajonc 2001). The affect that accompanies repeated exposures to the stimuli do not depend on contextual or subjective factors but solely on a clear history of exposure (Zajonc 2001). Mere-repeated exposure suggests that the affective attachment to places represented by Place Identity is formed primarily on the basis of repeated exposure to place, whether that exposure is based on actually experiencing the place or only hearing or reading about it. Given the mere-repeated-exposure effect, past experience should be a powerful or at least stable predictor of place identity. Total variance explained may be low, but what would be important about the effect size of past experience predicting place identity would be that it is relatively stable (Prentice & Miller, 1992).

Place Dependence is rooted in transactional theory that suggests people evaluate places according to how those places meet functional needs. That is, people compare how well the place meets their functional needs based on evaluations of alternatives (Stokols & Schumaker, 1981). The ability to make these judgments depends largely on developing a frame of reference through experience. Past-experience provides a lens shaped by the activities and social groups of participation. So, it is plausible that the recreationist finds for his/her chosen activity, a specific setting meets

her/his participation needs better than other specific settings.

Attention to the role of past experience in the development of place attachments has been minimal at best. In their seminal article on place attachment to recreation settings, Williams, et al. (1992) simply divided the respondents into two groups for item concerning previous visits and years since the first visit, less than three or three or more and ran ANOVAs on the groups. Moore and Graefe (1994) included frequency of visitation and months associated with the sites in regression models predicting place identity and place dependence scores with several other variables. In Bricker and Kerstetter (2000), past experience was integrated into a composite index of specialization. Finally, Williams and Vaske (In Press) divided visits in the past 12 months into three groups and test across the groups with an ANOVA. Other than Moore and Graefe (1994), little research has been published using past-experience with higher level of measurement statistics. The purpose of this paper is to specifically examine the role of past experience to the of place identity and place dependence across several studies using meta-analytic techniques.

Methods

Several data sets and codebooks were compiled from the studies' original authors. Each was examined to identify common measures of past-experience. The two most common measures were the items, "How many years have you visited 'X'?" and "How many times have you visited 'X' in the past twelve months?" When original data sets were available Place Identity and Place Dependence were computed using the items according to Williams and Vaske (In Press). Other data was provided in the form of correlation matrices provided by the author. Finally data found in published studies were utilized if data was appropriate. Ten studies of recreationists and conservation volunteers from diverse regions of the United States were included in the analysis. To be included studies, needed to have the ability to calculate or report the any of the relationships of interest. Namely, correlations between the past experience variables and Place Identity and Place Dependence and/or the correlation between Place Identity and Place Dependence.

To analyze the compiled data, relationships

between the variables of interest were synthesized and then test for homogeneity. First five relationships were synthesized following Rosenthal's (1991) procedures for mean weighted correlations, the four correlations between the common past experience variables and Place Identity and Place Dependence, as well as the correlations between Place Identity and Place Dependence. In this procedure, correlations are converted using Fisher's r to z transformation and then weighted by the sample size. Next to test for homogeneity in the relationships, a chi-square test was performed on the resulting mean weighted z scores. For display purposes the resulting z values are then converted back to r using Fisher's z to r transformation.

Results

Overall, correlations between the past experience variables measuring visitation over the past twelve months and the years visiting a site were moderate to weak with Place Identity and Place Dependence (Table 1). The strongest overall association was that between visitation over the past twelve months and Place Identity, $r = .25$. The weakest association was that between years visiting the site and Place Dependence, $r = .009$. The overall correlation between Place Identity and Place Dependence was strong, $r = .69$. The moderate to weak correlations between the past-experience variables should be expected. What is of more importance is the homogeneity of the relationships across the studies.

Table 1. — Test of homogeneity for the correlations between Place Identity and Place Dependence.

Study	Place Identity/Place Dependence		
	n	r	Z_r
Appalachian Trail	1879	0.60	0.68
Chattooga Trout Anglers	188	0.61	0.70
Chattooga Whitewater	234	0.60	0.69
Desolation Wilderness	1404	0.64	0.74
Mt. Rogers	503	0.79	1.04
Shenandoah National Park	2104	0.70	0.86
Heritage Trail ¹	241	0.68	0.84
St. Marks ¹	421	0.50	0.55
Lafayette ¹	515	0.68	0.83
Vaske & Korbin ²	182	0.88	1.36
Mean			0.83
Weighted Mean			0.79
X^2			155.26**

** $p < .001$

¹From Moore & Graefe, 1994

²From Vaske & Korbin, 2001

Associations between past-experience variables and Place Identity were heterogeneous (Table 2). Five data sets included the appropriate data for the analysis of times visiting in the past year and Place Identity. Sample sizes for each ranged from 187 to 2058 for a total $n = 4758$. Z_r 's ranged from 0.10 to .34, with $M = 0.23$ and a weighted mean of 0.26, $X^2 = 16.42$, $p < .001$. Five data sets included the appropriate data for analysis of year visiting the site and Place Identity. Samples sizes for each ranged from 187 to 1879 for a total $n = 4067$. Z_r 's ranged from 0.03 to 0.34, M

Associations between past-experience variables and Place Dependence were also heterogeneous (Table 3). Five data sets included the appropriate data for the analysis of times visiting in the past year and Place Dependence. Sample sizes for each ranged from 185 to 2047 for a total $n = 4743$. Z_r 's ranged from 0.04 to .36, $M = 0.17$ and a weighted mean of 0.14, $X^2 = 37.22$, $p < .001$. Five data sets included the appropriate data for analysis of year visiting the site and Place Dependence. Samples sizes for each ranged from 188 to 1879 for a total $n = 4063$. Z_r 's ranged from -0.03 to 0.21 with $M = 0.08$ and the weighted mean of 0.009, $X^2 = 14.51$, $p < .001$.

Finally, the associations between Place Identity and Place Dependence across 10 studies were found to be heterogonous. Sample sizes ranged from 182 to 2104 for a total $n = 7671$. Z_r 's ranged from 0.55 to 1.36 with $M = 0.83$ and the weighted mean of 0.79, $X^2 = 155.26$, $p < .001$ (Table 4).

Discussion

Recreation research has a vast body of data that can contribute to our understanding of the emotional and symbolic attachments and bonds people form to places. While most studies of recreationists' place attachment are focused on how differing degrees of Place Identity and Place Dependence change perceptions of management issues, the purpose of this analysis was to use some of this research to investigate what recreationists' attachment to the places they recreate can reveal about the nature of place attachment. The studies used in this analysis examined the same phenomena at a variety of spatial scales, activities, and regions of the country. What they held in common were similar consistent measures of the Place Identity, Place Dependence and a history of visiting a particular locale.

Table 2. — Matrix of weighted mean correlations, n, and k for each weighted mean correlation.

Variables	12 Months	Years associated	Place Identity	Place Dependence
Place Identity	0.25 n=4758 k=5	0.11 n=4067 k=5	—	
Place Dependence	0.14 n=4743 k=5	0.009 n=4063 k=5	0.69 n=7671 k=5	—

Table 3. — Tests of homogeneity for the correlations between past-experience variables and Place Identity.

Study	12/Place Identity			Years/Place Identity		
	n	r	Z _r	n	r	Z _r
Appalachian Trail ¹	1870	0.30	0.31	1879	0.03	0.03
Chattooga Trout Anglers ²	187	0.34	0.34	187	0.33	0.34
Chattooga Whitewater ²	236	0.26	0.26	236	0.25	0.26
Desolation Wilderness ³	—	—	—	1368	0.15	0.15
Mt. Rogers ³	401	0.10	0.10	397	0.15	0.15
Shenandoah National Park ³	2058	0.24	0.24	—	—	—
Mean			0.23			0.17
Weighted Mean			0.26			0.11
X ²			16.42**			29.39**

**p<.001 ¹From Kyle et. al ²First author's proprietary data ³Second author's proprietary data.

Considering the findings from psychology and the theories behind Place Identity and Place Dependence, past-experience at a site should be predictive of these two dimensions of place attachment. Synthesis of the data sets revealed that the associations between the place attachment dimensions and past experience variables were weak to moderate at best. The strongest overall association was between Place Identity and visitation in the past twelve months. This suggests that simply being exposed to a place may account for some variation in the degree of reported Place Identity. This could also be a result the respondents having quicker access to range of thoughts, memories, and feelings about a certain experience in a place. Visitation in the past twelve months was also the strongest association with Place Dependence. While the overall association was weak, the frequency or infrequency of visiting a site should predict Place Dependence to some degree. Activity specialization or involvement are probably better predictors of Place Dependence of a site alone (as evidenced by Kyle et. al) because of the

interaction between activity and place that are integral to the development of Place Dependence.

Across the data that was summarized, there was considerable variability in the correlations between the variables. Had the associations between the past-experience variables and Place Identity and Place Dependence been homogenous, this would have been evidence that while the associations are weak, past-experience is an important predictor of place attachment. Homogeneity between Place Identity and Place Dependence would have also provided further evidence to suggest that both are dimensions of a larger single construct, place attachment (Williams & Vaske, In Press). The heterogeneity of the associations indicates the presence of factors that increase or decrease the some correlations related to measurement, the sample, or possibly study design. To look into this further sample size and association strength were correlated and it was found that all the associations except for that between visits in the past twelve months and Place Identity were negative and

Table 4. — Tests of homogeneity for the correlations between past –experience variables and Place Dependence.

Study	12/Place Identity			Years/Place Identity		
	n	r	Z _r	n	r	Z _r
Appalachian Trail	1979	0.04	0.04	1879	-0.03	-0.03
Chattooga Trout Anglers	185	0.35	0.36	188	0.04	0.04
Chattooga Whitewater	234	0.13	0.13	234	0.21	0.21
Desolation Wilderness	—	—	—	1368	0.004	0.004
Mt. Rogers	398	0.12	0.12	394	0.08	0.08
Shenandoah National Park	2047	0.21	0.21	—	—	—
Mean			0.17			0.08
Weighted Mean			0.14			0.009
X ²			37.22**			14.51**

**p<.001

significant. This suggests the larger studies tended to produce weaker associations. These larger studies capture respondents with much more variation in both past-experience and attachment compared to smaller studies focused on one more homogenous user groups.

The findings of this study and mere-exposure paradigm, beg a certain question that would provide insight into the nature of place attachment especially as it relates to public lands. If being exposed to an attitudinal object will generate some affective response to that object, then could people who have never been to a place be attached to it? If so, this could mean that some of our attachment to places like National Parks, Wilderness areas, and National Forests stems not from direct experience of a place, but as a consequence of hearing others stories and memories of these places. Future research would do well to develop some way of investigating such a phenomena. Applied research should also consider how place attachment manifests itself in natural resource planning. Place attachment is most likely related to the experience of reactance, negative affective response when perceived freedom is threatened (Brehm, 1966). This relationship could be important to understanding the psychology of public involvement.

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Constraints

AN EXAMINATION OF THE RELATIONSHIP BETWEEN LEISURE CONSTRAINTS, INVOLVEMENT, AND COMMITMENT

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Abstract: The purpose of the investigation was to examine the effect of constraints on the development of enduring involvement and commitment to a service provider. Two models were examined; (a) the first model had constraints as an antecedent of involvement and commitment, and (b) the second model had constraints mediating the relationship between involvement and commitment. Overall, these findings indicated that constraints inhibit the development of enduring involvement but not the development of individual preferences for specific service providers. In particular, Other Priorities - which focused on respondents' time commitments - was the strongest predictor of involvement. As respondents' scores on this component increased, their scores on all dimensions of involvement declined. Alternately, as respondents' scores on the Setting Elements - a measure of the condition encountered on site - dimension increased, their scores on the Centrality dimension also increased. Finally, consistent with previous research involvement was an antecedent of commitment. As respondents' involvement with the activity increased, so too did their emotional attachment to the service provider and its settings, their dependence on these settings, and their social bonds to the setting.

Introduction

Several years ago Iwasaki and Havitz (1998)

presented a conceptual model depicting the relationships among the involvement, commitment, and loyalty constructs. In their model, they indicated that behavioral loyalty was the product of "sequential processes including (a) the formation of high levels of involvement in an activity, (b) the development of psychological commitment(s) to various brands, and (c) the maintenance of strong attitudes toward resistance to change preferences for those brands" (p. 259). They also indicated, however, that not all individuals' developmental trajectories would be identical. That is, personal (e.g., emotions, personal benefits, intrapersonal) and social-situational factors (e.g., social support, social-cultural norms, interpersonal and structural constraints) intervene to varying degrees to inhibit or facilitate the individual's progression in the development of behavioral loyalty. In this investigation, we empirically test several components of their conceptual model. The purpose of the investigation was to examine the effect of constraints on the development of enduring involvement and commitment to a service provider. Following their hypothesized relationships, two models were examined. The first model, depicted in Figure 1, had constraints as an antecedent of involvement and commitment. The second model, depicted in Figure 2, had constraints mediating the relationship between involvement and commitment.

The importance of loyal and committed recreationists to leisure service providers has received considerable attention in the leisure literature over the past decade. For the most part, committed recreationists are considered an asset to the service provider (Gahwiler & Havitz, 1998). For profit driven providers, client retention is regarded as an important organizational competency. This is borne out of studies that have demonstrated customer retention often yields greater profits (Reichheld & Sasser, 1990) and the realization that the cost of maintaining clients is substantially less than the cost of attracting new ones (Fornell & Wernfelt, 1987). This is illustrated in Howard's (1992) study of the adult fitness market where he observed that two percent of all adults accounted for up to 75% of participation in six sport and fitness activities. Reichheld and Sasser (1990) also observed that in several industries a reduction of five percent in the

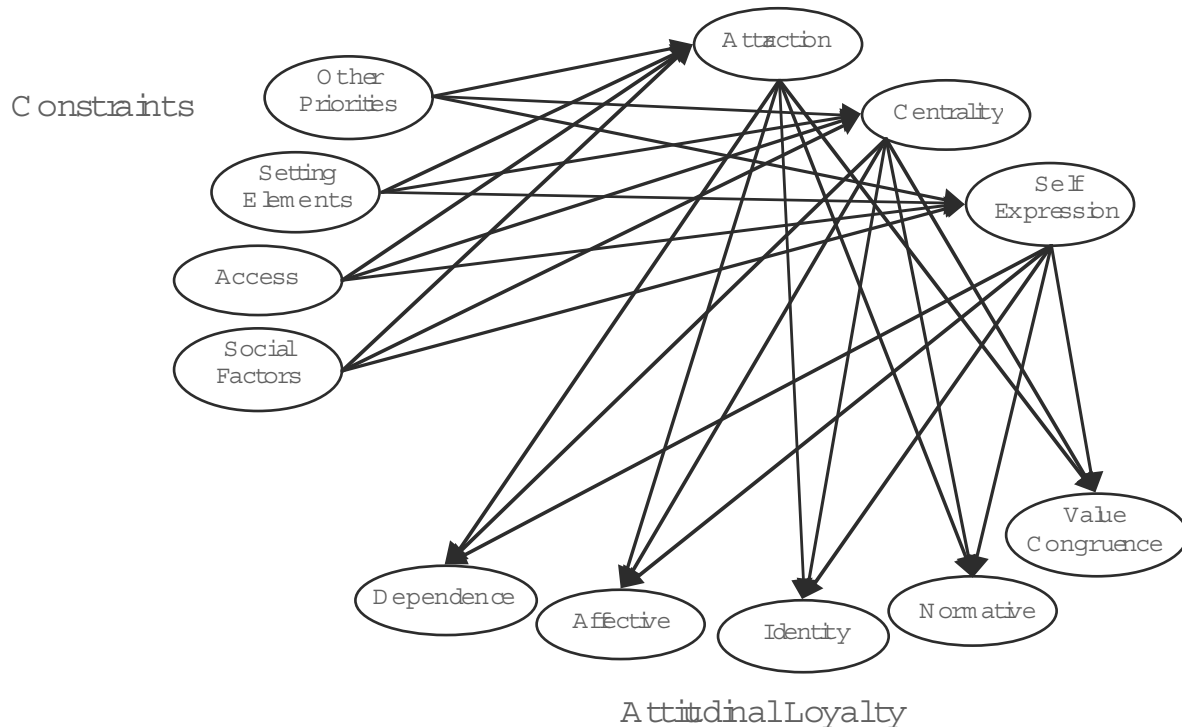


Figure 1. Constraints as Antecedent

number of customers lost corresponded with 25% to 85% increases in profitability. They suggested that customers become more profitable to the company over time because of product referrals, require less in terms of operating costs, and tend to purchase a greater volume and a higher proportion of premium products.

For public agencies, a similar picture emerges. Historically many public leisure service providers have relied on government support for the provision of their services. In times of economic recession and fiscal conservatism, however, these agencies have been pressed to be more fiscally independent. They have responded by imposing pricing structures that are at least commensurate with the cost of service provision. Consequently, the retention of fee paying clients has also become an important consideration. Of the dwindling appropriations that are available, client support remains an important factor for resource acquisition. Services that are strongly supported in the community are less likely to experience programmatic cut backs than those that are perceived to be of low priority.

Past Literature

Constraints

There are few constructs in the leisure literature that have been examined as thoroughly as leisure constraints. As suggested by Jackson (2000), it is generally understood that there are essentially three types of constraints to leisure; (a) intrapersonal - psychological conditions internal to the individual (e.g., personality, attitudes, moods), (b) interpersonal - arise out of interactions with others (e.g., the presence of others within the setting), and (c) structural - arise from external conditions within the environment (e.g., cost, few opportunities). In his review of the constraints literature, Jackson put forth several observations concerning what we currently know about leisure constraints. First, he suggested that there is a reasonably stable and replicable set of constraints dimensions which include the costs of participation, time commitments, the availability and quality of facilities, social and geographical isolation, and personal skills and abilities. He also suggested that time and cost related constraints are most common and significant inhibitors of leisure experiences but noted that these constraints are not experienced with equal intensity by everyone.

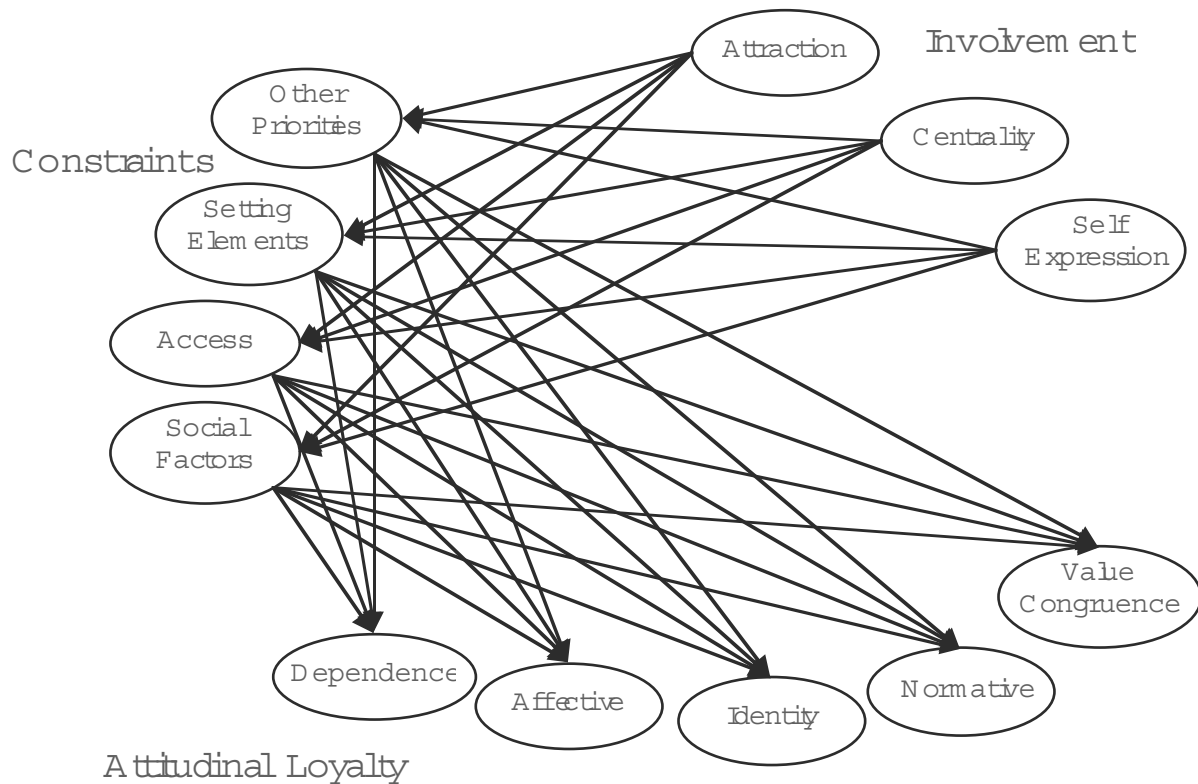


Figure 2. Constraints as Mediator

Variations across dimensions, individuals, and sub-populations have been observed.

Leisure Involvement

Involvement has been defined as involvement is an “unobservable state of motivation, arousal or interest toward a recreational activity or associated product. It is evoked by particular stimulus or situation and has drive properties... In other words, leisure involvement refers to how we think about our leisure and recreation, and it affects our behavior” (Havitz & Dimanche, 1997, p. 246, adapted from Rothschild, 1984). Thus, an understanding of leisure involvement has significant implications for understanding leisure behavior. Three dimensions - attraction, centrality, and self expression - have consistently been shown to be applicable and reliably measured within leisure settings (Dimanche, Havitz, & Howard, 1991; Havitz & Dimanche, 1997; McIntyre & Pigram, 1992; Wiley, Shaw, & Havitz, 2000). Based on their research on vehicle-based camping, McIntyre and Pigram suggested that attraction is best conceptualised in terms of recreationists’ perceptions of activity importance and the pleasure

derived through the activity. The centrality dimension, on the other hand, refers to the centrality of the activity within the context of recreationists’ overall life (Watkins, 1987). An activity may be considered central if other aspects of an individual’s life are organized around the activity. Finally, self expression refers to the self-representation or the impression of the self that individuals wish to convey to others through their participation in the activity.

These three dimensions of activity involvement (i.e., attraction, self expression, and centrality) represent conceptually separate and distinct aspects of activity involvement, although empiric associations between dimensions have occurred in some contexts (i.e., dimensions are often correlated and convergence between centrality and the importance component of attraction has occurred; see Havitz & Dimanche, 1997). Together, empirical indicators of the three dimensions can be seen to make up an involvement profile related to an individual’s participation in a particular leisure activity, or type of activity, and thus indicate the overall relevance or meaning of that activity in the

Table 1. — Item Factor Loading and Means

Scale Items	alpha	λ	t-value	M	SD
Constraints ¹					
Other Priorities	.78				
OP ₁ The lack of time		.53	—	3.99	1.33
OP ₂ Too busy with other activities		.71	9.55	3.18	1.37
OP ₃ Too busy with family responsibilities		.75	8.36	3.03	1.46
OP ₄ Work commitments		.48	8.40	3.23	1.56
OP ₅ Conflicting schedules with spouse/companion		.66	8.08	2.54	1.49
Setting Elements	.72				
SE ₁ Parks and facilities are over-developed		.57	—	1.26	.67
SE ₂ Parks and facilities are too crowded		.56	10.03	1.50	.90
SE ₃ Park facilities and programs cost too much		.65	7.13	1.18	.60
SE ₄ Don't like to participate in nature or outdoor recreation activities		.54	6.75	1.19	.60
Access	.72				
AC ₁ I have no way to get to parks		.99	—	1.15	.60
AC ₂ Lack of transportation		.77	11.34	1.17	.70
AC ₃ Parks are too far away		.35	6.53	1.45	.95
Social Factors	.55				
SF ₁ No one to go with to the parks		.54	—	2.06	1.25
SF ₂ Not at ease in social situations		.61	6.03	1.34	.81
SF ₃ Fear of crime		.38	4.97	1.65	1.11
SF ₄ Friends/family prefer to recreate elsewhere		.42	5.27	1.57	.94
Involvement ²					
Attraction	.86				
AT ₁ _____ is very important to me		.73	—	4.21	.77
AT ₂ _____ offers me relaxation when pressures build up		.61	11.24	4.36	.68
AT ₃ Participating in _____ is one of the most satisfying things I do		.83	15.16	3.97	.89
AT ₄ _____ interests me		.56	10.26	4.11	.73
AT ₅ I really enjoy _____ .		.59	10.86	4.43	.62
Centrality	.85				
CE ₁ I find a lot of my life is organized around _____ .		.91	—	2.86	1.12
CE ₂ _____ has a central role in my life		.85	22.97	3.06	1.18
CE ₃ I enjoy discussing _____ with my friends		.55	11.95	3.15	1.00
CE ₄ I find a lot of my life is organized around _____ .		.88	24.47	2.74	1.08
CE ₅ Most of my friends are in some way connect with _____ .		.47	9.70	2.79	1.02
Self Expression	.79				
SX ₁ Participating in _____ says a lot about who I am		.74	—	3.76	.92
SX ₂ You can tell a lot about a person by seeing them participating in _____ .	.61	11.36	3.48	.86	
SX ₃ When I participate in _____ I can really be myself		.72	13.40	3.81	.91
SX ₄ When I participate in _____ others see me the way they want to see me		.67	12.67	3.15	.96

context of the individual's life (Wiley et al., 2000)

Commitment

Consistent with previous suggestions appearing in the leisure literature, we conceptualized commitment as the attitudinal component of loyalty (Backman, 1991; Backman & Crompton, 1991). From a sociological point of view, investigators have stressed the structural conditions which underlie commitment and the persistence in a line of activity (e.g., social bonds and financial

investment; Becker, 1960; Buchanan, 1985). From a psychological perspective, on the other hand, the locus of commitment is seen to be internal or to be hinged upon individual choice (Shamir, 1988). Our conceptualization of commitment has attempted to incorporate measures capturing elements of both disciplines. First, as an attitudinal construct, we have followed research suggesting that attitude is comprised of three distinct components (Breckler, 1984; Jorgensen & Stedman, 2001; Ostrom, 1969); (a) affect - refers

Table 1, continued Item Factor Loading and Means

Scale Items	alpha	I	t-value	M	SD
Commitment ²					
Place Dependence	.91				
PD ₁ For the recreation activities I enjoy most, the settings and facilities provided by Cleveland Metroparks are the best		.78	—	3.97	.86
PD ₂ I prefer Cleveland Metroparks over other settings/facilities for the recreation activities that I enjoy most		.82	23.58	3.87	.88
PD ₃ For what I like to do, I couldn't imagine anything better than the settings and facilities provided by Cleveland Metroparks		.84	17.94	3.78	.94
PD ₄ I enjoy visiting Cleveland Metroparks more than any other sites		.83	17.59	3.74	.91
PD ₅ I get more satisfaction out of visiting Cleveland Metroparks than from visiting any other sites		.75	15.32	3.42	.93
Affective Commitment	.82				
AF ₁ I enjoy discussing Cleveland Metroparks with other people		.55	—	3.71	.81
AF ₂ Cleveland Metroparks means a lot to me		.66	9.77	4.35	.70
AF ₃ I am very attached to Cleveland Metroparks		.77	10.73	4.03	.85
AF ₄ I feel a strong sense of belonging to Cleveland Metroparks and its settings/facilities		.81	11.13	3.89	.84
AF ₅ I feel as though Cleveland Metroparks' problems are my own		.55	8.67	3.16	.91
Place Identity	.81				
ID ₁ I feel Cleveland Metroparks is a part of me		.87	—	3.56	.90
ID ₂ I identify strongly with Cleveland Metroparks		.89	21.33	3.63	.86
ID ₃ Visiting Cleveland Metroparks says a lot about who I am		.33	6.82	3.43	.86
Normative Commitment	.70				
NC ₁ My friends/family would be disappointed if I were to start visiting other setting and facilities		.52	—	2.47	.89
NC ₂ If I were to stop visiting Cleveland Metroparks sites, I would lose contact with a number of friends		.77	9.39	3.65	.81
NC ₃ Most of my friends/family would agree that Cleveland Metroparks settings and facilities are the best for what we like to do		.71	9.05	3.43	.82
Value Congruence	.88				
VC ₁ Cleveland Metropark's attitude toward the environmental education, conservation and recreation are similar to my own		.75	—	4.07	.77
VC ₂ Cleveland Metroparks shares my values		.87	16.39	3.91	.81
VC ₃ Cleveland Metroparks' views are similar to my own		.74	13.97	3.65	.93
VC ₄ Cleveland Metroparks' goals related to recreation, environmental education and the conservation are consistent with my own views		.72	13.60	3.80	.76

¹ Measured along a Likert-type scale where 1="Not a reason" through 5="Major reason."

² Measured along a Likert-type scale where 1="Strongly Disagree" through 5="Strongly Agree."

to emotional responses or activity in the sympathetic nervous system, (b) cognitive - refers to beliefs, knowledge, and thoughts related to the attitude object, and (c) conative - refers to behavioral intentions and behavioral commitments.

We have also included a forth component in our conceptualization of commitment termed "Value Congruence." Recently, Borrie, Christensen, Watson, Miller and McCollum (2002) highlighted the importance of building and maintaining positive relationships for public leisure service providers. They argued that in the context of public goods and services, it is more important for

service providers to build relationships with clients that lead them to consider themselves shareholders of the agency, rather than focusing purely on economic transactions. The objective of this approach is to encourage clients to act within the best interest of the agency rather than for themselves. Borrie et al. suggested that a key step in building lasting relationships is to foster trust, where the consumer has confidence in the agency and perceives them to be fair and equitable. Thus, we have included measures adapted from Borrie et al. examining respondents' perceptions of trust in the agency.

Table 2. — Summary of Model Testing Procedure

Model	χ^2	df	RMSEA	SRMR	CFI
Model 1: Constraints as antecedent	2190.24	1342	.041	.057	.92
Model 2: Constraints as mediator	2199.35	1344	.041	.057	.92

Table 3. — Structural Coefficients

Direct Effects	Structure Coefficients	t-value	R ² (Total Coefficient of Determination)
Constraints → Involvement → Commitment			
Other Priorities → Attraction	-.16	-2.38	.02
Other Priorities → Centrality	-.30	-4.03	.09
Setting Elements → Centrality	.11	2.20	
Other Priorities → Self Expression	-.19	-2.71	.04
Attraction → Place Dependence	.40	7.12	.16
Attraction → Value Congruence	.42	6.99	.18
Attraction → Affective Commitment	.54	7.46	.30
Self Expression → Place Identity	.50	9.55	.58
Self Expression → Normative Commitment	.39	5.53	.15
Involvement → Constraints → Commitment			
Attraction → Social Factors	-.15	-2.30	.02
Centrality → Other Priorities	-.28	-3.92	.08
Attraction → Place Dependence	.16	4.32	.16
Attraction → Affective Commitment	.30	4.42	.30
Attraction → Value Congruence	.42	6.98	.18
Self Expression → Place Identity	.76	9.75	.58
Self Expression → Normative Commitment	.38	5.43	.15

Methods

Study Context and Data Collection

Data were collected from subscribers to Cleveland Metroparks' Emerald Necklace. Cleveland Metroparks is a public leisure service provider in suburban Cleveland, OH. They manage and provide a variety of leisure services around the perimeter of Cleveland that include environmental and cultural education centers, walking and hiking trails, a metropolitan zoo, and various playing fields and open areas. They also provide a wide variety of interpretive programs. The Emerald Necklace is a monthly publication provided free of charge to residents who have registered to receive it. Non-residents pay a small fee for publication and postage. To receive the publication, individuals must request to have their name placed on the Emerald Necklace database, typically by placing their name on a register at one of the Cleveland Metroparks facilities or by calling the agency. The publication features information about Cleveland Metroparks facilities, services, and special programs that are offered each month. The

database currently consists of 50,000 subscribers. From this data set 1,500 names and addresses were randomly drawn in the summer of 2002. Survey instruments were distributed using a modified Dillman (2000) procedure which involved the sending of a survey instrument and cover letter, followed by a reminder/thank you postcard two weeks later, and a final survey instrument to non-respondents one month following the initial mailing. This procedure yielded 860 complete survey instruments (57.3% response rate).

Measures

Constraints: Our measures of constraints were similar to that used in previous studies (e.g., Hultsman, 1995; Jackson & Henderson, 1995; Scott & Munson, 1994). While Crawford, Jackson, and Godbey (1991) originally suggested that there are three types of constraints - intrapersonal, interpersonal, and structural - empirical research confirming this structure has been mixed. Using the Crawford et al. framework, it becomes evident that the items we used to

measure constraints could fall into more than one category. Therefore, to identify the underlying dimensionality of the constraint items, we first performed exploratory factor analysis in SPSS (version 11.0) (principal axis with a varimax rotation). As shown in Table 1, this procedure yielded four dimensions of leisure constraints; “Other Priorities,” “Setting Elements,” “Access,” and “Social Factors.” These dimensions are very similar to several of those identified by Jackson (1993, 2000). With the exception of Social Factors, all constructs demonstrated adequate internal consistency (Cronbach’s alpha) as determined by Nunnally’s (1978) .70 minimum. In spite of Social Factors’ weak reliability, we decided to retain the factor based on previous research (Hultsman, 1995; Jackson, 1993).

Involvement: Involvement was measured using an adapted version of McIntyre and Pigram’s (1992) involvement scale. The three dimensions, Attraction, Centrality, and Self Expression all demonstrated adequate internal consistency with alphas ranging between .79 and .86.

Commitment: Commitment was measured using a combination of several scales. Place Identity, Place Dependence, and Affective Commitment were measured using a combination of items adapted from Williams and Roggenbuck’s (1989) measure of place attachment, and Allen and Meyer (1990) along with Gruen, Sommers and Acito’s (2000) measure of organizational commitment. While Williams and Roggenbuck’s measure of place attachment combines items measuring both affective bonds and identity affirmation and expression related to a geographic setting, we have decided to distinguish these two components to be more consistent with representations in the literature. Thus, our measure of place identity is more consistent with Proshansky’s (1978) conceptualization of place identity and Pritchard et al.’s notion of position involvement where the attitude object (i.e., specific setting or service provider) becomes imbedded in the self system and serves to reinforce individual identity. Normative commitment was also measured using an adapted version of Gruen et al.’s scale. Thus, the three attitudinal domains noted by Jorgensen and Stedman (2001) are represented by Place Dependence for the conative domain, Affective Commitment for the affective domain, and Place

Identity for the cognitive domain. Normative Commitment is consistent with Becker (1960) and Buchanan’s (1985) notion of side bets where elements external to the individual bind them to consistent behavior. In this context, Normative Commitment captures respondents’ social bonds to Cleveland Metroparks. Finally, Value Congruence was measured using items adapted from Borrie et al.’s (2002) measure of social trust. All scales demonstrated adequate internal consistency with alphas ranging between .70 through .91

Analysis and Results

The data were analyzed using covariance structure analysis provided with LISREL (version 8.50; Jöreskog & Sörbom, 2001). The use of covariance structure analysis has certain advantages over separate applications of factor analysis and regression. It allows the researcher to; (a) simultaneously test a system of theoretical relationships involving multiple dependent variables, (b) restrict the relationships among variables to those that have been hypothesized a priori, and (c) more thoroughly investigate how well the model fits the data (e.g., through the use of residuals and goodness of fit indices) (Lavarie & Arnett, 2000).

The goodness of fit indices for the two models are reported in Table 2. It is important to note that these two models are not competing models. Thus, the goodness of fit indices indicate that the models adequately fit these data. The structural coefficients for each model are depicted in Table 3. For the first model, the following paths were statistically significant; (a) Other Priorities predicted Attraction $\beta = -.16$, $t = -2.38$, Centrality $\beta = -.30$, $t = -4.03$, and Self Expression $\beta = -.19$, $t = -2.71$, (b) Setting Elements predicted Centrality $\beta = .11$, $t = 2.20$, (c) Attraction predicted Place Dependence $\beta = .40$, $t = 7.12$, Value Congruence $\beta = .42$, $t = 6.99$, and Affective Commitment $\beta = .54$, $t = 7.46$, and (d) Self Expression predicted Place Identity $\beta = .50$, $t = 9.55$ and Normative Commitment $\beta = .39$, $t = 5.53$. The variance accounted for in the dependent variables included two percent for Attraction, nine percent for Centrality, four percent for Self Expression, 16 percent for Place Dependence, 18 percent for Value Congruence, 30 percent for Affective Commitment, 58 percent for Place Identity, and 15 percent for Normative Commitment.

For the second model, our results indicated that constraints were not a mediator of the involvement - commitment relationship. Significant paths included; (a) Attraction predicted Social Factors $\beta = -.15$, $t = -2.30$), Place Dependence $\beta = .16$, $t = 4.32$), Affective Commitment $\beta = .30$, $t = 4.42$), and Value Congruence $\beta = .42$, $t = 6.98$), and (b) Self Expression predicted Place Identity $\beta = .76$, $t = 9.75$) and Normative Commitment $\beta = .38$, $t = 5.43$). These variables accounted for two percent of the variance in Social Factors, eight percent of the variance in Other Priorities, 16 percent of the variance in Place Dependence, 30 percent of the variance in Affective Commitment, 18 percent of the variance in Value Congruence, 58 percent of the variance in Place Identity, and 15 percent of the variance in Normative Commitment.

Discussion

Overall, these findings indicated that constraints inhibit the development of enduring involvement but not the development of individual preferences for specific service providers. In particular, Other Priorities - which focused on respondents' time commitments - was the strongest predictor of involvement. As respondents' scores on this component increased, their scores on all dimensions of involvement declined. Alternately, as respondents' scores on the Setting Elements - a measure of the condition encountered on site - dimension increased, their scores on the Centrality dimensions also increased. While this finding might seem illogical, past research has shown that those most involved with a specific activity also have the most specific needs concerning their leisure experiences. Consequently, they tend to be the most critical of setting conditions (Kyle, Kerstetter, & Guadagnolo, 2002). Finally, consistent with previous research (see Iwasaki & Havitz, 1998; Kyle, Graefe, Manning, & Bacon, in print), involvement was an antecedent of commitment. As respondents' involvement with the activity increased, so too did their emotional attachment to the service provider and its settings, their dependence on these settings, and their social bonds to the setting.

For managers, these findings suggest that attempts to make their services and facilities more convenient might be best suited. This might include scheduling programs at more convenient times, locating facilities close to key target markets,

and providing services that are "family inclusive." As a next step in this research process, Cleveland Metroparks would be advised to focus on better understanding their clientele's time commitments.

An important limitation of this investigation concerns the sample being studied. Given that they were drawn from an agency membership list, they have already displayed an above average level of investment (i.e., time, effort) to enroll of the subscription list. Consequently, they may have already negotiated many of the constraints faced by the general population.

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POSSIBILITY OF REFINING THE HIERARCHICAL MODEL OF LEISURE CONSTRAINTS THROUGH CROSS-CULTURAL RESEARCH

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Abstract: Leisure constraints “limit the formation of leisure preferences and ... inhibit or prohibit participation and enjoyment in leisure (Jackson, 1991, p. 279). In 1991, Crawford, Jackson, and Godbey developed a hierarchical model of leisure constraints that included three types: interpersonal (e.g., lack of appropriate partners), intrapersonal (e.g., lack of skill, too much stress), and structural (e.g., excessive cost, lack of availability). Since leisure constraints research has been focused on North America the purpose of this study is to examine the validity of the hierarchical model of leisure constraints in two societies outside of North America, Japan and China. These countries are culturally quite different from the U.S and Canada but Japan, like both the U.S and Canada, is a developed nation while China, on the other hand, is a developing country. Six Japanese couples and six Chinese couples who range in age from approximately 20 - 40 years old were interviewed about their leisure and what they perceive to be constraints to their leisure. Data was analyzed in order to determine whether or not the hierarchical model of leisure constraints can guide cross-cultural research and in both developed and developing nations. In addition, we attempted to determine if culture itself was in important constraint category.

While this study did not provide final answers regarding the validity of the hierarchical model of

leisure constraints either cross-culturally or in developed and developing societies, the results indicate that constraints in other societies differ from those found in North America. Results also suggest that the categories of leisure constraints must be refined on the basis of cross-cultural research and new constraint categories be added to the hierarchical model. In particular, culture is a constraint category that may substantially enhance the validity of the model when it is applied to other societies.

Introduction

The Hierarchical model of Leisure Constraints Crawford and Godbey identified three major types of constraints to leisure in 1987 (See also Crawford, Jackson and Godbey, 1991). These are intrapersonal constraints, interpersonal constraints, and structural constraints (see Figure 1). Intrapersonal constraints involve psychological conditions that are internal to the individual such as personality factors, attitudes, or more temporary psychological conditions such as mood. Interpersonal constraints are those that arise out of interaction with others such as family members, friends, coworkers and neighbors. Structural constraints include such factors as the lack of opportunities or the cost of activities that result from external conditions in the environment.

Previous research

The overwhelming majority of research on leisure constraints has been conducted in North America and several theories and models have been proposed (Alexandris, 1997). Blazey (1987), Crompton (1977), and Lansing and Blood (1964) found that lack of money, time, poor health, and family support or interest were the primary constraints that influence an individual's decision of whether to travel. Norman (1995) examined the influence of perceived constraints on the decision of whether to take a summer trip. Tian, Crompton, and Witt (1996) studied the constraints that inhibited individuals from visiting museum attractions in Texas. They found that cost, time, difficulty of access, repetition, product failings, and lack of interest were the primary constraint dimensions.

Similarly, tests of the Hierarchical model of Leisure Constraints have largely been restricted to North

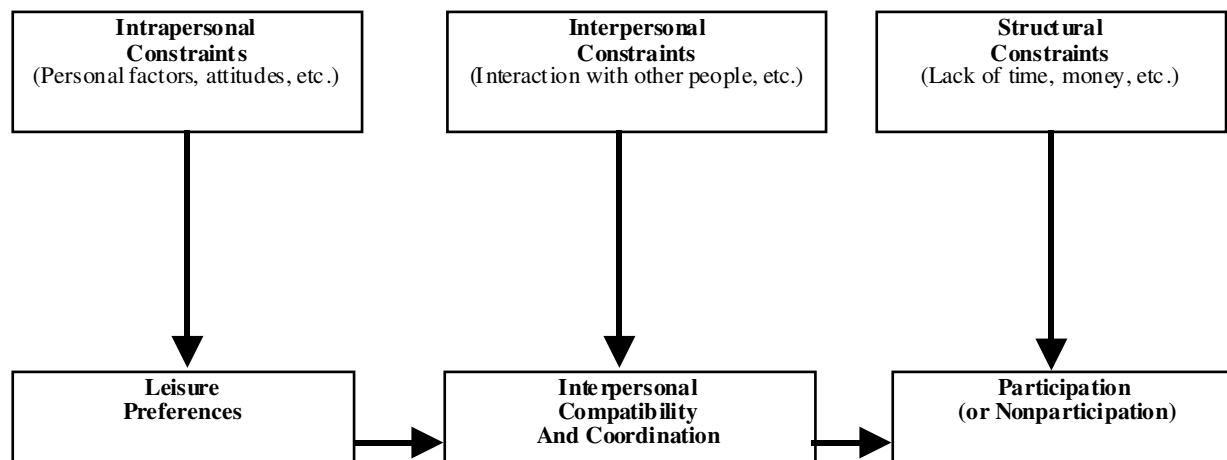


Figure 1. A Hierarchical Model of leisure Constraints (Crawford, Jackson and Godbey, 1991)

America. Pennington-Gray and Kerstetter (2002) investigated perceived intrapersonal, interpersonal, and structural constraints to nature-based travel and tested the constraint model in a nature-based tourism setting. They found individuals' perceptions of constraints differed depending on socioeconomic status, family life cycle, and age. Raymore et al. (1993) tested the model with a sample of adolescent students and found support for the hierarchy of importance of leisure constraints. Hawkins et al. (1999) attempt to replicate and extend previous work on leisure constraints construct development based on data from a sample of mentally handicapped adults. They found it is necessary to refine the propositions associated with the hierarchical model of leisure constraints. However, Hawkins and her colleagues' research was strongly criticized by Godbey (1999), one of the founders of the hierarchical model of leisure constraints, who claimed that Hawkins et al. (1999) failed to consider a central fact for adults with mental retardation—they are, by definition, significantly lower in intelligence than other people. This fact alone would affect research outcomes (Godbey, 1999). Jackson (1999), another founder of the hierarchical model of leisure constraints, recommended that Godbey's concerns should be respected, but also that Hawkins and her colleagues' study represents a useful contribution to knowledge about leisure constraints, and indirectly about leisure in general.

Cross-cultural research on leisure

Most studies of leisure are conducted in North

America. Moreover, to our knowledge, there are no investigations of the validity of the leisure constraints model on the basis of cross-cultural comparative research. Alexandris et al. (1997), for example, investigated demographic differences in the perception of constraints on recreational sport participation and analyzed leisure constraints based on different recreational sport participation levels in Greece. Their study is not comparative, however.

Cross-cultural comparative research on leisure is extremely rare in both the anthropological and leisure literatures. The rarity of such studies does not mean that they are without value, however. Cross-cultural comparative studies have several clear virtues. First, they permit data exploration. Second, examinations of the cross-cultural literature permit the formulation and testing of hypotheses generated from case studies or from wider consideration of the ethnographic record. Third, because cross-cultural researchers sample from societies around the world, they are able to examine the widest possible range of human variation in culture traits. Finally, in the case of comparisons where secondary data are used, cross-cultural comparative studies tend to be extremely cost efficient (Chick, 2000).

Leisure theory and models which are created in North America may not be applicable in Asian countries. According to Ap (2002), for example, the modernization of Asia must not be thought of as the westernization of Asia, but as the modernization of Asia in the Asian way despite the

fact that parts of Asia (for example, Japan, South Korea, Taiwan, Hong Kong and Singapore) have attained per capita GDPs that rival those of Western developed countries. He also indicated that even if Asians are influenced by Western ideas, they do not necessarily embrace Western values. This sentiment was reinforced by Tay (2001, p.74): "The (Asian) region may be absorbing Western influences, but it is not going to end up as another MacDonald's franchise.... Rather, the increased links with the United States and the West will likely result in hybrids that abandons traditional Asian forms while still insisting on a difference from the West".

Based on the hints above that culture may have an important influence on the experience of constraints, the purpose of this research is to test the validity of the hierarchical model of leisure constraints cross-culturally and comparatively in two societies outside of North America, Japan and China. These countries are culturally quite different from the U.S and Canada but Japan, like both the U.S and Canada, is a developed nation while China is still in the process of developing. In addition to testing the model originally proposed by Crawford and Godbey (1987) and elaborated by Crawford, Jackson, and Godbey (1991), we will propose a modified model that incorporates culture as a type of leisure constraint.

Method

An increasing number of scholars are relying on alternative methodological paradigms to study leisure behavior (Henderson, 1998). Stanfield (1994) identified several concerns associated with traditional quantitative approaches including low return rates of mailed questionnaires and skepticism and suspicion of telephone surveys. In addition, ethnographic or qualitative research is useful in initial explorations of topics. Hence, because of the lack of previous research on leisure constraints in China and Japan, we decided to use interviews to explore what kinds of factors influence choices regarding leisure activities in those two countries.

Sampling and research settings

Purposeful sampling strategies are commonly used in qualitative and ethnographic research. This is in contrast to random sampling in quantitative studies (Rossman & Rallis, 2002, pp.137). We

used snowball or chain sampling, which is one of typical strategies for purposeful selection of cases and individuals, events, or processes (Patton, 2002, pp.230-242). Participants in the study were Japanese and Chinese couples who ranged in age from approximately 20 - 80 years. We chose couples instead of individuals because couples may be more constrained by family responsibilities than single people. Hence, it may be easier to identify leisure constraints for married couples. In Japan, we asked a sport and culture association in Tokyo to provide names of people who are using their recreational facilities. We asked a water-ink painting fan club in Yokohama to provide names of people who were willing to be interviewed. We then contacted them for interviews. In China, we contacted community centers in Beijing and Dalian for names of people who used the facilities. And then, we contacted them for interviews. We selected Tokyo and Yokohama, in Japan, and Beijing and Dalian, in China, as appropriate sites for the study in the view of their large populations, abundant recreational facilities and reputations as tourism sites.

Data collection and analysis

Data for the study was collected via interviews. We asked about informants' life styles in their homes, their family and work, and their leisure activities. In additional, participants also were asked to talk about what factors constrain their leisure activities and how they overcome these constraints. The interviews took place in the participants' homes and lasted from one to two hours. Interview questions addressed the following areas:

1. Questions pertaining to demographic characteristics and socioeconomic status
2. Questions pertaining to time use and free time activities
3. Questions pertaining to leisure constraints

All of interviews were recorded with the consent of the interviewees. We then read transcripts of the interviews in order to explore informants' life styles and leisure constraints. We attempted to find the similarities and differences in leisure constraints between Japan and China and how these fit the hierarchical model of leisure constraints. Finally, we looked for the influences of culture on leisure constraints.

We will present brief excerpts from our interviews

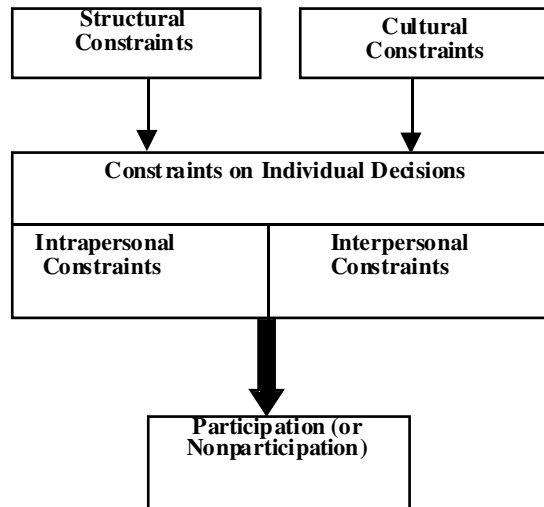


Figure 2. Refined Hierarchical Model of leisure Constraints (Chick & Dong, 2003)

that appear to support the intrapersonal, interpersonal, and structural constraint categories but which also suggest that culture is an important category in its own right.

Results

Validity of the Three Types of Leisure Constraints

The findings of this study indicated that interpersonal, intrapersonal, and structural constraints three types of leisure constraints also exist in two societies outside of North America, Japan and China.

Both Chinese participants and Japanese participants addressed intrapersonal barriers:

My hobbies are Taiji and Chinese chess. Actually, I also like to play basketball. But nobody likes to play basketball among my friends except me because they think basketball is not an appropriate leisure activity for old people. I have to quit playing basket to follow my friends. (Chinese female, 60s)

I like to read new papers. My son bought a computer for me and told me I can get more information by surfing the internet. I have tried to surf the internet many times. Unfortunately, I cannot continue to do it because the computer is too complicated for me to remember all the options. I think I am getting old; I have to give up and continue to read the newspaper. (Japanese female, 60s)

Most subjects mentioned that they are extremely restricted by Interpersonal constraints resulted in quitting their leisure activities.

We live with my mother. She is 79 years old and cannot walk at all. Everyday, I had to prepare meals for her and help her to walk. In order to take care of her, I do not have time to do leisure. I think I do not have leisure. (Japanese male, 40s)

Structural constraints impact on leisure decisions regardless of the ages and incomes.

My annual income and my husband's income have to support my daughter for her study. My husband and I are working hard, we only have one purpose of working is for my daughter. I have no leisure! (Chinese female, 30s)

There was a movie theater nearby our former apartment. Now, there are no theaters nearby our new apartment. Our leisure is movie going. The lack of a theater makes us lose our leisure. (Japanese couple, 30s)

Constraints Imposed by Culture

In this study we found constraints that do not obviously belong to any of categories defined by Crawford, Jackson, and Godbey (1991). Culture appears to be a type constraint that is not easily subsumed by the intrapersonal, interpersonal, or structural categories.

I live in a traditional Japanese residential area. Most people who live in this area are old people. They think women should stay at home to take care of their kids and do housework. So traditional Japanese culture constricts my leisure activities and make me give up some leisure activities. (Businessman, female, 50s)

We have to take care of my grandchildren everyday..... In traditional Chinese culture, mothers should be responsible for taking care of their grandchildren. We are very old and we also have chronic illnesses, but we have to do this. This is an obligation. (Retired couple, 70s)

Now, we have three long holidays: Spring Festival, Labor Day and National Day. I may tell my parents I have to take some rest at home or visit my friends or travel during the Labor Day and National Day. But I have to see my parents and stay with them during the Spring Festival which is a cultural symbol of family gathering. Chinese parents cannot accept that their children don't visit them and traditional culture also doesn't allow me to do my leisure activities instead of visiting my parents during the Spring Festival. (Chinese male, 20s)

I just got married last year. Traditionally, in Japan after women got married, they had to visit their husbands' parents during the New Year Holiday (usually January 1st). I have to visit my husband's parents during the New Year holiday because our culture doesn't allow me to do leisure activities instead of visiting my parents-in-law. (Japanese female, 20s)

The statements above indicate that interpersonal, intrapersonal, and structural constraints to leisure exist in both China and Japan. In addition, the final pair of statements show that "tradition" (read: "culture") is also a significant influence on leisure constraints.

Discussion and result

The findings of this study indicated that three types of leisure constraints, intrapersonal, interpersonal, and structural constraints also exist in two societies outside of North America, Japan and China. However, our study found intrapersonal and interpersonal constraints are also influenced by culture. Indeed, it is not at all clear

how the constraints denoted by the term "tradition" could be incorporated into the categories of intrapersonal, interpersonal, or structural. It seems far better, both in terms of economy and explanatory value, to assign these constraints to the cultures of the informants. We believe that the development of the hierarchical model of constraints in North America, which has been regarded as monocultural for these purposes, has led to a disregard for culture as a variable. However, cross-cultural data expose the weakness in such a perspective. Since it is generally assumed that culture both prescribes and proscribes intrapersonal and interpersonal behavior differently in different cultures, we feel that both intrapersonal and interpersonal constraints should be subordinate to culture in any hierarchical model.

Although cultural constraints have not denoted in leisure research field, they are well-documented in other research's areas. According to Brightman (1981), cultural constraints include taboos, differing time perspectives, attitudes toward change, beliefs toward the scientific method, and decision-making styles. According to Mendonca's study (1996), the application of management techniques developed in U.S hamper developing countries because of cultural differences. In Ireland, the role of the Catholic Church and religion, more generally, is a major source of cultural constraints, influences on health education programs, particularly information giving, and the development of services and other interventions (Smyth, 1998). In Oman, a Middle Eastern country, women may work in special areas of employment approved by men and under the guidance of men, but they may not create their own spheres of activity (Chatty, 2000). In Canada, the approximately 25% of Canadians who are of French origin are very sensitive to the use (or abuse) of their preferred language. Marketers who have been successful in Quebec must develop or modify advertise messages to be used for French-speaking parts of Canada (Jarvis, 1995).

Therefore, cultural constraints are either prescriptive (people should do certain things) or proscriptive (people should not do certain things). Said differently, cultures have "norms;" that is, things that people should do and should not do. Pornography, for example, is proscribed in American culture despite the fact that many people

consume (buy, watch, etc.) it. But many do not do so even if they would like to because it is proscribed. Hence, within the “expressive array” (the total number of expressive and recreational activities that are available to members of particular cultural communities), people either do or avoid doing certain things because their culture tells them that they should or should not do them. Of course, some people violate the prescriptions and proscriptions and either do not do what they are supposed to do or do what they are not supposed to do. For their actions they may be subjected to punishments that range from cross words or looks to being executed.

It is also the case that cultures do not have identical expressive arrays because of cultural complexity (e.g., tribal peoples in highland New Guinea do not have computer games), because certain activities are ecologically impossible (people who live in tropical jungles do not go snow skiing), or because the activities are culturally inappropriate (e.g., games of strategy generally do not exist in societies that lack social stratification (Roberts, Arth, and Bush, 1959; Chick, 1998). Hence, behavior is constrained by the type of expressive array in one’s culture. While individuals ultimately make decisions about leisure, we feel that these decisions are strongly influenced, if not strictly determined, by culture in conjunction with structural constraints. Therefore, in our revised model, we place both cultural and structural constraints prior to individual level (intrapersonal and interpersonal) constraints (see Figure 2). We feel that the model, thus configured, offers a better way of understanding constraints to leisure in cross-cultural or multicultural contexts.

In sum, the categories of leisure constraints must be refined on the basis of cross-cultural research and new constraint categories should be added to the hierarchical model. In particular, culture itself is a constraint category that may substantially enhance the validity of the model when it is applied to other societies or whenever culture cannot be assumed to be a constant. Indeed, we feel that culture can be assumed to be a constant only when it is empirically demonstrated to be so.

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GENDER-BASED CONSTRAINTS TO SPORTFISHING PARTICIPATION IN THE EASTERN LAKE ONTARIO AREA

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Abstract: Sportfishing in the eastern Lake Ontario area is the foundation of the coastal heritage of local residents, promotes the awareness of residents about the importance of coastal resources, and is essential to the area's economic base. With declines projected in sportfishing participation by 18- to 44-year-old anglers in New York State by 2005, understanding how constraints influence fishing participation could be essential for maintaining existing participation levels. The purpose of this study is to identify, through qualitative research methods, the major constraints influencing fishing participation by females and males during childhood, adolescence, and early to middle adulthood. Forty-one anglers (i.e., 20 females and 21 males) and 16 non-anglers (i.e., 10 females and 6 males) were interviewed. Constraints varied by life stage, with fishing opportunity constraints limiting participation during childhood, social constraints affecting adolescence, and time constraints limiting participation during adulthood. Female interviewees tended to have more constraints on their fishing involvement throughout the course of their lives than did male interviewees. Management implications related to the constraints identified are discussed.

Introduction

The eastern Lake Ontario area in New York State is an area strongly influenced by an abundance of coastal resources and the sportfishing heritage of its residents. Over the past decade, declines in sportfishing participation have occurred in this area, negatively impacting the economies of coastal communities. Fishing participation projections for New York State indicate that statewide angler participation will decline further by 2005 due to population shifts in the state (Connelly, Brown, &

Knuth 1999). In order to offset these projected declines in sportfishing participation, the elements influencing participation need to be identified. Because of the low percentage of New York State anglers who are females (i.e., 12%; Connelly, Brown, and Knuth 1997), the elements influencing female participation may be of particular interest to fisheries managers and promoters as they attempt to offset declines in participation by attracting specific angler markets such as female anglers.

Previous research has identified gender-based constraints to participation in leisure activities during specific life stages (Jackson and Henderson 1995; Culp 1998; McMeeking and Purkayastha 1995; Hultsman 1993; Shaw 1994). An analysis of constraints is likely to reveal insights into sportfishing participation as well. The purpose of this study is to identify constraints influencing sportfishing participation by females and males during childhood, adolescence, and early to middle adulthood. Interviews of anglers and non-anglers will be qualitatively analyzed to identify the constraints influencing participation. Management implications based on these results will be discussed.

Background

Constraints to leisure have been defined as anything that inhibit an individual's ability to participate in a leisure activity, whether by limiting the amount of time an individual can participate, preventing an individual from taking advantage of leisure services, or preventing an individual from achieving a desired level of satisfaction (Jackson and Henderson 1995; Jackson 1988). Constraints shown to influence leisure activities include the cost of participation, time limitations, lack of opportunity or access, and physical limitations (Jackson and Henderson 1995; Jackson 1988; Culp 1998).

Previous studies have shown that constraints to participation in leisure activities are often related to life stage and gender (Jackson and Henderson 1995; Culp 1998; McMeeking and Purkayastha 1995; Hultsman 1993; Shaw 1994). During childhood, participation in recreational activities may be influenced by external factors such as family (both parents and siblings), peers, teachers, media, and community programs (Mannell and Kleiber 1997). According to Connelly et al. (1999), when parents were asked why their oldest

child did not fish more, several reasons were provided, including the parent's inability to take the child fishing — an opportunity-related constraint. In addition, female children may have fewer individuals outside of their immediate family who are willing to take them fishing, further limiting their opportunity to fish (Kuehn 2003).

During adolescence, when individuals begin to socialize more with friends, social constraints such as peer pressure may influence sportfishing participation. According to Erikson (1963), adolescence is the developmental stage during which people develop a sense of identity, through both identification with others and individuation (i.e., defining themselves as unique from others). In identifying themselves as one with peer groups, adolescents may either continue fishing (if their peer group fishes) or stop fishing (if their peer group does not fish). In defining themselves as unique from others, adolescents may pull away from existing fishing partners such as parents. Because of the low number of females who fish, it is likely that peer pressure negatively influences female fishing participation to a greater extent than it does male participation during adolescence. Culp (1998), in her study of adolescent females and outdoor recreation, found that gender roles, peer relationships, an individual's self concept, access and opportunity problems, environmental factors, perceived and/or existing physical limitations, and safety considerations constrained female adolescent participation.

Constraints may also influence an individual's participation in leisure activities during adulthood. Duda et al. (1999) states that the lack of time available for fishing for both males and females is due to work obligations (69% of responding anglers), family obligations (22%), education-related activities (13%), and other recreational activities or hobbies (9%). Bryan (1977) suggests that the amount of time anglers spend fishing is likely related to the amount of time their jobs allow. Women who work and have children may have less available leisure time than working men with children because more of the women's time may be used for childcare and domestic work (Mannell and Kleiber 1997). Shaw (1994) suggests that economic and opportunity constraints may also limit the participation of both men and women in leisure activities, and that both men and

women are "channeled" into specific leisure activities that "perpetuate gender stereotypes." Thus, many women may believe that it is not suitable for them to participate in male-dominated recreational activities such as fishing. Female anglers may also view fishing as an activity that is not welcoming to them because of the relatively high number of males involved in the sport.

Methods

In order to identify elements influencing the fishing participation of both males and females during childhood, adolescence, and adulthood, a study comprised of preliminary qualitative interviews, a mail survey, and qualitative interviews of both anglers and non-anglers¹ was conducted in 2001 and 2002 with funding from New York Sea Grant and the State University of New York College of Environmental Science and Forestry. Data concerning constraints were collected during the qualitative angler and non-angler interview portion of this study.

The samples of angler and non-angler interviewees were selected through a three-step process:

1. Mail survey sample of anglers. For the mail survey portion of this study, an initial sample of anglers was collected from New York State Department of Environmental Conservation fishing license stubs for the 1999 calendar year. This sample was constrained by gender (i.e., 525 males and 525 females), location of license purchase (i.e., Wayne, Jefferson, and Oswego counties along the eastern shore of Lake Ontario), state of residence (i.e., New York state residents), and age (i.e., 18 to 44 years). Sampling constraints were used to ensure a comparable number of males and females in the original sample, a similarity in fishing experience between anglers, and ages appropriate for studying the projected decline in the number of New York State anglers (i.e., the 18- to 44-year-old age class in New York is projected to decline by 7.9% by 2005; Connelly et al. 1999).

2. Angler interviewee sample. Anglers were mailed interview permission form with the mail survey. Of the 279 anglers who responded to the mail survey, 44 males and 21 females returned this permission form, indicating their willingness to participate in

¹ Individuals who either do not fish or fish infrequently are termed "non-anglers" in this study for simplification purposes.

Table 1. — Numbers and percentages of male and females anglers indicating the existence of specific constraints during childhood.

Constraints	Females		Males		
	Number	Percent	Number	Percent	
Lack of initiator	5	33%	1	5%	
Access to a fishing location	2	13	4	19	
Gender bias	1	7	0	0	
Handling bait	1	7%	0	0%	
N	15		21		

Table 2. — Numbers and percentages of male and females non-anglers indicating the existence of specific constraints.

Constraints	Females		Males		
	Number	Percent	Number	Percent	
Boring/Lack of patience	4	40%	2	33%	
Handling bait	4	40	1	17	
Handling fish	2	20	0	0	
Peer pressure	2	20	0	0	
Other interests	1	10	3	50	
Weather/Insects	1	10	1	17	
Young children	1	10	1	17	
Lack of partner	1	10	1	17	
Gender bias	1	10	0	0	
College	0	0	2	33	
Work	0	0%	1	17%	
N	10		6		

the interviews. Of those anglers who returned the permission form, 21 males and 16 females were contacted by telephone. An additional four females were selected randomly from the pool of survey respondents and asked to participate in the interviews.

3. Non-angler interviewee sample. During the angler interviews, interviewees were asked for contact information for friends and relatives who either do not fish or fish infrequently. Contact information for eight males and eleven females was obtained. Six males and ten females were identified as non-anglers and interviewed.

The angler and non-angler interviews were conducted by telephone using an interview guide and tape recorder, and ranged in length from 15 to 45 minutes for anglers and 5 to 10 minutes for non-anglers. All interviewees were asked for permission to have their interviews tape recorded for research purposes prior to the start of each interview. The interview question guides were developed through a literature review as well as from preliminary interviews conducted as part of

this study. Questions focused on the social and psychological elements (including constraints) influencing childhood, adolescent, and adult fishing participation or, in the case of non-anglers, lack of participation.

Recordings of both angler and non-angler interviews were transcribed and analyzed using NUD*IST, a qualitative research software program. Data for males and females were analyzed separately and coded according to the elements influencing participation during each life stage. Data concerning constraints were separated during coding from data concerning motivations for participation. Coded constraint data were studied for patterns in the similarities and differences between genders and life stages.

Results

Childhood constraints. Constraints during childhood for both males and females were related to opportunity (i.e., the interviewee's lack of access to a fishing location and/or lack of an adult willing to take them fishing during childhood) and individual inclinations (e.g., dislike of handling

bait and boredom). Opportunity-related constraints were common and appeared to be similar for female and male interviewees early in childhood, with children depending on their parents or other adults to take them fishing. Thirty-three percent of the female and 5% of the male anglers interviewed indicated that the lack of an adult to take them fishing constrained their participation during childhood (Table 1). Interviewees who grew up with a fishing location literally in their backyard were not as constrained by the need to have an adult take them fishing as were those living further distances from fishing locations.

INTERVIEWER: Were you close enough to water that you could go fishing on your own?

MALE INTERVIEWEE #1: No, not that close. It was about five miles from the farm to the bay, so I never went too much on my own as a child.

In two instances, the lack of an adult willing to take the interviewee fishing as a child was related to a gender bias (i.e., a gender-related lack of support) by the interviewee's parents. Although a gender bias was identified only by one female angler and one female non-angler, this constraint strongly influenced the decision of both individuals to drop out of the sport. In one case, the angler re-entered the sport as an adult due to the support she received from her significant other.

INTERVIEWER: Now what re-sparked your interest in fishing?

FEMALE INTERVIEWEE #2: When I got out of the military, I moved up to where I am now to help my parents out with their fish cleaning station. I wanted to get into fly-fishing and I had somebody that took the time to show me. And I love it. I always wanted to fly fish when I was a kid but my Dad never would show me.

INTERVIEWER: Did you Dad know how to fly-fish?

FEMALE INTERVIEWEE #2: Yeah. I don't know... once I got to be over eight years old, Dad was no longer interested in girls. He wanted a boy.

In the other case, the interviewee did not re-enter the sport.

FEMALE INTERVIEWEE (NON-ANGLER)

#3: ... my mother did not feel like it was ladylike for us to be fishing and that's why we didn't fish. We had to be little girls and we were acting too much like little boys so... no more fishing.

Individual inclinations such as the dislike of handling bait or fish also often constrained participation during childhood. Five females and one male (Tables 1 and 2) indicated their dislike of baiting hooks. Five of these individuals dropped out of the sport largely because of their dislike of that aspect of fishing.

MALE INTERVIEWEE (NON-ANGLER) #4:

I never really liked it [fishing]. It was a little too icky... like worms and... I wasn't a real dirty kid. One female angler explained why she was able to adapt to handling bait.

FEMALE INTERVIEWEE #5: I liked the taste of the trout. I hated puttin' the worm on. Being a girl, you know, it's not your favorite thing to do but it was quite... my brother would pick on me so it was quite a thing to do it too. I had to be able to do what he could do so I would put the worm on .

Another aspect of fishing found to be constraining during childhood was the boredom that many male and female anglers associated with fishing. Many non-anglers reported boredom as the reason why they dropped out of the sport.

INTERVIEWER: Have you fished at any time in your life?

FEMALE INTERVIEWEE (NON-ANGLER)

#6: Yes. When I was younger when my father wanted us all to fish but it just was not something that I took to.

INTERVIEWER: What didn't you like about it?

FEMALE INTERVIEWEE (NON-ANGLER)

#6: ... I had no patience for just sitting there, waiting for something to happen. I just need something... I don't know. I just didn't care for that. That wasn't something that I was interested in.

Boredom was also mentioned by interviewees concerning their own children.

INTERVIEWER: When you go out on a fishing trip, it's your daughter, your girlfriend and you?

MALE INTERVIEWEE #7: Usually it's just me and my girlfriend. Once in a while my daughter comes along when we go for a short day cause she just gets bored so quick and don't want to be out there.

Adolescent constraints. During adolescence, interest in other recreational activities, the lack of a fishing partner, peer pressure (both to fish and not to fish), access to fishing locations, and time

Table 3. — Numbers and percentages of male and females anglers indicating the existence of specific constraints during adolescence.

Constraints	Females		Males		
	Number	Percent	Number	Percent	
Other interests	5	33%	7	33%	
Lack of partner	4	26	2	10	
Peer pressure	3	20	3	14	
Time constraints (work/school)	2	13	2	10	
Access to a fishing location	2	13	2	10	
Weather	0	0%	1	5%	
N	15		21		

Table 4. — Numbers and percentages of male and females anglers indicating the existence of specific constraints during adulthood.

Constraints	Females		Males		
	Number	Percent	Number	Percent	
Time constraints (work)	8	40%	14	67%	
Lack of partner	7	35	2	9	
Birth of Children/Young children	6	30	1	5	
College	5	25	4	19	
Weather	4	20	0	0	
Safety (concerns for children)	3	15	0	0	
Time constraints (family/marital)	2	10	5	24	
Perceptions concerning male-domination of sport	2	10	0	0	
Safety (concerns for self)	2	10	0	0	
Handling boat alone	2	10	0	0	
Other recreational interests	1	5	3	14	
Military	0	0	3	14	
Time constraints (house-related)	1	5	1	5	
Access to a fishing location	1	5	1	5	
Family emergencies	1	5	0	0	
Poor catch rate	1	5	0	0	
Handling bait	1	5	0	0	
Temporary physical problem	0	0%	1	5%	
N	20		21		

constraints influenced the fishing participation of interviewees. Thirty-three percent of both female and male anglers indicated that their interest in recreational activities other than fishing negatively influenced their fishing participation during adolescence (Table 3). In addition, the lack of a fishing partner constrained the participation of 26% of the female anglers interviewed and 10% of the males. Peer pressure acted as a constraint for 20% of female interviewees, but as both a facilitator and constraint to participation for males. While these three constraints (i.e., interest in other recreational activities, lack of a fishing partner, and peer pressure) appeared to strongly influence the fishing participation of both male and female interviewees during adolescence, they had a greater negative impact

on the participation of female interviewees. Because of the low number of females involved in the sport, female interviewees were less likely than the male interviewees to have peers that fished during adolescence. In order to satisfy a need for socializing as a teenager, females often sought activities other than fishing in which their peers were involved.

INTERVIEWER: Did you fish a lot as a teenager?

FEMALE INTERVIEWEE #8: Not really. No.

INTERVIEWER: Why did you not fish?

FEMALE INTERVIEWEE #8: Being more of a teenager...a female...it kind of quieted down because you were busy doing other things and it wasn't always really cool to go with your parents anywhere.

In contrast, many male interviewees indicated that adolescence was generally the time in their life when they fished the most, mainly because of having ample time to fish as well as many friends with whom to fish.

INTERVIEWER: Was there any time when you were a teenager when you stopped fishing or you fished less?

MALE INTERVIEWEE #9: No, actually it probably picked up.

INTERVIEWER: As a teenager, did you fish?

MALE INTERVIEWEE #10: That probably was when I would have done most of my fishing.

However, several male interviewees stated that they did stop fishing late in their teens because of their need for social interaction with their peers or other interests.

MALE INTERVIEWEE #11: Probably from thirteen to sixteen I fished extremely a lot... every weekend. Then as I got more into sports and girls, fishing took the back seat. A fishing date doesn't cut it.

Obligations related to work and school also constrained participation by both 13% of female and 10% of male interviewees as they entered late adolescence (Table 3).

INTERVIEWER: Was there any time when you were a teenager when you stopped fishing?

MALE INTERVIEWEE #12: When I started working.

INTERVIEWER: At what age did you start working?

MALE INTERVIEWEE #12: I've worked since I was nine years old. But I really officially didn't work till I was about fourteen or so. And I stopped for a couple of years cause... girls and money... and you can get the aspects of life quickly. You can't go out with the girls unless you have the cash. Fishing would be my third thing when I was younger. It was work, girls, then fishing.

Access issues also constrained the fishing participation of 13% of the female and 10% of the male interviewees during adolescence (Table 3).

However, many of the interviewees indicated that this constraint was eliminated once they learned how to drive.

Adult constraints. Constraints to fishing development varied during adulthood. In early adulthood (Erikson 1963), a time often characterized by an individual's focus on specific life goals (e.g., marriage and education), participation tended to decrease temporarily. Many male and female interviewees stated that their early twenties was a time of low fishing participation, primarily because of attending college, being in the military, or being a newlywed. The lack of time available for fishing, as well as limited fishing access due to the location of their residence in college or the military, constrained fishing participation during these years.

INTERVIEWER: Has there been any time as an adult when you stopped fishing or fished less?

MALE INTERVIEWEE #13: Sure. During college I fished very infrequently. Probably eighteen to twenty-four I didn't fish much.

In addition, many males indicated that their fishing participation during the early years of their marriage decreased due to increased time constraints. In contrast, several women who did not fish prior to their marriage began fishing during the early years of their marriage because of their spouse's interest in the sport.

As anglers aged, fishing participation for both female and male interviewees was limited by time constraints related to work and family obligations. Sixty-seven percent of males and 40% of females described work as being a constraint (Table 4). Twenty-four percent of males and 10% of females indicated that family obligations limited the time they had available for fishing.

INTERVIEWER: Is there anything today that prevents you from fishing as much as you'd like to...

MALE INTERVIEWEE #14: Work. I'm sure that's the number one answer. Probably, work, because anything else... I make time to go fishin'

In addition, all of the female interviewees who had children, with the exception of one, stated that they had dropped out of fishing for several years following the birth of their children.

INTERVIEWER: Was there any time since you started fishing at age eighteen when you stopped fishing?

FEMALE INTERVIEWEE #15: I fished pretty much straight through... Well, when my

daughter was born, I probably didn't fish for a couple of years. She just didn't enjoy the boat too well, at first. Now we have her fishing.

While many males also stated that family obligations greatly limited their participation, none temporarily dropped out of the sport after the birth of their children. One male interviewee indicated that his participation was greatly limited by the birth of his child.

INTERVIEWER: Has there been any time since you started back fishing when you fished less?

MALE INTERVIEWEE #16: Yes, there was a two-year period where I hardly went and it was last summer and the summer before. And I just kind of gave it up for two reasons. The summer my daughter was born, I just couldn't justify going out there and leaving my wife home with a newborn all the time. So I eased back that summer. Then the following summer I started the business that I currently own so we've been busy building that for a couple of years. So I did ease back in light of those responsibilities.

As the children of anglers aged, participation of male and female anglers frequently increased as the anglers began initiating their children into the sport. However, after their children reached adolescence, the time that was available to both male and female interviewees for fishing was often constrained by the activities of the angler's children.

INTERVIEWER: Do you ever fish by yourself now?

MALE INTERVIEWEE #17: Occasionally. I drop my son off at karate class which takes an hour and it's right on the Salmon River so at times I drop him off and go wet a line... yeh.

For some male and female interviewees, the social nature of their fishing involvement also acted as a constraint. Several female interviewees indicated that the enjoyment they derived from fishing was exclusively based on social interaction, and that they did not fish when they did not have someone with whom to fish. Thirty-five percent of females and 9% of males indicated that the lack of a partner constrained their participation in the sport (Table 4).

INTERVIEWER: Why do you currently fish?

FEMALE INTERVIEWEE #18: My husband likes to fish.

INTERVIEWER: Do you get anything out of it, though, or is it just for companionship?

FEMALE INTERVIEWEE #18: Basically companionship for him. I wouldn't go by myself.

INTERVIEWER: Why wouldn't you?

FEMALE INTERVIEWEE #18: It's just not as much fun, fishin' by yourself. It's fun to go with people...

In addition, several female non-anglers indicated that they no longer fished because they had married a non-fishing male.

INTERVIEWER: Do you have any interest in fishing nowadays?

FEMALE INTERVIEWEE (NON-ANGLER)

#19: I probably would if Tom [husband] was. Because he isn't, I haven't. But like if I'm around it, I'm interested by it. But I'm not around someone all the time that likes to fish...

Two males also indicated a preference for fishing with someone. Unlike the female interviewees above, however, the fishing activity of these anglers did not end completely when fishing partners were not available since the males were willing to fish alone.

INTERVIEWER: Do you ever fish by yourself?

MALE INTERVIEWEE #20: Not too often. I usually go with someone... I usually bring somebody along... I like to share the experience with somebody else. But I have [gone by myself]. I enjoy it enough that I would but t here's just a lot of people that I'm in contact with that appreciate the chance to go out and go fishing, so...

INTERVIEWER: Do you fish by yourself at all anymore?

MALE INTERVIEWEE #21: Yeh, occasionally when I can't get no one to go out with me in my boat so I go out. So occasionally I do fish alone but usually I like to go with someone.

Fishing participation by female interviewees was also constrained by a perceived lack of safety that they associated with fishing. Issues concerning personal safety and the safety of children were raised by 10% and 15% of female interviewees, respectively (Table 4).

FEMALE INTERVIEWEE #22: I'm an overcautious mother when my son goes. He's a hyperactive child and he wears chest waders. And I'm like "Robert, you have to please be

careful. Don't get in a hole. You know what to do if your boots fill up." "Yes, Mother."

INTERVIEWER: Why wouldn't you fish by yourself?

FEMALE INTERVIEWEE #23: Well, I'm really a busy person... and so if I happen to have a moment when I'm not with them, I'm usually working. I'm just at this stage in my life where actually being able to recreate on my own is not usually an option... or at least I don't feel like it is. So that's probably the major reason. But I would say a back one for me... kind of lurking in the background... is just a woman alone in the woods. I'm old enough now that I know that things happen out there. When I was younger it wouldn't have concerned me a bit. So... you know, that would be an issue.

Two female anglers also mentioned their discomfort with handling a boat by themselves. Several female interviewees who grew up fishing on a boat did not identify this constraint.

INTERVIEWER: Why wouldn't you [go fishing by yourself]?

FEMALE INTERVIEWEE #24: It's just not as much fun, fishin' by yourself. It's fun to go with people... and... I don't know if I could handle taking the boat to the lake on my own. He [her husband] does all that.

Female perceptions concerning fishing as a male-dominated sport were also identified as constraining by two female anglers and one non-angler. One female angler discussed how her perceptions concerning fishing as unwelcoming to females changed once she became more involved in the sport.

FEMALE INTERVIEWEE #25: But I've also found... the first few times I went out... I thought this is going to be like when I first started coxswaining in high school. We were operating out of a men's club and the men really didn't like seeing women around, girls [clarifies meaning], and I thought this was going to be like with the fishing. That it was going to be all these guys and you know, "Man, look at her." [Voice takes on insulting tone.] And they're going to be guzzling and... I found that there's only that kind of group in certain circumstances. It's the time when there's the big salmon run, you get kind of macho guys out there. But

generally, people are really supportive and they don't care about gender. And particularly when you've got a child with you. It seems people will do anything... So really, if anything, they just want to be as helpful as possible. So I've found it to be very positive.

Discussion

Both female and male anglers experience constraints to their fishing participation during all stages in their lives. These constraints appear to vary by life stage. For instance, opportunity, especially as it is related to access to a fishing location, appears to be an important constraint during childhood and adolescence, but has little importance during adulthood when individuals usually own a motor vehicle and are able to travel as needed. Dislike of handling bait and boredom were the two important constraints identified by male and female interviewees during childhood. During adolescence and adulthood, the need for social interaction as a component of fishing was important for both males and females. Time available for fishing in general appears also to change greatly with life stage, with individuals having more time to fish during childhood and adolescence than during adulthood when work and family obligations often make leisure time scarce.

Females tended to have more constraints on their fishing involvement throughout the course of their lives than did male interviewees. During childhood, a gender-based lack of encouragement (i.e., gender bias) during childhood caused two female interviewees to drop out of fishing. The fishing participation of female interviewees during adolescence was constrained by their need for social interaction while fishing and a lack of peers that fished. During adulthood, female participation continued to be constrained by the need for social interaction as a component of fishing experiences. Adult females were constrained to a greater extent than males by family obligations during the years immediately following childbirth. In addition, female participation was constrained by perceived safety risks, a factor that did not appear in any of the male interviews. Female perceptions concerning fishing as a male-dominated sport may also discourage females from participating to some extent.

Males were influenced by gender-related constraints as well. Specifically, males who married

non-fishing females were likely to have decreased levels of participation during the early stages of their marriage. Males who were able to successfully initiate their wives into fishing often satisfied their need to both spend time with their spouse and continue fishing. A greater percentage of males than females indicated that their fishing involvement was most constrained by work. Traditional societal perceptions of males as family providers may account for this difference between genders.

Management implications

Many of the constraints to fishing participation identified in this article can be minimized by specific fisheries management, education, and promotional strategies. For example, educating parents, through both seminars and publications, about how to successfully initiate their children into fishing could help alleviate the dislike of handling bait and boredom that many interviewees experienced during childhood. Using artificial lures when a child expresses a dislike of handling live or cut bait, and choosing locations suitable for children such as shoreline areas where catch rates are likely to be high (e.g., panfish ponds) are two strategies that could help prevent these common constraints from causing children to drop out of the sport.

For adolescents, providing social fishing opportunities for both males and females could encourage participation. Weekend fishing events, fishing teams, and teen fishing derbies could maintain participation by individuals during this highly social time of their lives. In addition, incorporating outdoor and fishing skills curricula in schools could help educate teens (especially those with parents who do not fish) about fishing. Teaching fishing skills in a school setting would also increase the number of females who fish, making it easier for females to find peers that fish during adolescence. Adding fishing trips to the activities of existing teen organizations, especially organizations for females, could also provide teens with highly social fishing experiences.

During adulthood, time constraints are frequently experienced by both males and females. Although it difficult to overcome time constraints, it is possible to utilize promotional and educational strategies to encourage fishing participation during leisure time. Specifically, promotions to both males

and females should focus on fishing as a family activity. The interests of female anglers should be carefully considered when placing fishing advertisements, since media used by female anglers will likely differ from those used by males. In addition, sportfishing clinics could be held to expand the fishing skills of adult anglers. Clinics targeted specifically to females interested in learning how to fish are highly recommended, but need to focus on the social interests of females.

Conclusion

Constraints appear to influence the fishing participation of both males and females during all life stages. In addition, female participation throughout life appears to be negatively influenced by a greater number of constraints, partially explaining why female participation in the sport is lower than that of males. In order to reduce fishing-related constraints to both males and females, it is important to understand the highly social nature of fishing and focus strategies designed to increase participation on the social needs of anglers. Eliminating constraints to fishing participation during each life stage is also important since adult participation appears to be closely linked to participation during childhood and adolescence. Finally, understanding how the traditional male-domination of the sport acts as a motivator for male participation and a constraint for female participation is essential to increasing fishing opportunities for females in family, organizational, and school settings.

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Modeling

THE SOCIAL VALUES OF WILDERNESS

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Abstract: The purpose of this paper is to describe the value of federally designated wilderness to Americans using social science measures. Social science in this case refers to non-economic values of wilderness to individuals and communities (and excludes intrinsic values). Specific objectives are to posit 14 specific social values accrued from the NWPS and create a preliminary taxonomy of values. The purpose of creating the taxonomy is to organize and communicate the social value of wilderness to policy makers and the general public (who might not have a substantial understanding of wilderness) in a usable format.

Introduction

The purpose of this paper is to describe the non-economic social value of federally designated wilderness (i.e., those lands placed under the National Wilderness Preservation System (NWPS)) to Americans. Social values include the noneconomic values of wilderness to individuals and communities.

Specifically, we address the human use and non-use values of the NWPS that are noneconomic and nonconsumptive. Wilderness provides social services to the public that are of the same stature as other federally subsidized social services. Services include, but are not limited to, the contributions of wilderness to individual and social well-being such as air and water quality, cultural and historic

preservation, spiritual pleasure, and personal growth. The NWPS provides for the well-being of individual, communities, and the American culture in the same way that the social security program provides for the well-being of older Americans. However, the values that reflect these services have not been embraced or accurately understood.

Previously, the total value of wilderness has been underestimated by failing to consider both the use and non-use values in decision-making (Stevens, Benin, & Larson, 1995). Use values of wilderness comprise direct, indirect, and option values while non-use values are derived from preserving lands in their pristine condition and include existence, bequest, and intrinsic values (Mountford & Kepler, 1999). While there have been attempts to provide economic estimates of these values of wilderness, such as contingent valuation (i.e., willingness to pay) and proxy/ substitution methods, only direct uses can be reduced to wholly economic terms (Rolston, 1985). In order for the NWPS to remain a healthy and viable system into the 21st Century it must be protected by legislation and endorsed by society (Dearden, 1989). A first step in this process is to identify and specify the range of values accruing to Americans of the NWPS.

Currently there seems to be a deficiency in the use of social values in policy and decision making concerning wilderness. Detailed, information rich decision making methods are less often used due to difficulty of collecting the data and unfounded lack of confidence in the results. Decision makers seem to have a staunch confidence in traditional economic measures of value. Traditional value measurements have a direct and strong relationship with wilderness decision-making. The metric of monetary values or other standard value measures associated with attributes such as board-feet (timber) and animal unit months (grazing) are more comfortable for policy makers to understand and justify than nontraditional social measures. History has shown that policy makers feel more comfortable with decisions based on an economic premise than on one that is based on a less tangible foundation such as the spiritual value or existence value of a wilderness.

Traditional measures often assume that the detailed values (represented by the 14 social values posited herein) have been adequately captured using

traditional measures. However, traditional measures often fall short of representing the true value of wilderness due to lack of specificity resulting from indirect measurement. Yet, the relationship to decision-making is direct and strong. A strong and direct relationship also exists between the list of 14 values and the social science measures on the right of the figure. These social values are currently or can be directly addressed in detail by the fields of psychology, sociology, and anthropology. These forms of science are capable of providing more detailed information on issues associated with these values. However, the relationship between these forms of science and decision-making is almost non-existent and the richest sources of information are ignored or left dormant.

Explanation of the Social Values of Wilderness

The purpose of this section is to posit 14 social values of wilderness that have been or should be used to understand, explain, and champion the value of wilderness to humanity. The list is an accumulation of knowledge up to this point. The current exposition of values has been constructed from historical values and an examination of the current state of our value system. The following list is not completely inclusive; an attempt has been made to provide a comprehensive umbrella of social values without allowing the individual values to overlap in definition. However, there is always room for debate over the inclusion or exclusion of individual items. When possible, specific values are supported using past research. Some values have not been researched at this time and are not supported by research examples and those that have been investigated largely reflect scientist intuition and limitations in earlier decades of methodology. The list of values is intended to provide a springboard for future research in the rubric of wilderness value.

The social values listed are organized into four domains (self-centered, societal, human, and vehicles for acquiring values). Each domain consists of a group of values that have similar content. These groupings serve as a preliminary taxonomy of social values. Each set of definitions in the domains is preceded by a brief introduction describing the group of values. Rolston (1985) discusses the following seven, of the 14, values listed below: character building, therapeutic, spiritual, historical/cultural, esthetic, and

recreation. The descriptions below expand on Rolston's work and provide additional value topics, insight, and organization.

Self-Centered Values

Values that result in direct benefit to the individual are considered self-centered. Each of the values in this domain provides self-improvement qualities to the wilderness user. People who have relationships with the individuals experiencing self-centered values may also realize indirect benefits. This domain deals specifically with the assertion that wilderness has therapeutic qualities and that people can experience a positive and meaningful change as a result of spending time in wilderness.

Scherl (1989) asserts that an individual gains self-control by participating in wilderness based activities. The wilderness environment cannot be easily changed; attention must be shifted inward when seeking a means of maintaining a balanced person-environment relationship. As a result the individual must find a way to align him or herself with the environment in order to cope with situations. Many wilderness education programs depend on the trying conditions experienced in wilderness to promote personal growth. Experiencing an optimal stress level from matching personal skill level with fear, physical challenge, or emotional challenge is believed to promote personal growth by challenging the individual and allowing successful problem solving skills to be exercised. Coping with wilderness situations prepares the individual to remove previous psychological barriers that are reinforced in urban environments and prepare for confronting the unfamiliar and unexpected (Scherl, 1989). People become more aware of their capabilities and resources after exerting them in wilderness. The awareness that one can identify, confront, and successfully cope with challenging situations provides increased self-confidence, which influences all parts of life.

Wilderness provides a context for individuals to develop a sense of self-identity, self-reliance, and to shun social pressures. Pohl and Borrie (2000) posit that wilderness is a place "where women may go directly against the grain of what they have essentially been socialized to be" (p. 416). Gender roles are less inhibiting to women in wilderness, particularly on all women experiences. Women

identified four transferable outcomes from all-women wilderness experiences (Pohl & Borrie, 2000). First, self-sufficiency, the ability to rely on personal resources, is developed in a wilderness context. Self reliance helped assign self-worth, create a positive sense of self, and reduce socially imposed limitations. Second was a change in perspective, which is a shift in point of view in understanding and judging things. Noted third was a more meaningful connection with others. Relationships were more comfortable, centered on bonding and healing problems, and the ability to speak freely with improved communication skills. Finally, wilderness experiences lead to increased mental clarity, mental awareness and being more mindful of others. Overall, wilderness experiences promote greater freedom of thinking and improved mental health. The value of wilderness for character building, therapeutic purposes, personal well being, and self-enlightenment are further defined below.

Character Building

This value is the foundation for groups such as the Boy Scouts, National Outdoor Leadership School (NOLS), and Outward Bound. Humans have the opportunity to push themselves, learn about the environment, practice teamwork, hone skills, improve physical condition, and balance success and failure. The individual has the opportunity to spend time developing a sense of personal value. Character building is usually gained through the vehicle of a recreational activity. Calculated events, such as a solo backpacking trip, a skill-challenge match on a rock climb, or unexpected events, such as an electrical storm or avalanche, produce a person-environment relationship that is appraised as a challenge, which must be confronted and overcome. The positive outcome of successfully coping with the challenge is improved and strengthened character. However, not all character building wilderness experiences must be physically and emotionally challenging. The sublime nature of wilderness also has the ability to promote self-centered values. A sublime wilderness setting allows opportunities for self-reflection or to engage in character building activities that require concentration (such as painting, meditating, or photography).

Therapeutic

This is the basis for wilderness therapeutic

recreation programs. Again, the sublime nature of wilderness provides a therapeutic setting for recovery from traumatic events (e.g. sexual assault, loss of loved ones, divorce) or those suffering other afflictions (e.g. depression, mental illness). The pressures of society are removed and social situations are reduced to simpler terms in a wilderness setting. Problems caused by complicated and confusing daily life are expunged in wilderness. Daily routines in wilderness are simplified and primary survival activities have greater meaning (for example, gathering fire wood, boiling water to drink, or hiking to the next camp site). One has the time to “get back to basics” and heal by focusing on goal-oriented activities in the grandeur of a wilderness setting.

Personal well-being

Wilderness is considered a restorative environment (Kaplan & Kaplan, 1982), a place to get away to, or escape the pressures of the “daily grind”. In this case, the value of wilderness is to allow the individual to recover from the pressures exerted in un-natural environments (urban and social settings) and return with a greater sense of well-being. This value is a reflection of basic models that posit that time away is necessary to recover from weekday pressures and the worker will return more productive and ready to face the week after a weekend or vacation. It is also associated with other values pertaining to psychological health. For example, the amateur photographer may have increased self-efficacy after producing a pleasing image. This can be separated from character building in that one can have very strong character and poor psychological health. Therapeutic value is different in that it is more akin to a prescription from a doctor in response to an ailment; using wilderness to promote well-being is more psychological maintenance.

Self-Enlightenment

This is a higher order value (higher order is used with caution as this is not a hierarchy). This value represents the importance of entering wilderness with the intention of achieving a higher level of consciousness or to improve oneself in a metaphysical sense. Self-enlightenment differs from spiritual value. As a spiritual value, nature takes the role of representing God or a spiritual higher power; thus, there is a master-servant relationship with the human taking the role of

servant. The focus of the experience is on the individual person in a self-enlightening value. A person can use wilderness a respite from stress to address difficult questions or seek solace. Wilderness has value as a non-judgmental environment that naturally allows the best qualities in a person to surface. A person is free from the confines of urban life to achieve higher levels of consciousness in wilderness settings.

Societal Values

Values in this domain illustrate how wilderness contributes to America as a social entity. Wilderness is a vital component of the social fabric that displays the character of American citizens and culture. Wilderness is valuable as a means of producing productive, contributing, and well-adjusted citizens. Historically, these values extend beyond the first Euro-Americans setting foot on the continent and include wilderness values of indigenous populations to North America. Values that are realized by present-day society and are integral to the continued existence of a traditional American Culture are represented. Wilderness has value as a contributor to basic social institutions such as the education system, religion, family, and the American workforce.

Americans of all backgrounds can benefit from wilderness in the form of an increased understanding of community within close relations and society as a whole. On this topic, research has shown the value of wilderness experiences to the welfare of disadvantaged youth. Disadvantaged youth who have participated in wilderness backpacking programs, designed with an educational prerogative to promote citizenship and job retention, have identified the following values (Russell, Hendee, & Cooke, 1998). Wilderness experiences develop a positive self-image and strengthen friendships in youth. Group experiences in wilderness promote a sense of community, foster an effort to achieve communal goals, and teach respect for other members of the community. Wilderness experiences reduce inhibitions in communication with peers and promote effective communication with authority figures. Relief from daily stresses found in the wilderness allows citizens to return to work and family life refreshed and renewed. Russell, Hendee, and Cooke (1998), found that disadvantaged-youth hired by the Federal Job Corps were more likely to retain their

jobs if they participated in a wilderness based education program. Specifically, a 36% reduction in termination rates was found for those who did participate in the program when compared to those who did not participate.

The values of positive self-image, community, respect for peers, respect for authority, goal setting and achievement, and positive family relations are fostered through wilderness experiences and that these values are vital to America as a nation. In addition, any individual who seeks-regardless of advantage or disadvantaged position in society-can realize these values. The societal values promoted through wilderness that we hold dear today are the same values displayed throughout history. History is rife with examples of men and women challenging themselves in the wilderness, with personal goals and communal goals, then emerging from the experience a better person and producing benefit to the Nation. The values learned and displayed on a wilderness outing today are the same as values displayed by pioneers such as Lewis and Clark when confronting the American wilderness in 1803 or Sir Edmund Hillary and Tenzing Norgay the first men to summit Mount Everest in 1953. The social values of wilderness endure the test of time and still contribute to cultural development. Americans have assimilated many of these people and deeds into its history and national character. Wilderness has created the American heritage, history, and a national identity. This sense of American identity founded in wilderness provides a sense of future projects and possibilities (Hammond, 1985).

Educational

Wilderness is a warehouse of educational resources. Subjects such as geology, botany, zoology, and entomology rely upon untrammelled wilderness to produce the necessary elements for their continued existence. These subjects are best displayed through examples in nature. Flora, fauna, wildlife, and physical conditions are represented in wilderness that cannot survive elsewhere. Teachers and researchers from the elementary to graduate levels depend on wilderness for educational subject matter. Wilderness has value as a research laboratory and in taking students out of the building and using wilderness as a classroom or using wilderness as a tool in the classroom. In addition, it has become apparent that learning

styles differ as we discover more about human learning ability. Often students are more adept to learning certain subjects in informal settings opposed to formal. Wilderness can compliment the formal classroom or in other cases wilderness is the best possible classroom. Educational value provides the base for institutions such as the Teton Science School, curriculums such as 'semester at sea' or life education programs such as Peace Corp.

Spiritual

The word wilderness appears 245 times in the Old Testament and 35 times in the New (Nash, 1982). Wilderness was a cursed land and associated with a forbidding character as defined in the Old and New Testament. The God of the Old Testament used the wilderness as a punishment for the unfaithful (Nash, 1982). However, current society is beyond such interpretations. A more palatable interpretation of the human relationship with wilderness in a religious/spiritual sense is represented by John Muir's attitude toward nature. Muir saw wilderness as a place of worship that was created by the hand of God. Damming of the Hetch Hetchy Valley in the wilderness of Yosemite surfaces Muir's pious attitude toward the spirituality of nature. "Dam Hetch Hetchy! As well dam for water tanks the people's cathedrals and churches, for no holier temple has ever been consecrated by the heart of man" (Muir, 1912). Wilderness stands "as a symbol of qualities beyond the structure of routine life. It competes with no religion; rather it suggests a new religion, the revelation of which is comprehension of the vast cosmos and the ultimate purpose and validity of life" (Adams, 1961, p. 53). Mountain peaks, the grace of grizzly bear fishing for salmon, and the calm or turbidity of the ocean foster a spiritual connection with larger powers. The beauty, grandeur, and mystery of wilderness inspire a reverence for a higher power responsible for its creation. Wilderness provides a church for those who do not pray indoors or with a liturgy. Three major types of spiritual groups help describe these values: Native American Indians, the wilderness enthusiast who "connects" with nature, and New Age type religions.

Family & Social

Family and fraternal bonds are created using the vehicle of wilderness based leisure outings. This is represented by adages such as "the family that plays

together stays together." Participating in wilderness-leisure activity allows family members to develop and express primary relationships (Mannell & Kleiber, 1997). Mannell and Kleiber discuss three values of this type of family interaction. The first realized value is family stability, seen as continuity of relationships and a reduction in the probability of separation and divorce. Interactions and communication among family members improve, fewer conflicts occur and those that do occur are easier to resolve, and there is a more equitable distribution of household tasks and family roles. Third, family wilderness-leisure outings promote both family and marital satisfaction. "Husbands and wives who share leisure time together in joint activities tend to be much more satisfied with their marriages than those who do not" (p.320). Family wilderness trips such as hiking or camping proffer opportunities to create positive role models and fortify family bonds that result in lasting family units and positive morale. Friendships are created and enhanced through wilderness-leisure social organizations such as the local hunting, fishing, hiking and mountain bike clubs. Wilderness provides a context to engage in controlled social interaction while experiencing benefits from other values. Thus, social bonds are strengthened while participating in wilderness activities with others. For example, sharing a religious or enlightening experience with another person fosters strong relationships resulting in positive social functioning.

Citizenship

The seemingly innocent protests of the 1960's are over. Citizens have moved to new methods of enacting social reforms in addition to protests. Wilderness has generated a following that is willing to take civil action when necessary. Increased citizenship is shown through the number of letters written to political representatives, organizations joined, special interest magazine subscriptions, monetary donations, and protests. A significant population has been motivated to take part in the governmental process as a result of the wilderness cause (for and against the cause). The value of citizenship is in the fact that regular citizens who might otherwise have been politically dormant have been called to duty to do their part for the good of society. A sense of responsibility for both environmental and social community has been created by wilderness.

Historical & Cultural

Wilderness is a watershed of cultural and natural history. The development of American heritage is intricately linked to wilderness and nature (pioneers, cowboys, pilgrims...). History is a combination of reality and romanticism. Thanksgiving cannot be celebrated without the romantic vision of pilgrims living on the edge of a wild and undiscovered continent. Wilderness provides a living memory of American heritage (e.g. the wild west, Louis and Clark, Buffalo Bill Cody, and Seward's Icebox). It also provides living evidence of how things were for most of recorded and unrecorded time (before human presence). Losing wilderness results in the loss of a tangible, real, and accurate example of American history. Once lost that example can never be recovered. Nash (1982) provides an excellent description of how wilderness has shaped American and other cultures; the details of such a discussion are limited here.

The definition offered here is concerned with the value of wilderness to American culture in the present day. Our culture has changed from one that fears wilderness to one that actively engages wilderness, even taunts wilderness, using hi-tech equipment (e.g. Gore-Tex and synthetic insulators). The phenomenon of wilderness activities reshaping culture is represented by the popularity of eco-races, extreme sports, and the ease of introduction to once elite activities such as climbing Denali in Alaska or Mount Rainier in Washington. Debates concerning the commercialization of wilderness experiences and the modification of historical methods of interacting with nature illustrates that Americans are rooted in traditional wilderness experiences and traditional methods of wilderness recreation have great value. In addition, many basic cultural traditions that shape our society and are of high value endure; for example, a family camping trip, a summer vacation to a National Forest or National Park, or weekends at the family cabin. The act of a parent teaching a child to fish or how to make a campfire is still a culturally rich experience. Using wilderness as a means to pass cultural and family traditions between generations must endure. In addition, other cultural values of society are conveyed by use of wilderness and attitude toward wilderness management. For example, consider the diverse cultural values represented by the interest groups involved in the debate over snowmobile use in Yellowstone. Thus,

wilderness develops the character of American culture and wilderness acts as an agent to socialize people into American culture.

Human Values

Some wilderness values transcend American culture and are valuable to humanity as a whole. This domain addresses such values in a global and cultural light. Wilderness has value simply because it is esthetically pleasing to the eye, it has value as a source of art that motivates humans to greater purposes. Wilderness also helps humans understand the world they live in. Art has played a role in the preservation of wilderness since the early 1800s. Fear of complete destruction of wilderness by "ravages of the axe" beckoned Thomas Cole. In 1836 Cole saw the destruction of the remaining North American wilderness as eminent. To awaken the American public and cease the destruction of wilderness over a century ago, he wrote "we are still in Eden; the wall that shuts us out of the garden is our own ignorance" (Cole, 1836). The photographs of William Henry Jackson were shown to the United States Congress during the debate to designate Yellowstone as a National Park. Photographer Ansel Adams served on the Sierra Club board for 37 years. He met with former Secretary of the Interior Harold L. Ickes and used photography to advocate the designation of Kings Canyon National Park. Adams was invited to the White House by former president Gerald Ford and had an opportunity to use his art to persuade the President concerning the wilderness cause. He also spoke with former president Jimmy Carter and congress on the issue of the Alaska National Interest Lands Conservation Act.

Artistic representations of wilderness are an internal event. Reducing the grandeur of nature to attributes and descriptions often produces lacking results. Artistic representations of wilderness embody esthetic values and are a manifestation of our understanding of the world around us (epistemology). They conjure spiritual, emotional insights while communicating deeper meaning and understanding of experience. "The artist's function is not to produce mere pretty pictures and continue the euphoria which tame men so often develop in the presence of wild nature, but to stir the deepest concern about our hazardous tenure on this planet" (Adams, 1961, p. 58). As a Nation and a global community, esthetic and artistic values are

formed that influence the way the world is understood. Not only are these esthetic, artistic, and epistemological values represented in wilderness, but wilderness has also shaped these values.

Esthetic

Esthetic value is when nature is pleasing to the eye; for example: an eagle soaring, patterns on a sand dune, a murky swamp, the setting sun, shapes in irregular glacial till, or the prowess of a cheetah. Many of these visually pleasing elements are dependent on wilderness. This includes the feelings that one gets from interacting with the environment. For example an esthetically pleasing feeling might result from standing on the edge of the Grand Canyon, summing a difficult peak, braving a violent electrical storm, or watching clouds while lying in a pasture. These are experiences that cannot occur in a non-wilderness context. Beauty is in the eye of the beholder and is the result of intimate contact with the environment. Wilderness provides innocent and pure pleasing images and feelings enjoyed by humans. The aesthetics of wilderness are long lasting and provide stability for people forced to cope with an unstable world. One can rely on the consistency of the beauty of wilderness across generations. The esthetic value of wilderness will be weakened if wilderness is allowed to deteriorate.

Artistic

Thomas Cole and the Hudson River School used the medium of oil painting and artistic impression to birth the modern environmental movement we are part of today. Ansel Adams has extolled the artistic value of wilderness through photography. Artistic value is differentiated from esthetic in that esthetic value is dependent on direct contact with the resource. The artistic value is dependent on an image that is an abstraction of reality. There are multiple layers of abstraction that may modify the reality of the wilderness. This may add or detract value (add a romantic history or portray an environment inhospitable to humans). Artistic value can be illustrated by the depth and beauty of a black and white photograph of Half Dome that is hung in your home. Photographs and paintings of wilderness have a definite market value. However, the true value is only realized in the meaning that the image conveys to the viewer. The artistic value of nature is used to communicate or

accentuate other anthropocentric values. As seen when an image of Mt. Baker in Washington State represents a cherished moment during a father and son climbing trip.

Artistic value is not only individual, cultural consensus exists for the value of some images. Art may also deliver a message more powerful than words. For example, an anti-pollution advertising campaign in the 1970's used a powerful image of a Native American Indian crying with a polluted Manhattan Island in the background. The Wilderness Society has used Ansel Adams' photographs of varied wilderness scenes in appeals to members. The power of wilderness to convey a message is also portrayed by the silhouette of Half Dome that has been trademarked by the National Park Service to represent Yosemite National Park. The allure of wilderness is also used in advertisements for commercial products. Wilderness is used to sell products to Americans on the premise that the product will bring the individual closer to wilderness or that the product represents the wilderness ideal or way of life. Ironically, wilderness preservation rarely profits from the sale of these products and many products are damaging to wilderness. The value or power of wilderness as a consumer attraction is not clearly defined. Additional guidelines are needed to protect wilderness from exploitation by marketing and wilderness preservation should be compensated for the value added to products by wilderness.

Epistemological

Epistemology is a way of understanding the world or the science of seeking the origin of knowledge. Human understanding of the world and knowledge base has been historically related to nature and wilderness. Thus, our current understanding of the world is dependent on the historical value of nature. Humans use natural processes as a reference group or point for evaluation of unnatural products and phenomena. For example, the tinsel strength of a single strand of spider web might be compared to a nylon strand of the same diameter to evaluate the petroleum-based product against the perfect natural product. Humans are yet to replicate a perfect circle with any material and nature is capable of producing them day after day. The scarcity of Wilderness is causing two additional influences on epistemology. First, as the Wilderness movement gains

momentum the epistemology created through Wilderness is also gaining significance. Second, epistemology is not static; it evolves with culture and society. As more Wilderness is lost to development (it becomes more scarce) our epistemology changes and diverges from one based on natural processes to one based on unnatural modifications of natural resources that are internalized by culture. Thus, wilderness has value in the ability to provide an accurate understanding of the world we live in.

Vehicles for Acquiring Values

Vehicles are simply mechanisms that people use to realize the previously discussed social values. Recreation is specifically noted above as a vehicle for realizing character building, therapeutic, personal well-being, self-enlightenment, family & social, historical & cultural, and artistic values. Research provides information necessary to competently manage wilderness and can improve quality of life outside of wilderness. Recreation and research are valuable in themselves and as conduits to receive benefits associated with other wilderness values.

Recreation & Leisure

Recreation is a vehicle for, or provides the context in which, humans acquire other values of wilderness. For example recreation may be the primary component of a therapeutic wilderness curriculum but, the participant may not perceive the activities as recreation, or an amateur photographer may represent an artistic value while capturing images of mountains on film. Thus, the true anthropocentric value of recreation is not in the activity, it is in the vehicle that allows one to acquire additional values. Stated differently, the leisure experience (regardless of recreational activity) provides value. Recreation managers often use the Recreation Opportunity Spectrum (ROS) to describe resources as existing along a continuum ranging from the most developed urban recreation environments (e.g. RV parks) to the most primitive wilderness (Driver, Brown, Stankey, & Gregorie, 1987). Wilderness has value as the primitive anchor along the ROS continuum (Manning, 1989). Wilderness is necessary as an anchor and standard by which other natural resources are compared. Allowing wilderness to degrade or be modified will reduce the breadth of the ROS continuum and result in the loss of primitive recreation opportunities.

Research

Manning (1989) stated, "I have concluded that the greatest value of wilderness for social research is as a laboratory to study man's relationship to nature" (p. 120). By definition the NWPS provides excellent opportunities for primitive and unconfined forms of recreation (1964). In an unconfined environment people are more likely to relax and allow their true emotions and relationship with nature to surface. In addition, wilderness environments provide a more controlled and comfortable social setting. People are more comfortable and social interactions feel less stressful in controlled social situations that occur in wilderness (Kaplan & Kaplan, 1982). Behavioral scientists have an opportunity to investigate human behavior in a setting that is free of social inhibitions. Wilderness can also be a very stressful setting. Wilderness recreationists may seek stress in activities such as mountain climbing or a wilderness may be rather stressful if the environment is alien to the individual. Thus, researchers have an opportunity to understand human response to stress (Schuster, 2000). Wilderness is often considered the antithesis of the urban world. In this case, the value of wilderness to reduce the affects of stress from everyday life can be investigated (Iwasaki & Mannell, 2000). Wilderness is ripe with opportunities for social research, provided basic safeguards are taken to preserve the spirit and character of the wilderness experience. There is great potential for wilderness to teach humanity secrets of successful coexistence with each other and nature. Finally, the most appropriate source of information to guide wilderness policy is information from research conducted within wilderness. However, wilderness is underutilized as a research laboratory despite the myriad of possibilities (Manning, 1989).

Closing Statement

Only when social values are completely imbedded in the decision-making process, and maintain equal stature with other values, will decisions be informed and American citizens realize the true value of wilderness. The present decision making system tends to underrepresent the widespread, diffuse social values and overestimate the concentrated economic values (Rolston, 1985). Without the use of social values it is unclear if present actions truly represent the needs of society today and generations to come. Diverse

populations of citizen's benefit from the wilderness values discussed herein. Concentrating social values as a single unit to be discussed in policy negotiations is complicated by the variety of values derived from diverse populations. However, the diversity must be embraced. America is a melting-pot of cultures, which translates to a melting-pot of wilderness users. It is a constitutional right of all Americans to have their values represented by public policy concerning public land and to have an opportunity to realize desired values on public land. Thus, policy-makers who neglect social values of wilderness are also neglecting their duty and obligation to the public. The application of social values is a difficult task. This paper is not expected to single-handedly modify the belief systems of researchers, policy-makers, and citizens socialized to comfortably rely on tangible and economic measures for rationalizing behaviors. Consistent collective action across time must be directed toward: defining and quantifying social values, the ability to accurately communicate the importance and relative strength of values, and identifying and informing agents capable of influencing wilderness management. The process of applying social values is a political, academic, and civic process.

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SEGMENTING OF EMPIRICAL ESTIMATES OF CHOICE MODELS

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Abstract: Managers are often interested in determining how different types of people will respond to alternate management strategies. Preferences for multiple-objective strategies can be estimated using choice models. Respondents can then be segmented according to their preference structures by techniques such as discriminant analysis, cluster analysis, and subsampling. The most appropriate technique depends on the needs of the analyst or manager and the sample design used. Limitations resulting from the initial sample design of choice experiments are discussed.

Introduction

Choice modeling has become a popular tool for estimating and understanding values and preferences associated with decisions concerning natural resources. Managers and society must consider diverse objectives such as timber harvesting, various types of outdoor recreation, wildlife habitats, aesthetics, and ecological concerns. Decisions are increasingly complex as the number of objectives and concerns multiply. Since most of these goods are not traded in markets, their relative values can be difficult to ascertain. The situation is further complicated by the use of different units of measure and the fact that values and relative weighting for many goods and benefits are context specific with respect to time, location, and sociopolitical factors. Choice models offer a means of estimating relative values.

Managers also may be interested in determining how different types of people will respond to alternate management strategies. It may be important to know whether a chosen strategy represents a consensus among stakeholders or a mid-point between polar views. Various segmenting techniques are available to identify different viewpoints and values, though their availability may be limited by the initial sample design.

Choice Models

There are many variations of choice models. Generally, revealed preference models rely on preferences and relative values that have been “revealed” during past behaviors. Stated preference models rely on data obtained through surveys of respondent choices that they “state” are their preferences. Frequently stated choice surveys solicit responses to hypothetical depictions of scenarios or management alternatives.

Conjoint analysis, a term used by marketing researchers, refers to analysis of data obtained from surveys in which respondents choose between alternative products or scenarios that display varying levels of selected attributes (Green et al. 1988). The choices involve alternatives that include different levels for each of a group of attributes. Thus, the respondent indicates his or her preference or value for an attribute level within the context of (or “conjointly” with) all other attributes or objectives. The utility of each attribute can be inferred from the respondent’s overall evaluations. These partial utilities or “partworths” indicate the relative importance of each attribute’s contribution to overall preference or utility. They can be combined to estimate relative preferences for any combination of attribute levels.

Conjoint techniques are well suited for soliciting and analyzing preferences in environmental decisions that frequently entail tradeoffs between costs and benefits that are not represented efficiently in market transactions. For example, Opaluch et al. (1993) described an approach that used paired comparisons to rank potential noxious facility sites in terms of social impacts. Dennis (1998) used a conjoint ranking survey to solicit public preferences for various levels of timber harvesting, wildlife habitats, hiking trails, snowmobile use, and off-road-vehicle (ORV) access on the Green Mountain National Forest, and Lawson and Manning (2002) used a stated (dichotomous) choice model to analyze tradeoffs among social, resource, and management attributes of the Denali wilderness experience.

Choice experiments can be designed and analyzed in many ways. Respondents may be asked to indicate their preferences by choosing one of two or more options, ranking several options, or

Table 1. — Logistic regression model (n=1811) comparing likelihood of beach use and non-beach use based upon the influence of demographics and activity preferences.

Variable	Odds Ratio	Std. Err.	z	p> z	95% Conf. Interval	
Age 18-29	1.451179	.2704393	1.998	0.046 *	1.007146	2.090978
Age 30-39	.865539	.1528429	-0.818	0.414	.6123157	1.223482
Age Missing	.499970	.1443317	-2.401	0.016	.2839346	.8803784
Age 50-64	.426565	.0813603	-4.467	0.000 *	.2935168	.6199235
Age 65 +	.396793	.1117294	-3.283	0.001 *	.228498	.6890431
Non-white	.648328	.0846806	-3.318	0.001 *	.5018988	.8374783
Race Missing	.553262	.2009314	-1.630	0.103	.2715158	1.127371
Female	.865311	.1048385	-1.194	0.232	.6824062	1.097239
< High School	.619171	.118886	-2.497	0.013 *	.4249845	.9020874
College Grad	1.222347	.1596248	1.537	0.124	.9463182	1.578890
Disabled	.598790	.1127542	-2.723	0.006 *	.4139904	.8660815
Dis Missing	.692636	.9462508	-0.269	0.788	.0476024	10.07816
Coastal	2.017702	.2751331	5.148	0.000 *	1.544498	2.635885
Part-time	1.363170	.2653801	1.591	0.112	.9307636	1.996461
Retired	.6972371	.1734442	-1.450	0.147	.4281897	1.135337
Unemployed	.8232953	.1365774	-1.172	0.241	.5947697	1.139626
Work Missing	.6898237	.3655598	-0.701	0.483	.2441513	1.949024
Non-Beach	1.2335700	.1596492	1.622	0.105	.9571958	1.589742
Beach Missing	.0456670	.0111792	-12.608	0.000	.0282638	.073786
<\$50K	.9197644	.1436666	-0.535	0.592	.6772039	1.249205
> \$100K	1.5393100	.4122901	1.610	0.107	.9106253	2.602032
\$ Missing	.8129619	.1368678	-1.230	0.219	.5844731	1.130774

* Significant at alpha .05

assigning numerical ratings to each option. Numerical ratings provide the most information but also place the greatest cognitive demands on respondents. Green (1974), Green and Srinivasan (1978), Louviere and Woodworth (1983), and Louviere (1988) provide information on experimental design in the context of conjoint analysis.

A random utility model generally is used to explain preferences in choice modeling. When presented with a set of alternatives, individuals are assumed to make choices that maximize their utility or satisfaction. The utility that the *i*th individual derives from the *j*th alternative (U_{ij}) can be represented as:

$$U_{ij} = X'_{ij}\beta + e_{ij} \quad (1)$$

where X_{ij} is a vector of variables, which may include transformations of variables, that represent values for each of the five attributes of the *j*th alternative to the *i*th individual; β is a vector of unknown parameters; and e_{ij} is a random disturbance, which may reflect unobserved attributes of the alternatives, random choice

behavior, or measurement error. A respondent's utility level (U_{ij}) for each alternative is not observed, but a rating (r_j) or other choice representation is observed that is assumed to proxy for his or her underlying utility.

Following McKenzie (1990, 1993) and others, the analytical capabilities of the conjoint rating model can be illustrated by assuming that rating (r_j) can be modeled as a linear combination of the variables representing the attribute levels. Quadratic terms can be included to examine nonlinear relationships among the variables (increasing or decreasing marginal returns); they are not included here to simplify interpretation.

$$r_j = a + b_1x_{1j} + b_2x_{2j} + \dots + b_nx_{nj} \quad (2)$$

The estimated partial utilities are the linear effects (b_n 's) of a discrete change in the level of the associated attribute on overall preference (n references attributes). Relative overall preference for any alternative (combination of attribute levels) can be determined by summing across Equation 2. The marginal rate of substitution (MRS) is the rate at which an individual is willing to trade one good

for another while remaining equally well off (Nicholson 1978). The MRS or acceptable tradeoff of one attribute for another is determined by the ratio of the marginal responses. Setting the total differential of (2) to the point of indifference and solving yields the marginal rates of substitution or the acceptable tradeoffs for the respective attributes:

$$dr_j = b_1 dx_{1j} + b_2 dx_{2j} + \dots + b_n dx_{nj} = 0 \quad (3)$$

$$dx_{1j} / dx_{2j} = - b_2 / b_1$$

Conjoint models may be estimated in a number of ways depending on the experimental design and desires of the analyst or manager. McKelvey and Zavoina (1975) developed a polychotomous probit model to analyze ordinal level dependent variables such as those obtained in a ranking survey. Logit techniques also are available. Although not theoretically correct, some statistical packages (e.g., SPSS) use an ordinary least-squares procedure for estimating parameters of conjoint models. The belief is that this relatively simple technique provides estimates that are useful to field managers. Although estimates differed slightly, all substantive conclusions remained similar when I compared an ordinary least-squares approach with the ordered probit technique developed by McKelvey and Zavoina (1975) using data collected during the public involvement phase of a National Forest planning effort (Dennis 1998).

Survey Design

An important consideration in designing conjoint surveys is determining the number of attributes and possible levels that comprise an alternative. The needs of the decisionmaker, cognitive burden on respondents, and survey medium must be considered. Optimally, an orthogonal survey design can be used. An orthogonal plan allows estimation of all main-effects components over the entire range of attribute combinations with the least number of trials. Thus, the analyst obtains high leverage between the options actually evaluated by respondents and those that can be analyzed after the evaluation. Dennis (1998) used an orthogonal plan that required individuals to rank 18 alternate National Forest management scenarios during public involvement sessions. Each alternative was depicted by one of three levels for

five attributes (timber harvesting, wildlife habitats, hiking trails, snowmobile trails, and off-road-vehicle access). An orthogonal design also allows estimation of partial utilities or a preference structure for each respondent. These individual estimates can then be used to segment or stratify respondents according to their preferences.

A full orthogonal design may not be practical if it stretches the cognitive ability of the respondents. If there are numerous attributes or levels, a full orthogonal design may require too many scenarios for respondents to choose among. Also, it may not be practical to ask respondents to choose among many scenarios in a mail survey or if time is limited. Dennis et al. (2000) and Stevens et al. (2000) used mail surveys to elicit conjoint responses with respect to multiple-objective ecosystem management on private forests. In each case, respondents were asked to rank five scenarios.

Segmenting Respondents by Preferences

Just as a company does not want to design or market a product in a way that pleases an average but possibly nonexistent consumer, resource managers need to understand how their decisions will be perceived by different groups of stakeholders so that they can target information and design programs effectively. In some instances, it may be important for managers to know whether a proposed management alternative represents a consensus among groups of stakeholders or a midpoint between polarized subgroups. At which points are they polarized and are there similarities in values that might achieve a compromise?

Partial utilities can be estimated for each respondent with an orthogonal survey design. Cluster analysis, a multivariate procedure for detecting groupings within a data set, can be used to explore preference or value differences among subgroups of the respondents. The clustering variables are the estimated conjoint coefficients (partial utilities). Respondents with similar preference structures are identified and clustered together. Discriminant and other analytical techniques can then be used to characterize the respondents in each segment (cluster) by differences in demographic profiles, attitudes, or other available information. These techniques were used to identify and characterize two groups of respondents with different

preferences toward attributes of a previously mentioned National Forest planning effort¹. An alternate plan is to divide the sample into groups based on demographics or other available data, estimate separate models for each subgroup, and compare the results. This strategy may require a larger sample size but is particularly useful if an orthogonal survey design is not practical.

Summary

Choice modeling techniques are flexible and can be used in a variety of situations to solicit and estimate preferences and values in multiple-objective environmental decisions. The estimated partial utilities indicate the relative contribution of a particular attribute and level to overall satisfaction with an alternative. The desirability of any possible alternative can be obtained by summing the partial utilities. The MRS or acceptable tradeoff between one attribute and another also can be determined. Segmenting techniques can be used to identify and understand differences in respondent preferences.

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¹ Market segmentation strategy for assessing public preferences in multi-attribute decisions. In preparation.

A PREDICTIVE MODEL OF RECREATIONAL BEACH USE IN SOUTHERN CALIFORNIA

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Abstract: California's beach areas are a vital recreation resource for millions of Americans. A recent study by the National Oceanic and Atmospheric Administration (Leeworthy & Wiley, 2002) estimates that 12.5 million people visit these areas every year, accounting for over 151 million visitor days in the process. Only the State of Florida has a higher rate of visitation. Despite the popularity of California's beaches, very little information exists regarding the nature of beach use within the state. The purpose of this study was to develop profiles of beach users and non-beach users within southern California, and to develop a predictive model that demonstrates how demographics and activity preferences affect participation and non-participation at southern California beaches. Data were gathered in the spring of 2000 through a random telephone survey of 1,846 residents of Orange, Los Angeles, Riverside, and San Bernardino counties. The findings show that 1) there are significant differences in user status based upon age, ethnicity, level of education, county of residence, and presence of a disability; 2) that participants are most likely to be young coastal residents, and that a lack of education, increasing age, minority status, and presence of a disability are all likely to lead to non-participation. Activity preferences were not significant. The results of this study provide valuable baseline data for the managers of southern California's beaches, as well as researchers who are interested in modeling participation patterns.

Introduction

The California coast stretches 1,100 miles from the Oregon border to Mexico. Each year an estimated 566 million people visit this region, contributing over 27 billion dollars to the California economy in the process. This spending accounted for nearly

three percent of state's economy in 1995 and created over 500,000 jobs (King & Potepan, 1997). A recent National Oceanic and Atmospheric Administration Study (Leeworthy & Wiley, 2002) found California to be the second most popular destination for marine recreation in the United States. With an estimated annual participation rate of 17.7 million participants per year, California recorded nearly three times as many participants as did South Carolina, the third ranked state. Only Florida had a higher level of participation.

Beach use is an important component of marine recreation. Leeworthy and Wiley (2002) estimated that 61.9 million people visited a beach area in 1999. Due to the fact that some individuals participated on multiple occasions, the estimated number of visitor days was 853 million. California ranked second in terms of beach users per year (12.6 million) and the number of visitor days per year (151.4 million). Current trends indicate that these numbers will increase. By the year 2050, seventy-five percent of Americans will visit a beach or freshwater recreation area in a given year. The greatest increase in visitor days is projected along the Pacific Coast (Bowker and others, 1999). In California, much of the increase will be likely to occur at saltwater beaches due to the fact that a majority of the state's residents indicate a preference for saltwater beach use over other forms of water-based recreation (King & Potepan, 1997).

These figures indicate that California's coastal areas are a vital recreation resource, yet very little information exists regarding the nature of beach recreation. Though numerous studies have investigated marine recreation, a review of the literature revealed only one study that dealt specifically with beach use in California (King & Potepan, 1997). This is a significant finding given the demographic changes that are projected as California's population continues to grow. According to Murdock (1991, p.238), "Changes in rates of population growth, as well as in the characteristics of the population, were major determinants of the rapid growth in outdoor recreational activity in the past several decades and have been recognized as important determinants of both past and present levels of participation in recreational and leisure activities." As a result, the agencies that over-see California's beaches will be unable to promote effective, efficient, and equitable

management plans until further information is gathered.

The purpose of this study was 1) to develop profiles of beach users and non-beach users within southern California, and 2) to develop a predictive model that demonstrates how demographics and activity preferences affect participation and non-participation at southern California beaches. The results of this study were used to determine whether certain groups are more likely to be precluded from participation than others. According to McGuire and others (1990), participation models are useful because they expand the concept of non-participation from an activity-specific or constraint-specific level to a broader conceptual framework. In other words, participation models allow for the analysis of the many factors that contribute to non-participation and show how such factors inter-relate.

The results of this study are particularly relevant to the agencies that are responsible for managing beaches within southern California, and they provide a framework for other organizations that are interested in assessing visitation and non-use. An understanding of the factors that influence participation trends will become increasingly important as demographic trends begin to shift. Despite an increasing population, growth rates for most recreation activities are projected to slow as the population becomes older and more ethnically diverse (Murdock, 1991). Although over all participation rates are likely to increase, slower growth rates and differences in the ways that beach areas are being utilized will necessitate a shift in management priorities. While past efforts have focused on meeting recreation demand, future efforts will need to account for changing consumer preferences (Murdock, 1991).

Rationale & Significance

There are currently more than 34 million people living within the State of California and nearly 80 percent reside within one hour of the coast. Projections by the State Department of Finance indicate that California's population will reach 60 million by the year 2040. Hispanics will account for over 50 percent of the population and other ethnic groups will also increase in numbers (Locklin, 1999). These trends will have important ramifications for the management of California's beaches.

It is well documented that differences in race and ethnicity affect recreation participation.

Hutchinson (1988) noted that whites and blacks tend to recreate in small groups whereas Hispanics prefer an extended family atmosphere. Johnson and Bowker's (1999) research indicates that blacks prefer developed recreation facilities while whites have a preference for natural areas. Shinew and others (1995) found that activity preferences differ among whites and non-whites based on social class. Other demographic variables such as age, county of residence, gender, household income, level of education, and physical disability have also been shown to influence the use of leisure time (Leeworthy & Wiley, 2002).

As a result of these differences, researchers have attempted to identify the users of recreation services and the ways that resources are being utilized. Hecock (1970) found that use patterns at public beaches along the Atlantic Coast differed according to the demographic characteristics of the visitors. Hecock explained that use patterns are related to the perceptions of site characteristics among different demographic groups. Fensenmaier (1988) studied visitation patterns and activity preferences at Oklahoma State Parks and found similar results.

While certain groups may be attracted to particular activities/sites, it is also possible that under-represented groups are being discouraged or prevented from visiting the beach. Previous research has demonstrated that certain groups are more likely to be precluded from participation in an activity because the presence of constraints limits the formation of activity preferences. Shinew and others (1995, p.87) state,

A leisure preference implies having a choice among a set of viable alternative activities. However, choices are rarely free of limitations imposed by social roles, socio-economic resources, and familiarity with or awareness of available options. Understanding what might limit or constrain preference formation as well as actions based on preferences would suggest ways for disadvantaged individuals and groups to negotiate barriers to engagement in fulfilling, enjoyable, and meaningful activity.

Searle and Jackson (1985a) have identified four

areas that can be assessed from a constraints perspective: leisure philosophy, policy analysis, programming, and marketing. Given that public service agencies are responsible for providing opportunities for all classes of citizens, research that identifies who is being served and who is not will allow for the development of philosophically sound management strategies. Identifying those who are unable to participate, and why, will allow managing agencies to determine whether or not such factors are within their control. Efforts can then be taken to reduce constraints and policies can be developed to make opportunities more available to under-represented sectors of the population.

Research is also needed to identify current and potential target markets. This will allow for the development of strategies that will increase accessibility and drive demand towards suitable facilities. In some cases, managing agencies may find it necessary to construct new facilities to accommodate changing visitation patterns. Research findings can then be used to justify budget proposals. This is an important consideration given that funding is often associated with visitation rates. Should visitation decline, marketing efforts can be undertaken to promote use by groups that have not traditionally utilized beach areas, a necessary strategy if current funding levels are to be maintained.

Theoretical Background

The hierarchical model of constraints, proposed by Crawford and Godbey (1987) and extended by Crawford and others (1991), was used as a basis for the investigation. This model categorizes constraints as intrapersonal, interpersonal, or structural and groups them in a relational manner. Intrapersonal constraints are internal factors that influence people on an individual basis. Examples include personality traits, cultural values, and psychological states. Interpersonal constraints, the result of interaction between individuals or groups of individuals, include lack of partners, crowding, and incompatible uses. Structural constraints are specific to the activity such as lack of time, expense, and limited access.

Fundamental to constraint theory is the idea that limiting factors can be negotiated. Crawford and Godbey (1987) proposed that participation was dependent upon the successful negotiation of

constraints. Those who were unsuccessful either chose not to participate or were prevented from doing so. Crawford and others (1991) expanded upon the model by hypothesizing that intrapersonal constraints affect the formation of activity preferences. Before a preference can be formed these constraints must be overcome. Once a preference has been established the individual encounters interpersonal constraints that must be successfully negotiated. Success leads to interpersonal compatibility and coordination. However, there are also structural constraints that must be overcome. Participation results only after all three categories of constraints have been negotiated. In this instance, the strength of the preference has outweighed the strength of the constraints.

Constraints have been shown to affect different groups of people in different ways. Searle and Jackson (1985a, 1985b) studied the constraining effects of seven socio-economic variables upon recreation participation in Alberta, Canada. They found that income and age were the most significant variables in the reporting of constraints. The manner in which constraints affected participation also varied accordingly. Lack of time, lack of someone to participate with, lack of opportunities near home, and crowding were the most significant factors in relation to non-participation. Income was the most significant socio-economic variable, affecting both the frequency of constraints, and the type of constraints that were encountered. This finding supported the work of Howard and Crompton (1984) who reported a significant relationship between low income and nonparticipation.

Gender has also been shown to affect recreation participation (Bialeschki & Henderson, 1988; Henderson et al., 1988; Henderson, 1991; Henderson, 1994; Shaw, 1994). Shaw's study found that lack of time, lack of money, and lack of transportation were more prevalent among women than men. Although both sexes experience these constraints, they occur more frequently among women due to differences in social status and gender roles.

County of residence is another important factor that should be included in participation studies. Leeworthy and Wiley (2002) found that those who

live in coastal counties are more likely to participate in beach recreation than those who live in non-coastal counties. It is likely that this trend is associated with constraints such as lack of time and lack of money. However, it is also possible that those who live in non-coastal counties choose to spend their time elsewhere because they have developed a preference for non-beach related activities. The usefulness of a model that predicts those values that are most likely to influence use and non-use is particularly evident in this instance.

Of particular relevance to constraint studies is the influence of race and ethnicity. According to Phillip (1995, p.113), "race has functioned as the single most important constraint to education, housing, and employment in the United States and should also be an important constraint to leisure." The under-representation of minorities in outdoor recreation activities has been well documented (Carr and Williams, 1993; Floyd et al., 1994; Phillip, 1995; Shiner et al., 1995; Johnson and Bowker, 1999).

The previously listed demographic characteristics are important factors that need to be assessed in regard to beach use and nonuse in southern California. Leeworthy and Wiley (2002) have shown that nationally, a distinct difference exists between beach users and nonusers. In general, they found that beach users are likely to be younger, white males with high levels of education and income who reside in coastal counties. The following hypotheses were developed based upon the results of previous research:

- H1: Older respondents are less likely to be beach users than non-users.
- H2: Non-whites are less likely to be beach users than non-users.
- H3: Those with lower levels of education are less likely to be beach users than non-users.
- H4: Females are less likely to be beach users than non-users.
- H5: Those who favor non-beach related activities are less likely to be beach users than non-users.
- H6: Those who live in non-coastal counties are less likely to be beach users than non-users.
- H7: Those with a physical disability are less likely to be beach users than non-users.
- H8: Those with lower household incomes are less likely to be beach users than non-users.

- H9: Those with full-time jobs are less likely to be beach users than non-users.

Methods

This study is part of a larger project that was conducted by the Survey Research Center at California State University, Chico. Data were gathered in the spring of 2000 through a random telephone survey of 1,846 southern California residents in Orange, Los Angeles, Riverside, and San Bernardino counties. Respondents were asked a series of initial questions to classify their user status. Separate scripts were then used to interview residents about the nature of beach use and nonuse in Orange, Los Angeles, Ventura, San Diego, and Santa Barbara Counties. The responses to selected questions have been utilized to produce a predictive model of beach use in southern California.

There were 1,846 completed interviews. A total of 965 potential respondents refused to participate in the survey and an additional four respondents completed only part of an interview. This yielded a cooperation rate of 66%. A total of 1,570 cases remained unresolved at the completion of the survey. An additional 793 cases were never answered or had a perpetual busy signal, 308 were answering machines, and 468 resulted in scheduled callbacks that were never successfully completed. Of the 1846 completed interviews, a total of 35 were unusable due to data entry errors. Therefore, the actual response rate is equal to 1811 (64%).

Once the data was collected descriptive statistics were compiled to create profiles of users and nonusers. A logistic regression model was then constructed to identify those variables most important in determining beach use and nonuse. Knoke and Bohrnstedt (1994) note that logistic regression is an appropriate method when analyzing a dichotomous dependent variable (one that one that contains two choices or outcomes) with continuous independent variables. Logistic regression is similar to a cross-tab, only more powerful because it adjusts for the influence of the other independent variables. This method is useful because it illustrates how the degree of change within an independent variable influences the outcome of the dependent variable while holding all other factors constant. In other words, logistic regression will explain how changes in a person's age (or other demographic characteristic) will

predict participation and non-participation while controlling for the influence of other variables.

Findings

A majority (55%) of those sampled had visited a southern California beach within the previous year. Those between the ages of 18-29, 30-39, and 40-49 were more likely to be beach users (67%, 61%, & 66% respectively) than non-beach users. Those over 49, on the other hand, were less likely to be beach users. Among this group, 55% of those between the ages of 50-64 had not been to the beach within the previous year. The rate of non-participation was higher for those 65 and over (68%).

Whites tended to be beach users (61%) as opposed to non-beach users (39%). Approximately half of non-whites (51%) had visited a southern California beach within the last year. Gender exhibited similar results. Males were more likely to be beach users (60%) than non-beach users. Females, on the other hand, were about equally likely to be beach users (52%) or non-beach users (48%). Presence of a disability seemed to have a stronger effect. Those with a disability were more likely to be non-participants (66%) than participants. Those without a disability, on the other hand, were more likely to visit the beach (58%) than to refrain from doing so.

Level of education exhibited a clear trend in which higher rates of participation were related to corresponding increases in schooling. Those without a high school degree were less likely to be beach users (35%), than were high school graduates (47%), those with some college education (62%), and college graduates (66%). Household income exhibited a similar trend. Those with lower levels of income were less likely to be beach users than non-users. Those from households who earned less than 50 thousand per year were about equally likely to use the beach (54%) as opposed to going elsewhere. An income of 50-99,999 thousand per year resulted in a participation rate of 66%. The highest rate of beach use (77%), however, was among those from a household that earned over 100,000 per year.

Those who live in coastal counties were more likely to be beach users (59%) than non-beach users (41%). Non-coastal residents were less likely to be

beach users (44%) than non-beach users (56%). Of the four counties included in the study, participation rates were highest among Orange County residents (70%), followed by Los Angeles County (55%). The two inland counties, Riverside and San Bernardino, had participation rates of 46% and 42% respectively.

Employment status exhibited an interesting trend. The highest rate of participation was among those with part-time jobs (69%). Those employed full-time were slightly less likely to use the beach (62%). A significant decrease in participation occurred among the retired (32%) and the unemployed (48%). Another interesting trend was exhibited by activity preferences. Those who preferred beach-related activities were only slightly more likely to visit the beach (68%) than those who preferred non-beach related activities (65%).

The output from the logistic regression model indicates that a typical southern California beach user is a white coastal county resident, between the ages of 18-29, who has graduated from high school and who does not have a disability. Therefore, hypotheses 1,2,3,6, &7 were accepted. The remaining hypotheses, however, were rejected. Table 1 provides the relevant output of the logistic regression model. The degree of influence is measured by the odds ratio - the greater the variation from zero, the greater the influence of the independent variable. It is important to note that one group has been left out of each categorical independent variable so that it can serve as the baseline comparison against which all other groups are measured. For example, the age group 40-49 is the base line that is used to determine the degree of influence that the other four age categories have upon the dependent variable. A measure of less than one indicates that those in a selected age group are less likely to be beach users than are 40-49 year olds. A measure of greater than one indicates that those in a selected age group are more likely to be beach users than are 40-49 year olds. A measure of zero indicates that those in a selected age group are equally as likely to be beach users as are 40-49 year olds. It is the strength of the odds ratio that ultimately reveals the most information about the predictive value of the independent variable. Therefore, the results of these measures are interpreted along with the measures of statistical significance.

There are 1811 observations accounted for in the logit model. However, some of the respondents refused to answer specific demographic questions. As a result, the number of cases for some of the variables does not equal 1811. In the case of activity preferences, the missing information can be explained by noting that not all of the respondents stated that they have a favorite activity. As a result, these individuals were not asked the question that pertained to activity preferences. In order to account for all of the cases, the missing responses have been recoded into separate independent variable categories. For example, 93 respondents refused to give their age. These cases, which appeared in the data set as refusals, were recoded into the Age Missing category. This was also the case for activity preference, disability, employment status, ethnicity, and household income. All cases were accounted for under county of residence, gender, and level of education. Therefore, it was unnecessary to create recodes for these variables.

County of residence, age, disability, ethnicity, and level of education had a significant influence on beach use and non-beach use. The most important predictors of use were coastal county residence and age (18-29). Coastal residents residing in Los Angeles and Orange counties were 2.01 times more likely to visit the beach than are non-coastal residents residing in Riverside and San Bernardino counties. Those between the ages of 18-29 were also positively associated with beach visitation. This group was 1.45 times more likely to visit the beach than are 40-49 year olds.

The most salient predictors of non-use were minority status (.65), lack of a high school degree (.62) and presence of a disability (.60). Age, however, is also significant. Those 50 and older were less likely to use that beach than are 40-49 year olds. The odds ratio for those between the ages of 50-64 was .43, while the ratio for those over 65 was .40. Interestingly, gender, employment status, household income, and a preference for beach-related activities were not significant predictors of beach use and nonuse.

Conclusions & Recommendations

The results of this research are similar to those from the national study by Leeworthy and Wiley (2002). It was determined that beach users tend to be young white coastal residents with higher levels

of education and no disabilities. However, this study did not find significant differences based on gender and household income. This suggests that constraints to beach visitation are likely to be related to other characteristics. County of residence was the strongest predictor of beach visitation. While a variety of factors are likely to contribute to this finding, transportation-related constraints are a possible explanation. Many of the beaches within southern California are within a two-hour drive of Riverside and San Bernardino counties. However, traffic congestion and parking problems are likely to increase perceptions of constraints among potential users. These areas, along with Los Angeles County, also have a higher percentage of minority residents - a factor that decreased the likelihood of beach visitation. Another factor that has been associated with this demographic is a lower level of education. Together, these characteristics may lead to greater perceptions of constraints among non-coastal residents.

The results of this study also indicate that beach use declines as age increases. Previous research has demonstrated that older individuals face a wider range of constraints than younger people. Therefore, it is logical to assume that constraints are precluding the elderly from visiting southern California's beaches. While this trend may be related to health constraints that develop as one ages, it is also possible that older people are less inclined to visit the beach due to interpersonal constraints/conflicts with a predominately younger class of users. Given the demographic changes that are projected within the state, it is recommended that managers identify the factors that are leading to higher rates of non-participation among the elderly, minorities, non-coastal county residents, and those with disabilities. While managers are likely to have little control over many of the constraints faced by these groups, it will be necessary to account for the possibility that interpersonal and structural constraints are precluding members of these groups from visiting southern California's beaches.

Managers should also consider the possibility that demographic changes will lead to new participation patterns. Although the results of this study indicate that older individuals and minorities are less likely to visit the beach, the rapid growth of these populations will result in a corresponding increase

in beach use. Therefore, managers will be forced to account for changes in the ways that these areas are being utilized. In order to do so, it will be necessary to determine the type of opportunities that are desired, along with existing and potential constraints. This will allow for a more realistic determination of the impact that shifting demographic patterns will have upon the management of southern California's beaches. Questions for future research include: What are the preferred activities/settings among existing and potential beach users within southern California. How are participation trends changing over time? Will changing use patterns lead to conflicts between user groups? How can managers best accommodate the needs of an increasingly diverse public? Answering these questions will allow managers to focus their efforts on the identification of desirable resource, social, and managerial conditions. This will allow for the development of a coastal recreation opportunity spectrum that will assist managers in matching desirable conditions with existing resources. In formulating such a plan, it will be important to identify existing constraints so that managers can account for the needs and desires of those groups that would otherwise remain unnoticed. This research takes an important step in that direction by outlining potential areas of concern, and by establishing a baseline for monitoring participation trends over time.

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Recreation Users

ACCEPTABLE NUMBER OF USER ENCOUNTERS: A STUDY OF ADIRONDACK AND GREAT GULF WILDERNESS HIKERS

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Abstract: Hikers in three wilderness areas of New York's Adirondack Park and one wilderness area of the White Mountain National Forest were interviewed and surveyed regarding their trip-related wilderness experiences. A total of 901 hikers were interviewed in the High Peaks, Siamese Ponds, and Ha-De-Ron-Dah wilderness areas in 1997 with an overall mail survey response rate of 69%. A total of 903 hikers in the High Peaks and Great Gulf wilderness areas were interviewed in 1999 with an overall mail survey response rate of 63%. The surveys of hikers' expectations for encounters with other users and acceptable user encounter levels were measured for two types of encounters on trails. Comparisons of the respondent results between areas were conducted to understand the congruence or disparity between expectations, acceptable encounter levels, and perceptions of crowding.

Introduction

The New York State Department of Environmental Conservation (NYSDEC) has been completing Unit Management Plans (UMP) for many of the 17 wilderness areas within the Adirondack Park. These 17 wilderness management units on state Forest Preserve lands now total more than one million acres with the latest addition of the 20,500-acre Whitney Wilderness area in 1999. During the public review of the draft plans for some of these UMPs, concerns and opinions have been expressed by a wide variety of groups and

individuals over the need to limit, or not to limit, visitor use in some higher use wilderness areas. Some people contend that there are substantial visitor impacts on the environment and social experiences in Adirondack wilderness areas. Since the Adirondack Park State Land Master Plan requires consideration of visitor use and recreation carrying capacities in the development of a UMP, an effort was made to gather together the existing studies of wilderness visitors. In particular, there was very limited information on the number of user and large group encounters that were acceptable to users during their wilderness experiences.

The concept of social carrying capacity has been studied for several decades in recreation (Shelby and Heberlein, 1986) with a variety of conclusions including that any measurement and understanding of carrying capacity must be based not just on actual use, but also visitor perceptions of encounters and crowding (Manning, 1999). Use encounters are often measured to better understand the relationship between user densities or perceptions of density with privacy, coping behaviors, satisfactions, and social carrying capacity (Hammitt and Patterson, 1991; Hammitt and Rutlin, 1995; Manning, 1999; Lah, 2000). Since managers and visitors can report different levels of acceptable encounters and standards for social carry capacity (Lah, 2000), it is necessary to measure visitor responses on their trip-related wilderness experiences. The issue of whether visitors can actually agree or converge on a normative standard for user encounters has been debated (Hall and Shelby 1996) because of the wide variability in visitor responses. Even with this information it is a difficult and controversial process to take this social information and combine it with ecological impact information and then develop a management plan that addresses wilderness party size issues through direct or indirect management techniques (Monz et al., 2000).

Methods

Three wilderness areas in the Adirondack Park (High Peaks, Siamese Ponds, and Ha-De-Ron-Dah) were used because these studies represented a variety of wilderness area sizes and visitor use levels so that use density varied between them (Table 1). Additionally, the Great Gulf Wilderness area in the White Mountain National Forest was included as a comparison that was available using the same methodology and at a higher user density per acre

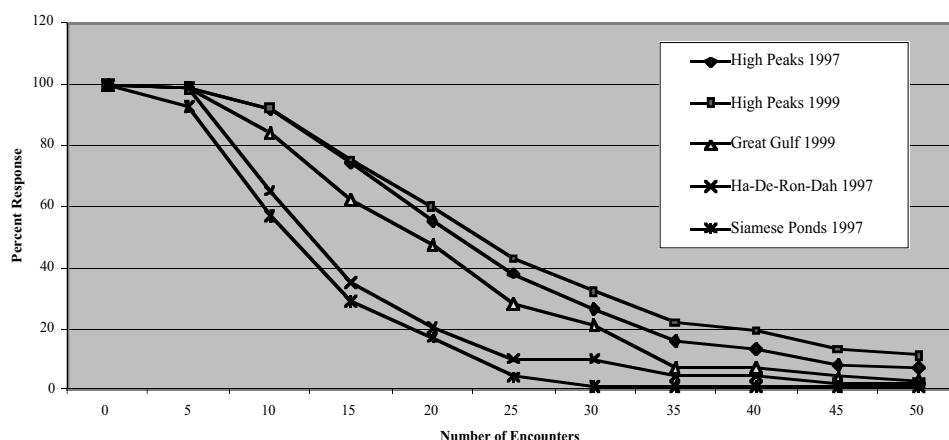


Figure 1. Percentage of Respondents Reporting an Acceptable Number of User Encounters While on Trips in Four Wilderness Areas

of land. Visitor studies from 1997 and 1999 were selected for these four areas to increase the number of studies to compare (Table 2).

The general design approach for these studies (Dawson et al., 2000; Dawson et al., 2001) was to conduct brief, on-site interviews of visitors during their recreational activities in the four wilderness areas during the summer months from Memorial Day through Labor Day in 1997 and 1999.

Table 1. — Four wilderness study areas, acreage within each area and estimated annual visitor use.

Wilderness Areas	Acreage in Area	Estimated Number of Users in Area
High Peaks	226,400	140,000
Great Gulf	5,500	8,000
Ha-De-Ron-Dah	27,000	2,000
Siamese Ponds	108,500	2,000

Table 2. — Five wilderness studies, year of study, number of surveys mailed, and survey response rate.

Wilderness Areas and Year of Study	Mail Surveys Sent	Response Rate (%)
High Peaks — 1997	710	67%
High Peaks — 1999	586	64%
Great Gulf — 1999	317	60%
Ha-De-Ron-Dah — 1997	93	75%
Siamese Ponds — 1997	98	74%

Only visitors involved in their recreational activities on the study areas were interviewed. This on-site contact approach was used to ensure that visitor responses to survey questions reflected their actual on-site recreation experience for a specific trip. An interview survey instrument was designed to gather some user characteristics information during a two-minute interview in the field by a trained interviewer. A name and address was collected from each person interviewed to enable a follow-up mail survey be sent to collect trip specific information. A separate but related survey was developed for each of the four wilderness study areas so that each visitor received a survey related to the area in which he/she was interviewed.

The mail surveys collected information about several wilderness experience topics (e.g., wilderness conditions, satisfactions, management preferences); however, this manuscript only reports on the data from the questions on user expectations for encounters, acceptable encounter levels, and perceptions of crowding. Up to three reminders were sent, as necessary, to ensure a high response rate from the mail surveys.

Results

Of the 1,804 wilderness visitors briefly interviewed in the field and sent a mail survey, 66 percent responded. Response rates varied between the study areas from 60% to 75% (Table 2). Sample sizes varied between the study areas from 93 to 710 visitors based on the number of users available for interviews during the sampling time and the time allowed for interviews at the various trailheads in

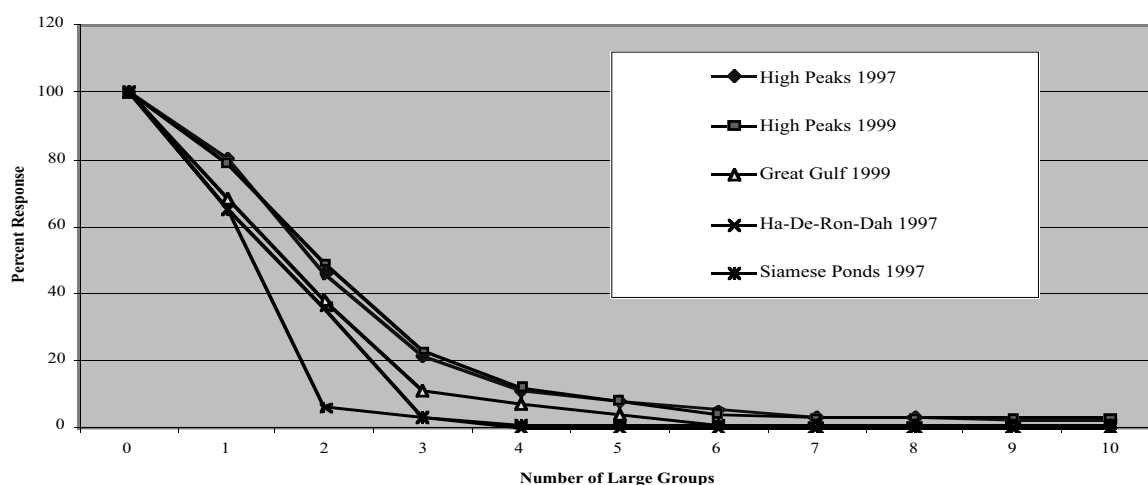


Figure 2. Percentage of Respondents Reporting an Acceptable Number of Large Group Encounters While on Trips in Four Wilderness Areas

the study areas (Dawson et al., 2000; Dawson et al., 2001). Respondents were asked to indicate the number of hikers that was acceptable to them to meet on the trail each day while on their wilderness trip in a given area. The response categories were in 5-person increments and ranged from 0 to 50 people. The percentage of respondents who reported an acceptable number of user encounters while on their trips to one of the four study areas in 1997 or 1999 is shown in Figure 1. Fifty percent or more of the respondents in the High Peaks and Great Gulf study areas (i.e., higher density use areas) reported that 20 encounters or less was acceptable, while fifty percent or more of the respondents in the Ha-De-Ron-Dah and Siamese Ponds study areas (i.e., lower density use areas) reported that 10 encounters or less was acceptable. Only five percent or less of the respondents left the question blank, presumably because they were not able to decide on an encounter number that was acceptable to them (Table 3).

Table 3. — The percentage of respondents who could not specify the acceptable number of groups on the trails during their trips in the four wilderness areas.

Wilderness Areas and Year of Study	Percent
High Peaks — 1997	5
High Peaks — 1999	1
Great Gulf — 1999	2
Ha-De-Ron-Dah — 1997	3
Siamese Ponds — 1997	4

Respondents were asked to indicate the number of large groups of hikers (i.e., 10 or more people) that was acceptable to them to meet on the trail each day while on their wilderness trip in a given area. The response categories ranged from 0 to 10 large groups was acceptable to them to meet on the trail each day while on their wilderness trip in a given area. The percentage of respondents who reported an acceptable number of large group encounters while on their trips to one of the four study areas in 1997 or 1999 is shown in Figure 2. Fifty percent or more of the respondents in the High Peaks study areas in both 1997 and 1999 (i.e., higher density use area) reported that two large group encounters or less was acceptable, while fifty percent or more of the respondents in the Great Gulf, Ha-De-Ron-Dah and Siamese Ponds study areas (i.e., one higher use and two lower density use areas) reported that one large group encounters or less was acceptable. Only eight percent or less of the respondents left the question blank, presumably because they were not able to decide on a large group encounter number that was acceptable to them (Table 4).

Table 4. — The percentage of respondents who could not specify the acceptable number of large groups on the trails during their trips in the four wilderness areas.

Wilderness Areas and Year of Study	Percent
High Peaks — 1997	5
High Peaks — 1999	1
Great Gulf — 1999	4
Ha-De-Ron-Dah — 1997	8
Siamese Ponds — 1997	8

Table 5. — The percentage of respondents reporting whether the number of user encounters experienced was less or more than expected during their trip in four wilderness study areas.

Wilderness Areas and Year of Study	Far fewer	Fewer	Same	More	Far more
High Peaks 1997	6	17	58	15	4
High Peaks 1999	6	19	61	10	4
Great Gulf 1999	10	30	51	8	1
Ha-De-Ron-Dah 1997	18	30	39	12	1
Siamese Ponds 1997	10	26	53	11	0

Table 6. — The percentage of respondents reporting whether the wilderness was crowded or not on their trip in four wilderness study areas.

Wilderness Areas and Year of Study	No	Slight	Moderate	Very	Extremely
High Peaks 1997	51	23	17	8	1
High Peaks 1999	50	26	18	3	3
Great Gulf 1999	77	16	5	2	0
Ha-De-Ron-Dah 1997	73	15	5	5	2
Siamese Ponds 1997	74	22	4	0	0

In an effort to understand what the users expected and what they experienced in visitor encounter numbers while on their trips, they were asked to indicate whether the number of user encounters experienced was less or more than expected during their trip in a given area. The five response categories were “far fewer”, “fewer”, “same”, “more”, and “far more” than expected. The largest percentage of respondents reported that what they experienced was what they expected (Table 5). Those reporting a disparity in expectation versus experience most often reported they experienced fewer people or far fewer than expected, this was more often the case for respondents in the Great Gulf, Ha-De-Ron-Dah and Siamese Ponds study areas (i.e., one higher use and two lower density use areas) than in the High Peaks in both 1997 and 1999.

Following the questions on encounters and expectations, respondents were asked to indicate whether they felt crowded by other visitors during their trip in a given area. The five response categories were “no”, “slight”, “moderate”, “very”, and “extremely” crowded. Over 50 percent of respondents in all areas reported that they did not feel crowded (Table 6). The second highest category of responses were in the slight category with 15 to 26 percent of respondents reported being slightly crowded. Those reporting a moderate feeling of crowding were most often using the High Peaks in either 1997 or 1999 (i.e., higher density use area).

To better understand the relationship between feelings of crowding and visitor expectations for encounters, those two variables were tested for association using a Pearson R correlation statistic. The association between respondents’ feelings of crowding and their expectations on user encounters during their trips in the four wilderness areas ranged from 0.35 to 0.52 (Table 7). All associations were statistically significant ($p < 0.05$) suggesting that when encounters were less than expected there was a higher likelihood that there was no perception of crowding and, conversely, when visitor expectations were exceeded there was a greater likelihood that there was perceived crowding from a moderate to extreme problem.

Table 7. — The association between of respondents’ feelings of crowding and their expectations on user encounters during their trips in the four wilderness areas.

Wilderness Areas and Year of Study Area and Year	Pearson R
High Peaks — 1997	0.48
High Peaks — 1999	0.52
Great Gulf — 1999	0.35
Ha-De-Ron-Dah — 1997	0.42
Siamese Ponds — 1997	0.43

Even though 23 to 50 percent of respondents reported feeling crowded on their trip, only 7 to 23 percent reported that they changed either their trip duration or route of travel while in one of the four

Table 8. — The percentage of respondents reporting whether they changed their trip duration or route of travel in four wilderness study areas.

Wilderness Areas and Year of Study	No	Yes
High Peaks — 1997	77	23
High Peaks — 1999	82	18
Great Gulf — 1999	93	7
Ha-De-Ron-Dah — 1997	88	12
Siamese Ponds — 1997	90	10

wilderness areas (Table 8). Those most often reporting changes in trip duration or route were most often using the High Peaks in either 1997 or 1999 (i.e., higher density use area).

Discussion

One of the implications for wilderness management relates to the concern about higher acceptable levels of user-user and large group encounters in higher use areas. These areas may require information and education programs to remind users of wilderness experience conditions that include opportunities for solitude and remote and isolated recreational experiences. The concern revolves around the observation that visitors in higher use areas report higher acceptable levels of encounters, report expectations that are relatively congruent with the numbers experienced, and often report feeling not crowded to slightly crowded.

The study result that visitors in higher use areas also report using more coping techniques (e.g., changing trip duration or routes) suggests the need for further research on how sequential waves of coping and displacement among users may cause those who do move away from a high use area to displace those in a less-used area (i.e., as use levels escalate in the previously less-used area). Furthermore, the use of visitor perceptions of crowding as a monitoring indicator should be studied to test if expectations and perceptions of crowding are based on first experiences and first information gained about a high-use area. For example, visitor expectations were moderately correlated with perceptions of crowding. The management concern is that users may set expectations or a “benchmark” based on current use and not against ideal wilderness conditions.

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Water-Based Recreation

MICHIGAN MARINE SAFETY PROGRAM ASSESSMENT

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Abstract: Boating is critical to Michigan's quality of life and economy. In 1998, it was estimated that the 980,378 Michigan registered watercraft (all motorized or rental craft) logged 18.4 million boating days and spent \$635 million on boating trips in Michigan. An estimated 250,000 additional unregistered, non-motorized watercraft account for an additional 4.6 boating days. Boaters in Michigan had 343 reported boating accidents and 27 fatalities in 1999. The Michigan Marine Safety Grants program, established by law in 1967, provides a state match of 3:1 for county marine safety activities. This includes for marine law enforcement, search and rescue, water safety education, recovery of drowned bodies and boat livery inspections. In 2000, 80 of Michigan's 83 counties participated and the state provided \$3.1 million in state matching funds. In a 2001 assessment of marine safety efforts, regional meetings with sheriffs, a follow up mail survey of sheriffs and analysis of boating fatality records, boat registrations and marine safety actions were used to assess the program. A total of 611 county law enforcement personnel worked at marine safety tasks in 2000 and patrolled 66% of the state's inland lake acreage, all Great Lakes and connecting waters and 98 rivers and streams. Ninety-seven percent of participating counties were involved in marine safety education. Counties provided 52% of total marine expenditures, far above the state mandated state/county 3:1 match due to inadequate state funding. The Secretary of State annually takes

10% of all watercraft license revenue as overhead. It is recommended that instead of triennial registration with the Michigan Secretary of State, an annual licensing of boats be done by the Michigan Department of Natural Resources. This will reduce administrative overhead providing an additional \$800,000 for marine safety programs. Further, all watercraft used in Michigan should be licensed, including currently unregistered non-motorized private craft. Analysis of Michigan boating fatalities for 1997-2001 revealed that of the 133 fatalities, 49 (44.4%) occurred in non-motorized craft. Further, non-motorized craft use the same public water access sites now solely maintained by boat registrations and marine fuel taxes from motorized boaters.

Introduction

Safe recreational boating is vital to Michigan's economy and quality of life. In 2001, the US Coast Guard (US Department of Transportation 2003) reported that Michigan had 1,003,947 registered boats, more than any other state. This was 8% of the 12.8 million boats registered in the United States. In addition, Michigan does not register non-powered rowboats, canoes or kayaks unless they are available for rent. It is estimated that there are approximately 250,000 such non-registered craft, based on the proportion of non-motorized craft to motorized craft found in one of Michigan's neighbors, Minnesota, which registers all craft. There 25% of all registrations are for non-powered, private rowboats, canoes and kayaks. Michigan's most recent boating study (Lee 1999), estimated that the 980,378 craft registered in Michigan in 1998 accounted for 18.4 million boating days during that year, with 13.6 million on inland waters and 4.8 million on the Great Lakes. Those boating days resulted in \$635 million in trip expenditures within Michigan in 1998. Applying the annual average of 18.4 uses per registered craft to the estimated 250,000 non-registered craft provides an additional 4.6 million boating days in 1998. In total, there was an estimated 23 million boating days in Michigan in 1998.

Boating safety is an important issue both nationally and in Michigan. In 2001 the US Coast Guard (US Department of Transportation 2003) reported that there were 6,419 boating accidents. Of these accidents, there were 681 fatalities, with 471

(69%) in motorized craft, 199 (29%) in non-motorized craft and 11 (2%) in craft of unknown type. During that same year in Michigan, there were 299 (5% of US total) boating accidents resulting in 27 fatalities (4% of US total). Hence, Michigan has a smaller proportion of accidents and fatalities than it does registered craft. Of the Michigan fatalities 15 (56%) were in motorized craft and 12 (44%) were in non-motorized craft. In terms of boater days per fatality in Michigan, motorized craft had approximately 1 fatality per 1.2 million boater days. Non-motorized craft had approximately 1 fatality per 380,000 boater days. Compare it to a recreational activity some consider dangerous, hunting; the U.S. Fish and Wildlife Service (1998) reported that annually that there were approximately 18.4 million hunter days in Michigan. During 2001 the Michigan Department of Natural Resources (DNR) Law Enforcement Division reported that there were 2 hunting fatalities or 1 fatality per 9.2 million hunter days. Hence, considerable progress could be made in improving marine safety, especially in the area of non-motorized boating.

To promote boating safety, a marine safety program was initiated in 1967 under Michigan Public Act 303 of 1967. Administered by the DNR, the state program allocates a portion of boat registration revenue to participating county sheriff departments for:

- Marine safety patrol - Patrol on waterways to enforce marine laws
- Marine safety education - Classroom education including safety certification for those 12-15 and operators of personal watercraft born after December 31, 1978
- Search and rescue - Providing emergency services on the water for boaters reported lost or missing
- Body recovery - Recovery of drowned bodies
- Regatta patrol - Patrol at boating races, sailing events, etc.
- Complaint investigation - Follow up on citizen concerns regarding specific unsafe or illegal boating activity
- Livery inspection - Safety inspection of all rental craft on an annual basis
- Court appearances - Testifying in court during marine safety violation prosecutions

The funding is available on a matching basis with

the law specifying a match of up to 3:1 (state: county) dollars. The authors, through Michigan State University, were contracted by the Michigan DNR with additional support from the Michigan Agricultural Experiment Station to conduct an assessment of the Michigan marine safety grants program. The focus of this presentation concerns marine safety patrol, marine safety education and funding for marine safety.

Methods

The assessment of Michigan's marine safety program involved a number of information gathering techniques. A self-administered mail survey was sent to the county sheriff in each of the 80 Michigan counties (out of 83 total counties in Michigan) participating in the 2000 marine safety grants program. In addition, the authors held six regional meetings with Michigan county sheriff representatives, conducted a review of state and national marine safety literature and contacted ten other major boating states regarding their marine safety programs. Finally, the assessment also used the knowledge of the authors regarding funding and operation of other recreation law enforcement and safety programs in Michigan and elsewhere, including studies of snowmobile enforcement (Lynch 2000), studies of off-road vehicle enforcement (Nelson and Lynch 2001) and Nelson's 15-year tenure directing the Park Law Enforcement and Ranger Institute (a professional training program for recreation law enforcement personnel) at Michigan State University.

Findings and Management Recommendations

The results are segmented into patrol, safety education and funding findings and management recommendations. Of the 80 counties surveyed, 78 (98%) responded.

Patrol Findings

When asked about their county's marine safety patrol coverage of inland waters, in aggregate the counties reported that they patrolled 923 inland lakes accounting for 66% of all inland lake acreage of lakes greater than 10 acres during the summer of 2000. This amounted to 506,702 inland lake acres patrolled. In addition, 98 major rivers/streams were patrolled. In terms of the Great Lakes, 31 of the 32 Great Lakes coastal counties in the marine safety program patrolled Great Lakes waters. Marine safety patrol was conducted by a total of 611

officers during 2000, with 30% of the officers fully certified police officers and 70% appointed as marine deputies with a more limited law enforcement role and significantly less training than fully certified officers. Most counties (86%) participating in the program were actively cooperating with other marine safety entities. For cooperating counties, the most common partner was a conservation officer from the Michigan DNR Law Enforcement Division. Other partners included personnel from adjacent counties and the Michigan State Police. For Great Lakes coastal counties, the US Coast Guard, officials from adjacent states and Canadian marine safety officials were also important partners.

During regional meetings with sheriff representatives, participants were asked for patrol recommendations that would reduce fatalities. The two major recommendations were to target patrol and enforcement activities to violations that directly threaten safety and to increase patrol on weekday evenings and weekends. Key violations identified that directly threaten safety were:

- Inadequate personal floatation devices
- Operation in or near designated swimming areas
- Reckless operation
- Lack of required fire extinguisher
- Lack of navigational lights
- High speed operation in no wake zones, especially by personal watercraft operators

Patrol Recommendations

While there appears to be adequate spatial patrol coverage, temporal and intensity modifications are suggested. In particular, additional effort should be placed on patrolling when there is maximum boating pressure (weekends and after 5PM during the week). Further, patrol should focus directly on priority safety violations, such as those recommended by the sheriffs. For the equipment violations such as inadequate personal floatation devices, functional fire extinguisher and functional navigation lights, pre-launch safety checks performed at marinas, public boat launches, etc. would be cost effective and preventative. County marine safety personnel could also form effective partnerships with boating related civic organizations such as lake associations, watershed councils, power squadrons, etc. to jointly accomplish such preventative measures.

Education Findings

Of the 80 counties participating in the marine safety program, 78 provided one or more marine safety education classes in 2000. These classes lead to certification for youths 12-15 who desire to operate a registered watercraft without direct parental supervision. To gain certification, youth need to pass the Michigan proctored, on-site written safety examination at the conclusion of the class. In addition, classes also serve all adults who want to operate a personal watercraft by reducing insurance costs and meeting new (1999) marine safety education requirements that all personal watercraft operators born after December 31, 1978 have successfully completed a marine safety education course. In 2000, approximately 50,000 students were enrolled in marine safety instruction and a total of 43,705 were certified.

The marine safety education target is to educate 25% of all youth aged 12-15. As a surrogate, the Michigan Department of Education (<http://www.michigan.gov/mde>) reported that in 2001 there were 128,987 7th graders enrolled in public and charter schools. This does not include private schools. Hence, less than 8% of youth aged 12-15 were certified during 2000. Further, considering that approximately 10% of those certified were adults, the proportion of youth certified is even less than 8%.

While most other states with major boating programs and effort have adopted internet based educational materials, Michigan has been slow to do so. However, 90% of the sheriff departments responding to the survey supported the use of internet based education as one modality of marine safety education. Their rationale was that it provided information more conveniently to a larger audience, especially adults who may be uncomfortable taking a class with youth. However, there was no support for eliminating face-to-face classes as many sheriffs felt that the discussions and question and answer opportunities of a class enhance understanding and provide valuable clarification. Further, all supported continuation of proctored exams to actually grant certification. There was no support for internet based testing.

When asked in an open-ended format what could be done to improve marine safety education, most suggestions revolved around better use of

technology to disseminate marine safety information, including having teaching materials on DVD and CD, providing access to safety information over the internet and regularly updating teaching materials to remain current with and even anticipate changes in boating, thus new challenges in marine safety.

Education Recommendations

Making use of the internet to reach a broader audience with marine safety information appears to be a positive with little downside. In particular, it provides youth boaters and adult personal watercraft operators who are summer visitors to Michigan with ready access to information prior to visiting the state. Hence, upon arrival at their second home they can rapidly schedule their proctored test with the appropriate county sheriff with an excellent knowledge base, minimal impact on vacation time and strict adherence to marine safety certification requirements. The use of more advanced technology in teaching will also be helpful for gaining access to schools for marine safety education. The familiar use of computers, CDs and DVDs by officers teaching marine safety can enhance their status and the value of their message in the eyes of teens and fits with educators' efforts to better integrate technology into K-12 schools. It will also facilitate the accurate and rapid transfer of teaching materials between the Michigan DNR central clearinghouse for marine safety education and instructors across the state.

Funding Findings

Marine safety funding is predicated on need and available monies. The need for marine safety operations funding is assessed by a formula that considers the marine safety functions noted in the introduction. The major categories are patrol, education, search and rescue and related activities, administration and contractual services, supplies and materials (CSS&M). This does not include the need for capital improvements such as boats, motors, trailers and electronics and other small equipment. The authors recommended the following formula and estimate of operational funding need.

Patrol is assessed to be efficient and effective when 2% of the registered boating days are contacted annually. This is 2% of an estimated 13.6 million inland boating days (272,000) plus 2% of an

estimated 4.8 million Great Lakes boating days (96,000). Each inland contact takes 0.5 worker hour and each Great Lake contact takes 1.0 worker hour. The differential contact times are due to the necessity of two officers in a boat during a Great Lakes contact to enhance boating safety in potentially rough waters involving larger craft. This does not take into account the use of unregistered craft. Hence the minimum total patrol time need is 232,000 hours (136,000 inland hours + 96,000 Great Lakes hours).

To educate the target 129,000 youth annually, it is assessed that 0.5 hours per youth are needed, considering the typical class size and hours of instruction per class. Thus the annual need for marine safety education is 64,500 hours. The need for all other operation activities, such as search and rescue, is assessed to be what it was over the past 4 years based on a rolling annual average (12,000 hours). Aggregating all hours for patrol, education and other operations programs to 308,500 hours, administration is assessed to be 20% of that aggregate or approximately 62,000 hours. The total number of hours needed to conduct the marine safety program is then approximately 370,500 hours. Based on the average wage paid across Michigan for all marine safety personnel (\$19.33/hour) this amounts to almost \$7.2 million. In addition, CSS&M is estimated to be 21% of total wage costs, making the total cost \$8.6 million. Considering the 3:1 match of state to local monies noted in the marine safety legislation (PA 303 of 1967), this amounts to approximately \$6.4 million from the state and \$2.2 million from counties.

Based on surveys of county sheriffs and state financial records, the actual funding allocated for marine safety is considerably less than \$8.6 million and the proportion provided by counties is considerably more than 25%. Of 68 counties providing detailed budget information in the sheriff survey, total marine safety expenditures were \$5.7 million. Of this, 52% was county funds, 46% was DNR marine safety grant funds and 2% was from other sources such as civic organizations. State financial records indicate that on a statewide basis, marine safety grant funds provided a total of \$3.1 million to the 80 participating counties, slightly less than half the operational need based on the above needs formula.

Investigation of state funding sources for marine safety found that, of the \$9.3 million collected by the Michigan Secretary of State for boat registrations in fiscal year 2000, \$1.0 million (10%) was used for registration administration (overhead). By contrast, the Michigan off-road vehicle (ORV) licensing program, in which all ORVs ridden on public lands or frozen waters are required to be annually licensed by the Michigan DNR, operates on an overhead rate of 1.5% and through annual licensing provides a more current picture of active licensees. Licenses are sold through the state's electronic dealer network, available in many retail outlets 24 hours per day, 7 days per week. This is in contrast to the 45 hours per week the Secretary of State is open. If boats were licensed in the manner of ORVs, this would result in over \$0.8 million additional dollars for marine safety efforts.

Funding Recommendations

It is recommended that the marine safety operations program need as defined by the funding formula be fully met. This can be done in two ways. First all watercraft users should pay their fair share. This includes those who use currently unregistered craft. Those estimated 250,000 craft are three to four times more likely to be involved in a fatality than a motorized, registered craft, thus highlighting the need for marine safety education targeted at non-motorized craft users. Indeed, over the period 1997-2001 the US Coast Guard (US Department of Transportation 2003) reported that of Michigan's 133 boating fatalities, 44% were in non-motorized craft. In addition, the non-motorized craft boaters use the full range of marine safety and boating services including search and rescue, body recovery, etc. as well as public boat launching facilities purchased and maintained by boat registrations and Michigan marine fuel sales taxes in Michigan. While non-motorized craft boaters will not use and thus contribute to marine fuel sales, licensing of their craft is equitable and feasible. Considering the current cost of a 3-year registration for a square stern 16 foot canoe that occasionally uses an outboard motor of \$14, this amount divided by 3 (\$4.67) reduced by 1.5% overhead ($.985 * \$4.67 = \$4.60$) multiplied by the estimated 250,000 non-registered craft will provide \$1.15 additional million for marine safety and other boating related services such as public boat launch site maintenance and operation. It will also provide an accurate list of people and addresses

so currently non-registered craft users can be identified, providing opportunities to contact them in survey and other formats to determine their boating related needs and concerns.

Second, triennial boat registration should be converted to annual boat licensing in a manner similar to that for ORVs in Michigan. Licensing should be done through the DNR's electronic licensing network, providing point of sale data entry capture with the swipe of a driver's license, at many locations 24 hours a day, 7 days a week. This will annually provide approximately \$0.8 million additional dollars for marine safety and other boating related program costs.

Conclusion

Improving boating safety is an important and achievable goal. This assessment identifies methods to accomplish that goal through more targeted patrol and enforcement, use of available technology in education and significant new sources of funding through increased efficiencies in registration/licensing and equitable distribution of safety and management costs across the spectrum of boaters in Michigan.

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DIFFERENCES IN MOTIVATIONS AND EXPECTATIONS OF DIVERS IN THE FLORIDA KEYS

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Abstract: The adventure tourism market has grown steadily in recent years along with the number of certified SCUBA divers. With the increase of divers, the need for satisfying experiences, marketing strategies, and knowledge of the dive market in general arises. This study tested differences in motivations and expectations of SCUBA divers in the Florida Keys, to identify target markets for better programming and marketing. A gap analysis was used to test for differences between Boy Scouts diving with the Florida National High Adventure Sea Base, international, and regular US divers (n=300) diving with one of four commercial dive centers or with Sea Base, summer 2002. Diver level of development was a primary independent variable using nonparametric tests for a nonprobability sample to examine differences between skill level groups. Eighteen expectation variables in a pre/post test format were used to test the extent expectations had been met. Largest differences were between Scouts and regular US divers and between different levels of diver development. Differences in motivations were found between the Scouts and regular US divers among 12 of 28 motivation items as well as among diver skill level. Scouts were the most satisfied with their experience, and motivated to dive for adventure and excitement. Beginning divers mostly dove for challenge and excitement while more advanced divers dove to be with similar people, use their equipment and see shipwrecks. Implications for commercial dive operations to improve diver preparations are given.

Introduction

This study focuses on motivation and expectations

for adventure tourism, a growing segment of outdoor recreation. Travel and Tourism Analyst (Market Segments, 1992, p. 38) defines an adventure holiday "as one that contains an element of personal challenge, through controlled risk, daring and/or excitement, often in an inaccessible (wilderness) environment." SCUBA fits this definitional context and has seen a major rise in popularity with the growth of adventure activities. According to the Professional Association of Diving Instructors (PADI) there are 8.5 million divers in the United States and most of them must travel away from home to find a nice pristine diving environment.

Perceived freedom and intrinsic motivation are central defining elements of any leisure activity. Neulinger (1974, p. 38) defined perceived freedom as "a state in which the person feels that what he or she is doing is done by choice and because he or she wants to do it." Intrinsically motivated behaviors are based on "innate psychological needs" for self-determination and competence. Meanwhile, there are push and pull factors motivating people to do certain activities (Crompton, 1979). Pull factors are destination related and refer to tangible characteristics such as accommodation, attractions, the beaches, and so on. Push factors are origin related and refer to intrinsic motives such as the desire for escape, rest and relaxation. Motivation between divers of different stages of development was measured in Todd, Graefe, & Mann's (2001) study of divers in the New York Great lakes. Their study showed significant differences among stages of diving development and diver motivations for diving, thus we used Todd et al.'s stage of diving development variable in this study.

According to Mannell (1997), leisure satisfaction can be motivation or evaluation based. In this study satisfaction is conceptualized as closely tied to motivation. Participants of scuba diving are expected to be satisfied when they meet or satisfy certain leisure needs and motives by engaging in scuba diving. Research by Oliver (1980), Churchill & Suprenant (1982) and others show that expectations by influencing perceived performance had a direct impact on customer satisfaction. Past research findings confirm that levels of satisfaction can vary according to country of origin. Danaher and Arweiler (1996), although having a small

sample size, found differences in level of satisfaction with outdoor recreation activities between four different nationalities visiting New Zealand. In sports and recreation, literature has also identified participant skill level as an important indicator of satisfaction and importance of the activity. Skill is defined as a function of ability, experience and learning. Using Csikszentmihalyi's terminology (1982), challenge and the ability to handle challenge can significantly influence satisfaction derived from the activity. It is anticipated that motivations stem from the urge to fulfill certain needs, and that participants of different countries of origin, who participate in scuba diving have different expectations of the services designed to satisfy those needs. Thus, we used nationality as a category in our group type variable to check for differences between international and divers from the US.

Turner and Fluker (2000) found that expectations were significantly different for participants in a commercial whitewater rafting experience with and without prior experience. They found that participants without prior experience expected to get an adrenaline rush, go down big rapids, get cold, and be challenged. Findings show that participants with prior rafting experience did not expect this thrill but rather to meet new people, to be in nature and to enjoy themselves. Their expectations were found to be more realistic of people's expectations. Anderson, Fornell, and Lehmann (1994) describe how customer expectations are adaptive and change according to levels of previous experience and other information. Schreyer and Roggenbuck (1978, p. 377) identify five main points in expectancy research:

- People have a variety of expectations for participating in recreation activities;
- Expectations for participating in one activity are usually different from participating in another activity;
- People who engage in the same activity sometimes seek different outcomes; and
- Antecedent conditions such as demographics, socio-economic and environmental variables seldom by themselves predict the motivations of recreationists.

Turner and Fluker (2000) examined differences between before rafting expectations and the degree

expectations were met after rafting. A confirmation/disconfirmation framework was used to guide their investigation distinguishing gaps between motives, expectations and satisfaction with the outdoor activity experience. Their theoretical framework was applied in Meisel's (2003) master's thesis, the source and inspiration for this paper.

Purpose

The purpose of this study was to increase understanding of diver sociodemographics, previous dive experience, and their motives and expectations for diving in the Florida Keys. More specifically, the relationship between group type (Boy Scout, regular US and international) and stage of diver development (beginner, intermediate, advanced, expert, and post expert) were examined for differences in motivation and expectations for diving. Implications for diver education and target marketing for dive operators in the Florida Keys are sought. Confirmation/disconfirmation gap analysis adapted from Turner and Fluker (2000) was the theoretical framework used to guide this investigation.

Methods

A pre and posttest survey was completed by scuba divers before and after diving in the Florida Keys, summer 2002. Rotating between three commercial dive centers in the Florida Keys and the Boy Scout Sea Base, the researcher conducted surveys with 300 divers. All four dive operators chosen had two boats running on a daily basis. The boats hold approximately 30 to 40 passengers with a range of 10 to 25 divers per trip. Sampling was non-random and convenience based. The non-probability sample consisted of Boy Scouts, national and international divers diving in the Florida Keys while on vacation. Members of the Boy Scouts of America participating in the Florida High Adventure Sea Base scuba program formed one group. This group represents a homogeneous sample of white middle class youth between the ages of 13-18 attending Sea Base in groups of eight for one week diving in the Florida Keys. Their diving schedule was very structured and organized under the guidance of dive masters and instructors in the context of a diver educational training program. Divers visiting the Keys either on a packaged dive trip or on an individual dive vacation make up the other two groups who were diving with one of four dive operators in Key West,

Key Largo, or Islamorada, Florida. The Florida Keys was the location selected for the study since the area plays host to the third largest reef system in the world and the BSA Florida Sea Base was interested in sponsoring a study of diver motivations and expectations for diving. The researcher went on the dive boats on a regular basis in June and July rotating between the three dive centers. After an introduction from the dive master the researcher introduced herself and explained the survey. On the boat ride to the dive site divers completed part one (including demographics, environmental attitudes, expectation items) of the survey. When finished they initialed the survey and returned it to the researcher who kept it until the boat ride back. On the return trip, the researcher passed out the surveys again for the divers to complete part two including motivations and satisfaction confirmation/disconfirmation items.

Twenty-eight leisure experience preference items were drawn partly from the Recreation Experience Preference Scales - a standardized inventory (from Driver et al., 1991) and from Todd et al.'s (2001) study of divers. The items offer the advantage of easy comparison with other studies and across different populations. Using a five-point scale, 18 expectation variables (adapted from Turner & Fluker, 2000) ranging from not at all important to extremely important, measured the importance of each item to divers. Satisfaction was measured using a post event evaluation, according to the expectations stated before engaging in the activity. The same 18 expectations were restated in past tense asking if and to what extent expectations were met. It is assumed that expectations not met will result in decreased satisfaction, hence a decreased likelihood of return visits. On the other end of the spectrum a surpassed expectation will result in increased satisfaction. Thus, a satisfaction scale was not necessary since satisfaction was measured using confirmation/disconfirmation of expectations.

Sociodemographic and diver experience variables provided a descriptive profile of the divers. Mean rank scores of the different needs and motives were compared between divers of different sub groups using Kruskal Wallis Test, non-parametric test equivalent to one-way analysis of variance. A paired T-test was used to examine the gap between

expectation and satisfaction items for diving via the Statistics Package for the Social Sciences (SPSS).

Results

Of the 312 surveys administered, 12 were unusable since part 2 was missing. This was due to seasick divers from rough seas reducing the sample to 300. Of the divers approached aboard the dive boats chosen for the study hardly any refused to participate in the survey. Approximately 97% of the divers selected completed the survey. The high response rate might be because the survey was administered on the boat trip to and from the dive sites, when the divers had ample time to fill out a ten-minute survey. Also the researcher was present on all of the boats to introduce the project and answer any questions. Dive boats were chosen from different commercial dive operators throughout the Keys and the Florida National High Adventure Sea Base. The set up was nonrandom and convenience based and dive boats were selected with no particular pattern intended.

A diver profile revealed that 51% of all divers stayed in the Florida Keys for the sole purpose of diving followed by 20% of divers who were also vacationing and 11% who were doing business in the Keys while also wanting to vacation. 96% of these divers were certified. Twenty-six percent of the sample was diving with the Boy Scouts, 69% divers from the US on vacation, and 5% international (Table 1). The average age was 33, but the Boy Scout divers in the sample skewed the average slightly lower. The age range was 13 to 64 (minimum age for certification is 12). Seventy-eight percent of all divers were male.

Table 1. — Frequencies of Independent Variables

Dive group type	N	%
Regular US divers	206	69
Boy Scouts	78	26
International divers	16	5
Total	300	100
Diver Level of Development		
Beginner	75	25
Intermediate	117	39
Advanced	69	23
Expert	28	9
Post expert	10	3
Total	299	100

Divers were mostly diving with friends (30%), family (24%), dive buddies (13%), or family and friends (9%). Number of dives ranged from none (Boy Scout divers learning to dive) to 5000 and 80% of them had been diving between 2 and 18 years. A more detailed discussion of diver background variables was presented in another paper at the NERR 2003 conference (see Cottrell & Meisel, 2003).

When the entire sample (Table 2) was taken into consideration, the top motive turned out to be: "for fun", followed by "to look at underwater animal and plant life" and "to explore things." The least important motives were: "because of the risk involved" and "because it's sort of an impressive thing to do."

Table 2. — Mean scores for diving motivation items (n=300)

Motive	Mean
For Fun	4.53
To look at underwater animal and plant life	4.47
To explore things	4.39
Because its stimulating and exciting	4.33
To create an experience I can look back on	4.26
For the adventure of it	4.25
For a change from everyday life	4.08
Because of the sense of discovery involved	4.02
To experience the tranquility here	3.99
To learn more about the underwater environment	3.99
To be with similar people	3.81
To forget the pressures of my daily work	3.81
To develop my diving skills and knowledge	3.68
To be with my friends/family	3.64
For relaxation	3.64
To see shipwrecks	3.32
Because I think there is a lot of action here	3.27
To take pictures	3.26
To keep fit	3.13
To meet new people	3.11
Because I think it will be a challenge	3.08
To study underwater geological formations	3.07
To share my diving skills and knowledge	2.58
To use my equipment	2.45
To show myself that I can do it	2.27
For a chance to control things	2.05
Because its sort of an impressive thing to do	1.98
Because of the risk involved	1.85

Values based on a 1-5 scale: 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

Table 3 shows expectations ranked in the order of highest to lowest importance, along with the post event variables of the before stated expectations, hence the extent to which the expectation was met. Looking at mean expectations the following variables turned out to be the most important for the entire sample: "I will have fun," "The equipment will be good," "I will see some nice fish." The least expected variables for the soon to be had dive experiences were: "I will get scared," "I will take risks," and "I will get cold." Two things are interesting to note here. The highest expectations correspond with the most important motivations in Table 2. For satisfaction, "staff was friendly" was the highest ranked followed by "I did not get injured." The items scoring least in satisfaction were the challenge related items (challenge, took risks, got cold and got scared). However, these same items scored lowest in expectations as well. Overall, divers were extremely satisfied with their experience, staff, and the value they got, even though prices are quite high for diving.

Divers level of development was measured by a single measure (Table 1), where respondents characterized their level of diving development. Twenty five percent characterized themselves as beginner, 39% intermediate, 23% advanced, 9% expert, and 3% post-expert. Using the Kruskal Wallis Test (equivalent to oneway analysis of variance), motivation was compared according to level of development between the five groups. Ten out of the 28 motivation variables showed significant differences in motivation between these groups (Table 4). Groups differed in motivations such as: "To show myself that I can do it," "Because its sort of an impressive thing to do," "To develop my diving skills and knowledge," "To have an experience I can look back on," and "Because it's a challenge." These were most important for beginning divers and decreased in level of importance with higher levels of development. The variables: "For relaxation," "To share my knowledge," "To use my equipment," and "To see shipwrecks" were more important for advanced, expert and post expert divers than beginners and intermediates. The variable "For a change from life" was most important for beginners and advanced divers and less important for expert and post experts, which seems logical since they see diving as everyday life. These variables suggest that the less experienced group of divers, namely

Table 3. — Mean scores of Pre/Post expectations for diving (n=300)

Expectation	Mean	Satisfaction	Mean
I will have fun	4.61	Staff was friendly	4.69
I will see nice fish	4.59	I did not get injured	4.68
Equipment will be good	4.55	Equipment was good	4.59
I will feel safe	4.52	I had fun	4.57
Staff will be friendly	4.49	I felt safe	4.57
Will see nice formations	4.49	Staff was competent	4.54
The trip will be well organized	4.42	The trip was well organized	4.49
Staff will be competent	4.41	I saw nice fish	4.47
I will be comfortable	4.40	I was comfortable	4.47
I will not get injured	4.36	I met some nice people	4.42
I will get value for money	4.34	I was well informed	4.36
I will be informed	4.32	I saw nice formations	4.32
I will get to know nice people	4.23	I got value for my money	4.26
I will learn new skills	4.11	I learned new skills	3.76
I will be physically challenged	2.93	I was challenged	2.63
I will get cold	2.50	I took risks	2.29
I will take risks	2.34	I got cold	2.04
I will get scared	2.06	I got scared	1.67

Level of Measurement: 5 point Likert scale ranging from 1= strongly disagree to 5= strongly agree

beginning and intermediate, see the activity as a challenge that needs to be conquered. They want to learn new skills and see diving more as a new experience. Motives for more advanced divers are “to use my equipment,” “to meet new people,” “to share my diving skills/knowledge,” and “for relaxation.” These factors suggest a relatively more relaxed attitude of the advanced divers towards the sport. The pre and post¹ event variables on expectations for beginning and advanced divers showed that beginning divers had significantly higher scores on expectations such as: “I will learn new skills,” “I will get scared,” and “I will be physically challenged.” This is logical since these expectations correspond to their motives for diving as a new challenge and impressive activity that needs to be conquered.

Findings suggest a pattern exists among the motivation and expectation variables indicating that beginning divers are more focused on the diving activity itself. They seek a new experience and to explore new adventure activities they are willing to be physically challenged and to get scared. Advanced divers generally have more realistic expectations and a more relaxed attitude. They are more concerned with the auxiliary benefits of diving such as meeting new people, using their equipment, and sharing their skills.

¹ Data for pre-post test scores for expectations by diver skill level not given due to limitations in length of paper

This same pattern was true for rafters with and without prior rafting experiences in Turner and Fluker's (2000) study of whitewater rafting. Thus, perhaps this general pattern could be true for other adventure activities (e.g., fishing, sailing, climbing, etc.).

Next, differences between Boy Scouts, national and international divers were found for 12 of the 28 motives using the Kruskal Wallis test (Table 5). International divers showed the highest means for items such as: “for a change from everyday life,” “For a chance to control things,” “For relaxation” and although not significant, “To forget the pressures of my daily life.” The Scouts most often showed the highest scores for motives and regular US divers the lowest. Motives that were most important for the Scouts were: “Because it's impressive to do,” “Because of the action here,” “Because of the challenge,” “To show myself that I can do it,” and “Because of the risk involved.” When comparing these motives to motives international divers deemed most important one can clearly see some differences. International divers seem to dive for the escape of it, to forget pressures of daily life and to relax. Boy Scouts on the other hand want action, risk, and challenge. They want to conquer something that is exciting and impressive. Motives of most importance to regular US divers were “To see shipwrecks,” “To use my equipment,” “To stay fit,” and “To be with my family/friends.”

Table 4. — Differences in motivations among diver skill levels (Kruskal Wallis nonparametric test)

Motive	Beginner Mean Rank	Intermediate Mean Rank	Advanced Mean Rank	Expert Mean Rank	Post Expert Mean Rank	Chi-square Value
To show myself I can do it	195	140	128	110	111	39.11***
Because its impressive to do	175	154	129	117	103	20.80***
To develop skills	170	153	144	116	79	16.80***
Challenge	188	145	143	91	99	34.30***
Action	156	155	137	135	115	
For relaxation	124	147	161	182	205	17.20***
Chance to control things	149	148	151	143	149	
To share my knowledge	122	138	166	197	190	24.34***
To use my equipment	128	144	172	155	160	10.77*
To be with similar people	143	148	153	166	125	
To meet new people	137	146	165	152	175	
To learn more about marine life	159	143	156	143	132	
To see shipwrecks	122	142	166	182	187	17.80***
To study underwater formations	126	142	170	153	107	12.56**
To keep fit	139	143	157	177	121	
To experience tranquility here	127	157	145	165	144	
To forget pressures of daily work	130	151	155	130	134	
For a change from everyday life	156	151	156	115	92	11.16*
For fun	145	149	138	155	120	
Sense of discovery involved	155	138	154	164	120	
To look at underwater Life	143	155	145	152	105	
Experience to look back on	155	146	152	141	109	
It is stimulating & exciting	154	153	149	142	88	
For the adventure of it	149	151	149	149	81	
To be with family and friends	144	153	149	140	159	
To take pictures	147	143	156	148	161	
Because of the risk involved	159	142	157	138	116	
To explore things	153	145	151	154	150	

*Significant at .05, **significant at .01, ***significant at .001 level

Group percentages (n=300, 25% beginners, 40% intermediate, 23% advanced, 9% expert, 3% post expert)

Scale measurement – 1=not at all important to 5=very important

Mean ranks reported for each group

A gap analysis was conducted to show the change in mean scores for expectations before the dive and satisfaction afterwards. Out of the 18 pairs of pre and posttest variables, 10 pairs showed significant differences (Table 6), four of which expectations were exceeded including staff will be competent, will not get injured, friendly staff, and meet nice people. The six significant pairs of expectations not met were challenge and quality of marine life related items.

Eight posttest variables were lower than expected, as stated by divers in the Florida Keys.

Expectations not met were: “I will get scared,” “I will be physically challenged,” “I will take risks,” “I will see nice fish,” “I will see nice coral,” “I will have fun,” “I will get cold,” “I will learn new skills,” and “I will get value for my money.

Looking at these items one can see that the scuba business is doing a good job in general in meeting and even exceeding expectations of customers in the Keys. The fact that people don’t get as scared or cold or physically challenged is certainly not going to harm the business. But there are three variables that managers should be careful about. As seen above divers stated that they didn’t have as much fun as expected, the fish and coral were not as nice as expected and above all they didn’t get as much value for their money as expected. These variables are the ones that could hurt a scuba business and should alert scuba stakeholders. Mean scores, however, are high and discrepancies between expectations and satisfaction are relatively small yet the general patterns shown are worth noting. Scuba operations could give divers a choice of dive sites to choose from so they feel they have an input in

Table 5. — Differences in motivations between the Boy Scouts, International and American Divers (Kruskal Wallis Test)

Motive	Regular US divers	Boy Scouts	International divers	Chi Square
To show I can do it	137	171	159	10.31**
Impressive to do	130	197	157	40.76***
Develop skills	147	155	153	
Challenge	141	173	147	8.46**
Stimulating/exciting	142	165	165	5.87*
Action	138	177	137	12.90***
Relaxation	154	135	174	
Control things	139	164	205	13.69***
To share knowledge	150	145	147	
Risk	139	173	165	11.14***
Equipment	155	136	128	
Friends/family	152	149	115	
Be with similar people	147	152	170	
Meet people	144	163	160	
To learn	145	161	165	
To explore	148	158	140	
Discovery	148	153	127	
To look	145	156	142	
Adventure	143	167	127	6.41*
Experience to look back on	142	173	118	11.48***
Take pictures	144	166	120	5.89*
See shipwrecks	156	128	154	6.16*
Study underwater	150	137	123	
Keep fit	151	145	135	
For fun	141	160	137	
Experience tranquility	151	134	163	
Forget pressures	143	141	184	
Change from everyday life	143	156	184	4.88 ¹

¹Approaching significance at .1 level

*Significant at .05, **significant at .01, ***significant at .001 level

Scale measurement – 1=not at all important to 5=very important

Mean ranks reported for each group

what to see, hence feel better about what they saw underwater afterwards. Furthermore, divers stated they didn't learn new skills as expected. From comments people left on the surveys we know that divers would appreciate more information about the environment, fish at the dive site or how to handle rough waters. Dive operations could essentially get their dive masters to talk about these issues which would enhance diver feelings they learned something new, got attention and good value for the money.

Upon further analysis (data not presented here due to space limitations), results reveal that Boy Scouts seem quite distinct and different in their expectations. Boy Scouts showed much higher scores on expectation and satisfaction variables than regular US and international divers.

Conclusions

The study showed differences in motivations and expectations between different sub groups of scuba divers. Beginning and advanced divers showed differences in both motivations and expectations for the experience, which suggests that level of development could be a good means for stakeholders in the scuba industry to segment their markets. Beginning divers are more focused on diving seeking new experiences. To explore new adventure activities beginners are willing to get physically challenged and scared. Advanced divers generally have more realistic expectations about the dive experience and a more relaxed attitude about diving. They are more concerned with such aspects as meeting new people, using their equipment, and relaxing. Agencies and managers of adventure tourism and dive operators may wish to consider

marketing implications based on key findings especially when segmenting the market. Marketers might want to promote themes such as: "Challenge yourself," "Scuba diving is impressive-can you do it?" to beginning divers. When promoting diving to more experienced divers marketers should note that expectations of this group are more realistic, thus instead of promoting challenge and risk, focus on relaxation and being with people of similar interest aspects that appeal to this segment of the market reminding them of previous experiences. The Boy Scouts also showed very different expectations and motivations, and further research could be done to investigate why they are more satisfied with their experience in general, which might be due to their participation in an organized program, a more individual approach with an instructor and dive master per group, or the homogeneity of this group. These findings have direct implications for commercial dive centers to improve their pre dive orientation.

Implications

The purpose of this study was to increase understanding of diver sociodemographics, previous dive experience, and their motives and expectations for diving. This increased understanding might help managers to appreciate this group of recreationists more and enhance more effective environmental and outreach programs in the Florida Keys (i.e. the Florida National Marine sanctuary, PADI Project AWARE.) This knowledge can also benefit management of dive operators to offer efficient and successful diving programs. Dive operators might consider improving diver preparation for their dive experience by showing dive sites on charts, explanation of the marine life and how divers can help preserve the marine environment. Survey comments reveal that divers want to know more about how to dive more environmentally friendly. Dive masters of commercial diver operations could, after giving the necessary safety talk, address beginning divers with tips on no touch diving and information on how to behave in bad weather and in case of emergency. These are many of the things done in the Boy Scout Sea Base program that might be reasons why Boy Scout divers have higher satisfaction scores than those of the commercial dive shops.

Pertinent to further research, an investigation of cross-cultural differences in motivations for scuba

diving is suggested to meet expectations of international divers. This was not possible in this study due to the limited sample of international divers. Divers gave positive comments about the pre-post test survey because it allowed them to directly comment on the extent dive operators and the dive experience met their expectations. This approach allows for action-oriented research providing results for immediate and direct implementation, especially as it pertains to service quality.

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A COMPARISON OF ACTIVITY-SPECIFIC AND NONACTIVITY-SPECIFIC IMPORTANCE AND MANAGEMENT PREFERENCES AMONG THREE SPECIALIZATION GROUPS OF TROUT AND BASS ANGLERS

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Abstract: Recreation specialization describes the continuum of general to specific behavior of natural resource users and allows for the classification of these users into meaningful subgroups. An understanding of different specialization levels is useful to resource management in that it allows managers to distinguish between different interests and preferences among resources users when making resource allocation decisions. From a 1998 survey of licensed Massachusetts anglers, Salz et al. (2001) developed three subgroups of anglers based on their activity orientation, experiences, relationships, and commitment. Results from the 2001 study showed strong support for specialization theory, and suggested that managers consider differences in these three groups when making resource allocation decisions. Of further potential use to fisheries management would be to consider whether these differences are further explained by the type of fish anglers most prefer to catch. In this paper, angler attitudes toward specific aspects of the fishing experience and towards management regulations are examined based on species preference (trout or bass) as well as specialization level. Little difference was found in specialization levels between the two groups. However, there is a slight difference between trout and bass angler attitudes toward five out of seven activity-specific components of fishing and four out of 10 nonactivity-specific components. In each of these cases, bass anglers placed more importance on nonactivity-specific elements and less importance on activity-

specific elements. Also, the two fishing groups showed slight differences in preferences for five out of 11 possible management regulations, with greater support varying by item between bass and trout anglers. Overall, more variation was found by specialization level than by species targeted.

Introduction

Guided by managers trained in the biological sciences, fisheries management has traditionally been dominated by a resource-oriented approach. Such an approach involves priorities of resource protection and management for biological and economic goals (Ditton, 1996). In recent years, managers in the field of fisheries have come to recognize a need to understand the interests of different resource users and to incorporate human dimensions research into management. Segmenting resource users into meaningful subgroups allows for better management for diverse interests. Ditton (1996, 79) suggests that managers have come to recognize several "fishing products" that they can provide for various fisheries stakeholder groups, namely "tournament fishing, fishing for trophy size fish, catch and release fishing, family recreation, and catching fish to eat." In order to adequately supply these 'products,' human dimensions research needs to properly identify and segment the interests of fisheries stakeholders. A number of techniques have been used in the past to segment anglers into meaningful subgroups.

The most common approach used by managers has been to segment anglers by species sought (Ditton, 1996). This offers managers an opportunity to understand what types of fish anglers would like to catch, perhaps aiding in stocking and catch-limit decisions for specific species. However, this uni-dimensional approach may not account for the fact that many anglers fish for more than one species. Anglers stating that they plan to target a certain type of trout one week may be searching for bass the next. An alternate technique has been to segment recreational anglers according to age and/or social group. For example, Loomis and Ditton (1988) suggested that recreational fishing demand varies by age cohort, predicting that as future demand is increasingly sought by individuals in older cohorts, management desires are likely to change. Analyzing population age structures in the

United States, Murdock et al. (1996) predict that future recreational anglers will be more diverse and comprised of older individuals.

Another useful tool is that provided by the theory of recreation specialization. Recreation specialization describes a continuum of general to specific behavior of natural resource users and allows for the classification of these users into meaningful subgroups. Recreation specialization can be used to predict the importance anglers place on activity-specific goals, nonactivity-specific goals, support for management regulation, investment in the activity, and frequency of participation. Ditton (1996) suggests that recreation specialization could be especially helpful in deciding how to allocate resources, as well as in defining reasonable management goals and helping to avoid user conflict. Additionally, segmenting users by specialization level may help managers predict support and opposition to prospective management decisions (Fisher, 1997).

In this paper, we consider two of these segmentation approaches—recreation specialization and species targeted—as ways in which fisheries managers can better meet angler needs.

Literature Review

Recreation Specialization

The concept of recreation specialization was first proposed by Bryan (1977). Defining recreation specialization as “a continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences,” Bryan classified anglers into four groups: “occasional fishermen,” “generalists,” “technique specialists,” and “technique-setting specialists” (175). A criticism that came out of Bryan’s work and those who attempted to test the specialization concept was the circular reasoning used to measure and define specialization. Measures of equipment, skills, and setting preferences were used both to define specialization and to measure specialization level (Ditton et al., 1992).

To address the problem posed by this circular logic, Ditton et al. (1992) incorporated ideas from the social world literature and Bryan’s work to provide a re-conceptualized version of recreation specialization. This process yielded eight propositions. Namely, a person is likely to become

more specialized in an activity over time. As specialization level increases, side bets, centrality of the activity to one’s life, acceptance for rules, norms, and procedures related to the activity, importance of equipment and skill, resource dependence, and use of media sources related to the activity will increase. Also, with increased specialization, the importance of activity-specific elements will decrease relative to nonactivity-specific elements. The authors tested and found support for three of the propositions—resource dependency, mediated interaction, and activity-specific/nonactivity-specific elements. At the same time, Ditton et al. admitted the limitations presented by using the uni-dimensional measure of participation to classify anglers into specialization groups and suggested that multiple variables might be used in future studies to form a specialization index.

Specialization Index

Building on the work of Ditton et al. (1992), Salz et al. (2001) developed a multi-item specialization index using the social subworlds concept of Unruh (1979). Specifically, the authors used four variables to determine specialization level: orientation, experiences, relationships, and commitment. Based on questionnaire responses, anglers were divided into four specialization levels: “least specialized,” “moderately specialized,” “very specialized,” and “highly specialized.” Using the four variables derived from the social subworlds concept to determine specialization level appears to be especially useful, as the limits of using a single variable (Ditton et al., 1992) and the circular reasoning used originally by Bryan (1977) are avoided.

Salz et al. (2001) tested their specialization index on four statements predicted by specialization theory. Namely, high specialization anglers will 1) place less importance on activity-specific elements of the fishing experience and greater importance on nonactivity-specific elements, 2) have greater support for management tools and regulations, 3) generate a greater value of side-bets, and 4) have a greater frequency of participation than low-specialization anglers (243). They found strong support for all hypotheses, and thus for recreation specialization theory. This analysis was a consideration of all licensed Massachusetts anglers and did not separately consider species sought by the anglers.

Species Preference

There has been some suggestion that species preference could have an impact on the structure of angler specialization. Citing Wilde and Reichers (1994), Wilde et al. (1998) offer an example of different fishing methods for various species of catfish. Persons fishing for flathead and blue catfish were reported to be more specialized than channel catfish anglers. Understanding the relative specialization levels of trout versus bass anglers could be beneficial to managers in making management decisions about specific species. For example, if trout anglers placed less importance on actually catching a fish than bass anglers, managers might consider stocking fewer trout.

Before testing for differences in specialization level between trout and bass anglers, it is useful to consider potential variations in habits and culture between the two groups. In Massachusetts, numbers of wild trout are limited and the state stocks thousands of trout for the benefit of anglers. Bass, on the other hand, tend to reproduce naturally. The two fish provide a good basis for comparison, because they are the most commonly pursued species in the state and anglers are free to fish for either trout or bass once they have obtained a state fishing license. In other states, anglers may have to pay an additional fee to fish for stocked trout (Ross and Loomis, 2001). The difference between stocked trout and bass that mostly occur through natural reproduction could have implications for angler specialization. Many trout in the state are stocked for high catch rates (Ross and Loomis, 2001). Perhaps this practice reflects a strong desire by trout anglers to catch a fish (an activity-specific element) as part of their experience. Conversely, trout anglers may not be all that interested in catching fish, and the high levels of stocking could reflect manager misunderstanding of trout angler expectations. Likewise, knowing that bass populations occur naturally does not shed light on the importance of the catch to bass anglers.

Other evidence suggests that fly fishers may be more specialized than those who fish with bait (Manning, 1999). While popular myth may yield an image of the more sophisticated trout fly-fisher, a lack of empirical evidence comparing fishing methods of trout and bass anglers allows little more than speculation on whether or not trout anglers

could be more specialized. Further, Wilde et al. (1998) suggest that black bass anglers are considered to be highly specialized. This group is known to practice and advocate catch-and-release fishing. On the Bassmaster website (2003)-and organization for bass anglers-an entire section is devoted to promoting this practice of catch and release. This might suggest high specialization for bass anglers, because of the reduced importance of the activity-specific element of keeping a fish that has been caught. But again, without evidence to suggest the catch-and-release practices of trout anglers, it is difficult to hypothesize about which angler is likely to be more specialized.

Ross and Loomis (2001) compared activity specific and nonactivity-specific items between trout and bass anglers outside of the concept of recreation specialization, finding few differences between the two groups. Since little substantial evidence supports greater specialization for either trout or bass anglers, hypotheses for specialization by species will be open ended in this analysis. However, understanding potential differences that may be related to stocked and naturally-reproduced fish, fly-fishing versus bait fishing, and promotion of catch-and-release practices may be useful in interpreting the results. These variables may be helpful in exploring species variation in future research studies.

Hypotheses

Ha1: Trout and bass anglers differ in overall specialization level

Ha2: Trout and bass anglers will differ in perceived importance of activity-specific elements

Ha3: Trout and bass anglers will differ in perceived importance of nonactivity-specific elements of the fishing experience

Ha4: Trout and bass anglers will differ in support for management tools and regulations

Ha5: High-specialization anglers will attach less importance to activity-specific elements of the fishing experience than will low-specialization anglers

Ha6: High-specialization anglers will attach more importance to nonactivity-specific elements of the fishing experience than will low-specialization anglers

Ha7: High-specialization anglers will have greater support for various management tools and regulations than will low-specialization anglers

Methods

Data Collection

Data for this analysis come from a 1998 survey of 2,930 Massachusetts anglers. Participants were randomly selected from a population of state licensed anglers to receive a 16 page questionnaire. Questionnaires were administered to study participants using the Salant and Dillman (1994) Total Design Method. The 2,930 prospective survey respondents were mailed a letter notifying them about the project. One week later, questionnaires accompanied by a cover letter describing the purpose of the study and a self-addressed stamped envelope were mailed to the same individuals. A week after mailing the questionnaire materials, a post card was mailed out to the same individuals reminding them to return their questionnaires and thanking them for their participation. Three weeks after mailing the reminder post card, an additional questionnaire, a letter describing the project and encouraging response, and a self-addressed envelope was mailed to sample individuals who had not yet responded with a completed questionnaire.

Specialization Index

Survey administrators developed the specialization index used in this analysis from four questionnaire items. Each of these items corresponded to one of the following characteristics: orientation, experiences, relationships, and commitment. These characteristics were first used by Unruh (1979) to place individuals into four social subworlds—strangers, tourists, regulars, and insiders. Survey respondents were asked to rate which of four descriptions for each characteristic best described them. Each description corresponded to a value from one to four. These values were then totaled across all four characteristics for each respondent, yielding a value between four and 16. This value was divided by four to determine the respondent's specialization level (1=least specialized (stranger), 2=moderately specialized (tourist), 3=very specialized (regular), 4=highly specialized (insider)).

Species Preference

Respondents were asked to list the freshwater fish that they “actually fish for” “most often,” “second most often,” and “third most often” in Massachusetts. Respondents listing any type of bass species as the fish actually sought “most often” (e.g. largemouthed bass, smallmouthed bass) were

Table 1. — Status of Sport Angler Questionnaire Response (adapted from Salz et al., 2001)

Type of response	N	%
Initial sample	2,930	—
Mortality	344	—
Deceased (3)		
Nondeliverable (312)		
Not-usable upon return (29)		
Effective original sample	2,586	100.0
Nonresponse	1,175	45.4
Useable returned surveys	1,411	54.6
Trout or bass preference indicated and specialization level = 2,3, or 4	1,076	41.6
Trout (440)		
Bass (636)		

classified as bass anglers. Respondents listing a trout species (e.g. rainbow trout, brown trout) were classified as trout anglers. Those listing another type of fish were excluded from this analysis.

Data Analysis

To consider overall differences in specialization level by species preference (Ha1), a comparison of the percentage of anglers falling into each specialization level was made between trout and bass anglers. A chi-square test was performed to determine if differences were significant. A series of two-way ANOVA tests were performed to test the remainder of the hypotheses (Ha2 through Ha7). Using a two-way ANOVA with specialization level and species preference as factors is one technique that differentiates this analysis from previous considerations of the data that looked at either specialization level (Salz et al., 2001) or species preference alone (Ross and Loomis, 2001).

Results

Response Rate

Out of the 2,930 questionnaires sent to Massachusetts anglers, 1,411 were returned in useable form, yielding a response rate of 54.6% (Table 1). Data considered here come from the 1,076 questionnaires in which respondents were in one of the three highest specialization levels and indicated that they most preferred to fish for either bass (n=636) or trout (n=440). This represents 41.6% of the effective original sample and 76.3% of the useable returned surveys.

Specialization Index

In the original sample of 1,411 anglers, 1.2% were in the “least specialized” category (Level 1), 32.5% in the “moderately specialized” category (Level 2) category, 42.3% in the “very specialized” category (Level 3), and 42.3% in the “highly specialized” category (Level 4) (Salz et al. 2001, 249). In that original analysis, the first level of specialization was dropped because of the low number of anglers falling into the category (See Salz et al., 2001 for full description of methods). Likewise, this analysis considers just the upper three levels of specialization—“moderately specialized,” “very specialized,” and “highly specialized.” Out of 1,076 trout and bass anglers falling into these three upper levels of specialization, 278 (25.8%) were moderately specialized, 506 (47.0%) were very specialized, and 292 (27.1%) were highly specialized. Overall specialization levels for trout and bass anglers were very similar. Out of trout anglers, 120 (27.3%) were moderately specialized, 201 (45.7%) were very specialized, and 119 (27.0%) were highly specialized. Among bass anglers, 158 (24.8%) were moderately specialized, 305 (48.0%) were very specialized, and 173 (27.2%) were highly specialized (Table 2, Figure 1).

Table 2. — Number of Bass and Trout Anglers by Specialization Level

Species Preference	Specialization Level			Total
	M	V	H	
Trout	120	201	119	440
Bass	158	305	173	636
Total	278	506	292	1076

A Pearson Chi-square test revealed a probability of 0.643 that differences between trout and bass anglers are significant. Therefore, no significant difference is shown for overall specialization between trout and bass anglers and Ha1 is not supported.

Activity-specific Items

Out of seven items, significant differences were found between species in five cases. For these five items, bass anglers placed slightly less importance on activity-specific items of the fishing experience than trout anglers (Table 3). This provides support for Ha2, which predicted differences between trout and bass anglers in perceived importance of activity-specific items. Specialization theory is

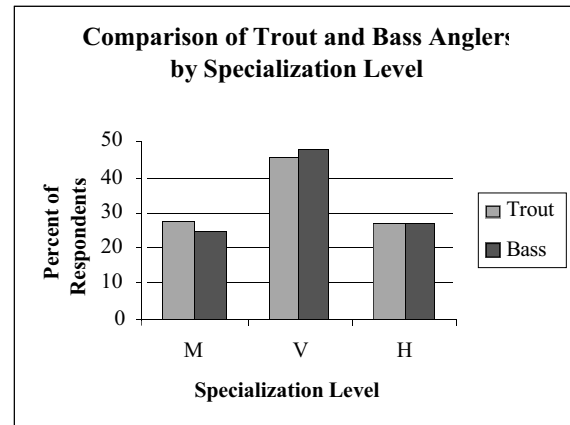


Figure 1. Comparison of Trout and Bass Anglers by Specialization Level. Differences between species are not statistically significant.

supported in five out of seven items as mean importance increases from moderately to highly specialized. We therefore support Ha5 as stated.

Nonactivity-specific Items

Differences in perceived importance of nonactivity-specific aspects of the fishing experience were found between trout and bass anglers for four out of 10 items (Table 4). In all four cases, bass anglers rated nonactivity items as slightly more important than trout anglers. This finding offers only limited support for Ha3, since no significant differences were found for six out of the 10 items.

In nine out of 10 items, item values increased by specialization level, supporting Ha6. The one item that did not show this increase in value (“for family recreation”) showed no significant difference according to specialization level.

Support and Opposition of Management Regulation Items

Support for management regulation items differed according to species preference on five out of 11 items (Table 5). Unlike items for activity-specific and nonactivity-specific elements of the fishing experience, greater support for management regulation items was not clearly found in one or the other of the two groups. Bass anglers indicated greater support for two of the five management items (“minimum size limit” and “voluntary catch and release”), while trout anglers indicated greater support for “restricted fishing area,” “prohibit use

Table 3. — Two-way ANOVA Tests for Mean Differences in Importance of Activity-specific Items According to Specialization Level and Fish Preference

Items*	Level of specialization			F	p	Fish Preference			
	M	V	H			T	B	F	p
I'm just as happy if I don't keep the fish I catch***	<u>4.127**</u>	<u>4.178</u>	<u>4.325</u>	3.047	0.048	<u>3.897</u>	<u>4.417</u>	70.654	0.000
I'm just as happy if I release the fish I catch***	<u>4.176</u>	<u>4.188</u>	<u>4.399</u>	6.500	0.002	<u>3.943</u>	<u>4.450</u>	68.924	0.000
To obtain fish for eating, and not for sport***	<u>1.413</u>	<u>1.460</u>	<u>1.526</u>	1.732	0.178	<u>1.697</u>	<u>1.306</u>	44.650	0.000
For the sport of fishing, not to obtain food to eat***	<u>3.655</u>	<u>3.924</u>	<u>4.203</u>	13.840	0.000	<u>3.632</u>	<u>4.137</u>	38.307	0.000
For the experience of the catch	<u>3.605</u>	<u>3.819</u>	<u>4.090</u>	13.575	0.000	<u>3.617</u>	<u>3.989</u>	27.854	0.000
When I go fishing, I'm just as happy if I don't catch a fish	<u>3.018</u>	<u>3.026</u>	<u>3.103</u>	0.357	0.700	<u>3.097</u>	<u>3.010</u>	1.352	0.245
A fishing trip can be successful even if no fish are caught	<u>3.799</u>	<u>3.809</u>	<u>4.031</u>	5.457	0.004	<u>3.854</u>	<u>3.875</u>	0.102	0.749

* For items 3, 4, and 5 mean scores were based on responses to the following categories; 1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Very important, 5 = Extremely important. For all other items, mean scores were based on responses to the following categories; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

** Means underscored by same line are not significantly different (.10) using Tukey's test.

***Interaction between Specialization Level and Fish Preference is significant at 0.10.

Table 4. — Two-way ANOVA Tests for Mean Differences in Importance of Nonactivity-specific Items According to Specialization Level and Fish Preference

Items*	Level of specialization			F	p	Fish Preference			
	M	V	H			T	B	F	p
To be with friends	<u>3.080**</u>	<u>3.173</u>	<u>3.561</u>	13.644	0.000	<u>3.064</u>	<u>3.387</u>	15.901	0.000
To experience adventure and excitement	<u>3.387</u>	<u>3.754</u>	<u>4.017</u>	22.556	0.000	<u>3.575</u>	<u>3.838</u>	12.969	0.000
For family recreation	<u>3.155</u>	<u>3.087</u>	<u>3.226</u>	1.092	0.336	<u>3.019</u>	<u>3.228</u>	6.673	0.010
To get away from the regular routine	<u>3.812</u>	<u>3.876</u>	<u>4.153</u>	7.124	0.001	<u>3.856</u>	<u>3.989</u>	3.737	0.053
To be close to the water	<u>3.254</u>	<u>3.564</u>	<u>3.887</u>	18.293	0.000	<u>3.501</u>	<u>3.621</u>	1.286	0.257
To get away from the demands of other people	<u>3.404</u>	<u>3.463</u>	<u>3.834</u>	7.266	0.001	<u>3.516</u>	<u>3.571</u>	0.461	0.497
For relaxation***	<u>4.226</u>	<u>4.365</u>	<u>4.550</u>	11.280	0.000	<u>4.380</u>	<u>4.379</u>	0.379	0.538
To experience natural surroundings	<u>4.084</u>	<u>4.262</u>	<u>4.419</u>	10.023	0.000	<u>4.259</u>	<u>4.258</u>	0.351	0.554
To be outdoors	<u>4.144</u>	<u>4.265</u>	<u>4.426</u>	7.419	0.001	<u>4.279</u>	<u>4.276</u>	0.233	0.630
To experience new and different things	<u>2.778</u>	<u>2.939</u>	<u>3.273</u>	11.879	0.000	<u>2.974</u>	<u>3.000</u>	0.053	0.819

* Mean scores were based on responses to the following categories; 1 = Not at all important, 2 = Slightly important, 3 = Moderately important, 4 = Very important, 5 = Extremely important.

** Means underscored by same line are not significantly different (.10) using Tukey's test.

***Interaction between Specialization Level and Fish Preference is significant at 0.10.

of certain gear,” and “no stocking allowed.” This finding yields little support for Ha4.

Nine items showed increasing ratings by specialization level, showing support for Ha7. Two items (“voluntary catch and release” and “prohibit use of certain gear”) showed no difference in support by specialization level. One item (“restricted fishing area”) ran counter to the

prediction in Ha7, showing greater support by moderately specialized anglers than highly specialized anglers.

Discussion

Results yielded greater differences by specialization level than by species targeted, suggesting that the former is a stronger predictor of the importance of activity-specific and nonactivity-specific items to

Table 5. — Two-way ANOVA Tests for Mean Differences in Support and Opposition of Management Regulation Items According to Specialization Level and Fish Preference

Items*	Level of specialization			F	p	Fish Preference			
	M	V	H			T	B	F	p
Minimum size limit***	4.134**	4.226	4.454	7.870	0.000	4.043	4.417	20.779	0.000
Voluntary catch and release	3.942	3.998	4.007	0.325	0.723	3.844	4.084	12.854	0.000
Restricted fishing area***	3.360	3.233	3.055	2.463	0.086	3.371	3.111	11.770	0.001
Prohibit use of certain gear***	3.657	3.522	3.603	2.182	0.113	3.683	3.506	10.197	0.001
No stocking allowed	3.599	3.681	3.924	9.601	0.000	3.806	3.670	6.085	0.014
Mandatory catch and release	3.117	3.200	3.474	6.612	0.001	3.147	3.326	3.584	0.059
Maximum size	3.285	3.574	3.745	10.736	0.000	3.459	3.607	2.497	0.114
Stock native fish***	4.260	4.320	4.406	3.095	0.046	4.329	4.326	0.502	0.479
Slot limit	3.078	3.173	3.399	6.211	0.002	3.231	3.197	0.477	0.490
Creel limit	4.171	4.270	4.476	8.821	0.000	4.307	4.296	0.456	0.500
Stock non-native fish	3.073	3.274	3.360	5.208	0.006	3.230	3.256	0.134	0.715

* Mean scores were based on responses to the following categories; 1 = Strongly oppose, 2 = Oppose, 3 = Neutral, 4 = Support, 5 = Strongly support.

** Means underscored by same line are not significantly different (.10) using Tukey's test.

***Interaction between Specialization Level and Fish Preference is significant at 0.10

anglers and angler support for management practices. For example, nine out of 10 nonactivity-specific items were more important to anglers as their specialization levels increased. Conversely, importance of nonactivity-specific items differed by species targeted for only four out of 10 items. Recreation specialization theory was strongly supported for all three propositions tested, while testing the same items based on species targeted yielded only limited differences. This finding suggests that understanding the specialization levels of users could be more useful to managers than understanding species targeted-which has been the more traditional angler segmentation approach (Ditton, 1996).

A second finding indicates that highly specialized trout anglers may differ somewhat from highly specialized bass anglers. While little difference was found in overall specialization levels between the two species target groups (Figure 1), there were slight variations between trout and bass anglers in the importance placed on activity-specific and nonactivity-specific items and support for management options. While keeping fish and catching fish for food were not especially important to either trout or bass anglers, these activity-specific items were slightly less important to bass anglers (Table 3). Likewise, nonactivity-specific items, such as being with friends and family and experiencing excitement, were slightly more important to bass anglers than trout anglers (Table 4). There was also mixed support for

management items, with bass anglers indicating greater support for mandatory and voluntary catch-and-release programs. The finding that bass anglers were slightly less catch retention-oriented may run contrary to the stereotype of the more sophisticated trout fly angler. Future research efforts could focus on testing and explaining this difference. Finally, while specialization level appears to be the better predictor of the three propositions tested in this paper, an understanding of differences by species targeted could still be useful in providing managers with a more complete picture of angler needs.

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THE IMPACT OF LICENSE FEES ON PENNSYLVANIA TROUT ANGLERS' PARTICIPATION

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Abstract: This paper examines a recent policy change by the Pennsylvania Fish and Boat Commission with serious implications for angling participation. Due to water quality problems at its fish culture stations, the Commission reduced the number of catchable-sized trout stocked in 2002 in the state by 28% relative to recent years. In addition, the Commission has proposed a package of changes to the set of fishing license and permits sold in the state that includes increases in the costs of both a fishing license and a trout/salmon stamp.

This paper uses two approaches to explore current knowledge about the potential impacts of these changes on angling participation in the state. First, previous research done both in Pennsylvania and in other states is reviewed. Second, data on license sales in Pennsylvania over the last 30 years are analyzed using econometric models to estimate relationships between the size of the trout stocking program and license sales, and between license and stamp prices and license sales.

Introduction

Two upcoming changes could have serious implications for angling participation in Pennsylvania. First, beginning in 2002, the Pennsylvania Fish and Boat Commission will reduce the number of catchable-sized trout stocked in the state by 28% relative to recent years. Second, the Commission has proposed a package of changes to the set of fishing license and permits sold in the state that includes increases in the costs of both a fishing license and a trout/salmon stamp.

This paper reviews current knowledge about the potential impacts of these changes on angling participation in the state, specifically focusing on the effects of price increases. Two approaches are followed. First, previous research done both in Pennsylvania and in other states is reviewed. Second, data on license sales in Pennsylvania over the last 30 years are analyzed using econometric models to estimate relationships between license and stamp prices and license sales.

Historical Background on Trout Management in Pennsylvania

The Pennsylvania Fish and Boat Commission (earlier the Pennsylvania Fish Commission) has propagated and stocked trout since 1873. Up until the late 1960's and early 1970's, the Commission managed the trout fishery primarily as a put-and-take fishery, with little attention paid to the wild trout resource (Snyder, 1995). Prior to the early 1970's, trout stocking decisions (which waters received trout, and how many) were largely political, with less consideration given to differences among waters in angling pressure, access, or the ability of the waters to support the stocked fish. Beginning in 1973, a county quota system allocated hatchery production to each county, based on license sales in the county, amount of accessible water, and the population of the county. This occurred at the same time that total hatchery production was increasing dramatically (from 2.8 million catchable trout in 1970 to 4.3 million in 1975).

To make better use of this increased production, the Commission changed from a county-based Allocation approach to a resource-based allocation approach. Beginning in the mid 1970's, extensive inventories of the physical, chemical and biological characteristics of Pennsylvania waters were

conducted. This information was used to form the basis of a classification system, based on the ability of each water body to support wild trout. In this classification, the best trout waters are classified as Class A wild trout waters. To capitalize on the natural productivity of these waters, and prevent between wild trout and hatchery-produced trout, stocking was discontinued on these waters. Waters with less wild trout productivity, but that meet minimum requirements for size, access and water quality, are eligible for trout stocking.

The objective of the stocking program has since been to “provide recreation in those waters where wild trout populations are inadequate to sustain the fishery at desired levels.” (PA FBC 1997). Beginning in 1983, trout management has been conducted following consistent statewide guidelines, so that similar waters are managed the same way, regardless of where they are located in the state. Trout are allocated to individual waters based on the size of the water, public access, angler use, and the ability of the water to sustain the trout until they are harvested. The goal of the stocking program is to generate one angler use day for each stocked trout.

Background On Angler Participation And Trout Stocking In Pennsylvania Angling Activity

Two independent estimates of trout angling activity in Pennsylvania are available. According to the most recent National Survey of Fishing, Hunting and Wildlife-Related Recreation (USFWS 1998), Pennsylvania anglers participated in 18,635,000 angling days in 1996 (excluding Great Lakes angling). Of these, 8,861,000 angling days, or 48% of the total, were for trout. Resident anglers accounted for 93% of the trout angling days in the state. The Coldwater Unit of the PA Fish and Boat Commission (PFBC) has assembled estimates of trout angling days for various classes of stocked waters, collected in . An additional 279,000 angler days occur on delayed harvest streams (spring and fall combined). Finally, 1,514,000 angler days are spent on trout-stocked lakes annually. The PFBC estimates do not include trout angling on waters that are not stocked.

License Sales

The total number of fishing licenses issued increased approximately 43% between 1970 and

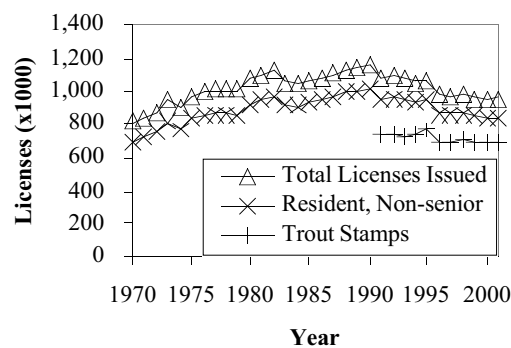


Figure 1. Annual Pennsylvania fishing license sales 1970-2000

1990, peaking at 1.164 million licenses in 1990 (Figure 1). Since 1990, issuances have declined 19% (216,000 licenses). Trout stamp sales have declined in a parallel manner, though the proportional decrease has been smaller. Much of the decline occurred in 1991 and 1996, years when license fees were increased. Over 70% of the decrease in sales since 1990 occurred in those two years. Senior lifetime licenses may also account for a significant portion of the decline. Senior annual license sales in 2000 were 66,000 fewer than in 1978, the year before senior lifetime licenses became available. Other potential factors, such as changes in the demographic makeup of Pennsylvania, do not help explain the decline in license sales (Ford 1997). For example, between 1990 and 2000, the age distribution of Pennsylvania residents has actually skewed toward the 35-54 year old age category, a range of ages at which Pennsylvanians tend to fish proportionately more.

License Prices and Fees

During the period 1970-2000, license prices and fees have increased five times. Figure 2 shows the total cost to purchase the regular license and stamp necessary to fish for trout, including license price and issuing fees. While the nominal (face-value) cost has increased four-fold, the real price (adjusted for inflation, and measured in year 2000 dollars) is actually 8% lower in 2000 than it was in 1970. Comparison of Figures 1 and 2 shows that fishing license issuances declined in every year that fishing license costs were increased. The average drop in license issuances in years of a cost increase was 7.1 percent.

License Revenues

Fishing license revenues, including all license types,

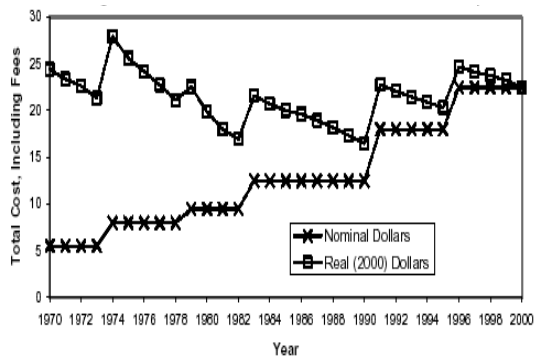


Figure 2. Total Cost of a Resident License and Trout Stamp

have increased steadily over the period 1970-2000 (Figure 3). Measured in real dollars, revenues have held fairly constant, with year-to-year fluctuations. Importantly, license revenues increased in every year that prices were increased.

Previous Studies of Angler Participation

A working hypothesis here is that the number of fish stocked in Pennsylvania waters will influence catch rates (or fishing success), and in turn influence angler satisfaction, and that this change in angler satisfaction will be reflected in a change in participation or license sales.

In a 1996 survey (Responsive Management, 1996b), Pennsylvania anglers expressed high levels of satisfaction with their fishing experiences. When asked about factors that took away from their satisfaction, 21% responded that "pollution or litter" detracted from their enjoyment, 18% responded "not enough game fish," 18% said "interference from others," and 16% reported "work obligations" kept them from enjoying fishing as much as they would have liked. Several other reasons were reported, but were attributed to smaller segments of the angler population.

Other studies indicate that angler satisfaction is due to several factors in addition to catch rate. Holland and Ditton (1992) examined fishing trip satisfaction in Texas. They narrowed their inventory of all dimensions of fishing trip satisfaction to six: 1) sense of freedom, 2) excitement, 3) competency, 4) relaxation, 5) enjoying the natural setting, and 6) reflection on past experience. They found that enjoyment of nature and sense of freedom were the two most important factors of satisfaction, followed by excitement and competency.

Hummon and Greene (1993) examined trout fishing in Pennsylvania. A random sample of 1600 anglers gave the following ranking of factors that are important to a satisfying fishing experience: 1) close to home, 2) nice environment, 3) special waters—clean water or good fishing holes, 4) uncrowded, 5) catch trout, and 6) stocked trout.

In 1997 survey (Heberling 1997), Pennsylvania anglers listed factors important to their choice of a fishing site. Nearly 60% of the respondents mentioned peace and quiet as a prominent factor. The next-most-often listed factors were (55%) an uncongested environment (55%), type of fish (45%), number of fish caught (39%) and nice scenery (35%).

A common finding, then, is that number of fish caught does contribute to fishing satisfaction, at least for some anglers, but is a less important determinant than other factors such as the physical setting of the fishing experience and social factors. It is still an open empirical question, however, whether fishing success impacts angler participation or license sales. Several studies, which are reviewed below, have investigated the factors that influence angler participation. Taken together, these studies suggest that license cost and the opportunity cost of time are more important determinants of angler participation than stocking rates or fishing success.

Two studies looked specifically for a link between stocking rates and aggregated license sales. Loomis (1999) found no statistical relationship between the two in an analysis of statewide license sales in California. Likewise, Loomis and Fix (1998) found no statistical relationship between statewide license sales and stocking levels in Colorado. Loomis and Fix did find, however, that intra-state regional differences in stocking levels were related to regional differences in fishing activity, as measured by angler days. Whether this relationship is the result of an inducement effect, where anglers in a region with higher stocking levels are induced to fish more frequently, by an attraction effect, where anglers travel to regions with highest stocking levels, or to a program delivery effect, where the state conservation agency stocks more heavily in areas where more fishing occurs, is unclear.

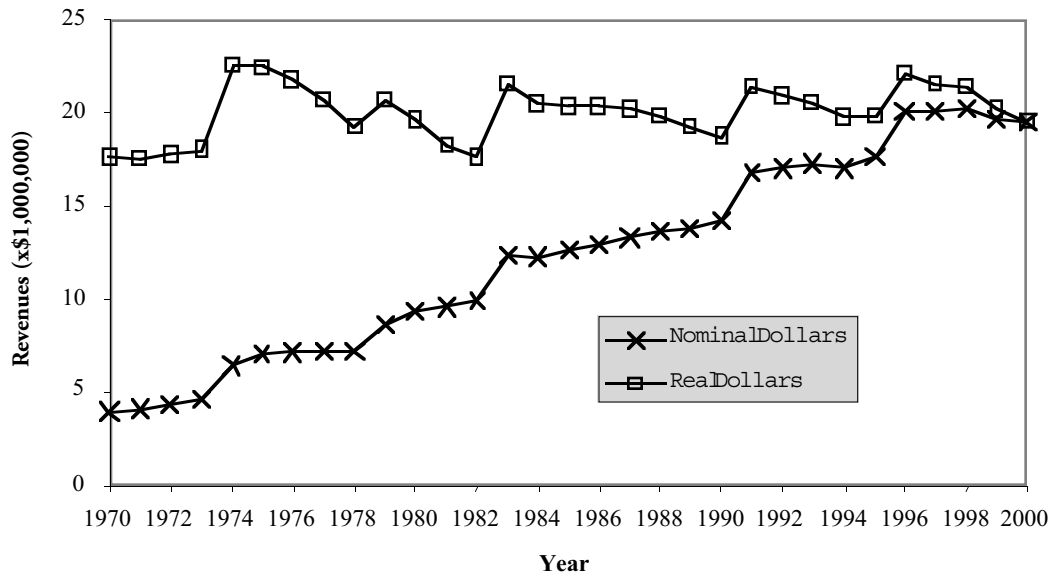


Figure 3. Fishing License Revenues

Two other studies have focused on the individual decisions made by active anglers whether to continue to fish. Fedler and Ditton (2001), in a survey of Texas anglers, found that while some half of the anglers surveyed fish consistently, year after year, the rest “drop in” and “drop out” over time. Most significantly, 25% of anglers who purchased a license in any given year were likely to not purchase a license within the next one or two subsequent years, with time constraints as the most-commonly cited reason for not participating.

In a 1996 survey, inactive anglers in Pennsylvania (anglers who had fished in 1995, but who did not buy a 1996 license) were asked their reasons for not buying a license (Responsive Management 1996a). Respondents were not prompted, and could list multiple reasons. The most common reason given was a lack of free time, due to work, family or other commitments. Only 8% of inactive anglers cited license cost as a reason for not buying a license. This even though the survey was conducted in the year following an increase in fishing license fees. Even fewer inactive anglers mentioned the quantity of fish (4%) or quality of fish (2%) as reasons for not buying a license.

A national survey conducted between 1993 and 1996 (Responsive Management 1996b) also asked inactive anglers their reasons for not buying a license. Here, anglers were read a list of potential

reasons, and asked how strongly each reason influenced their decision to not buy a license. Among inactive Pennsylvania anglers, the most commonly-cited factor was a loss of interest (62% said that loss of interest influenced their decision to no longer fish). Others in the top five reasons that respondents said influenced their decision included lack of free time, no one to fish with, and work and family obligations. Of particular interest to us is that 21% of the inactive anglers stated that the cost of licenses influenced their decision to no longer fish, while only 10% stated that the quantity of game fish available influenced their decision.

Finally, two studies looked specifically at the impact of license fees on angler participation. Teisl et al. (1999), in a study of anglers in New England, found that a one percent increase in the resident fishing license price will lead to a 0.05 percent decrease in resident license sales, while a one percent increase in nonresident fees will lead to a 2.83 percent decrease in sales. Sutton et al. (2001) found that an 18% increase in license price to a unique fishing spot in Texas will lead to a 10% drop in sales, implying a 0.55% drop per 1% increase in license price. This latter result must be interpreted with caution, since it involved purchase of a special permit to fish in one specific area, not a statewide license.

Analysis of Historical Participation

To determine the relationship between stocking rates and license sales, we analyzed license sales data from Pennsylvania over the last thirty-two years (1970-2001). The analysis was limited to resident, non-senior licenses, which consistently account for 87-89% of all license sales. Senior annual licenses are difficult to model because of the attrition process as anglers buy lifetime licenses. An analysis of non-resident license sales is complicated by the recent introduction of three- and 7- day tourist licenses.

To control for changes in population over the period, the number of licenses sold in each year was divided by the number of Pennsylvania residents between the ages of 16 and 64, generating a measure of licenses sold per capita. In 1970, the purchase rate was 9.7%. It peaked in 1990 at 13.4%, and has since declined to 10.7%.

Several factors were investigated to determine whether they influenced license sales, including license price, the unemployment rate (x100), per-capita personal income, and the number of adult trout stocked in Pennsylvania. License price includes issuing fees, as well as the cost of a trout stamp. While not all license holders purchase a trout stamp, the majority do. The unemployment rate was included as a measure of the opportunity cost of time, because anglers have reported that the amount of free time they have is an important determinant of participation in angling.

Tests showed that the license sales time series was non-stationary, meaning that an ordinary regression of license sales on the explanatory variables could lead to spurious results. Instead, regressions were conducted using first-differenced data. That means that the dependent variable in the regressions was the absolute change in per capita licenses sales (positive or negative) that occurred each year, relative to the year before. The explanatory variables were first-differenced as well (change in real price, change in unemployment, change in income, and change in stocking rate).

A second set of tests showed that the differenced data exhibited serial autocorrelation. A moving-average autoregressive model was therefore estimated. Regression results are shown in Table 1. The dependent variable is the annual absolute

change in resident licenses sold per capita. The regression R-square was 0.819. The regression standard error was 0.002123. The regression F statistic was 22.660.

The constant term and the trend term work together to determine the background level of change in license sales. The trend term is set so that it equals 1 in 1970. Thus, in the early part of the period 1970-2001, the background trend was positive—absent any change in price or unemployment, license sales tended to increase. In later years, the background trend turned negative.

Real per capita income was not a significant determinant of license sales, and was dropped from the regression.

Price is an important determinant of license sales. For each \$1 increase in the real price of a fishing license, resident license sales per capita dropped by 0.001709. In 2001, when the population of Pennsylvania between the ages of 16 and 64 was 7,770,000, this would translate into a decrease of 13,280 licenses. Expressed as a point elasticity, a 1% increase in the real price of a fishing license would result in a 0.36% decrease in resident licenses sales.

Table 1. — Regression results for Resident Licenses

Variable	Estimated Coefficient	Std. Error	t-Statistic
Constant	0.002166	0.001214	1.785
Trend	-0.000122	6.50E-05	-1.874
Trout Stocked	-9.90E-11	1.01E-09	-0.098
License Price	-0.001709	0.000139	-12.327
Unemployment	0.001036	0.000369	2.806
MA(1) Autoregr. coeff.	0.521108	0.184384	2.826

Unemployment was also a significant determinant of license sales, with higher unemployment leading to higher license sales. The magnitude of the effect was much less than for price changes. A one-point increase in the unemployment rate would result in an increase in resident license sales of 8,050, an increase of 1.0%.

The number of adult trout stocked was not a significant determinant of resident license sales.

This non-result held regardless of whether a trend variable was included in the regression, so it cannot be attributed to colinearity with the trend variable. Nor did the result change when the regression was run with longer lags, up to a four-year lag. Nor did the result change when biomass of fish stocked was used, instead of number of fish. From the 32 years of data used for the analysis, we have no statistical evidence that stocking rate influences license sales.

To summarize, the econometric analysis of historical license data showed that license price and the unemployment rate were significant determinants of license sales, but that the number of trout stocked each year was not. Still, for comparison purposes, we calculate the impact that a 1.4 million fish decrease in stocking would have on resident license sales. Because the estimated coefficient for trout stocked is negative, the expected impact of the stocking decrease is an increase in license sales per capita of 0.000138, which translates to an increase of 1072 licenses. The uncertainty associated with this estimate is high, however.

Conclusions

Two upcoming changes could have serious implications for angling participation in Pennsylvania. First, beginning in 2002, the Pennsylvania Fish and Boat Commission will reduce the number of catchable-sized trout stocked in the state by 28% relative to recent years. Second, the Commission has proposed a package of changes to the set of fishing license and permits sold in the state that includes increases in the costs of both a fishing license and a trout/salmon stamp. 2003. This paper reviews current knowledge about the potential impacts of potential price changes on angling participation in the state. Three sources of information are included. First, previous research done both in Pennsylvania and in other states is reviewed. Second, data on license sales in Pennsylvania over the last 30 years are analyzed using econometric models to estimate relationships between the size of the trout stocking program and license sales, and between license and stamp prices and license sales. Third, results from a survey of 611 resident trout anglers are presented.

Previous research on the impact of license price increases on angling participation (as measured by license sales) has given a consistent result. While an

increase in license price does reduce license sales, the sales reduction is proportionately small, so that revenues increase as a result of the license price increase. In contrast, previous research on the impact of trout stocking on angling participation has given a consistent non-result. No statistical relationship has been found between the quantity of trout stocked in a state and the number of resident fishing licenses sold in that state.

Pennsylvania data on license sales, license prices, and trout stocking levels from 1970 to 2000 were analyzed using econometric regression techniques. That analysis gave results that are consistent with previous research in other states. The analysis found no statistical relationship between the number of trout stocked in Pennsylvania and license sales, either resident or nonresident. The statistical precision of that result is low, however, due to limited data. Further, the analysis showed that a 1% increase in fishing license price results in a 0.36% to 0.37% decrease in license sales. We project that a \$10 increase in the price of a resident fishing license and trout stamp effective in 2003 would result in a decrease in the number of licenses sold in that year of 14%, but would result in an increase in license revenues of 26%.

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THE IMPACT OF RECREATIONAL CRABBING ON NORTH CAROLINA'S CRAB POPULATION

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Abstract: In order to properly manage and regulate fisheries, resource managers must have accurate information concerning harvest rates for individual species. While commercial crabbers are required to report crab landings, little is known about the harvest rates and catch effort of North Carolina's recreational crabbers. The purpose of this project was to determine the impact of North Carolina's Recreational Commercial Gear License (RCGL) holders on the harvest of blue crabs (*Callinectes sapidus*). Specific objectives were to estimate the total number of crabs harvested by RCGL holders, as well as the amount of effort they put into crabbing and the types of crabbing equipment they used.

In order to accomplish these objectives, a random sample of 574 license holders was drawn from the approximately 7,100 RCGL holders who were eligible to use commercial gear to harvest crabs between July 2001, and July 2002. Telephone surveys were conducted on 388 members (68%) of this sample between September 2001 and March 2002. This survey included items on individual use of the RCGL licenses, type of equipment used, location of crab harvesting, number of days spent crabbing, and daily and season harvest estimates.

Results indicated that a relatively high portion (22.2%) of RCGL holders did not use their licenses to attempt to harvest any type of fish or seafood. RCGL holders who used their licenses harvested an estimated total of 354,150 crabs (118,050 lbs.) during the 2001 crabbing season, with an estimated market value of \$98,808. In addition, only 23.5% of RCGL holders reported any type of crab harvesting activities. Of those who reported harvesting crabs, 86.8% reported using gear that was specifically targeted to crabs. Overall, this data

demonstrates that RCGL license holders are having a minimum impact on crab populations within North Carolina, especially when compared with commercial harvest rates.

Introduction

In order to properly manage and regulate fisheries, resource managers must have accurate information concerning harvest rates for individual species. While commercial crabbers are required to report crab landings, little is known about the harvest rates and catch effort of North Carolina's recreational crabbers. The purpose of this project was to determine the impact of North Carolina's Recreational Commercial Gear License (RCGL) holders on the harvest of blue crabs (*Callinectes sapidus*). Specific objectives were to estimate the total number of crabs harvested by RCGL holders, as well as the amount of effort they put into crabbing and the types of crabbing equipment they used.

Methods

In order to accomplish these objectives, a telephone survey was developed, pilot tested, and administered to a sample of the approximately 7,100 RCGL holders who were eligible to use commercial gear to harvest crabs between July 2001, and July 2002. A sample of 574 was randomly drawn using the Statistical Package for Social Sciences (SPSS) computer software. The data collection interviewer made at least three attempts to contact each individual in the sample between September 2001, and March 2002. A total of 388 interviews were completed, resulting in a response rate of 68%. The telephone survey included items on individual use of the RCGL licenses, type of equipment used, location of crab harvesting, number of days spent crabbing, and daily and season harvest estimates.

Results

Since RCGL licenses can be used for a number of fishing related activities, the first question that was asked of respondents was whether or not they used their license to harvest crabs. The responses to this question are provided in Table 1.

The fact that only 23.5% of RCGL license holders used the licenses to harvest crabs during the 2001 season indicates that the majority of license holders are not utilizing their licenses to harvest

Table 1. — Crabbing Activity by RCGL holders

Harvest Crabs	Number	Percentage
Yes	91	23.5
No	297	76.5
Total	388	100

crabs. This percentage was extrapolated to all RCGL license holders to estimate that a total of 1,669 license holders attempted to harvest crabs during the 2001 season. This figure will be used throughout this report to estimate numbers related to the study objectives.

A follow-up question to respondents who reported that they had not attempted to harvest crabs during the 2001 season, concerned what they had used their RCGL for. This data is summarized in Table 2.

As the data in Table 2 indicate, the majority (68%) of RCGL holders use their licenses to gill net. This is followed by crabbing (23.5% from Table 1). Other less significant uses include shrimping (5%), herring netting (5%), oystering (4%), clamming (2%), and catching bait (1%). Surprisingly, over one-fifth of the sample reported that they did not use their RCGL licenses to harvest any seafood.

In an effort to determine harvest rates and effort put forth by RCGL crabbers, respondents were asked how many days per year they spent attempting to harvest crabs, how many crabs they harvested on an average day of crabbing, and how many total crabs they harvested throughout the season. The responses to these questions are respectively provided in Tables 3 through 5.

Table 2. — Use of RCGL by Non-Crabbers

Non-Crabbing Activity	Number	Percentage
Gill Netting	201	67.7
Did not use license	66	22.2
Shrimping	15	5.01
Herring Netting	14	4.7
Oystering	12	4.0
Clamming	6	2.0
Catching/Netting Bait	4	1.3
Other	3	1.0

Table 3. — Number of Days Spent Attempting to Harvest Crabs

Days Crabbing	Number	Percentage
1-5	29	32
6-10	21	23
11-15	14	15
16-20	11	13
21-25	2	2
> 25	14	15
Avg days crabbing = 15.09		

Table 4. — Average Crabs Per Day Harvested

Crabs per day	Number	Percentage
0-5	20	22
6-10	18	20
11-15	18	20
16-20	13	14
21-25	9	10
26-50	12	13
> 50	1	1
Avg Crabs per day = 15.85		

Table 5. — Total Estimated Crabs Harvested Per Season

Total crabs per season	Number	Percentage
0-5027	30	
51-100	23	25
101-150	8	9
151-200	6	6.5
201-300	13	14
301-400	6	6.5
>400	8	9
Avg Crabs per season = 203.27		

The data shown in the previous tables indicates a great deal of variety in effort and harvest rates. Although a few individuals (15%) spent over 25 days attempting to harvest crabs, the majority (55%) spent 10 days or fewer on the activity. Overall, the average number of day's respondents reported attempting to harvest crabs was 15.85. Reported harvest rates also varied considerably within the sample. While the majority (62%) of the sample reported harvesting less than 15 crabs per day, a sizable portion (14.3%) reported harvesting 25 or more crabs per day. The average number of crabs harvested per day (15.85)

multiplied by the average number of days spent crabbing (15.09) yields an estimate of 239.17 crabs per year harvested by RCGL holders. This figure is slightly higher than the average number of total crabs harvested (203.27) estimated by respondents. For both of these estimates, it appears that the majority of respondents are harvesting relatively few crabs (42% reported less than 10 per day and 55% reported less than 100 per year). However, these averages are greatly increased by the relatively small numbers of highly successful respondents who reported harvesting large numbers (greater than 25 per day and greater than 300 per year) of crabs throughout the season.

In addition to estimated harvest rates, the type of equipment used by RCGL holders to harvest crabs was also of interest. Respondents were asked to indicate whether or not they used crab pots, gill nets, shrimp trawls, or a dip net to harvest crabs. The responses to these questions are summarized in Table 6.

Table 6. — Methods Used to Harvest Crabs

Crabbing method	Number	Percentage
Crab Pots	69	76
Bait/Dip Net	14	15
Shrimp Trawl	9	10
Gill Nets	7	8

Of the individuals who reported attempting to harvest crabs, the majority (76%) reported using crab pots. This was followed by baiting and dip netting (15%), shrimp trawling (10%), and gill netting (8%). Since those individuals using crab pots and dip nets were targeting crabs as a primary harvest species, as compared to gill netters and shrimp trawlers who harvest crabs as a by-catch, the reported total annual harvest was broken down and compared by crabbing method. Table 7 displays the results of this comparison.

Table 7. — Total Annual Harvest by Crabbing Method

Crabbing method	Number	Avg Crabs per year
Crab Pots	69	241.99
Bait/Dip Net	14	162.43
Shrimp Trawl	9	88
Gill Nets	7	76.43

As predicted, respondents who reported harvesting crabs by crab pots and dip nets reported harvesting significantly more crabs than those who reported using gill nets and shrimp trawls. With this in mind, these averages and appropriate percentages can be used to estimate the total number of crabs harvested statewide by RCGL holders. Table 8 provides a breakdown of this analysis.

As Table 8 points out, NC RCGL holders harvested an estimated total of 354,150 crabs during the 2001 crabbing season. If converting to pounds, using approximately three crabs to one pound, we estimate that approximately 118,050 pounds of crabs were harvested by RCGL holders with a total market value of \$98, 808, using \$.83.7 per pound (current market price). This figure may also vary with the size and grade of caught crabs. While the figures contained in Table 8 are useful, by further segmenting harvest by region or body of water, managers can better understand the impact that RCGL crabbers are having on specific watersheds throughout the state. Respondents to the survey were asked to indicate on which body of water they participated in crab harvesting. Responses to this questions were examined and reduced into one of the following six categories: The Albemarle Sound watershed; The Tar/Pamlico River Watershed; The Neuse Watershed; The Cape Fear Watershed; The Lower Inter-Coastal Waterway (southern half of State); and the Pamlico Sound. Table 9 provides a summary of this data, along with estimates of harvest for specific watershed regions.

The majority (54.9%) of recreational crabbing activity within the sample took place on waters associated with the Inter-Coastal Waterway between the Pamlico Sound and the Cape Fear River. This was followed by activity on the Tar/Pamlico and Neuse River Watersheds, and the Cape Fear Watershed. The least amount of recreational crabbing activity within the state took place on the Pamlico Sound and Albemarle Sound Watersheds. It is important to note that these results are indicative only of crabbing activity by RCGL holders, and do not reflect the total amount of all crabbing activity that takes place within North Carolina.

Table 8. — Estimate of 2001 RCGL Crab Harvest Totals

Crabbing method	Percentage*	Estimated Statewide Users**	Average Annual Harvest	Total Crabs Harvested
Crab Pots	75.8	1,265	241.99	305,875.36
Gill Nets	5.5	92	76.43	7,031.56
Shrimp Trawl	7.7	129	88	11,356
Bait/Dip Net	11.0	184	162.43	29,887.12
Total Crabs Harvested =				354,150.04

*Percentage was derived from Table 6. In cases where an individual used more than 1 method to harvest crabs, the method yielding the highest number of crabs was chosen as primary method

**Derived from multiplying percentage by the estimated 1,669 statewide RCGL crab harvesters.

Table 9. — Crabbing Activity & Harvest by Body of Water

Body of Water	Number	Percent	Crabs Harvested	Pounds of crabs harvested
Albermarle	5	5.5	19,478	6,493
Tar/Pamlico River	12	13.2	46,748	15,583
Neuse River	12	13.2	46,748	15,583
Cape Fear River	7	7.7	27,270	9,090
Southern ICW	50	54.9	194,428	64,809
Pamlico Sound	5	5.5	19,478	6,493
Total	91	100.0	354,150	118,051

Summary

North Carolina RCGL holders harvested an estimated total of 354,150 crabs during the 2001 crabbing season. Approximately 118,050 pounds of crabs were harvested by RCGL holders with an estimated total market value of \$98,808. When compared to the 29,938, 956 pounds of crabs with an estimated market value of \$25,078,700 harvested by commercial crabbers in NC during the same time period, it appears that the crab harvest impact of RCGL holders is minimal. This project demonstrated that RCGL holders bring in less than one-half of 1 percent (0.4%) of all harvested crabs. Other important information includes:

- Only 23.5% of RCGL holders reported any type of crab harvesting activities. Of those who reported harvesting crabs, 86.8% reported using gear that was specifically targeted to crabs (crab-pots, bait/dip nets).
- Respondents who reported harvesting crabs by crab pots and dip nets reported significantly more crabs caught than those who reported using gill nets and shrimp trawls.
- Over half of the crabs harvested by RCGL holders were taken from waters associated with the ICW between the Cape Fear River and the Pamlico Sound. The proximity of this region to relatively large population centers (compared to the rest of the study region), may account for more recreational license holders utilizing this resource.
- A high percentage (22.2%) of RCGL holders reported that they did not use their licenses to attempt to harvest any type of fish or seafood.

RECREATION SPECIALIZATION: UPPER MANISTEE RIVER SHORELINE OWNER ANGLERS AND THEIR MANAGEMENT PREFERENCES

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Abstract: Recreation Specialization is managerial tool for identifying and describing the diversity within an outdoor recreation activity. Understanding diversity helps managers match recreators with the appropriate resources and forecast reaction to proposed policy changes. This study explored the relationship between specialization levels of upper Manistee River shoreline owner anglers and their management preferences. The study area is located in the northern Lower Peninsula of Michigan. This study was part of a culminating research effort that began in the fall of 2001. The Michigan Agricultural Experiment Station, the Michigan Department of Natural Resources, and the U.S. Forest Service sponsored these studies in part to obtain information about shoreline owners' property characteristics, recreational activities, and perceptions of environmental quality. Specialization was measured through four dimensions: skill, equipment, commitment, and centrality to lifestyle. In this study, mail surveys and a reminder postcard were sent all 601 shoreline owners, and 67% responded. Specialization level was linked to preference for stocking, fish habitat manipulation, and tackle restrictions, but was not linked to public access issues. Results also showed a small number of specialization indicators are capable of producing results similar to studies that used several indicators. The framework used to measure and report specialization in this study should make the concept more intuitively understandable.

Introduction

Hobson Bryan (1977) proposed the Concept of

Recreation Specialization in the late 1970's as a managerial tool that could identify and explain the diversity of behaviors and attitudes within an outdoor recreation activity; Bryan used trout fishing. Identifying unique recreator groups helps managers match them with the resources available to meet their needs, which should minimize conflicts between and within groups using the same resource. The essence of recreation specialization is found in Michigan's fishing rules.

Managers can identify subgroups by collecting data related to specialization's four core dimensions: commitment/experience, skill level, equipment, and centrality to lifestyle. Commitment/experience refer to the number of days spent participating in the activity, usually within the previous 12 months and/or the total number of years spent participating in the activity. Skill level refers to a person's self-rated ability to combine his/her innate coordination and dexterity with their learned knowledge to competently perform a task (e.g., fishing). Equipment refers to the type of tools used (e.g., type of fishing rod and reel) to participate in the sport or the replacement cost of those tools. Centrality to lifestyle refers to the activity's importance in a recreator's life.

For example, Bryan (1977) created a continuum of four subgroups. "Occasionalists" fished with any type of reel, expressed limited commitment to the sport, were not skillful anglers, and did not consider fishing a central life interest. At the opposite end of the continuum were "technique-setting specialists." These anglers fly-fished, were very skillful, were very committed to the sport (i.e., fished often), and considered fishing a central life interest. "Generalists" and "technique specialists" represented the middle of the continuum. Bryan found these subgroups differed in their preference for policies on stocking, who they fished with, and how important fishing was during vacations.

Subsequent researchers invested their efforts into specialization's relationship with attitudes, motivations, behaviors, and preferences using other activities such as birdwatching, hiking, camping, hunting, and sailing. Three general conclusions emerged from those investigations: 1.) Specialization's ability to identify unique subgroups is generally accepted, 2.) There is no standard method for measuring and reporting specialization,

and 3.) Specialization is moderately successful in predicting management preferences.

Preferences are general beliefs about desirable or ideal conditions (Graefe, Donnelly, & Vaske, 1987). Preferences typically revolve around three general types of settings: physical, social, and managerial. Management preferences are the issue of concern for this study, and they address the visible evidence of regulation (e.g., signs and uniformed police), the degree of regulation (i.e., how many rules to obey), the type of maintenance performed, and the type of acceptable services and facilities found in the recreational area (Driver, 1989).

Specialization has not been applied to private landowners, the people who, in a fragmented landscape such as a state forest, must live with recreational policies day to day. Landowners have a vested interest in recreational policies around their property because they cannot shift or substitute recreation sites as easily as visitors. Also, it was not known if the preferences associated with a landowner's specialization level would supercede or interact with the preferences associated with being a property owner. For example, previous studies found that as fishing specialization level increased, preference for fish habitat manipulation increased. Restricting the amount of vegetation removed from a shoreline is a habitat management technique, yet many shoreline owners remove such vegetation to view the water (Segerson, 2001).

The purpose of this study then was to gather baseline data about the management preferences of upper Manistee River (UMR) shoreline owners, and to explore the relationship between those preferences and shoreline owner anglers' specialization levels.

Hypotheses

As specialization level increases, preference for (on the UMR):

1. Designated public access should decrease
2. Information about public access should decrease
3. Stocking should decrease
4. "Flies only" water should increase
5. Habitat restoration should increase
6. Habitat enhancement should increase

The North Central Research Station of the U.S.D.A.'s Forest Service and the Michigan Agricultural Experiment Station sponsored this study. These organizations also sought data about the characteristics of shoreline owners' properties, their perceptions of environmental quality, their likelihood of making the UMR the site of their permanent home if it was so not already, and their assessment of UMR managers' job performance (Nelson & Valentine, 2003).

The UMR is located in the northern Lower Peninsula of Michigan, a two and a half hour drive north from the capitol city of Lansing (Figure 1). The area is rural and forested. Although part of the river is still recovering from the effects of timber extraction in the late 1800's, the Michigan Department of Natural Resources' (MDNR) Fisheries Bureau classified much of the river as a blue ribbon trout stream and the Natural Resource Commission instituted quality fishing regulations (e.g., "flies only" zone) from M72 to the CCC State Forest Campground (the middle stretch of the river). Visitors enter the river through more than 40 access sites. Access sites range from road crossings to developed sites with restrooms and boat launch facilities. Fishing, nature observation, and camping are popular UMR activities (Nelson, Valentine, & Lynch, 2002).

Riparian ownership is public and private. The MDNR's Forestry, Minerals and Fire Management Division is the lead public land manager. The division receives support from the Fisheries Bureau, Law Enforcement Division, and Parks and Recreation Bureau. More than 600 different individuals and businesses own land adjacent to the UMR. UMR properties were classified as principal homes, second homes, vacant land with a temporary structure, or vacant land without a temporary structure.

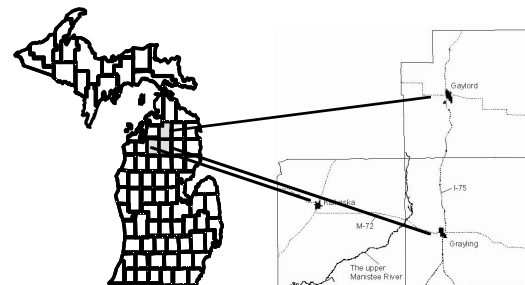


Figure 1. The upper Manistee River

Methods

This study was a census of upper Manistee River (UMR) private shoreline owners from Mancelona Road in Otsego County to M66 in Kalkaska County who fished at least once in their life. Many of the river's shoreline owners take advantage of the river's fishing opportunities, and trout are the most common target species (Nelson, Valentine, & Lynch, 2002).

The census was derived from a list of property owners obtained from Equalization Offices of the three affected counties. All 627 private shoreline owners were sent a recreational assessment questionnaire in the fall of 2001. After the fall 2001 survey effort, 601 shoreline owners remained to be included in this research effort. After three mailings and a postcard reminder (February to May, 2002), 580 shoreline owners remained in the sampling frame, of which 387 responded (67.1%). Three hundred forty three (88.6%) owners were eligible for analysis because they had fished at least once in their life.

Specialization was measured in a manner consistent with Bryan's (1977) framework and similar to Donnelly, Vaske, and Graefe (1986), Graefe, Donnelly, and Vaske (1987), and Miller and Graefe (2000). Each respondent received a specialization score based on their answers to four questions related to the core specialization dimensions: number of days fished from April 28 to September 3, 2001, skill level, preferred fishing method, and importance of fishing in life. The scores of each dimension were summed. Scores were only given

to respondents who answered all four questions (315 of 343; ~92%). Table 1 summarizes the coding process.

The rationale for measuring specialization in this manner was to make the concept more intuitively understandable and operational for managers, recreators, and private interests.

The study's management preferences were selected based on indications from UMR managers and private interests that these issues were relevant to them and could be acted upon. Respondents could select "increase," "similar amount," or "decrease" with respect to those preferences. Hypotheses were tested with Chi-square calculations, and were accepted if $p < .05$.

Results

Most of the respondents were male (84.1%). Principal home owners were typically older (42% were 65+) and retired (62%). Their median household income in 2001 was \$40,000 to \$59,999. Second home owners were typically younger (23% were 65+), still working (39% were retired), and had higher incomes (\$80,000+) in 2001. Vacant land owners with and without temporary structures were the youngest (22% were 65+), were still working (22% retired), and had median household incomes \$60,000-\$79,999.

A fairly normal distribution of specialization scores emerged: "novice" - 32.1%; "intermediate" - 40.3%; "advanced" - 27.6%. Anglers in each specialization level were in their mid to late 50's

Table 1. — Revised indicators used to measure specialization

Indicators	Original measures	Score
Days fished during season (at preferred water body and UMR)	0-10	1
	11-30	2
	31+	3
Skill level	Beginner or beginner-intermediate	1
	Intermediate	2
	Intermediate-expert or Expert	3
Preferred fishing method	Spincasting	1
	Spinning or Baitcasting	2
	Fly-fishing	3
Importance of fishing in life	Not at all important or somewhat important	1
	Moderately important	2
	Very important or extremely important	3

A-priori, three specialization levels based on summated variable
Novice = 4-7; Intermediate = 8-10; Advanced = 11-12

Table 2. — Results of specialization segmentation process

Indicators	Original measures	Novice 32.1%	Intermediate 40.3%	Advanced 27.6%
Days fished last 12 months (at preferred water body and UMR)	0-10	91.1%	41.7%	0.0%
	11-30	6.9	47.2	55.2
	31+	2.0	11.0	44.8
Skill level	Beginner or beginner-intermediate	42.6	4.7	0.0
	Intermediate	50.5	41.7	1.1
	Intermediate-expert or Expert	6.9	53.5	98.9
Preferred fishing method	Spincasting	26.7	4.7	0.0
	Spinning or Baitcasting	34.7	24.4	8.0
	Fly-fishing	38.6	70.9	92.0
Importance of fishing in life	Not at all important or somewhat important	82.2	14.2	0.0
	Moderately important	17.8	52.8	3.4
	Very important or extremely important	0.0	33.1	96.6

Table 3. — Specialization's relationship with management preferences

As level of specialization increases, preference for:	Test result	Hypothesis:
Designated public access should decrease	$X^2 = 1.910, p = .752$	Rejected
Information about public access should decrease	$X^2 = 2.877, p = .579$	Rejected
"Flies only" water should increase	$X^2 = 33.280, p = .000$	Accepted
Stocking should decrease	$X^2 = 9.374, p = .052$	Accepted
Habitat restoration should increase	$X^2 = 34.301, p = .000$	Accepted
Habitat enhancement should increase	$X^2 = 28.384, p = .000$	Accepted

Hypothesis accepted of $p < .05$

(average age) and most classified their UMR property as the site of their second home, particularly the advanced anglers (65.5%). Property type ownership however was not associated with any one level of specialization over another ($X^2 = 5.521, p = .238$). Advanced anglers more frequently reported household incomes of \$80,000+ in the past year (44.8%), which is consistent with the findings of previous research that showed more specialized anglers usually earned more income. Finally, as the level of specialization increased, a greater number of anglers reported the Manistee River as their preferred fishing location. Bryan (1979) noted that an increasing level of specialization manifests itself in resource specificity. Although Bryan only addressed the type of water body preferred by his different anglers (deep water vs. shallow stream), this finding logically parallels that result and was statistically significant ($X^2 = 35.103, p = .000$). Table 2 highlights the specialization level segmentation results.

The majority of the hypotheses were accepted. Although previous investigators found a link

between specialization level and public access issues, these results make sense in light of the unique circumstances on the UMR. The stocking hypothesis was accepted because its p-value was close enough to the acceptance threshold. Table 3 summarizes the hypotheses testing results.

Discussion

Hobson Bryan's (1977) segmentation scheme was inflexible. For example, an angler would not be classified as a "technique-setting specialist" if the angler used spincasting equipment, even if the angler's skill level, centrality to lifestyle, and commitment indicators were consistent with such a classification. However, flexibility in measuring specialization addresses the complexity of individual development and in this study, produced results similar to Bryan's propositions.

A smaller set of specialization indicators reduces the amount of data required to measure specialization. That data may even be available from existing sources such as license banks, U.S. Fish and Wildlife Service reports or other

university reports. Ultimately, this specialization measurement scheme should make the concept more intuitively understandable for resource management stakeholders.

Overall, shoreline owner anglers had a similar relationship with management preferences as visitors in previous studies. Recall that it was unknown if the preferences associated with property ownership would interact with the preferences of specialization level. In this study, specialization level was linked to preference for habitat manipulation, tackle restrictions, and stocking, but was not linked to public access issues.

It is logical that specialization level was not linked to preference for designated public access or information about public access. Two possible reasons and one probable reason could explain these results. First, it is possible that shoreline owners were concerned that additional public access would breed more conflict between themselves and recreators. Three commercial canoe liveries operate in the study area, and they attract considerable business from large groups of college-age people. In data not presented here, trespass and noise from drunken canoeists was a common issue of concern (Nelson & Valentine, 2003). If additional public access were installed, that could offer canoeists a wider variety of trip lengths, which could increase the amount of contact between shoreline owners and these recreators if their homes were near a new access point. Second, it is possible that shoreline owners believed additional public access and information about it would reduce the conflict between themselves and canoeists. If canoeists were given information about the location of public access, then they might avoid trespassing because they knew an access site was nearby. Third, public access is of probable universal importance to shoreline owners who want access to productive fishing areas and put-in sites for watercraft so they and their guests can float back to their property.

Stocking had a slightly weaker relationship with specialization level than hypothesized. It is possible that life course interacts with specialization. Life course refers to stages of life (e.g., single, married, retired, etc.). One of the common suggestions shoreline owners had for managers was an exception for children under 12 in the quality

fishing zone because children have difficulty using fly-fishing equipment. If shoreline owners were considering one exemption, perhaps they were considering a second by supporting stocking efforts because it would increase the probability of their children catching fish. In this situation, the preferences of life course interact with the preferences of specialization level. Future research into this topic would clarify the reasons for stocking's weak relationship with specialization level of UMR shoreline owners.

Bryan (1979) proposed that anglers of increasing specialization level desire settings they can manipulate to distinguish between luck and skill when catching a fish. "Flies only" water offers such a setting. In this study though, "flies only" water was most strongly supported by the advanced anglers, and they do not represent the majority of shoreline owners.

The findings related to habitat enhancement and restoration are consistent with previous studies in that as level of specialization increased, so did preference for these types of habitat manipulation. For UMR managers though, it is important to note that a majority in all specialization levels preferred to increase these efforts. A future study that forces respondents to prioritize these two options should offer more insightful results because in this study, respondents answered under the assumption that resources exist to do both.

Recommendations

Since Bryan (1977) framed the concept, very few investigators measured or reported specialization level the same way. Some researchers measured specialization with more than four indicators, other with less. Some researchers reported specialization through each dimension (more than one specialization score) while others did not. Since specialization was designed for managers, standardizing specialization measurement and reporting procedures would make the concept more intuitively understandable to them, and hopefully then, more likely to be used.

Specialization does not state that recreators must enter the continuum at the general end, nor does it say that they will/must reach the specialized end. It would be useful then to know what triggers an evolution in specialization level, how long do

individuals stay in one level, why do they stop moving within the continuum, and can a person's level of specialization ever go down and what does that mean for the concept?

Also, specialization was not designed to explain all of the variance all the time. Therefore, it would be helpful to understand the circumstances where specialization is not useful in explaining the variance, for example in the stocking hypothesis.

Finally, managers would benefit from measuring the specialization levels of their visiting anglers. For example, how would a specialization makeup of 80% "advanced" in visitors versus 27% "advanced" in shoreline owners affect management decisions. Whose preferences take priority? Also, understanding the preferences associated with a specialization level and knowing which specialization level is in the majority, should help managers forecast reaction to proposed policies. For example, an upper Manistee River's management plan is currently under public review. Perhaps managers should begin projecting responses of UMR shoreline owners with respect to the plan's propositions so they can begin formulating answers before the public hearings.

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Recreation Marketing

A MARKET ANALYSIS OF THE MIDEWIN NATIONAL TALLGRASS PRAIRIE

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Abstract: This paper reports survey results of Chicago area residents conducted as part of a market analysis of the Midewin National Tallgrass Prairie (MNTP). Key topics reported include respondents' intention to visit Midewin, likely visitation behavior, preferences for specific attraction features and programming options, and reactions to pricing options.

Introduction

The Midewin National Tallgrass Prairie (MNTP) was established in 1996 as the first national tallgrass prairie in the United States. The site is the former 23,500-acre Joliet Army Ammunition Plant, or Joliet Arsenal, located 45 miles southwest of Chicago. The site was recently transferred to the USDA Forest Service from the US Department of Defense. The Forest Services initial efforts have been to plan for future uses (via the master plan process and other planning efforts) and manage the existing resources. The restoration of the MNTP is being guided by four goals: to conserve and enhance native populations and habitats; to provide opportunities for scientific, environmental, and land use education and research; to allow for continued agricultural use under certain conditions;

and to provide a variety of recreation opportunities. A key input in developing the master plan for MNTP was to analyze the site's market potential as a recreation resource and tourist attraction in a major metropolitan area. The primary objective of the market analysis effort was to develop a market definition for MNTP-specifically, to estimate demand/likely usage - and a market profile of likely visitors. The secondary objective was to examine a set of key marketing issues associated with developing the site for visitor use-the issues examined centered on product/program preferences, transportation options, pricing issues, and promotion/communication alternatives; commonly known as the elements of marketing mix. The market analysis approach developed by the research team to recommend possibilities for marketing mix elements involved multiple methods including: an analysis of existing secondary data sources, interviews with other Chicago area nature-based attractions, focus group sessions with potential Midewin visitors, and two mail surveys-one with Chicago area teachers, the other with Chicago area residents. The findings summarized here are based on the later survey effort - the mail survey of Chicago area residents.

Method

The mail survey was developed by the research team along with input from various individuals with experience conducting recreation studies in the Chicago area. The survey instrument, designed as an 8-page booklet consisting of 18 questions, was structured to obtain information about respondent's general recreation habits and interests, intentions to visit Midewin, likely visitation behavior, preferences for specific attraction features and programming options, reactions to pricing options, and demographic characteristics.

The sample consisted of two groups: (1) 1000 individuals in the Chicago area drawn from the general population (using a list obtained from a sampling service); and (2) 335 individuals in the Chicago area who have an interest in outdoor recreation issues and programming (using a list obtained from an outdoor interest magazine). In both groups, termed General Population and Outdoor Interest respectively, individuals residing within a 100 mile radius of Midewin were selected to participate in the study.

An initial mailing was assembled and mailed September 4, 2001. The mailing consisted of a personalized cover letter, a prepaid return envelope, the questionnaire, and a small incentive of a one-dollar bill. A postcard, which included both a thank you and a reminder, was sent to all respondents on September 19—approximately two weeks after the initial survey mailing. On October 5th, four weeks after the initial survey mailing, those individuals who had not yet responded were sent another personalized letter, an envelope, and another copy of the survey. It should be noted that the reminder postcard mailing and second survey mailing were both delayed because of the attacks on September 11th and the anthrax scare that occurred shortly thereafter.

A total of 592 surveys were returned, with 370 from the General Population sample and 222 from the Outdoor Interest sample. A total of 60 envelopes were returned as either undeliverable (due to bad addresses) or refusals. In all, a 46 percent response rate was achieved, with a rate of 39 percent for those in the General Population sample and 68 percent in the Outdoor Interest sample.

The potential of non-response bias (i.e., which occurs when survey respondents and non-respondents differ in how they would complete the survey) was examined by computing the approximate distance between the zip code of each respondent and non-respondent in the original mailing lists and the zip code at Midewin (60481). The results of this analysis indicated no statistically significant difference between survey respondents and non-respondents in terms of their distance to Midewin. Based on this finding, non-response bias was not viewed as a major problem and no further analysis of non-respondents was conducted.

As was expected the two sample groups, General Population and Outdoor Interest, differed considerably in their interest both in the general survey topic (Outdoor Recreation) and in visiting Midewin. Consequently, separate analysis were conducted for each group of respondents.

Findings

Respondent Demographic Profile. Compared to those in the Outdoor Interest group, respondents in the General Population group were more likely

to be male (59% GP versus 37% OI), to be slightly younger (mean age of 50.6 GP versus 51.8 OI), more likely to have a larger household (84% in the GP group had more than one person versus 79% in the OI group) and to have at least one child living at home (40% in the GP group had more than one child living at home versus 29% in the OI group). The majority of respondents in both groups were predominately Caucasian/white (91% GP and 99% OI). The percentage of African American respondents was slightly higher in the General Population group (6%) compared to the Outdoor Interest group (1%). Finally, the annual household income of those in the General Population group tended to be slightly lower than the income of those in the Outdoor Interest group (36% in GP group had an income below \$50,000 compared to 26% in the OI group).

Intention to Visit MNTP. In order to assess intentions to visit Midewin, respondents were provided with a current description of the outdoor recreation site along with a set of maps showing Midewin's general location and the basic land-use plan. Respondents were then asked, "Given what you have seen and read, how interested would you or the members of your household be in visiting the Midewin National Tallgrass Prairie?" A "purchase intent" scale, with four response categories ranging from "definitely would not visit" to "definitely would visit" was employed to gauge intent to visit when the site was open with an appropriate range of managed areas and activities.

The response to this question, summarized in Table 1, revealed a strong level of interest in Midewin. Of those in the General Population group, approximately 74 percent indicated that they "probably" or "definitely" would visit Midewin, with 22 percent indicating that they "definitely" would visit. As would be expected, the interest of those in the Outdoor Interest group was even higher. Almost 94 percent of this group indicated that they "probably" or "definitely" would visit Midewin, with 70 percent indicating that they "definitely" would visit. Although these results are encouraging, it is important to note that no time frame was specified for this question.

Consequently, the estimates generated should be viewed as representing the level of visitation or demand that Midewin will eventually achieve once the site has been fully developed. Nonetheless, the

Table 1. — Intentions to Visit Midewin

	General Population n=349	Outdoor Interest n=212
Definitely would not visit	3.4%	1.4%
Probably would not visit	22.9	4.7
Probably would visit	52.1	24.1
Definitely would visit	21.5	69.8

Table 2. — Number of times over a 12-month period respondents interested in visiting Midewin would visit

	General Population (Interested in MNTP) n=234	Outdoor Interest (Interested in MNTP) n=187
None	0.4%	0.0%
Once a year	45.7	25.1
2 times a year	26.1	32.1
3 times a year	11.5	13.9
4 times a year	9.8	13.9
5 times a year or more	6.3	15.0
Mean	2.4 times	3.0 times
Std Deviation	(4.10)	(2.49)

figures generated by this question provide a useful foundation for future planning efforts.

Likely Visitation Behavior. Those respondents who indicated an interest in visiting Midewin (i.e., that responded that they “probably” or “definitely would visit” in the question above) were then asked a number of questions about their likely visitation behavior. When asked how often during a 12-month period they would visit (see Table 2), most of those in the General Population group indicated that they would visit either “once” (46%) or “twice a year” (26%), just over one-fourth (27%) would visit “three times a year or more.” In contrast, those in the Outdoor Interest group indicated that they would visit more frequently. More specifically, while one-fourth of that group (25%) would visit only “once a year,” the remainder would visit “twice a year” (32%) or “three times a year or more” (43%).

In terms of when they would visit (Table 3), the members of both groups indicated that they would be most likely to visit Midewin during the fall season (September, October, and November) and

Table 3. — Seasons respondents interested in visiting Midewin would be likely to visit Midewin¹

	General Population (Interested in MNTP) n=255	Outdoor Interest (Interested in MNTP) n=194
Spring (March, April, May)	59.2%	83.0%
Summer (June, July, Aug)	59.2	67.5
Fall (Sept, Oct, Nov)	81.2	90.2
Winter (Dec, Jan, Feb)	12.9	30.4

¹ Multiple responses allowed.

Table 4. — Length of time for a typical visit to Midewin for respondents interested in visiting Midewin¹

	General Population (Interested in MNTP) n=255	Outdoor Interest (Interested in MNTP) n=194
2 hours or less	7.1%	10.3%
3-4 hours	57.6	58.2
5-7 hours	29.8	44.8
8 hours or more	6.3	8.2
Overnight for 1 day	24.7%	22.7%
Overnight for 2 days	15.7	13.4
Overnight for 3 or more days	5.1	2.6

¹ Multiple responses allowed.

Table 5. — Intentions to use basic facility features for respondents interested in visiting Midewin (% that Probably or Definitely would use)

Feature/Option	General Population (Interested in MNTP) n=254	Outdoor Interest (Interested in MNTP) n=198
Visitor center	96.1%	98.5%
Paved trails	89.6	87.8
Unpaved natural-surface trails	84.5	96.9
Hiking trails	81.1	92.7
Biking trails	56.4	61.7
Horseback riding trails	38.3	26.9
Picnic areas	84.7	77.6
Fishing areas	54.8	34.9

least likely to visit during the winter season (December, January, and February). Those in the Outdoor Interest group also indicated a strong level of interest in visiting during the spring season (March, April, and May).

In terms of how long they would visit (Table 4), most indicated their visit would last either “3-4 hours” or “5-7 hours.” Outdoor Interest respondents were more likely to stay for longer day visits than General Population respondents. Of the overnight stay categories, most indicated that they would stay “overnight for one day.”

Table 6. — Intentions to use camping-options for respondents interested in visiting Midewin (% that Probably or Definitely would use)

Feature/Option	General Population (Interested in MNTP) n=254	Outdoor Interest (Interested in MNTP) n=198
Vehicle accessible campsites w/flush toilets and showers	57.1%	41.1%
Vehicle accessible campsites with flush toilets only	49.6	36.1
Vehicle accessible campsites w/pit toilet or outhouse only	31.0	27.7
Group campsites with flush toilets and showers	44.3	21.7
Group campsites with flush toilets only	31.1	16.8
Group campsites with pit toilet or outhouse only	19.2	11.6
RV camping areas with flush toilets, showers, and electric/water hookups	28.6	14.0
RV camping areas with electric/water hookups only	24.6	11.6
RV camping areas w/toilets and showers but no hookups	20.2	9.7
Walk-in only campsites with pit toilet or outhouse only	28.3	26.3
Walk-in only campsites with no facilities	17.9	15.2

Preferences for Attraction Features and Programming Options. Respondents were asked a number of questions about their interest and preference for selected design features and programming options. As shown in Table 5, of the features examined, almost all respondents indicated that they would use a “visitor center” and both “paved” and “unpaved/natural-surface trails.” General Population respondents preferred paved trails over unpaved natural-surface trails, whereas Outdoor Interest respondents preferred unpaved natural-surface trails over paved trails. In terms of types of trails, respondents would be most likely to use “hiking trails,” followed by “biking” and “horseback riding trails.” Of the other basic features examined, most indicated that they would use “picnic areas” while a smaller number indicated that they would use “fishing areas.”

Table 7. — Interest in programming options for respondents interested in visiting Midewin (% that Probably or Definitely would use)

Program Content	General Population (Interested in MNTP) n=251	Outdoor Interest (Interested in MNTP) n=193
Wildlife programs	34.9%	82.0%
Home gardening/ prairie-plant programs	29.3	51.0
Native American history programs	27.9	52.6
Programs that provide an overview of our Nations forests and grasslands	26.9	58.5
Ornithology (bird-related) programs	16.5	63.7
Prairie restoration programs	16.5	62.2
Prairie ecology/ecosystem programs	15.6	63.2
Military history programs and arsenal tours	15.4	18.6
Farmstead and agricultural history programs	14.3	24.5

Table 8. — Interest in programming options for respondents interested in visiting Midewin (% that Probably or Definitely would use)

Program Format	General Population (Interested in MNTP) n=251	Outdoor Interest (Interested in MNTP) n=193
Self-guided tours	39.5	77.2
Roving naturalist/ranger programs	34.9	60.1
Nature walks/tours led by an interpreter	33.9	72.0
Evening programs at a campground, picnic area or amphitheater	24.4	35.6
Programs held at visitor centers	24.0	52.1
Audio-visual programs in the Visitor Center	20.2	38.8
Audio-cassette guided tours	16.8	32.6
Volunteer opportunities at Midewin	6.2	22.0

Of the different types of camping options examined (Table 6), “vehicle accessible campsites” would be used by more, followed by “group campsites” and “RV campsites.” “Walk-in only campsites” would receive the least usage. Within each type of campsite, those offering “flush toilets, showers, and hookups” would be used by more compared to those offering “pit toilets or outhouse only.”

When asked about the different types of programs that might be offered at Midewin (Table 7), respondents in the General Population group were most interested in those involving “wildlife” (35%) and “home gardening/prairie plants” (29%), whereas respondents in the Outdoor Interest group were most interested in programs involving “wildlife” (82%), “ornithology” (64%), “prairie ecology” (63%), and “prairie restoration” (62%).

In terms of program format (Table 8), both groups indicated the strongest interest in the on-site options (“self-guided tours,” “Roving naturalist/ranger programs,” and “nature walks/tours”) and the least for the “audio-cassette

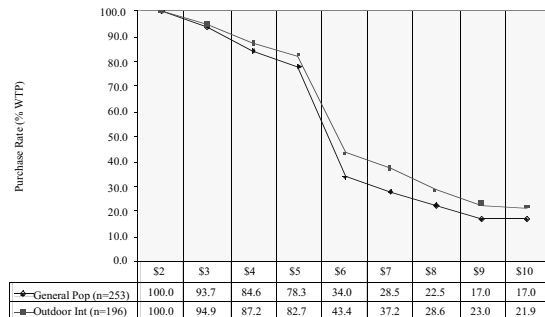


Figure 1. “Demand Curve” Based on Purchase Rate (Cumulative % WTP) for a Daily Vehicle Pass

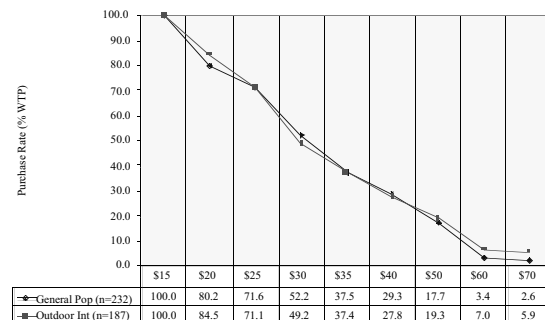


Figure 2. “Demand Curve” Based on Purchase Rate (Cumulative % WTP) for an Annual Vehicle Pass

tours.” “Volunteering” at Midewin was more appealing to the members of the Outdoor Interest group compared to those in the General Population group.

Reactions to Pricing Options. Survey respondents were told that the plan for developing Midewin required the enforcement of an access fee to partially cover the cost of the restoration effort and basic visitor services. They were then asked to indicate the maximum amount they’d be willing to pay for both a daily pass and an annual pass for a vehicle to access Midewin. For the “daily pass”, both groups indicated a preference for the \$5 price level. As shown in Figure 1, analysis of the purchase rate for each price level (i.e., the percent of respondents willing to pay a particular amount or more) indicated that roughly 8 out of 10 respondents in both groups were willing to pay \$5 for a daily pass for Midewin. For the “annual pass,” respondents’ preferences were more mixed. As shown in Figure 2, analysis of the purchase rate for each price level suggests that a price of \$20 to \$25 would be acceptable to most respondents. In

both groups, 8 out of 10 respondents would be willing to pay \$20, while 7 out of 10 would be willing to pay \$25.

Discussion

This market analysis reveals that this new outdoor recreation site holds great interest to both a general population of Chicago metropolitan residents, as well as a special outdoor recreation interest group. The interest levels are based on the existing knowledge-level that respondents held before receiving the survey instrument and the education about the site that occurred with the survey instrument. Importantly, the intention estimate provides a baseline for Forest Service planners to formulate facility access, design, and capacity estimates. While Midewin National Tallgrass Prairie is of local interest in a large metropolitan area, the site will also be known and marketed nationally and internationally. Tourism visitation estimates were considered, however, these estimates have not been presented here.

For those households intending to visit this outdoor recreation site, patterns of visitation can be inferred. Close to 50 percent of the General Population are likely to visit once a year with fall as the most popular season. Slightly over 50 percent of the General Population is likely to visit several times a year. Their visits are most likely to be a half day in length and not include an overnight stay in the general area. Facilities such as a visitor center, trails, picnic areas, and developed campgrounds with showers and flush toilets would be some of the attractions used by these visitors. Moderate levels of interest (between 25-40% of those intending to visit the site) were shown in guided tours, wildlife programs, prairie-plant programs, or Native American history programming. The results suggest that "traditional" recreation opportunities and facilities hold the greatest interest for the broader General Population. A daily rate of \$5 for a vehicle or annual rate of \$20-\$25 is the most acceptable entry fee for the General Population.

As expected, households from a specialized list representing the same geographic area as the General Population were more interested in visiting Midewin National Tallgrass Prairie and experiencing some of the unique elements of the site than the General Population. Three-quarters

of the Outdoor Interest group who intend to visit the site expressed an interest in several trips each year. Fall and spring were the most popular seasons to visit. While a half day trip was most popular, a 5-7 hour trip was also desirable. Facilities such as a visitor center, trails, picnic areas, and developed campgrounds with showers and flush toilets were highly desirable. Very high levels of interest are shown in programming (in stark contrast to the General Population). Specifically, wildlife programs, ornithology, prairie restoration, prairie ecology and ecosystem, programs that provide an overview of our Nation's forests and grasslands, home gardening and prairie plant programs, and Native American history were high desirable with over 50 percent of the Outdoor Interest group who intent to visit Midewin. A daily rate of \$5 for a vehicle or annual rate of \$20-\$25 appears to be the most acceptable entry fee for the Outdoor Interest group.

In addition to the vast opportunities Midewin offers to restore a prairie landscape and educate the public about wildlife and horticulture, the site also has a rich history in farmstead and agriculture, and the military. These stories and related programs also have a niche market of interested visitors amongst both the General Population and Outdoor Interest groups.

Future analysis of these data can enable richer profiles of demanded activity and facility clusters that might suggest itineraries for future visitors. This marketing knowledge can then be used to create customized itineraries. For the Outdoor Interest group, these itineraries could be marketed through relevant member communication programs. For the General Population, itineraries may need to be used as "add-on" experiences to a picnic or a stop at the visitor center. Recreation opportunities such as picnicking and visitor centers can be found throughout the Chicagoland area, however Midewin offers a unique education and outdoor experience other recreation sites might not provide. Effective communication and marketing efforts will be needed to expose the general population to the program possibilities once they arrive.

In conclusion, the market analysis study affords planners the opportunity to consider the level of demand for recreation facilities and programming opportunities. The results also provide useful

insights into the marketing strategies that can be developed and targeted towards key market segments and market niches. A sequence of market analysis, planning and marketing

implementation can help resource providers, such as the Midewin National Tallgrass Prairie, to be more efficient in their attempts to develop and deliver effective and valued user experiences.

OLDER ADULTS: A UNIQUE MARKET FOR THE COLUMBIA RIVER GORGE NATIONAL SCENIC AREA?

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Abstract: As the baby boomer cohort approaches middle age and beyond, the older population in the United States is increasing and will more than double by the year 2050. One of every five Americans will be senior citizens by then. The growing proportion of the senior population is not only a sizable potential market but also a promising target for outdoor park and recreation professionals. Previous literature has indicated that older Americans enjoy outdoor recreation activities and increasingly show interests in outdoor adventure experiences. They have the time, health and money to participate in leisure activities. This paper compares the activities, motives and attitudes of older visitors versus middle-aged and younger visitors in the Columbia River Gorge National Scenic Area. Results show that senior visitors differ significantly from younger visitors in motivations for their visits and activity participation. Young visitors expressed significantly more interest in physical or social oriented activities during the visitation. Research limitations and implications for program planning and implementation are discussed.

Introduction

As our population ages, the number of adults age 55 and over has expanded to more than 58 million (US Bureau of Census, 2000). Moreover, the baby boomer cohort has reached middle age and

beyond. The older population in the United States is expected to more than double by the year 2050. One of every five Americans will be senior citizen by then. This cohort is healthier and better educated than previous generations. They are likely to be environmentalists and enjoy "gentle" outdoor activities (Dickinson and Edmondson, 1996). The growing proportion of the senior population is not only a sizable potential market but also a promising target for outdoor recreation and park professionals. Previous literature has indicated that older Americans enjoy outdoor recreation activities and increasingly show interests in outdoor adventure experiences (Sugerman, 2000). Compared with this cohort in the early 20th century, older adults will have the time, health and money to participate in leisure activities following their retirement (Greenberg, 1997). According to the Administration on Aging (2001), people who are 65 years old and over remaining in the labor force have dropped from sixty-seven percent in the early 1900s to sixteen percent of older adults in the 1990s. Simultaneously, their income grew for both men and women in the late 1990s, while the poverty rate for persons 65 and over dropped to a historic low of less than ten percent.

Older adults not only enjoy outdoor activities, they also tend to experience outdoor opportunities by traveling to other locations and stay away longer than other visitors (Shoemaker, 1989; Blazey, 1991). Seniors' participation patterns and unique socioeconomic characteristics have profound implications for park and recreation professionals. Understanding this demographic segment and their demands for outdoor recreational services will be beneficial to the administration of parks and recreation.

This paper compares the activities and motives of older and younger visitors in the Columbia River Gorge National Scenic Area (CRGNSA). Our main objective is to determine what motives drive older visitors' coming to the CRGNSA and whether their needs are different from younger visitors participating in outdoor recreational activities.

Methodology

The CRGNSA, located along the Columbia River and straddling the borders of Oregon and Washington, encompasses 80 miles of land and water, and covers about 292,500 acres (Figure 1).



Figure 1. Location of Columbia River Gorge National Scenic Area

Source: USDA Forest Service, Columbia River Gorge National Scenic Area

The CRGNSA features hundreds of natural wonders and attractions including 120 scenic waterfalls and trails. It is a unique and ideal place for participating in outdoor recreational activities. With its gorgeous natural wonders, CRGNSA has hosted thousands of domestic and international visitors every year, including many older adults.

Data were collected through an on-site survey in conjunction with the USDA Forest Service's National Visitor Use Monitoring program. Interviews were conducted with more than a thousand visitors at 31 recreational sites (Figure 2) within the CRGNSA during the period of January 1 to December 31, 2000. A total 1282 onsite surveys were completed, with a response rate of 95.5 percent. The ages of respondents ranged from 18 to 87, including 192 senior visitors 55 years old and over with a mean age of 64 years ($SD = 6.8$), 457 middle-age visitors who are 35-54 years old with a mean age of 43.8 years ($SD = 5.46$), and 260 younger visitors who are under 35 years old with a mean age of 27.5 years ($SD = 4.16$).

The survey instruments used in this study were designed by the USDA Forest Service's Southeast Research Station for nationwide application. There were three versions used to query visitors about their use patterns and demographics, satisfaction levels, and economic expenditures. In a supplemental version of the survey instrument, respondents were asked to rank a list of reasons for visiting using a 5-point Likert-type scale ranging from 1 = not at all important to 5 = extremely important. Respondents were also asked what their primary activity was during their recreational visit and what

was the most important reason for visiting the CRGNSA (from four alternatives representing the place, activity, companions, and the special designation as a National Scenic Area).

One-way ANOVA was used to determine if differences exist among the senior visitors, the middle-aged and younger visitors in their motivations for visiting the CRGNSA and rates of using developed sites and undeveloped areas. Chi-square analysis was used to reveal if age was associated with primary activity participation and the major purpose for visiting the CRGNSA. A Geographic Information System was used to analyze and display the spatial distribution of visitors' demographic variables such as age in relation to selected recreational sites in the CRGNSA through manipulating point data and digitizing overlaid maps.

Results

Results from the Chi-square analysis revealed significant differences among the three age groups in their major reason for visiting the CRGNSA ($X^2=35.41$, $p<.001$). The majority of senior visitors (53%) visited the area "because it is the Columbia River Gorge," versus only 19% of younger visitors and 33% of middle-age visitors. Younger visitors were more likely to state that "it is a good place to do the outdoor activities I enjoy" (36% of younger versus 26% of middle-age visitors and only 9% of older visitors). There was relatively little difference between age segments in the proportion who reported "spending time with friends and family" and "enjoy the place itself" as their major purpose for visiting (Figure 3).

The comparison of primary activity participation in the CRGNSA followed a similar pattern. About three-fourths (74.3%) of older visitors reporting general viewing activities as their primary activity. In contrast, the majority (53.9%) of those younger than 35 years old reported some other recreation activities (e.g. hiking, biking, etc.) as their primary activity, versus 25.7% of senior visitors (Figure 4). The middle age visitors were more like the younger visitors, with a slight majority (55.1%) reporting viewing activities.

One-way analysis of variance was used to test whether statistically significant differences exist among age segments in motivations for visiting

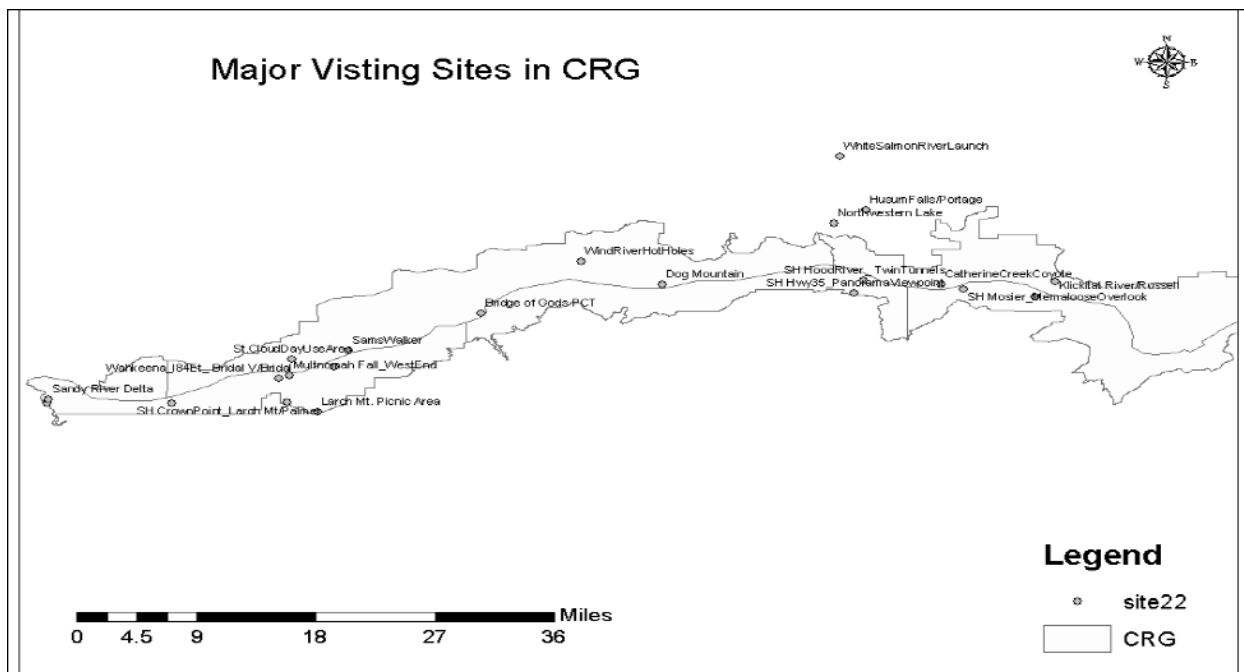


Figure 2. Distribution of Major Recreational Sites in the CRGNSA

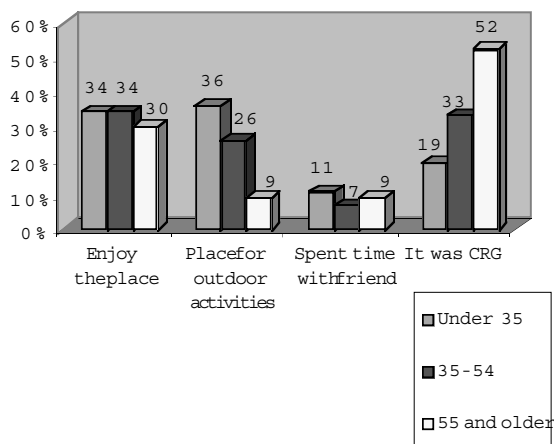


Figure 3. Most Important Reason for Visiting the CRGNSA, by Age Group. $X^2=35.41$, $p < .001$

the area (Table 1). Results revealed that visitors in the senior group placed less importance than the younger-aged groups on challenge/sport ($F_{2, 517} = 19.09$), family recreation ($F_{2, 519} = 7.61$), being with friends ($F_{2, 519} = 3.03$), physical exercise ($F_{2, 519} = 6.71$), and skill development ($F_{2, 518} = 8.11$). The middle-age visitors expressed more interest in visiting for family recreation than the younger and older groups, while the youngest group expressed the most interest in seeking challenge/sport, physical exercise, and skill development.

Bonferroni post-hoc tests showed significant differences between the senior group and younger group in “skill development,” “to be with friends,” “for challenge/sport,” and “for physical exercise,” while the post-hoc tests for family recreation and for challenge/sport indicated that younger visitors differed significantly from the middle-age visitors. In addition, senior visitors shared the same interests as the younger groups regarding four other motivations that were measured (experiencing natural surroundings, being outdoors, relaxation, and getting away from the regular routine).

GIS overlaid maps were used to identify recreation sites favored by senior visitors compared with younger groups (Figure 5). Sites near major cities like Portland or Hood River (e.g. SH Crown Point-Larch and SH Mosier Memaloose) showed higher proportions of senior visitors. Conversely, recreational sites like the Bridge of the Gods trailhead were visited mostly by young travelers.

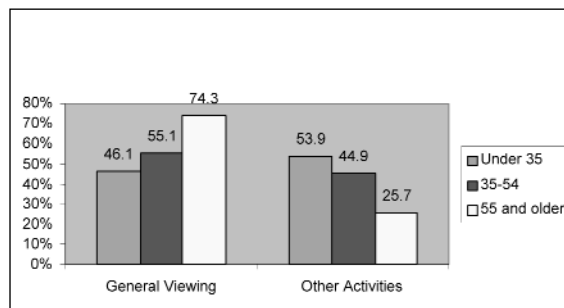
Finally, visitors were asked the number of different developed facilities they visited as well as their use of undeveloped portions of the Scenic Area. Results showed that the senior visitors tended to visit more developed day-use facilities (mean = 2.12) during their visit than middle-aged (1.60) or

Table 1. — Mean Scores Comparison of Motivations, by Age Group

Motivations	under 35	35-54 Yr. Old	55 and older	F	p
For challenge/sport	3.64	3.20	2.57	19.03	<.001
For family recreation	3.41	3.94	3.71	7.61	=.001
To be with Friends	3.81	3.64	3.44	3.03	<.05
For physical exercise	3.93	3.67	3.36	6.72	=.001
Skill development	3.24	2.89	2.51	8.11	<.001

Table 2. — Mean Scores Comparison of Facility Use, by Age Group

Type of Facility	under 35	35-54 Yr. Old	55 and older	F	p
Number of developed day-use sites visited	1.40	1.60	2.12	9.93	<.001
Number of days in undeveloped areas	.74	.59	.38	5.27	<.01

**Figure 4. Primary Activity participation, by Age Group. $\chi^2=47.45$, $p < .001$**

younger (1.40) visitors (Table 2). Conversely, the older visitors reported spending the least time in undeveloped areas (mean = .38 days) compared to middle-aged (.59) and younger (.74) visitors.

Conclusions and Implications

This study compared activity participation and motivations for visiting among older, middle-aged, and younger visitors in the Columbia River Gorge National Scenic Area (CRGNSA). There were significant age differences for most of the measured variables. Senior visitors placed less attention on physical and skill-oriented activities and motivations, compared with the younger-aged groups. Most senior visitors reported viewing or sightseeing as their primary activity while visiting. In contrast with younger visitors who favored more physical activities, senior visitors were more place-

oriented and much more likely to visit the area because of its designation as the Columbia River Gorge National Scenic Area.

The study also found that the senior visitors prefer to use developed outdoor recreational sites over undeveloped sites, which were more frequently chosen by younger visitors. Senior visitors' recreational participation patterns and facilities preferences demonstrate the need for improvement in outdoor recreation service planning.

With consideration of the increasing size of the senior market, and their growing interest in outdoor recreation, we suggest more research on marketing planning and program development for this growing outdoor recreation segment. Appropriate recreational services provided by specifically-trained staff members for facilitating seniors' visitation are needed in the near future.

Limitations

Limitations of the current study include that the research focused on only a few variables regarding the motivations and activity-involvement of older visitors. In practice, decision-making for travel destinations is a complicated process. Future research should examine a broader range of variables to investigate the needs and preferences of this emerging market.

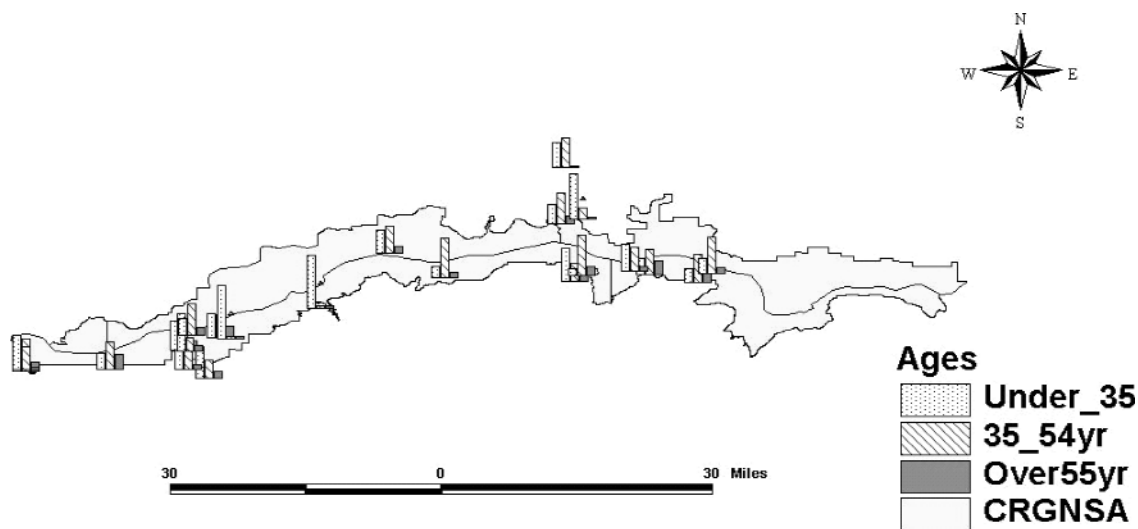


Figure 5. Geographical Distribution of Recreation Sites vs. Age Group

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AN EXAMINATION OF SATISFACTION VARIABLES AND INDICATORS AT A FIRST-TIME FESTIVAL

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Abstract: The purpose of this paper is to evaluate attendees' satisfaction in a first-time festival, and identify the relationship between visitor variables and their satisfaction level. Specific research questions / hypotheses focused on determining participants' satisfaction to the case Festival, understanding which indicators can best depict attendees' actual satisfaction level, and exploring how visitor variables may influence or relate to their satisfaction. The survey revealed a correlation between participants' overall destination image and their level of satisfaction to the festival experience, while all the other hypothesized relationship between visitor variables and their overall satisfaction level were proved to be invalid. Besides, the survey results suggest that indicators other than overall satisfaction and satisfaction attributes are needed in drawing a whole picture of attendees' attitude toward the festival.

Introduction

Hosting events is an effective approach to promote local tourism, as the man-made appeals generated will enhance the attractiveness of destinations (Ritchie, 1984; Xing & Li, 2000). In the past several decades, event tourism has become one of the fastest growing sections of the world leisure and recreation industry. Getz (1991) defined special event as "a onetime or infrequently occurring event outside the normal program or activities of the sponsoring or organizing body. To the customer, a special event is an opportunity for a leisure, social or cultural experience outside the normal range of

choices or beyond everyday experience" (p. 44). Varying in their size and significance, events could be classified as special events, hallmark events, and mega-events (Getz, 1997).

While there is increasing attention paid to various impacts of events (Getz, 1999; Suh, 1996), researchers have focused primarily on the economic significance of mega-events (Gnoth & Anwar, 2000; Raltson & Hamilton, 1992; Ritchie, 1984). Few publications can be found using small-scale community events as research objects, although community-run small-scale events collectively "represent an attraction section of ever-growing significance" (Getz & Frisby, 1988). Even fewer focus on first-time festivals, which typically demonstrate some organizational and marketing uniqueness from the established ones. On the other hand, research results on small-scale festivals may provide more real operational significance to the majority of communities and managers who host events. Due to the relative rarity of mega-events, research focusing on small-scale festivals may provide more operational significance to the majority of communities and managers who host events.

Visitors' satisfaction is one of the key variables used in assessing festival quality. Most researchers have used fairly straightforward measures in evaluating participants' satisfaction, typically a 4 to 7 point Likert scale between the extremes of "very satisfied" and "very dissatisfied" (Westbrook, 1980). Some marketing scholars also proposed that customers' intention to repeat purchase and recommend the product to others could be very useful indicators of consumers' satisfaction level (Suh, 1996). The purpose of this paper is to evaluate attendees' satisfaction in a first-time festival, and explore how visitor variables may influence or relate to their satisfaction. The hypotheses for this study are:

H1: Resident participants' overall satisfaction level is significantly different from non-resident participants'.

H2: Attendees' festival-related expenditure is related to their overall satisfaction level.

H3: Festival visitors overall image of a destination is related to their overall satisfaction level.

H4: Festival visitors' amount of festival experiences is related to their overall satisfaction level.

Table 1. — Demographic Characteristics

Race	Percentage (%)	Gender	Percentage (%)
White	82.5	Male	31.2
Black or African American	6.3	Female	68.8
Mixed Race	5.6		
Hispanic or Latino	1.6	Household Income	Percentage (%)
Native Hawaiian or Pacific Islander	1.6	Less than \$10,000	1.7
American Indian or Alaskan native	0.8	\$10,000-19,999	9.3
Asian	0.8	\$20,000-29,999	11.9
Other	0.8	\$30,000-39,999	14.4
		\$40,000-49,999	12.7
Education	Percentage (%)	\$50,000-74,999	24.6
11th grade or less	3.9	\$75,000-99,999	16.1
High school graduate	12.5	\$100,000 and above	9.3
Some college	36.7		
College graduate	32.0	Occupation	Percentage (%)
Post graduate work	14.1	Professional/technical	39.4
Post high school technical training	0.8	Not employed	20.4
		Homemaker/retired	18.1
Marital Status	Percentage (%)	Other	13.4
Married	75.6	Local/national government	10.2
Single	13.8	Sales/clerical	7.1
Divorced	8.1	Student	4.7
Widow/er	1.6	Skilled/semi skilled labor	4.7
Partner	0.8		
Mean Age	42.29		

Methods

The event studied in this project was the inaugural Riverwalk Festival, held in Jacksonville, NC in August 2002. The case festival was held in Jacksonville, NC, a town with 75,000 citizens. Located about 28 miles north of Topsail Beach in Eastern North Carolina, Jacksonville is the commercial hub of Onslow County and home to Marine Corps Base Camp Lejeune and Marine Corps Air Station New River (<http://www.ci.jacksonville.nc.us/>). This first time festival, occurring over a summer weekend (August 24th - 25th, 2002), was designed to showcase Jacksonville's new "Riverwalk" promenade which connects the downtown area to the community waterfront. It is also a response to local citizens' request for a big-name event returning to Jacksonville, according to a survey conducted by the host organization. The event included a variety of food and craft vendors, local and regional exhibitors, children's programs, a regatta, and several concerts. Its central focus was New River and children's activities. Although a higher attendance was expected, undesirable weather condition (consecutive hot days since Aug. 22, and

each day was above 100°F) lowered the actual total to 10,000.

Data were collected for this study through both on-site interviews and mail-back questionnaires. The subjects were adult visitors to the Jacksonville Riverwalk Festival. On-site personal interviews were conducted at various access points around Jacksonville Riverwalk Park, throughout daylight hours of the two-day festival period. A random systematic sampling procedure was used to ensure the representativeness of the information collected (Gay & Airasian, 2000). A total of 232 systematically (every nth visitor) selected festival attendees were interviewed and agreed to participate in a mail-back follow-up survey. With incentives and two rounds of reminders, 130 completed mail-back questionnaires were collected, generating a response rate of 56%. An analysis of non-response was conducted, assessing the difference between non-respondents and respondents in some key variables (Rylander, Propst, & McMurtry, 1995). It was concluded that the overall effect of nonresponse bias in this study was reasonably minor.

Findings

Participant Profile

Various questions were asked to determine attendees' demographic and participation characteristics. According to the 224 identifiable and valid zip codes provided by on-site respondents, an overwhelming majority (94.64%) of respondents were from North Carolina. Among these North Carolinians, 77.36% were from the Jacksonville (including Camp Lejeune) area. In the follow-up questionnaire survey, 32% respondents claimed themselves or a family member live/work in downtown Jacksonville. This group of people is categorized as "residents" in this study, while the rest 68% are "non-residents".

As the case of many research studies utilizing mail-back surveys (Farrell & Associates, 1998; Gartner & Shen, 1992; Kerstetter & Mowrer, 1998), the typical respondent for this study was white, married, over 40, and most likely female (see Table 1). Characteristically, the respondents received (some) college education, and maintain an annual household income exceeding \$50,000.

In general, visitors to Jacksonville Riverwalk Festival came in a group of 3-4 people (mean group size is 3.27). Among them, 13% respondents attended the festival alone, while 5.3% had 7 or more in their group (see Table 2). Visitors' mean travel distance was 57.26 miles. However, about 4.4% of respondents that traveled 300 miles or more, with 1,300 miles being the maximum travel distance reported. These long distances inflated the mean travel distance. Therefore, the median, which is 10 miles could be a more reasonable representative of the average distance in this case, which is consistent with the results of visitors' origin.

A series of questions were asked on attendees' expenses on admission fees, food and beverage, shopping, lodging, transportation, entertainment and recreation, and other expenses related to their festival participation, for themselves and other group members. It is calculated that per person expenditure is \$28.33. Participants' overall image of Jacksonville is investigated by rating their overall impressions of Jacksonville as a visitor destination on a 1 to 10 scale (with "10" being the most attractive place, and "1" being the worst place they have ever traveled to).

Table 2. — Participant Characteristics

Participant Characteristics		Mean
1. Group Size	Percentage (%)	3.27 persons
1	13.0	
2	32.1	
3	18.8	
4	14.1	
5	11.6	
6	5.1	
7 or above	5.3	
2. Miles Traveled	Percentage (%)	57.26 miles
0-5	35.0	
6-10	29.0	
11-15	10.4	
16-20	4.9	
21-25	1.0	
26-50	8.9	
51-300	6.4	
>300	4.4	
3. Per Person Expenditure		\$28.33
4. Overall image rating		6.23/10
5. Previous Festival Participation Experiences (In the past 12 months)		2.94 times

The mail-back respondents gave a mean rating of 6.23, with a standard deviation of 1.91.

Respondents were also asked to indicate the amount of their festival experiences in the past 12 months (not counting the Riverwalk festival). In this paper, this amount is used to numerically represent one's level of festival experiences. Participants' average festival experiences amounts to nearly 3 times (see Table 2).

Satisfaction Indicators

In this project, 4 types of indicators are investigated in assessing participants' satisfaction. These include:

- Overall satisfaction on a scale of 1 to 10
- 27 satisfaction attributes (16 universal attributes, 11 site-specific ones) on a scale of 1 to 5
- Intention to recommend the festival to others (Yes/No)
- Intention to attend the festival again (Yes/ No)

Table 3 presents respondents' rating on specific satisfaction items and overall satisfaction. "Safety and security", "cleanliness of facilities", "condition of facilities", and "behavior of other visitors" are among the most satisfied attributes of the festival. On the other hand, "sporting competition", "other local opportunities", and "water quality" received

Table 3. — Participants' Satisfaction

Satisfaction Attributes	N	Mean	Std. Deviation
safety and security	130	4.72	.574
cleanliness of facilities	128	4.69	.572
condition of facilities	127	4.67	.550
behavior of other visitors	129	4.63	.613
availability of space	122	4.59	.689
the organization of the festival	123	4.51	.682
helpfulness of volunteers	126	4.50	.767
availability of festival information	129	4.40	.939
children activities	84	4.32	1.008
crowd traffic/visitor control	123	4.30	.886
price	120	4.14	1.031
stage performances	87	4.11	.945
accessibility for those disabilities	88	4.07	.956
night concert	39	4.03	1.158
quality of food vendors	116	4.03	.913
variety of food vendors	128	4.02	.951
opportunity to relax	127	4.02	.934
quality of the performing artists	108	4.02	.967
quality of shopping vendors	126	3.98	.950
exhibits	124	3.94	1.015
opportunity to experience new things	128	3.92	.952
variety of shopping vendors	129	3.88	1.104
uniqueness of the experience	126	3.72	1.009
shopping and dining opportunities	120	3.66	1.025
water quality of New River	89	3.63	1.122
other local opportunities	107	3.63	.841
sporting competition	66	3.58	1.190
overall satisfaction of the trip	115	7.37	1.723

lowest grades. Participants' overall satisfaction was 7.37 on a scale of 1 to 10.

Contrary to the fairly low overall satisfaction rating, participants have consistently high level of "intention to recommend the festival to others" (97.2%) and "intention to attend the festival again" (93.7%). This demonstrates a very favorable attitude toward the festival.

Hypotheses Testing

H1: Resident participants' overall satisfaction level is significantly different from non-resident participants'. A T-test, using overall satisfaction as a dependent variable, and respondents' residency status (i.e., they are residents or nonresidents) as the independent variables, resulted in an observed

Table 4. — Relationship Between Participants' Overall Satisfaction Level and Their Residency Status

Residency Status	N	Overall Satisfaction		t	Sig.
		Mean	St Dev		
Resident	37	7.55	1.50		
Non Resident	76	7.32	1.81	.694	0.5
Total	115	7.36	1.72		

Table 5. — Relationship Between Participants' Overall Satisfaction Level and Their Festival-related Expenditure

	N	Mean	Std. Deviation
Overall satisfaction of the trip	115	7.36	1.72
Per person expenditure	121	6.23	51.87
Pearson's r		-.104	
Significance		.286	

level of significance of 0.694 (df=111). Thus, the hypothesis is not supported (see Table 4). In other words, this survey didn't identify a significant difference between resident festival participants' overall satisfaction level and that of non-resident participants'.

H2: Attendees' festival-related expenditure is related to their overall satisfaction level.

A test of Pearson Correlation r was applied between the mean of participants' overall satisfaction level and their per-person expenditure in the festival. The Pearson's r value of -0.104 implied that no significant correlation was found between these two variables. Thus, for this festival, attendees' festival-related expenditure is not statistically related with their overall satisfaction level.

H3: Festival visitors overall image of a destination is related to their overall satisfaction level.

A test of Pearson Correlation r was employed between the mean of respondents' overall image rating and their overall satisfaction rating. The test produced a Pearson Correlation r of 0.513, which is significant at the 0.01 level (2 tailed). Therefore, the hypothesis is accepted. The relevant statistics are shown in Table 6.

Table 6. — Correlation Between Participants' Overall Satisfaction Level and Their Overall Destination Image

	N	Mean	Std. Deviation
Overall satisfaction of the trip	115	7.36	1.72
Overall impression of Jacksonville as a visitor destination	125	6.23	1.91
Pearson's r		.513*	
Significance		.000	

H4: Festival visitors' amount of festival experiences is related to their overall satisfaction level.

Again, a Pearson Correlation r test was calculated between the mean of respondents' amount of festival experiences and their overall satisfaction rating. The r value is -0.166, indicating the hypothesis is not supported. In other words, the amount of festival experiences of visitors to Jacksonville Riverwalk Festival is not significantly related to their overall satisfaction level. (Table 7).

Table 7. — Relationship Between Participants' Overall Satisfaction Level and Their Amount of Festival Experiences

	N	Mean	Std. Deviation
Overall satisfaction of the trip	115	7.36	1.72
How many times have you been to a festival in the past 12 months	123	2.94	3.119
Pearson's r		-.166	
Significance		.083	

Discussion and Conclusion

The findings from this study provide an interesting example of the complexity of event tourism study. The survey did reveal a correlation between participants' overall image of Jacksonville and their level of satisfaction. That is to say, the more satisfied visitors feel with their experiences, the more favorable an overall image they will hold, and vice versa. However, for the other hypotheses, what sounds logical was not supported by actual survey results. For instance, most marketing scholars will agree that a more satisfied customer tends to consume more. Nevertheless, this hypothesis is not accepted in this study. Neither did the survey identify any substantial difference in satisfaction level between residents and non-residents, or

among festival attendees with different level of participation experiences.

Failing to establish a positive relationship between participants' satisfaction level and their consumption pattern is probably due to the fairly limited spending opportunities provided by the festival. The festival is a small-scale, open-access community event, which didn't charge any admission fee for participation (except attending the night concert). As the vast majority of attendees are locals, average spending on lodging or transportation is very limited. These reasons contribute to a fairly homogenous consumption pattern, which means everybody spent most of their money on food and beverage. Even though attendees are very satisfied with their festival experiences, there are inadequate "consumption outlets" allowing them to spend money.

Residents and non-residents, or festival attendees with different level of participation experiences didn't show significantly different satisfaction levels. This may be attributed to people's similar expectation to a small-scale community event like the Riverwalk Festival. Future research investigation on the reasons will help the organizers segment and choose their targeted market, as an event can never succeed unless it meets the motivations, expectations and needs of the targeted groups (Camacho, 1979; Hall, 1992).

Four kinds of satisfaction indicators were employed in this survey. There is obvious inconsistency between respondents' rating in specific satisfaction attributes, their intention to recommend the festival to others, intention to return, and their overall satisfaction. For the satisfaction items, even the lowest grade was higher than 3.5, which is fairly positive on a scale of 1 to 5. Likewise, respondents also indicated an impressively strong intention to return and recommend the festival to others. In contrast, the 7.37/10 overall satisfaction rating is much lower than expected.

One fact that may help justify the above results is the undesirable weather condition. In an open-ended question in the mail-back questionnaire, 45.11% respondents complained about the hot weather. Many of them indicated that the festival will be much more enjoyable, and they will stay longer and give a much higher rating if the weather

is better. Directly associated with this complaint, 19.55% suggested to change the festival date to either spring or fall, although previous study has proved that summer was most popular for attending events (Wicks & Fesenmaier, 1995).

It may be concluded that some non-controllable factors may have more influence on satisfaction than event programming and planning.

We may also conclude from this survey that indicators other than overall satisfaction and satisfaction attributes are needed to draw a whole picture of attendees' attitude toward the festival. In Jacksonville Riverwalk Festival. The respondents are content with the specific service attributes of their festival experience, such as "safety and security", "cleanliness of facilities", "condition of facilities", and "behavior of other visitors". But their overall satisfaction was worsened by the weather condition, which damaged a more enjoyable experience. In other words, respondents separated their comments on festival per se and non-controllable factors such as weather. That helps explain why at the same time people gave fairly low rating on satisfaction items, they still indicated a strong intention to return and recommending to others.

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Addendum to the 2002 Proceedings

SERVING MAPS ON THE INTERNET: A RECREATION AND TOURISM EXAMPLE

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Abstract: This paper will illustrate the steps necessary to deliver recreation and tourism maps on the Internet. In addition to the pragmatic need to introduce some basic cartographic and computer concepts, examples of the usefulness to recreation and tourism planners and managers will be illustrated. For example, a tourism bureau may wish to employ this technology to promote visitation to a region by mapping locations of B and B's, restaurants and other support services. Then the park manager can provide advance information about camping opportunities or cross-country ski trail routes. The Westfield River Watershed Interactive Atlas (<http://river.wsc.ma.edu>) is currently commissioned by the Commonwealth of Massachusetts to deliver such information. Lessons learned about the development will also be noted.

Introduction

Web cartography or Internet Mapping Servers, is a recent means to display information in a graphic form on the World-Wide-Web (Kraak and Brown 2001). The surfing public demands high quality maps for directions to hotels, attractions and state parks. This public is no longer satisfied with crudely drawn sketch maps for directions. As the fields of GIS (Geographic Information Systems) and the Internet have grown together in the last decade, the natural evolution of web cartography is a logical step for planning and managing our tourism resources.

The Westfield River Watershed Interactive Atlas (WRWIA) was premiered during the early Spring 2001. As a response to the growing demand for information about Massachusetts' first Wild and Scenic River, the Westfield River, and to provide an educational forum for social and natural environmental data via the Internet, the WRWIA project began. Since the GIS lab at Westfield State

College had been involved with mapping projects for several years, the next logical step was the publication of these data via the Internet. Using the software called ArcIMS (ESRI, inc.) and Servlet Exec 3.0 MS IIS/Windows, and a computer server, Westfield State College offered the first mapping server in the Massachusetts State College nine campus system. The River, as the server is called, is available at the web address <http://river.wsc.ma.edu>. Figure 1 highlights the regional focus of the Internet Mapping System.

Background

Westfield State College (WSC) is currently working with the Westfield River Watershed Association (WRWA), the Westfield River Watershed Team (WRWT) and area trail groups to develop trail maps for the Lower Westfield River Watershed. Included in this area are the communities of Agawam, Blandford, Granville, Montgomery, Russell, Southwick, Westfield and West Springfield. This inventory includes land-based trails as well as water-based trails and access points along river corridors. The primary goal of this project is to identify and map all recreational trails in the Lower Westfield River Watershed.

Data are collected from user groups, field checked with GPS technology and digital maps conforming to MassGIS (<http://www.state.ma.us/mgis>) standards are provided. A printed user guide will be published and will also be found on the Westfield River Watershed Interactive Atlas in Adobe Acrobat (tm) format. Maps for each community and a composite map will also be delivered. Four major tasks are involved in the project. Each of the major tasks is described next.

Task 1. Interview trail groups, community representatives, public and private agencies to inventory trails.

The project leader will oversee the collection and dissemination of trail data from a variety of organizations including non-profits such as WRWA, Appalachian Mountain Club (AMC), Sierra Club, Trout Unlimited (TU), and The Trustees of Reservations (TTOR). Also researched are public agencies including Conservation Commissions, Massachusetts Department of Environmental Management, Municipal Water Supplies, and others as deemed necessary. Private

landowners who permit “Officially” sanctioned trails will also be catalogued. Since some trails are in the planning stage, mapping these trails will provide managers with base-line data for planning purposes.

Task 2. Collect existing maps and field checking with GPS (where necessary).

During task 1, where existing digital databases are available, this information will be used to create maps of the trails. Should new trails be identified, field researchers will use Global Positioning Systems (GPS) technology to map trails, access points and other relevant data. At the same time, written descriptions of the trails will be prepared for later inclusion into the user guide.

Task 3. Geographic Information Systems.

WSC interns will digitize trail locations from field data collection and create necessary layers to be included with MassGIS and other data files. Eight community maps and one regional map will be printed. Eight community maps (scale 1:25,000) and one regional map (scale 1:50,000) will be published.

Task 4. User Guide.

Using the maps created in Task 3 and the detailed trail information written in Task 2, a Lower Westfield River Trails Inventory Guide will be published. In the guide, the reader will find trail maps and detailed information about each. While only Two Hundred copies of the guide will be published, the guide will be available on <http://river.wsc.ma.edu> for free downloads. Maps can also be printed from the website.

As this paper is written, we are presently finishing up Task 3. The remaining portion of the paper will highlight an example of one of the trail inventories (note: as this document is published one year later, the project is complete).

Sodom & Drake Mountain Ridge Trail Planning Project

The Sodom & Drake Mountain Ridge Trail was proposed in the latter 1990s as means to link public protected lands in the western hills of Westfield and Southwick, Massachusetts. As a

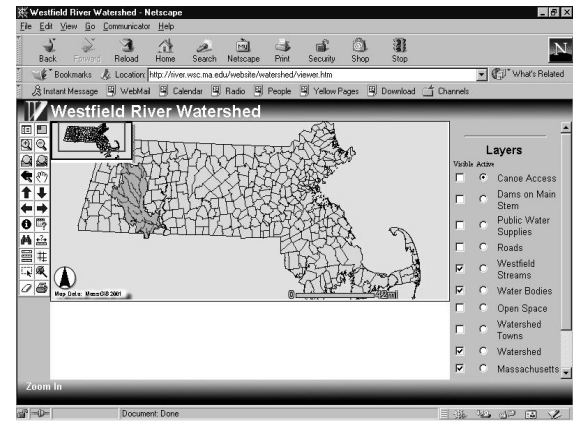


Figure 1

joint initiative between the Town of Southwick and the City of Westfield, this project seeks to curb the rapidly dwindling open space. Following the example proposed by the Father of the Appalachian Trail, Benton MacKaye, the trail corridor can act as a dam to stop the urban sprawl threatening much of America (MacKaye 1921). Further, the plan seeks to provide additional open space and habitat protection as a goal for the proposed Greenway. Current motorized and non-motorized trail related recreation is present along the ridge, while the objective of the project is to identify an appropriate route for the trail system and acquire appropriate easements from the private landowners where necessary.

For a description of the trail system, the author refers to the Massachusetts Greenways Grant Application (Noonan and Fitzgerald 2000). The proposed trail system's northern terminus begins in Southwestern Westfield near the Granville Town line at an approximate elevation of 195 meters and heads south for Drake Mountain (349 meters elevation). Continuing south for another 2.5 kilometers it reaches the Granville Gorge (90 meters). The Gorge is publicly owned and provides an excellent swimming hole for hot summer days! Crossing Massachusetts Route 57 and after a steep climb, the proposed trail reaches Sodom Mountain (315 meters). The trail meanders southeasterly for another 2 kilometers to Sodom Mountain Road (200 meters).

The proposed trail system is unique for a variety of reasons. First it links the two communities that share a common interest in protecting open space. Second, the ridge line already has numerous trails

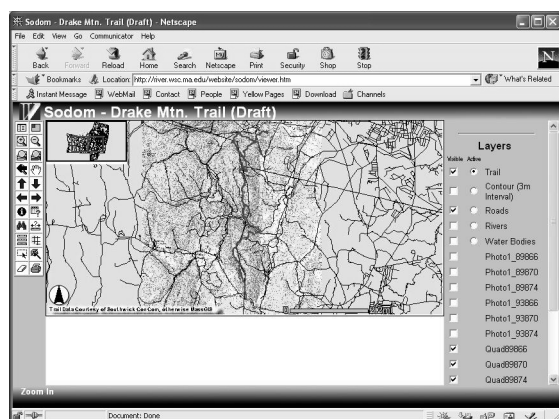


Figure 2.

criss-crossing the area. And third, there is already a significant amount of public land in the area. Public lands are managed by the local communities or conservation easements are found for agricultural reasons.

During the summer of 2001, The Trustees of Reservation was hired to conduct a GPS survey of the proposed route. The Trustees of Reservation (TTOR) is the oldest land trust in America. More information can be found at their website (<http://www.thetrustees.org/>).

The data files were then incorporated in a GIS project and are illustrated next. The overall area of the greenway is illustrated in Figure 2. This is the view from the Internet mapping site and thus is interactive to the user.

For this view, the geographic layers in an ArcView (ESRI, inc.) format are simply overlaid on top the scanned USGS topographic maps of the area. The topographic sheets provide the regional context and a tremendous amount of base data on which to use for planning. A detailed section of the trail system is shown in Figure 3. Drake Mountain, near the northern terminus of the trail is highlighted. As you can see, several alternative routes are proposed, each with unique views and provide different approaches to the summit.

The USGS Quadrangles were scanned by MassGIS (<http://www.state.ma.us/mgis/>) at a 500 dots per inch (DPI) resolution in 2000-01 from current maps. Each file was registered to the MA State Plane NAD83 coordinates. Since the USGS Topographic maps are nearly 20 years old,

information necessary for planning must be more current. Note this is not a criticism of the usefulness of the USGS maps, since topographic features are likely to be accurate, while cultural features may not be up to date. As such, aerial photography has become a necessary element in any planning application, since features will be more current and any recent construction will be visible.

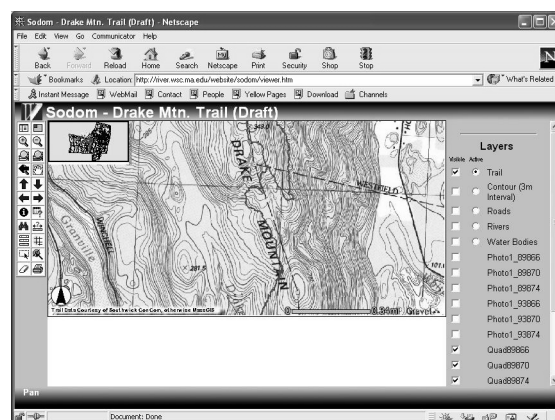


Figure 3.

The one-meter resolution aerial photography was obtained in 1997 and thus is more current than the 1983 base topographic maps. Figure 4 illustrates the proposed trail system on the more recent aerial photography.

The next phase of the trail project involves contacting landowners to secure a right of way for the trail to cross their lands. Since this a "sticky" situation, we will not display this information on the web. It is sticky since although land ownership is public information, citizens do not like this information made public. An interesting note is that this information is publicly available in any town's Tax Assessors office but publishing this information on the web is not widely accepted.

In any case, once the proposed route is accepted, trail construction can begin. And once the trail is constructed the Internet Map Server can provide the hiking public information about the trail. Anticipated information made available on the web will include not only the base maps, tailored made to the liking of the individual user, but also a trail guide, information about access points, nearby attractions as well as support infrastructure for the tourist.



Figure 4.

Discussion

As the Internet continues to grow, practical tourism information will become more important in the travel industry. It is estimated that there are 550 million Internet users worldwide (www.nua.ie). Of this figure, nearly 200 million live in the US or Canada. Further research conducted by NUA Internet Surveys (<http://www.nua.ie/>) recently found Online travel spending rose by five percent to 1.3 billion dollars while non-travel consumer spending declined by 5 percent to 373 billion dollars. Travel information sites were up in unique "hits". For example AAA.com was up 28 percent to 102,000 daily visits. Internet mapping sites like Mapblast (www.mapblast.com) was up 21 percent (119,000 daily) and Mapquest (www.mapquest.com) was up 16 percent. Obviously Internet mapping information is destined to grow.

Resource managers may wish to include interactive maps to their web site. By allowing the surfing public to create maps for tourism needs, the web site can provide a greater service for promotion or planning. For a management application, the next phase of this project will explore the usefulness of having field managers contribute information to the Internet mapping server. Thus the maps and related data bases will truly become interactive with up-to-date information from the field.

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NUA, Ltd., <http://www.nua.ie>

The Westfield River Watershed Interactive Atlas, <http://river.wsc.ma.edu>

The Trustees of Reservations, <http://www.thetrustees.org>

THE RELATIONSHIP BETWEEN EVALUATIVE STANDARDS OF QUALITY AND EXISTING CONDITIONS IN PARKS AND PROTECTED AREAS

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Abstract: In response to rising visitation, many parks and protected areas have adopted indicator-based management frameworks in an attempt to protect natural and cultural resources and the quality of visitor experiences. Indicator-based management frameworks rely on development of indicators and evaluative standards of quality. Indicators of quality are measurable, manageable variables that reflect the quality of natural/cultural resources and visitor experiences. Standards of quality define the minimum acceptable condition of indicator variables. Research to help formulate standards of quality has relied on normative theory and techniques. In this research approach, visitors to parks and related areas are asked to judge the acceptability of a range of recreation-related impacts to natural/cultural resources and the quality of the visitor experience. An issue related to this research is the extent to which normative standards of quality are linked to existing conditions in parks and outdoor recreation areas. This issue has important implications for research and management of national parks and related areas. If societal standards for parks and other components of the environment are shaped by

existing conditions, then this may have implications for normative research and may emphasize the importance of maintaining relatively high levels of environmental and experiential quality. Data for this analysis are derived from studies in a number of units in the U.S. National Park System. In these studies, visitors are asked to judge the acceptability of a range of impacts to a variety of natural and social indicators of quality, and to report the actual, or existing condition of those indicator variables they experienced. This study explores the strength and variability of the relationship between existing conditions and evaluative standards of quality using data from studies conducted at 51 sites in the national park system.

Introduction

In response to rising visitor use levels, indicator-based planning frameworks such as Limits of Acceptable Change (LAC) (Stankey et al 1985, Cole and McCool 1997), Visitor Impact Management (VIM) (Graefe et al 1990), and Visitor Experience and Resource Protection (VERP) (National Park Service 1997) are being applied increasingly in U.S. National Parks and related areas to protect natural and cultural resources as well as the quality of visitor experiences (Stokes 1990). Developed from the concept of recreation carrying capacity, these planning and management approaches seek to define the level of resource protection and the type of visitor experience to be provided. In doing so, indicator-based planning frameworks traditionally organize park management into two components: resource and experiential. Once management objectives have been identified, indicators and standards of quality are developed to monitor recreation impacts and guide management actions in an effort to maintain standards of quality over time. Indicators of quality are measurable, manageable variables that reflect the quality of natural/cultural resources and visitor experiences. Standards of quality define the minimum acceptable condition of indicator variables.

Research to formulate standards of quality has relied on normative theory and techniques. In this research approach, visitors to parks and related areas are asked to judge the acceptability of a range of recreation-related impacts to natural/cultural resources and the quality of the visitor experience.



Figure 1. Social Conditions at Kenai Fjords

Some of these studies have used image-capture techniques to simulate existing conditions as well as experiential and/or resource impacts, while in other studies visitors are simply asked to evaluate alternative levels of resource and social impacts that are described in a narrative and/or numerical format. For example, in a study conducted at Kenai Fjords National Park (Manning et al In Press), visitors were asked to rate the acceptability of a series of photographs showing a range of

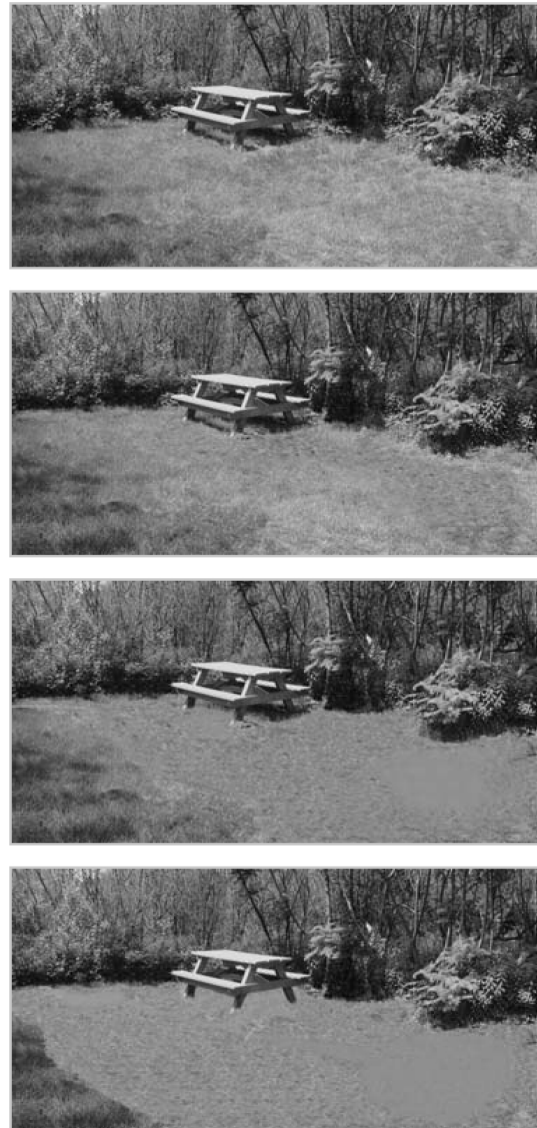


Figure 2. Campsite Impacts at Boston Harbor Islands National Recreation Area

visitor use levels at Exit Glacier, a popular attraction site in the park (Figure 1). Similar studies (Manning et al In Press) have been conducted where visitors were asked to evaluate the acceptability of a series of photographs showing a range of environmental impacts at trails and campsites (Figure 2). Resulting data from studies like these can help provide an empirical basis to formulate socially acceptable standards of quality for resource and experiential conditions.

An important issue related to this research is the extent to which normative standards of quality are linked to existing conditions in parks and outdoor

recreation areas. In other words, to what extent are normative standards of visitors (standards of quality) shaped by conditions visitors experience (existing conditions)? Previous research suggests that existing conditions, or environmental cues can influence standards such as appropriate behaviors in outdoor recreation areas as well as expectations associated with outdoor recreation experiences (Barker 1969, Barker 1968, Barker 1965, Kuentzel and Heberlein 1992, Samdahl and Christensen 1985, Schindler and Shelby 1995, Shelby and Heberlein 1986, Wicker 1979, Willems 1973, Willems 1974, Willems 1977). From this body of literature, the question of the relationship between existing conditions and evaluative standards of quality with respect to indicator-based planning frameworks emerges. If existing conditions are strongly linked to, and perhaps even shape evaluative standards of quality, this suggests that park visitors may be identifying evaluative standards of quality that simply reflect existing conditions they encountered during their visit, rather than “objective” evaluative standards of quality. In other words, it may be the case that visitors are simply expressing the existing conditions they experienced in terms of evaluative standards of quality. This issue has important implications for management of parks and protected areas. If evaluative standards of quality are shaped by existing conditions, then socially acceptable standards of quality may simply reflect the acceptable standards of quality may simply reflect the existing conditions experienced by visitors at any given time, thereby perpetuating the management status quo. In some instances, this may result in the loss of ecological integrity and/or opportunities for high quality experiences at parks and protected areas. To explore this further, we examined the strength and variability of the relationship between existing conditions and evaluative standards of quality among visitors to 10 different units of the U.S. National Park System.

Methods

Data for this analysis are derived from visitor studies at 51 sites in 10 different units of the U.S. National Park System (Table 1). Study sites ranged from Kenai Fjords National Park, AK to Acadia National Park, ME, and included NPS units near urban centers (e.g., Boston Harbor Islands

National Recreation Area) as well as NPS units in more remote locations (e.g., Yosemite National Park). In these studies, visitors were asked to evaluate the level of a variety of recreation-related impacts such as crowding, ecological degradation, automobile traffic, graffiti, and litter in terms of four evaluative standards: preference, acceptability, displacement, and management action. Survey questions used to measure these evaluative standards are shown in Table 2. To measure this, at some study sites visitors were shown a series of photographs depicting a range of impact levels and asked to identify the photograph representing each evaluative standard. For example, visitors to Boston Harbor Islands National Recreation Area were shown a series of photographs depicting a range environmental impact at campsites on the islands (Figure 2), and asked to evaluate these photographs in terms of preference, acceptability, displacement, and management action (Table 2). In addition to ecological impacts, this technique was used at other units of the national park system to measure evaluative standards associated with crowding, graffiti, litter, and automobile traffic. Responses to the visual components of the survey were reported to the National Park Service to help provide an empirical basis for formulating evaluative standards of quality. At other study sites, photographs were not used and visitors were asked to formulate evaluative standards of quality by responding to a narrative and/or numeric questionnaire. Resulting data from these questions have helped provide an empirical basis to formulate socially acceptable standards of quality at U.S. National Parks and related areas, as well as generated the data for the ‘standards of quality’ variables in this analysis.

Along with judging the photographs in terms of evaluative standards, visitors were asked to identify which photograph looked most like the existing conditions, or impact levels they encountered during their visit. For example, visitors at Boston Harbor Islands National Recreation Area were asked to identify which photograph looked most like the amount of environmental impact along trails and at campsites they typically saw during their visit. Results from these questions generated the data for the ‘existing condition’ variables in this analysis.

Table 1. — National Parks and Study Sites

NPS Unit	Number of Study Sites
Acadia National Park	5
Alcatraz Island – Golden Gate National Recreation Area	1
Arches National Park	1
Appalachian Trail	1
Boston Harbor Island National Park Area	23
Grand Canyon National Park	1
Kenai Fjords National Park	1
Mesa Verde National Park	6
Statue of Liberty National Park	1
Yosemite National Park	11
Total	51

Initial frequency distribution and cross-tabular analysis revealed that data for these variables are not normally distributed, and that a curvilinear relationship exists between existing condition and standards of quality variables. As a result, Crámer's V was used to measure the strength of association between existing condition and standard of quality variables. For each study site presented in Table 1, a Crámer's V coefficient was calculated between standards of quality variables (Table 2) and the existing condition variable for that study site. Cases with sample sizes less than 30, or constant values for either standard of quality or existing conditions variables were discarded, yielding a total of 181 Crámer's V coefficients.

As a statistical measure of association, Crámer's V coefficients are interpreted on a 0 - 1 scale, where

Table 2. — Evaluative Standards of Quality

Evaluative Standard of Quality	Survey Question Used to Measure Standard
Preference	Which photograph shows the highest level of use you would prefer to see?
Acceptability	Which photograph shows the highest level of use that you think would be acceptable to see?
Displacement	Which photograph shows the level of use that would be so unacceptable that you would no longer visit this site?
Management Action	Which photograph shows the highest level of use you think the National Park Service should allow

0.0 - 0.3 indicates a “weak” association, 0.31 - 0.60 indicates a “moderate” association, and 0.61 - 1.0 indicates a “strong” association between variables (Fox 1998, Humpries 2001). Crámer's V coefficients generated in this analysis were organized into a frequency distribution table. Once in tabular form, we calculated the percentage of studies with weak associations (0.0 - 0.3), moderate associations (0.31 - 0.60), and strong associations (0.61 - 1.0).

Results

Crámer's V coefficients ranged from .021 between ‘existing conditions’ and ‘preference’ variables for litter impacts on Little Brewster Island, (Boston Harbor Islands National Park Area), to .74 between ‘existing conditions’ and ‘preference’ variables for ecological impacts to trails on Grape Island (Boston Harbor Islands National Park Area). Despite this range, the majority of studies exhibited either weak (66.4%) or moderate (29.8%) associations between standard of quality and existing conditions variables, while few studies (3.8%) were characterized by strong associations between existing condition and standard of quality variables (Table 3). More broadly, these data indicate that the vast majority of studies (96.2%) exhibit weak to moderate associations between existing condition and evaluative standard of quality variables.

Because association is a necessary condition of a causal relationship between independent and dependent variables, results from this study suggest there may not be a direct, causal relationship between existing condition and evaluative standard of quality variables as employed by the normative approach in the development of evaluative standards of quality.

Table 3. — Standards of Quality

Strength of Association	Cramer's V	Frequency	% of Studies
weak	.00-.10	7	3.8%
	.11-.20	66	35.9%
	.21-.30	49	26.7%
moderate	.31-.40	26	14.1%
	.41-.50	20	10.8%
	.51-.60	9	4.9%
strong	.61-.70	5	2.7%
	.71-.80	2	1.1%

Management Implications

Results from this study have at least three broad implications for the application of indicator-based planning frameworks in the management parks and protected areas. These implications are 1) visitors appear to have relatively 'objective' evaluative standards of quality for relevant indicator variables, 2) there may be an important difference in the relationship between existing conditions and evaluative standards of quality (i.e. preference, acceptability, etc.) compared to the relationship between existing conditions and visitor expectations, 3) managers must continue to recognize and emphasize the importance of visitor education to achieve agency-mandated conservation goals.

Results from this study suggest that although existing conditions are related to evaluative standards of quality to some degree, this relationship, in a general sense, is characterized by a relatively weak association. Therefore, it appears that visitors are identifying standards of quality in a relatively 'objective' manner. In other words, visitors are evaluating resource and/or experiential conditions based on criteria in addition to, not solely on, existing conditions. When applied to the context of park and protected area management, this suggests that use of indicator-based planning frameworks does not necessarily perpetuate the 'management status-quo'. The status-quo issue is conceptually related to the notion of 'product shift' first discussed by Heberlein (1977). The idea Heberlein (1977) introduced, which has received subsequent attention in the literature (e.g., Shelby and Heberlein 1986, Kuentzel and Heberlein 1992, Schindler and Shelby 1995), centers around the notion that when faced with increasing levels of social and/or environmental impacts, visitors will change the definition of their recreational experience and adjust their normative standards to fit existing conditions. As a result, visitors will continue to be satisfied by recreational experiences even though conditions at various sites may have deteriorated. For example, Heberlein writes, "while those few who experienced the Grand Canyon before 1960 may be appalled by 1970 use levels...most visitors may not notice" (Heberlein 1977, p.71). Thus, 'product shift' can act as a temporal mechanism that may lead to loss of experiential and/or resource quality in parks and

protected areas. Similarly, perpetuating the 'management status-quo' may also result in a loss of experiential and/or resource quality in parks and protected areas. For example, if existing conditions are strongly influencing evaluative standards of quality, then evaluative standards of quality may simply reflect existing conditions at that moment. If, in this example, existing conditions are deteriorating over time, then evaluative standards of quality may be formulated that simply reflect and perpetuate lower-quality sets of existing conditions, resulting in a loss of experiential and/or resource quality. While 'product shift' remains an important issue, findings from this study suggest that existing conditions and evaluative standards of quality are not strongly linked, and therefore use of indicator-based planning frameworks do not necessarily perpetuate the 'management status-quo'.

In addition, findings from this study suggest there may be a difference in the relationship between existing conditions and evaluative standards of quality (i.e. preference, acceptability, etc.) compared to the relationship between existing conditions and visitor expectations. Previous research has shown that existing conditions can affect visitor expectations and preferences with respect to outdoor recreation experiences (Chambers and Price 1986, Shelby and Heberlein 1986, Neilson and Endo 1977). However, it has been suggested that existing conditions influence evaluative standards of quality to the same degree that existing conditions influence visitor expectations. For example, Shelby and Heberlein (1986) maintain that visitors may alter their expectations and preferences in response to perceived crowding. This assumption is supported by a large body of social psychology literature (e.g. Lawler 1973) that demonstrates and discusses the role existing conditions play in the formulation of expectations. In addition, several studies in outdoor recreation have shown that visitors may alter their preferences to conform to existing conditions (e.g., Kuentzel and Heberlein 1992). Although results from our study also suggest there is a relationship between existing conditions and evaluative standards of quality, this relationship appears to be relatively weak. Therefore, it remains unclear whether existing conditions influence evaluative standards of quality to the same degree that existing conditions influence visitor expectations. While subtle, recognizing this

difference may contribute to a broader understanding of how visitors formulate evaluative standards of quality with respect to changing social and environmental conditions within parks and protected areas.

Finally, results from this study suggest that natural resource managers must continue to recognize the importance of visitor education to achieve agency-mandated conservation goals. Because the relationship between existing conditions and evaluative standards of quality appears to be relatively weak, this suggests that visitors may be using a variety of criteria in evaluating social and environmental conditions. As a result, management strategies should continue to emphasize the use of educational programs to develop congruence between agency conservation objectives and evaluative standards of quality. This discussion speaks directly to the issue raised by Dennis Galvin, former Deputy Director of the National Park Service in his keynote address at this conference. In his address, Mr. Galvin argued that in 25 years, if NPS visitors are still satisfied with their experiences even though numerous species have become extinct, then the agency has failed. Within this context, it becomes clear that visitor education can be a valuable tool for achieving conservation objectives within parks and protected areas. Furthermore, previous research (e.g., Light 2000) suggests that educational programs, such as restoration initiatives, may have broader social significance because they increase public awareness with respect to environmental problems within parks and protected areas as well as within the communities in which park visitors live.

Future Research

As this paper suggests, the relationship between existing conditions and evaluative standards of quality is a broad question with implications for parks and protected areas, and beyond. Although a fairly large body of literature addresses issues related to how visitors evaluate changing experiential and resource conditions over time, two important questions emerge from this study. First, from a park and protected area management perspective, it is important to understand how the relationship between existing conditions and evaluative standards of quality affects carrying capacity. Conceptually, it seems likely that study sites with high correlations, or strong relationships

between existing condition and evaluative standards of quality variables may be at carrying capacity. For example, if visitors to the Yosemite backcountry report that existing encounter levels are at their standard for 'acceptability', then this relationship should also be reflected by a high correlation between existing condition and standard of quality variables. Although this explanation is theoretically possible, an empirical exploration should be conducted to test its validity.

Second, it is important to further explore, empirically, the difference in the relationship between existing conditions and visitor expectations compared to the relationship between existing conditions and evaluative standards of quality. Articulating this difference in greater detail will only contribute to the understanding of how visitors evaluate changing experiential and resource conditions and may provide insight into the refinement of park and protected area management strategies.

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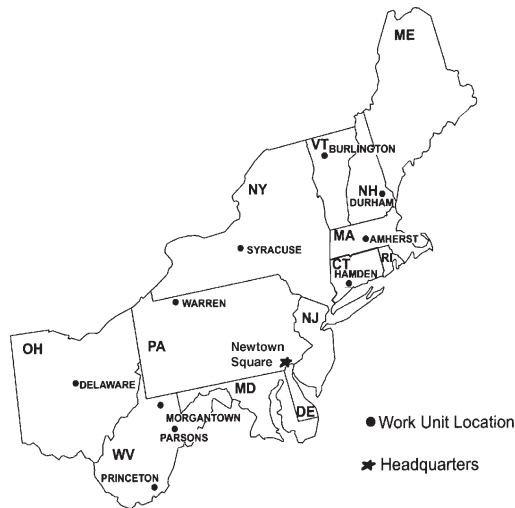
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