

DEVELOPING A RESEARCH PROCESS TO MONITOR SOCIAL CONDITIONS IN FIVE ADIRONDACK PARK PROTECTED AREAS

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Abstract

Research on wilderness and protected area visitors supports the importance of social conditions to the experiences of visitors. Researchers from SUNY-ESF and Cornell University and managers from the New York State Department of Environmental Conservation developed a methodology for starting to implement the Limits of Acceptable Change (LAC) planning process to be used in the Adirondack Park of New York. The methodology is based on visitor studies conducted in five management areas in 2003 and 2004. Visitor use level data was collected with trail counters and trailhead registers. Visitor characteristics and preferences were collected with personal interviews in the field and follow-up mail questionnaires. Information from visitors in the five areas was used to: identify and measure perceived social and resource problems encountered on the trip; perceptions of visitor use levels; and preferences for management of visitor behavior. A recommended approach to researching social conditions was developed for these five areas. This approach can help wilderness and protected area managers using the LAC planning process to design social indicators and monitoring programs and to identify appropriate management actions.

1.0 Introduction

The Adirondack State Land Master Plan (APSLMP) was designed to guide preservation, management, and use of the public Forest Preserve lands by the Adirondack Park Agency (APA) and the New York State Department of Environmental Conservation (NYSDEC). The main goal

of the plan was to ensure protection and preservation of the natural resources of the Forest Preserve lands. The management of recreational visitation on the Forest Preserve lands was directed to achieve "a place for human use and enjoyment, so long as the resources in their physical and biological context as well as their social or psychological aspects are not degraded" (APSLMP 2001, p. 1).

The APSLMP directs the NYSDEC to develop, in consultation with the APA, individual management plans for each unit of land under DEC's jurisdiction classified in the master plan (NYSDEC 2004). Each individual Unit Management Plan (UMP) must conform to the guidelines and criteria set forth in the master plan. These Umps are required to contain an inventory and assessment of the physical, biological, and social attributes and carrying capacity of each area. This study selected five areas based on the recommendations from the NYSDEC and APA staff to develop a process to support use of the Limits of Acceptable Change (LAC) as an approximation of a carrying capacity assessment.

Social conditions are important to visitors and their experiences (Manning 1999). Social conditions affecting the psychological and social satisfactions and benefits of a visitor experience include the perceptions and reactions of visitors to: contact with other individuals and groups; evidence of other users and their activity impacts on the resource; resource conditions; and managerial activities and conditions. Solitude or physical and sound separation from other visitor groups is one example of social conditions for wilderness areas (Dawson 2005). Other examples include but are not limited to: user density, visitor-to-visitor contact, evidence of littering, conflicts between different visitor activities, and presence of managerial facilities and infrastructure.

While the importance of social conditions is highlighted in this paper, it is emphasized that the resource and managerial conditions need to be included with social conditions to properly manage these Adirondack areas. All three types of conditions are not only important to

the visitors and their recreation experiences; they are also required under the APSLMP.

2.0 Site Descriptions

The five areas selected for study were meant to be a broad representation of the geographic region, different types of use and users, density and seasonality of use, resource and managerial conditions. Those five areas were: McKenzie Mountain Wilderness, West Canada Lake Wilderness, William C. Whitney Wilderness, Bog River Management Area, and the northern portion of Lake George Wild Forest.

McKenzie Mountain Wilderness area (MMWA) is located in the northeast corner of the Adirondack Park. There are numerous trailheads to the 37,616-acre wilderness area providing public access from all sides. MMWA is composed of steep and rugged terrain and the elevation ranges from 1,463 to 4,869 feet with excellent views from several mountain tops. Spring, summer, and fall use in this area include day hiking, rock climbing, hunting, and fishing; winter use is cross country skiing.

West Canada Lake Wilderness area (WCLWA) is located in the southwest corner of the Adirondack Park. Access to several trailheads within this wilderness area is limited to travel on seasonally maintained dirt roads. The elevation ranges from 1,390 to 3,899 feet. This 156,695-acre wilderness area contains 168 bodies of water including numerous pond, lakes, and streams. Eleven major trails provide access to destinations. Recreational activities in this area in the spring, summer, and fall months include hiking, backpack camping, hunting, and fishing.

William C. Whitney Wilderness (WCWW) is primarily known for the canoeing and kayaking opportunities on Little Tupper Lake and Lake Lila. This is the most recently designated wilderness in the Adirondack Park. This 20,560-acre area also has ponds with connecting streams in low forested hills. Spring, summer, and fall use in this area include canoeing/kayaking, hiking, camping from watercraft, hunting, and fishing; winter use is cross country skiing.

Bog River Management Area (BRMA) is most well known for canoeing and kayaking opportunities on the Bog River and access into Lowe's Lake and the Five Ponds Wilderness. This 36,100-acre area is a central access point for a mixture of roadside camping activities, primitive travel activities, and motorized use on gravel roads. Spring, summer, and fall use in this area include canoeing/kayaking, hiking, camping at roadsides and from watercraft, hunting, and fishing; winter use is snowmobiling.

The Lake George Wild Forest (LGWF) includes 62,000 acres with a northwestern and a southeastern portion on each side of Lake George. Only the northwestern portion is the subject of this study. Tongue Mountain peninsula in Lake George is the most well known and heavily used portion of the study area. Spring, summer, and fall use in this area is predominantly day hiking with motorized use on gravel and dirt roads that access small lakes and ponds.

3.0 Purpose of Study

The objectives of this study are to: 1) aid UMP planners in developing baseline visitor use data in support of Umps for each of the study areas (Connelly and others 2005; Peters and Dawson 2005); and 2) help establish a prototype for monitoring and implementation of visitor use assessments of carrying capacity within other units of the Adirondack Forest Preserve.

4.0 Methods

The authors adopted the Limits of Acceptable Change (LAC) as the planning framework for assessing carrying capacity since it has been widely used by federal agencies in protected areas and wilderness for this purpose (Hendee and Dawson 2002). Data collection methods were developed for later implementation of the LAC planning process in the Adirondack Umps (Table 1).

Research was conducted on recreational use in MMWA, WCLWA, and BRMA from May through November of 2003 and in WCWA and LGWF from Memorial Day through Labor in 2004 (Connelly and others 2005; Peters and Dawson 2005). The processes utilized to gather data for this study are outlined below:

Table 1.—10-Step LAC process and supporting research on social conditions.

LAC Process	Corresponding research inputs from five area studies
1. Define goals & desired conditions	
2. Identify area issues, concerns and threats	Focus Group meetings
3. Define acceptable conditions	Visitor surveys – social conditions
4. Select indicators of resource and social conditions	Visitor surveys – social conditions
5. Inventory existing social and resource conditions	Visitor surveys – social conditions Visitor use estimates
6. Specify standards for each indicator	
7. Identify alternative opportunity classes	
8. Identify management actions	Visitor surveys – preferences for management actions
9. Evaluate & select alternative	
10. Implement actions and monitor	

1. Focus group interview sessions were held in four of the study areas (not LGWF) with several APA and DEC staff members and up to 12 individuals who were invited to represent the diversity of visitor activities and uses in that area. The focus groups were used to scope the questions on visitor activities, equipment, problems, management preferences, and other factors to be used in the mail survey of visitors.
2. Estimations of recreational use with active infrared automated trail counters at all public access points in the five study areas. The trail counters recorded the date and time that the users entered or exited the wilderness area during the study dates in 2003 or 2004. Active infrared trail counters (sender and receiver units) were

installed within 50 feet on each side of the trails providing access to the areas studied. The counters were located and maintained to reduce any mechanical or systematic error (Yuan et al. 1995; Watson et al. 2000). Each set of counters was visited weekly to download the previous week of data for final analysis (Peters and Dawson 2005).

3. Brief field interviews were conducted systematically at all major public access points to the areas during the study time frame. Interview questions were used to determine use characteristics and trip related experiences and contact information was obtained to conduct a follow-up mail survey.
4. A mail survey was sent to all individuals interviewed to obtain more in-depth information about their trip- related experiences and their preferences for social, resource, and managerial conditions (Connelly and others 2005). Up to three reminders letters were sent as necessary to obtain a high response rate.
5. Visitor data were collected at NYSDEC self-registration sites at major trailheads to these five study areas to gain information regarding date, group size, length of stay, and trip destination. Not all public access sites have self-registration kiosks. Registers provide valuable information about use in the area; however, signing is voluntary so participation was a concern.

Using these combined techniques increased the validity of the data collected. Analysis and comparison of the results of each technique provided additional detailed information about recreational users in the areas studied, allowing for more management implications to be made regarding use in the area.

5.0 Results and Discussion

The field interview process and subsequent mail surveys to visitors in the five study areas were managed with follow up reminders to yield high survey response rates.

Table 2.—Number of mail surveys sent following field interviews in the five Adirondack management study areas and response rates during 2003 or 2004.

Study Area and Year of Survey	Number of Mail Surveys	Mail Survey Response Rate
McKenzie Mountain Wilderness—2003	74	74%
West Canada lake Wilderness—2003	94	80%
Bog River Area—2003	218	82%
Lake George Wild Forest (north)—2004	252	73%
Whitney Wilderness—2004	295	80%

The number of visitors sampled varied from 74 to 295 and response rates were from 73 percent to 82 percent (Table 2).

To illustrate the results obtained from this research process, we will present some of the information for the WCLWA through all phases and methods of research employed. The focus group results of the WCLWA discussion about issues, threats and concerns were characterized in four focus group observations:

- Increasing visitor use may be affecting perceptions of crowding and solitude experienced
- Some campsites and lean-to's maybe located too close together and may not be separated enough for solitude opportunities
- Poor trail conditions and locations may require relocation and trail closures
- Cedar Lakes dam is failing and may need to be removed or repaired, changing the water based experiences available

The focus group discussion about potential social indicator concepts to investigate was summarized in four observations:

- Visitor feelings about meeting other groups and large groups
- Evidence of previous users and impact on enjoyment

- Degraded resource conditions visitors saw and detracted from their experience
- Problems experienced by visitors on last trip due to other behavior of others

The focus group discussion about potential management actions to address some social conditions was summarized in five management concepts:

- Increase information and education program efforts
- Limit size of visitor groups
- prohibit or limit certain recreation uses and activities
- Change the number or type of access or camping facilities
- Reduce evidence of visitor resource impacts

The estimates of visitor use showed a variable temporal distribution of use in 2003 based on trail counter event dates and frequencies of visitor traffic for the WCLWA (Fig. 1). The x-axis dates represent Saturday of each week and the y-axis represents the number of events recorded per day. Seasonally, use levels were lower early in the season with use picking up mid-summer and dropping back off as summer temperatures decline and ending with fall backpacking and hunting. Weekends, especially with good weather, received higher levels of use than that of weekdays.

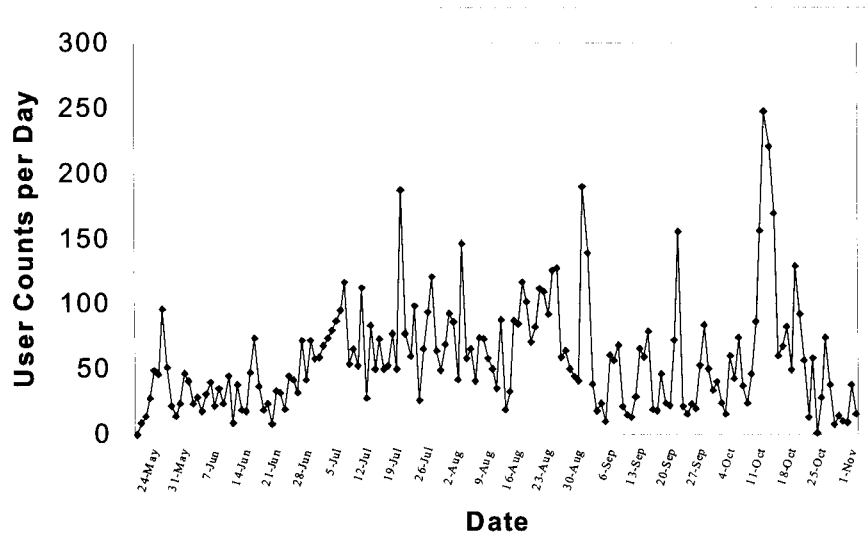


Figure 1.—West Canada Lake Wilderness temporal distribution from trail counter data.

The estimates of visitor use showed an uneven spatial distribution of use based on trail counter event dates and frequencies of visitor traffic and field interview data for the WCLWA (Fig. 2). More heavily used trail segments are represented by wider lines to show the relative amount of use during the weeks of the study in 2003.

From 7 to 23 percent of visitors interviewed reported experiencing a problem while on their trip in the WCLWA in 2003. Three of the top five problems experienced related to the number of other visitors: finding an unoccupied campsite (22.9%); encountering large visitor groups (12.9%); hearing noise from motorized equipment (11.1%); finding limited trailhead parking (9.9%); and seeing unattended or unleashed pets (7.0%).

From 16 to 66 percent of visitors reported they experienced a social or resource condition that detracted from their satisfaction during their trip in the WCLWA in 2003 (Table 3). Visitor perceptions of the resource impacts of other visitors (e.g., litter on ground) on the WCLWA were reported more often than were negative experiences from the number of other visitors (e.g., number of visitors near campsite) or their group size.

The percentage of visitors reporting too many other visitors (from 10 to 13%) was based on their perception of social conditions that they experienced during their trip in the WCLWA in 2003 (table 3). Notable was that from 13 to 38 percent of respondents reported that the number of other visitors and size of groups did not matter to them and they could neither report it as too many, neutral, or too few other visitors.

Table 3.—Percentage of visitors who reported they experienced a condition that detracted from their satisfaction during their trip in the WCLWA in 2003.

Conditions that could detract from trip experience in study area	Experienced not at all	Experienced a little	Experienced a lot
Litter on ground	33.9	42.9	23.2
Damaged or cut trees	43.1	35.3	21.6
Campsites with reduced vegetation due to use	56.9	31.4	11.8
Trails worn by heavy use	71.4	28.6	0.0
Number of groups near campsite	75.0	19.6	5.4
Number groups on trail	79.4	17.6	2.9
Inappropriate disposal of human waste	81.8	11.4	6.8
Many side or braided trails	82.0	16.0	2.0
Number groups 10 or more	84.3	3.9	11.8

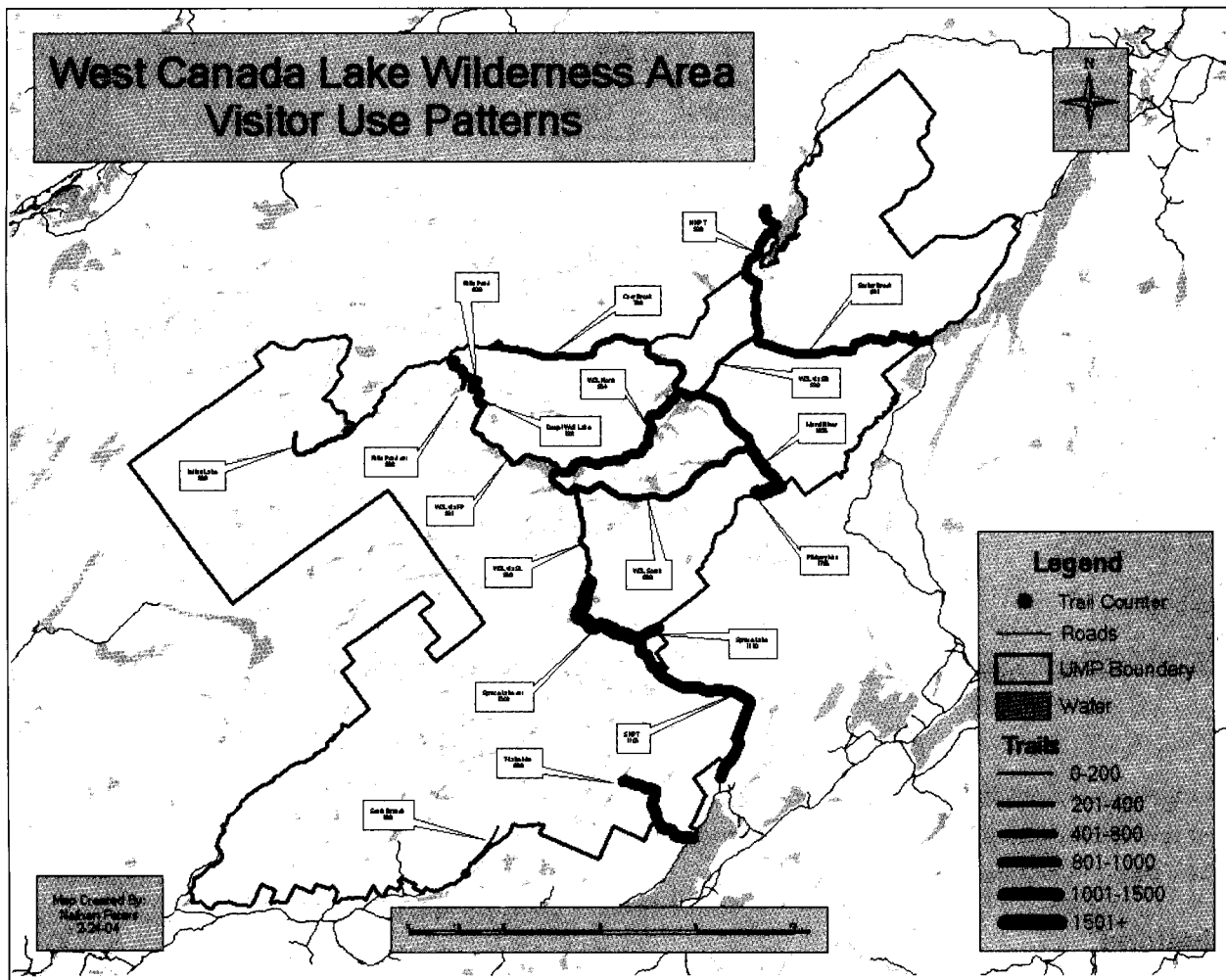


Figure 2.—West Canada Lake Wilderness spatial distribution from trail counter and interview data.

Table 4.—Percentage of visitors reporting their perception of conditions that that they experienced during their trip in the WCLWA in 2003.

Situation	Too few	About right	Too many	Did not matter
Number of hiking groups on trails	5.8	71.4	10.0	12.9
Number of camping groups near my site	5.1	55.9	11.9	27.1
Number of groups of 10 or more	7.5	41.5	13.2	37.7

Over 50 percent of visitors reported favoring four potential future management actions in the WCLWA (Table 5) to reduce visitor-related problems: limit camping group to eight persons; limit hiking and boating groups to 15 persons; bulletin boards for information;

and increase law enforcement. Visitors supported an additional two potential management actions in the WCLWA or they were neutral to the potential actions to reduce visitor-related problems: revegetate campsites and install pit toilets. A majority of visitors opposed three

Table 5.—Percentage of visitors reporting favoring, opposing, or neutral to potential future management actions in the WCLWA.

Potential Management Action	Favor	Neutral	Oppose
Limit camping group to 8 persons	65.8	24.7	9.5
Limit hiking and boating groups to 15 persons	58.3	26.4	15.2
Bulletin boards for information	58.3	26.4	15.3
Increase law enforcement	52.1	26.0	21.9
Revegetate campsites	47.3	30.6	22.2
Install pit toilets	37.5	27.8	34.7
Camping only at designated sites	34.7	15.3	50.0
Develop new lean-tos	23.6	26.4	50.0
Develop new campsites	18.1	23.6	58.4

potential management actions in the WCLWA to reduce visitor-related problems: camping only at designated sites; developing new lean-tos; and developing new campsites.

6.0 Conclusions

The data collected for these five studies are beneficial to the APA and the NYSDEC Unit Management Plan planners, as it will aid in developing the Limits of Acceptable Change planning process (Table 1). The baseline information collected emphasizes the areas that are currently receiving higher levels of use and the areas in which staffing and fiscal support may be needed for future management to maintain or improve the conditions of the resource and the recreational experience.

As illustrated with the WCLWA data, these studies conducted in 2003 and 2004 have highlighted that visitors are affected by evidence of the impacts on resources from other visitors and the number of other visitors present during their trip. The types of indicators that would monitor the social conditions found in these studies could be identified through the use of this research approach and be a direct aid to the implementation of the entire LAC process.

Since social conditions are important to visitors and their experiences, we measured the perceptions and reactions of visitors to: contact with other individuals and groups; evidence of other users and their activity impacts on the resource; resource conditions; and managerial activities and conditions. While the importance of social conditions is the central theme of this manuscript, we emphasize that the resource and managerial conditions need to be included with social conditions to properly manage these Adirondack areas. All three types of conditions are important to the visitors and their recreation experiences and are required under the APSLMP.

7.0 Acknowledgments

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8.0 Citations

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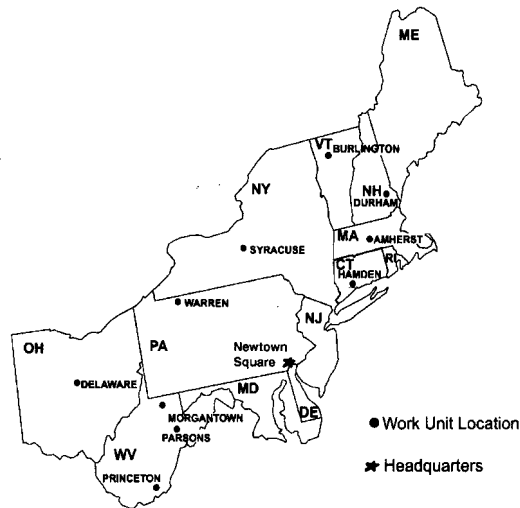
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