

COMPARATIVE ANALYSIS OF VISITOR ATTITUDES AND PREFERENCES IN THREE ADIRONDACK MANAGEMENT AREAS

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Abstract

This study developed measures of people's perceptions of the natural and social conditions they experienced while visiting a unit within the Adirondack Park. The importance of and satisfaction with trip features did not differ in any meaningful way between areas, even though activity participation did. Nature and solitude were important factors for almost everyone and most people were satisfied with their trip experience. The frequency of problems differed by area, but the effect on visitors if a problem was observed did not differ by area. Support for management actions was as expected, with support more likely among those who experienced problems.

1.0 Introduction

In New York State, the State Land Master Plan (SLMP) requires the development of Unit Management Plans (UMPs). The Adirondack Park Agency (APA) sets the policy for public lands within the Adirondack Park via the SLMP. For each plan, visitor demand must be estimated and the carrying capacity of the area for human use must be considered. The Department of Environmental Conservation (DEC) is in charge of developing and implementing UMPs for the Adirondack Park. They have chosen to use the Limits of Acceptable Change (LAC) in their planning process instead of attempting to measure the more complex carrying capacity of an area. To utilize LAC, information on visitor use and resource and social conditions must be gathered.

The objectives of our study were to obtain estimates of visitor use, measure natural and social conditions, and assist DEC in the development of a protocol for collecting such information in the future. The results discussed herein focus on the second objective of this

large study, but these results are limited to visitor perceptions and experiences on their trip and not the actual conditions. While measuring various aspects of visitor experiences is directly useful for managers and their accountability to the public, there are also important implications for designing social and resource indicators for an LAC planning process (Hendee and Dawson 2002). We developed measures of people's perceptions of the natural and social conditions they experienced while visiting a unit within the Adirondack Park. We also measured their level of satisfaction with various aspects of their visit and their preferences for management actions.

With the DEC and APA, we chose three areas for study within the Adirondack Park based on the diversity of recreational opportunities each provided, the stage of the UMP in the planning process, and how representative each area was of other units in the Adirondack Park. The study areas chosen were sufficiently similar to other areas in the Park that the findings could inform planning in other areas. The three areas chosen were the Bog River Management Complex, McKenzie Mountain Wilderness, and West Canada Lake Wilderness Area. Comparisons between the areas were designed to lead to insights and generalizations about the congruency or disparity of attitudes and preferences among recreationists.

The three management units chosen offered a diversity of recreational opportunities. The Bog River Management Complex in the western Adirondacks has several short day-hiking trails, most notably up Mt. Arab, and several drive-in campsites along Horseshoe Lake, but is known primarily for its non-motorized boating and camping opportunities up the Bog River Flow and into Lows Lake. The McKenzie area, adjacent to Lake Placid and Saranac Lake, is primarily a day-hiking area with a few overnight backpacking opportunities. The West Canada Lake Wilderness Area in the southern Adirondacks has a few day-hiking opportunities, but is primarily known for its overnight backpacking and wilderness fishing opportunities; the Northville-Lake Placid trail runs through this area.

2.0 Methods

Information on visitors to the three study areas was acquired through a two-stage survey process. First,

Table 1.—Interview and response rate information, by area.

	McKenzie	West Canada	Bog River
Interview Information	n		
Interviews attempted	84	105	231
Interviews completed	83	103	231
Refusal Rate	1.2	Percent % 1.9	0.0
Response Rate Information	n		
questionnaires mailed	74	94	218
returned undeliverable	1	0	4
returned completed	52	75	176
Adjusted response rate	74.0	Percent % 79.8	82.2

visitors were interviewed at trailheads, campsites, or put-in boating locations in one of the areas. These on-site interviews asked a few basic use-type questions and then obtained name and address information for stage two, a mail survey.

Mail questionnaires were developed based on past research by Human Dimensions Research Unit and SUNY-ESF staff and a review of recent literature (Shafer and Hammitt 1995; Cole and others 1995; Dawson and others 2001; Dawson and others 2002). Most questions on visitor characteristics and attitudes were similar for each area. Importance and satisfaction scales of trip features were developed from the work of Connelly (1987), Bowes and Dawson (1998), and Newman and Dawson (1998). Focus groups held in each area identified current issues or concerns in the area and possible management actions to address those concerns. Questions on natural and social conditions observed, possible problems, and acceptability of management actions were tailored more specifically to each area, based on the results of focus group meetings held in each area.

Each week from May through October, 2003, names and addresses of those interviewed in the field were obtained. Questionnaires were mailed to those individuals within a week of when they were interviewed in the field. Up to three reminder letters were sent to nonrespondents over the course of the month following their interview in the field to try to encourage their participation in the study.

Data from the interviews and the mail questionnaires were analyzed using SPSS software (version 11.0). Factor

analysis (principal components analysis with varimax rotation) was used to group items on the importance and satisfaction scales. Statistical comparisons between the three areas were made using chi-square, t-test, and Scheffe's test.

3.0 Results and Discussion

We attempted to interview 420 people for this study and completed 417 interviews (Table 1). All interviewees who provided their name and address were sent follow-up questionnaires, unless they resided outside the U.S. and Canada or had been interviewed previously and had already received a questionnaire. Of the questionnaires mailed, almost all were deliverable and most were completed and returned to us (Table 1). The response rate, adjusted for the few undeliverable questionnaires, ranged from 74% to 82%. These high response rates likely can be attributed to the face-to-face contact made during the field interview, the high saliency of the topic, and our use of follow-up mailings to encourage response.

Nonresponse bias was found in only one of the three variables compared. Those from smaller groups (4 people or less) were more likely to respond (81%) than those from larger groups (67%) ($P=0.04$). The other two variables examined for nonresponse bias, past experience in the area and day-use versus overnight-use, were not significantly different.

Most visitors to West Canada Lake Wilderness and the Bog River area stayed overnight, whereas visitors to McKenzie Mountain Wilderness were largely day-users (Table 2). Bog River area visitors stayed on average 3 days and West Canada Lake users, just slightly over 2 days.

Table 2.—Length of trip, by area.

	McKenzie	West Canada	Bog River
Length of Trip*	Percent		
Day-use	71.2	37.8	35.8
Overnight	28.8	62.2	64.2
	Days		
Average trip length	1.8 ^a	2.3	3.0 ^b

*Statistically significant difference between areas using Chi-square test at P = 0.05.

^{a,b}Statistically significant difference between areas using Scheffe's test at P = 0.05.

Table 3.—Recreational activities participated in during trip, by area.

Recreational Activities	McKenzie	West Canada	Bog River
	Percentage participating		
Hiking*	94.2	88.0	50.6
Camping*	9.6	53.3	58.0
Canoeing or kayaking*	15.4	21.3	67.0
Observing birds or other wildlife*	25.0	40.0	53.4
Photography*	21.2	37.3	42.0
Swimming	-----	28.0	39.2
Fishing*	3.8	29.3	33.5
Plant/flower identification	-----	24.0	25.6
Picnicking	9.6	14.7	22.7
Fitness running	9.6	-----	-----
Motorized boat use	-----	-----	5.7
Hunting	0.0	8.0	5.1
Mountain biking	-----	-----	1.7
Rock climbing	0.0	-----	-----
Other activities	5.8	8.0	7.4

*Statistically significant difference between areas using Chi-square test at P = 0.05.

As would be expected based on our selection of research areas, activities participated in while on recreational trips differed by area (Table 3). Almost all McKenzie Mountain and West Canada Lake visitors went hiking during the trip in which they were interviewed. Half of Bog River area users went hiking and two-thirds participated in canoeing or kayaking. Fishing, swimming, observing wildlife, and photography were more popular among West Canada Lake and Bog River visitors than McKenzie Mountain visitors. Perhaps this was because West Canada Lake and Bog River users were more likely to be camping, staying overnight, and thus had more time in the area to participate in these activities. For the Bog River area, mountain biking and motorized boating were permitted in parts of the management unit, but we found few users engaged in those activities.

Respondents were asked to rate the importance of 13 trip features and their satisfaction with each feature on their trip. Using the results of factor analysis on the satisfaction items (70% of total variance explained), we have grouped the features into three factors for ease of discussion, and present them here in order of the percent of variability explained by the factor. The first, which we termed "social bonding and rejuvenation," contains items such as "opportunity to strengthen close personal relationships" and "opportunity to escape everyday problems." Respondents rated the importance of items in this group generally in the "important" range (4.0) for trip success Table 4). The second factor consisted of four items related to the concept of "solitude." These items (e.g., not feeling crowded by other groups) were rated as "very important" (4.2-4.8) by most respondents

Table 4.—Importance of and satisfaction with trip features, by area.

Trip Features	Importance			Satisfaction		
	McKenzie	West Canada	Bog River	McKenzie	West Canada	Bog River
<i>Social Bonding and Rejuvenation</i>	Mean Score ^a					
Opportunity to strengthen close personal relationships	3.7	3.6	3.9	4.1	4.0	4.2
Feeling of camaraderie within my group	3.8	3.8	4.0	4.2	4.0	4.2
Sharing the experience with my companions	3.9	4.0	4.3	4.2	4.1b	4.4c
Opportunity to escape everyday problems	4.4	4.3	4.1	4.4	4.3	4.3
Feeling of relaxation	4.5	4.4	4.5	4.4	4.3	4.4
<i>Solitude</i>						
Not feeling crowded by other groups	4.5	4.6	4.5	4.2	4.2	4.0
Feeling of peace and quiet	4.8	4.6	4.6	4.5	4.4	4.2
Experiencing solitude	4.2	4.3	4.2	4.0	4.0	4.0
Privacy from most people, yet a personal relationship with my family and friends	4.2	4.0	4.2	4.1	3.9	4.1
<i>Nature</i>						
Scenic beauty	4.5	4.5	4.6	4.6	4.4	4.7
Enjoying the natural world	4.8	4.6	4.6	4.6	4.5	4.5
Seeing, hearing wild animals and birds	4.1	4.2	4.3	3.8	3.8b	4.1c
Rugged, wildness environment	4.1	4.3	4.2	4.2	4.2	4.2
Overall trip satisfaction				4.4	4.3	4.5

^aMean score was based on 5-point Likert-type scales ranging from 1 = very unimportant to 5 = very important and 1 = very dissatisfied to 5 = very satisfied.

^{b,c}Statistically significant difference between areas using Scheffe's test at P = 0.05.

regardless of management area. "Privacy from most people, yet a personal relationship with my family and friends" was rated as slightly less important. The third factor had items related to the concept of "nature" and the enjoyment of the natural world. These items were also "very important" (4.1-4.8) to most respondents. No significant differences were found between areas regarding the importance of trip features.

Respondents were generally satisfied with each of the trip features and their overall trip experience (Table 4). There was no statistically significant difference in overall satisfaction level between management areas. Satisfaction averaged in the "satisfied" to "very satisfied" range (4.0-4.4) for items in the "social bonding and rejuvenation"

factor. Bog River respondents were more satisfied than visitors to West Canada Lake with "sharing the experience with my companions." Respondents were mostly "satisfied" or "very satisfied" (3.9-4.5) with the "solitude" factor. They were particularly satisfied with the item "feeling of peace and quiet." Respondents were generally "very satisfied" with the "nature" factor, especially "scenic beauty" and "enjoying the natural world." Compared to other items in this factor, respondents were less satisfied with their experiences of "seeing, hearing wild animals and birds," especially visitors to McKenzie Mountain and West Canada Lake.

Feeling crowded in a wilderness-type environment is a social condition of concern to managers. In the three

Table 5.—Feelings about the number of other people seen on this trip, by area.

Types of Groups	McKenzie	West Canada	Bog River
<i>Groups using motorized equipment (like motor boats, jet skis, ATVs)</i>			
Too few	----	----	9.6
About right	----	----	30.4
Too many	----	----	29.6
Did not matter	----	----	30.4
<i>Groups with 10 or more members</i>			
Too few	5.1	7.5	9.3
About right	30.8	41.5	31.4
Too many	7.7	13.2	23.8
Did not matter	56.4	37.8	35.5
<i>Canoeing and boating groups on waterways</i>			
Too few	----	----	6.1
About right	----	----	61.8
Too many	----	----	14.3
Did not matter	----	----	17.8
<i>Hiking groups on trails*</i>			
Too few	6.0	5.8	4.0
About right	60.0	71.3	50.1
Too many	10.0	10.0	10.8
Did not matter	24.0	12.9	35.1
<i>Camping groups near my campsite*</i>			
Too few	2.9	5.1	9.1
About right	25.7	55.9	59.0
Too many	11.4	11.9	8.4
Did not matter	60.0	27.1	23.5

*Statistically significant difference between areas using Chi-square test at P = 0.05.

areas studied, respondents felt the number and type of groups (e.g., hiking, canoeing) seen were generally “about right” or “did not matter” (Table 5). The two exceptions were in the Bog River area where almost one-third of visitors felt there were too many groups using motorized equipment (more visitors who were new to the area felt this way) and one-quarter of respondents felt there were too many groups with 10 or more members.

Respondents were asked if the number of each of the various types of groups detracted from their enjoyment. Most of those who thought there were too many of a specific type of group felt the number of those groups detracted at least “a little” from their enjoyment. Some respondents who thought the number of groups was about right also felt they detracted “a little” from their

enjoyment. Groups using motorized equipment in the Bog River area detracted at least “a little” from the enjoyment of 40% of visitors. Groups with 10 or more members detracted from the enjoyment of one-third of visitors to the Bog River, but far fewer visitors at McKenzie Mountain or West Canada Lake.

Litter was the most frequently cited negative situation observed in all three of the areas, followed closely by campsites that had lost vegetation due to human use and trees that had been damaged or cut down by people (Table 6). These latter two conditions were more frequently seen in West Canada Lake Wilderness and the Bog River area than in McKenzie Mountain, probably because less camping occurs in McKenzie. In total, 59% of those who said they were camping on

Table 6.—Natural and social conditions observed and for those observing a condition, the percent indicating the condition detracted from their enjoyment, by area.

Natural and Social Conditions Observed	McKenzie	West Canada	Bog River
- - % Seeing Condition (% Detracted from Enjoyment) - -			
Litter left behind by people	37.3 (94.1)	53.5 (97.4)	45.3 (94.4)
Campsites that have lost vegetation due to human use*	18.8 (66.6)	40.8 (75.9)	45.4 (67.6)
Trees that have been damaged or cut down by people*	23.5 (75.0)	45.1 (90.6)	42.2 (81.2)
Many side trails off the primary trail, created by people	27.5 (28.6)	33.8 (39.1)	23.0 (37.1)
Trails which were worn down from heavy use	31.4 (62.5)	35.2 (52.0)	20.9 (53.1)
Inappropriate disposal of human body wastes*	5.9 (66.6)	14.1 (80.0)	26.3 (92.7)
Camping equipment or boats left by other groups	14.6 (28.6)	23.9 (41.2)	16.9 (48.0)
More than one campsite fire ring at a campsite	-----	12.9 (55.6)	11.8 (38.9)
People using motorized equipment (like ATVs)	0.0 (na)	12.7 (88.8)	-----
Mountain bikers on trails	8.2 (100.0)	-----	-----

*Statistically significant differences between areas using Chi-square test at P = 0.05.

this trip indicated they had seen campsites that had lost vegetation due to human use. Worn trails or side trails created by people were observed by one-third of visitors. Inappropriate disposal of human body wastes was observed primarily in the Bog River area. People using motorized equipment or mountain bikes in areas where they are not allowed were observed very infrequently.

Those observing a particular problem with a natural or social condition were asked if the condition detracted from their enjoyment of the area. Some conditions, like litter, detracted from almost everyone's enjoyment (Table 6). This was also true for the few people who observed motorized equipment or mountain bikes in areas where they are not allowed and for those who observed inappropriate disposal of human body wastes. For other conditions mentioned by many people, such as campsites that had lost vegetation due to human use, two-thirds to three-quarters felt the condition detracted from their enjoyment. The remaining conditions (e.g., trail conditions) were less likely to have detracted from people's enjoyment of an area. Interestingly, while the number of people observing certain problem conditions in each area differed, the amount the condition detracted from the experience did not differ by area.

Of the various potential management techniques suggested, limiting the sizes of groups (either 15 people

traveling together or eight camping together) were among the most strongly favored (Table 7). On average, respondents favored these actions. While large groups were not identified earlier as a problem, with the possible exception of the Bog River area, visitors appear to want to maintain the status quo with regard to group size. Among those who thought large groups were a problem on their trip, almost all wanted to limit the size of groups.

Revegetation of sites was favored, especially in the McKenzie Mountain Wilderness, or viewed neutrally on average by respondents (Table 7). Respondents who indicated that vegetation loss or tree damage at campsites detracted from their enjoyment were more likely to favor this management action. The installation of pit toilets was supported by most visitors to the Bog River area, but less so by McKenzie Mountain Wilderness and West Canada Lake Wilderness visitors. Those who said inappropriate disposal of wastes detracted from their enjoyment were more likely to favor installation of pit toilets.

Development of additional campsites or lean-tos was opposed on average by respondents (Table 7). Perhaps this was due in part to the wording of the item which stated the trade-off that more sites might give more campsite options, but might also encourage more people to use the area. Those who had camped on their trip were more likely to have an opinion about the development

Table 7.—Support or opposition for possible management techniques, by area

Possible Management Techniques	McKenzie	West Canada	Bog River
	- - - - - Mean ^a - - - - -		
Limit the size of boating and hiking groups to 15 people traveling together	3.8	3.6	3.9
Limit the size of camping groups to 8 people as specified in the State Land Master Plan	3.7	3.8	3.9
Provide better information on when and where heavy canoeing, camping and hiking use is occurring	4.0	3.9	3.9
Build bulletin boards to post maps and travel information at popular launching sites and trailheads	3.7	3.5	3.9
Increase enforcement of rules and regulations, which would result in your seeing and talking with more rangers	3.3	3.4	3.5
Require camping only at designated sites, which would keep the whole area more natural, but might prevent you from camping during peak use periods	3.6 ^c	2.8 ^b	3.2
Revegetate sites impacted by human use, which would temporarily close those sites for your use	3.8 ^c	3.4	3.3 ^b
Install pit toilets, which would reduce problems with human waste, but give a more developed appearance	2.9 ^b	2.9 ^b	3.6 ^c
Increase directional signage on hiking trails, which allows people to better follow trails, but may give a more developed feel to the wilderness	3.2	2.6 ^d	-----
Build bridging, stepping stones, or water bars over wet/swampy areas, which might give a more developed feel to the wilderness	3.4	3.3	-----
Develop new campsites, which would give you more site options, but may encourage more people to use the area	2.7	2.4	2.8
Develop new lean-tos, which would give you more site options, but may encourage more people to use the area	2.8	2.6	2.8
Allow groups up to 12 people to practice minimum impact camping off-trail, provided they obtain a special use permit	3.0	3.0	-----
Prohibit use of campfires, which might make campsites more natural, but would require you to carry a stove and fuel	2.7	2.1 ^d	-----
Remove trees to provide scenic vistas, even though it disturbs the natural area, and may encourage more people to visit	2.0	2.0	-----

^aMean score was based on a 5-point Likert-type scale where 1 = strongly oppose and 5 = strongly favor.

^{b,c}Statistically significant difference between areas using Scheffe's test at P = 0.05.

^dStatistically significant difference between areas using t-test at P = 0.05.

of new campsites; 54% were opposed and 35% were in favor. Those who said vegetation loss or tree damage at campsites detracted from their enjoyment were even more likely to oppose the development of additional campsites or lean-tos; they likely did not see this as a solution to the problem of campsite degradation.

Respondents made suggestions for additional management techniques by responding to an open-ended question. In the Bog River area, several people suggested working on a ban for all motorized equipment currently allowed and limiting the number (not the size) of large groups allowed in the area at one time.

4.0 Conclusions

The importance of and satisfaction with trip features did not differ in any meaningful way between areas, even though activity participation did. Nature and solitude were important factors for almost everyone and most people were satisfied with their trip experience. Overall satisfaction was high in all areas, which is not an uncommon finding of recreational surveys, as everyone wants to enjoy their leisure time.

The frequency of problems differed by area, but the effect on visitors if a problem was observed did not differ by area. For example, campsite degradation was more frequently a problem in West Canada Lake Wilderness and the Bog River area than McKenzie Mountain Wilderness, but across all areas, two-thirds to three-quarters of those affected felt it detracted from their enjoyment. At what frequency of occurrence and level of impact are management actions necessary? Support for management actions was as expected, with support more likely among those who experienced problems.

Measuring various aspects of visitor experiences is directly useful to managers and their accountability to the public, and also has important implications for designing social and resource indicators for an LAC planning process. In both management and LAC planning, managers largely influence visitor experiences through management of social and resource conditions, but they must be aware of visitor reactions to those conditions. Visitor experiences are one type of management input that serves as a monitor of change (e.g., visitor perceptions of increasing litter or degraded campsites). However, only direct measurement of those conditions by objective and scientific techniques will show if an indicator for social

and resource conditions has been exceeded or not (e.g., no more than one piece of litter per 1,000 feet of trail, no more than 100 sq. ft. in a campsite without herbaceous ground vegetation). Visitor perceptions help inform managers, but direct measurement of social and resource conditions are needed to completely carry out LAC planning and management processes.

5.0 Acknowledgments

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6.0 Citations

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