

CLIMBERS' ATTITUDES TOWARD RECREATION RESOURCE IMPACTS IN THE ADIRONDACK PARK

Christopher A. Monz
Assistant Professor
Environmental Studies Department
St. Lawrence University
Canton, NY 13617

Katherine E. Smith
St. Lawrence University

Leah Knickerbocker
St. Lawrence University

Abstract

Climbers arriving at trailheads to popular climbing areas in Adirondack Park, NY were surveyed as to the types of resource impacts they found to be offensive. Climbers were also asked about their degree of concern regarding crowding, noise and management of climbing areas. Some resource impacts, such as damage to trees as a result of poor climbing practices, are generally offensive to climbers, while other resource impacts common to climbing areas are less of a concern. Crowding was reported by the majority of climbers as an important concern, but noise appears to be less of an issue. The majority of those surveyed did not favor more active agency management of climbing areas.

1.0 Introduction

Managers of parks and protected areas continue to face challenges in maintaining a balance between visitor use and the protection of natural resources. These efforts are inherently dynamic as visitor numbers change and new activities emerge. To address these challenges, several approaches have been developed over the last twenty years to facilitate appropriate management decisions about visitor use and resource protection. These approaches are often collectively referred to as “carrying capacity” frameworks—procedures that often rely on indicators and standards of quality as central components of a management decision process (Manning 1999).

Numerous studies have examined the social, biophysical and managerial components of capacity (see Manning 1999 and Hammitt and Cole 1998 for reviews). Other efforts have reviewed and critiqued various framework

approaches and attempted to clarify the elements of the process (e.g., McCool and Cole 1997). A significant challenge in any of these contemporary approaches is the selection of meaningful indicators and standards of quality, particularly when “meaningful” is examined from the visitor experience standpoint. Some approaches have emphasized the use of information from visitor surveys as a means of both identifying important indicators and perhaps more importantly, using normative methods to determine standards (Manning et al. 2004). Others have suggested that descriptive information about visitors should only inform a standard selection process, and information from legal mandates, stakeholders, regional supply and demand, etc., is arguably of more importance (Stewart and Cole 2003). While this debate is ongoing, there is general concurrence that visitor-based information is useful to capacity decision processes. Understanding the specifics of which resource impacts are important to visitors and ultimately what level of impact is tolerable can at the very least inform appropriate management decisions.

It is in this spirit that this study of climbers' attitudes toward resource impacts was conducted. Although a substantial literature exists on visitor attitudes of specific indicators of quality, the vast majority of this knowledge is on social conditions (crowding, encounters, etc.) with relatively few studies examining resource conditions (Manning 1999). Manning et al. (2004) observed that early studies (c. 1970s) examining the perceptions of recreational impacts, found visitors rarely reported unacceptable recreation site conditions in backcountry settings. With the exception of litter, visitors appeared less concerned about environmental degradation of trails and sites than managers and researchers. For example, a study in the Boundary Waters Canoe Area found that there was no correlation between visitor ratings of site conditions and expert ratings of environmental impacts (Merriam and Smith 1974). More recent work suggests that visitors may now be more sensitive to the biophysical impacts of recreation (Manning et. al. 2004) particularly as visitor impacts increase in severity and proliferate spatially. Moreover, visitors may now be more aware

of resource impacts as minimum impact educational information, such as Leave No Trace materials have become commonplace (LNT 2005). Re-examining visitor attitudes toward impact seems prudent, particularly in the context of specific recreation visitor groups, since most studies have focused on hikers and boaters (Manning 1999).

This study was initiated to examine the attitudes of rock climbers toward specific resource impacts that may be encountered in a climbing setting. Climbing is a unique wildland visitor activity in that many climbers often pursue well known, popular climbs in areas away from designated hiking trails. As such, climbers concentrate their activities on a few visitor created trails and at the base and tops of cliffs, often resulting in the formation of vegetation and soil impacts in these areas. In addition, some climbing practices such as the use of permanent and temporary fixed anchors (e.g., bolts and slings, respectively) are controversial to managers and often offensive when seen by other visitors (Jones and Hollenhorst 2002). Combined with a strong degree of specialization inherent in the activity and a popular focus on the type and degree of difficulty of the climb as essential for a satisfactory experience, it is reasonable to question whether climbers are at all concerned with certain resource conditions. For example, it is particularly unclear whether impacts not directly related to the activity of climbing such as soil and vegetation disturbance near cliffs, represent a concern for climbers.

To date, few studies have addressed climbers' attitudes toward associated resource impacts and no studies have examined attitudes towards impact to soils and vegetation commonplace in climbing areas. Waldrup and McEwen (1994) examined climber's attitudes toward wilderness and climbing impacts, their motivations in choosing a place to climb and their preferences for management regulation in Red Rock Canyon National conservation Area, Nevada. The resource impacts examined in this study were limited to impacts to the cliff face such as the placement of bolts, the use of chalk and creating holds by chipping and gluing. While some differences were observed based on the type of climber (determined by the style of climbing preferred), most climbers were not offended by the placement of fixed anchors on

the cliff face or the use of chalk—two impacts often cited by managers and other visitors as problematic. Crowding at the climbing site and alterations of the rock face by chipping and gluing of holds were rated at least moderately offensive by the vast majority of climbers surveyed. Similar results were reported on climbers' attitudes towards bolts and fixed anchors in a study conducted across 13 popular U.S. climbing areas (Schuster et al. 2001).

This study was specifically designed to collect preliminary information on climbers' attitudes toward resource impacts, crowding and the management of climbing. Most importantly, information was collected on attitudes toward impacts to soils and vegetation at the climbing site—important and prevalent associated impacts for which there is little information currently. Broadly, the goal of this project is to utilize this preliminary information to inform future work utilizing normative approaches for standards development. Results from this study will help determine indicators of resource quality significant to the visitor experience, to be followed by future studies examining the levels of acceptability of these indicators (Manning 1999; Manning et. al. 2004).

2.0 Methodology

Climbers were surveyed at access points in the Adirondack Park in northern New York State in the general vicinity of the town of Keene Valley. The Adirondack Park is a well known climbing destination primarily attracting climbers from throughout the northeast U.S. and eastern Canada. It is particularly popular with climbers looking for a more wilderness based climbing experience (Mellor 1990). Purposive sampling was utilized to select trailheads and days to survey based on the likelihood of interacting with climbers. Since most Adirondack climbers do not live locally, it was only practical to sample at popular trailheads and on fair weather weekend days. The study was conducted during the popular fall climbing season (2004) and concluded at the onset of winter weather (late November).

A survey instrument was developed that assessed demographic information, attitudes towards environmental impacts, importance of wilderness, and

attitudes towards the management of climbing areas including the allowance for the placement of fixed anchors and bolts. The questionnaire consisted mainly of quantitative questions using five point Likert-type scales. Climbers were also asked to describe the type of resource impacts they found most offensive in an initial interview style question, before they were given the survey. It was stressed to participants that this survey addressed the range of potential impacts that could be found at climbing sites, but was not intended as an evaluation of conditions at any particular area. Attitudes towards various environmental impacts were measured on a scale adapted from Waldrup and McEwen (1994) that asked respondents to rate each impact as to the degree of offensiveness (1 = not offensive to 5 = extremely offensive). Wilderness values (i.e., solitude, remoteness, etc.) and attitudes towards management were measured by asking respondents to rate their response to statements (1 = strongly disagree to 5 = strongly agree). Concepts for each of these categories of questions were developed apriori and tested for reliability (Cronbach's alpha). Scales for each of the concepts were calculated from the multiple items and these scales became the dependent variables in the analysis. All statistical tests were conducted using standard procedures with SPSS version 12.0

3.0 Results

A total of 66 surveys were completed. All the climbers approached agreed to participate in the survey, with the exception of one individual. Responses to the initial open-ended question regarding the impacts climbers found most offensive were categorized and summarized (Table 1). Among the most frequently reported was the appearance of litter (53%), general erosion around the site (28%), impacts to trees from climbing practices or erosion around the roots (27%), and cigarette butts around the climbing area (21%). Other impacts such as crowding, noise, and cell phone use were reported less frequently (12-16%). The impacts least reported as offensive were multiple trails and impacts to the rock face at 9 and 7 percent, respectively.

A total of six resource impact concepts (Table 2) and two social and three managerial concepts (Table 3) were found to be reliable measures (Cronbach's alpha > 0.6).

Table 1.—Frequency of reported resource impacts¹

Impact type	Frequency
Litter	53
General Erosion	28
Impacts to trees	27
Cigarette Butts	21
Noise	16
Crowding	16
Cell Phones	12
Multiple trails	9
Impacts to the rock face	7

¹Results from the initial open-ended question, N=66.

Frequency analysis of these concepts suggests that the majority of climbers report that resource impacts are at least somewhat offensive at climbing sites (≥ 3 ; Table 4). Of the impacts surveyed, damaged trees (80%), trampled vegetation (73%) and top of cliff impact (71%) were reported at least somewhat offensive most frequently. Erosion, multiple trails and bare soil were also reported as offensive by the majority of climbers (63%, 65% and 58% respectively). Conversely, a sizeable number of climbers were not offended by impacts such as bare soil (42%), erosion (36%) and multiple trails (35%).

Crowding was reported as affecting the climbing experience by the vast majority of participants (77%) while human made noise appears to be less of a concern (48%; Table 5). The majority of climbers report awareness of the wilderness system in the areas in which they climb and feel that wilderness is an important land management designation (54% and 89% respectively). Participants were more likely to be either opposed or neutral to official agency management of climbing areas including fixed anchor management (70%).

Examination of groups organized by experience level within the climbing population surveyed did not reveal significant differences. Climbers were categorized into three groups: climbers with < 2 years, climbers with 3-5 years, and climbers with >6 years of experience. No significant differences were found among the groups for the resource, social and management concepts examined. (Tables 6 and 7).

Table 2.—Reliability analysis of environmental impact concepts

Concept and Variable Identification	Item total correlation	Alpha if item deleted	Cronbach's alpha
Attitudes toward erosion at site			.85
Erosion at the base of the cliff	.60	.84	
Erosion around trees, exposing the roots	.65	.82	
Erosion at/near climbing site	.73	.76	
Erosion at the top of the cliff	.79	.76	
Attitudes toward multiple trail impacts at site			.61
Erosion at/near cliff	.53	.46	
Multiple trails from cliff to parking area	.61	.46	
Attitude toward dead/damaged trees at site			.81
Dead/damaged trees at the base of the cliff	.62	.80	
Dead/damaged trees at the top of the cliff due to anchors	.65	.76	
Dead/damaged trees at the top of the cliff from rappelling	.74	.67	
Attitudes toward trampled vegetation at the cliff			.74
Trampled vegetation at the base of the cliff	.59		
Trampled vegetation at the top of the cliff	.59		
Attitude toward bare soil at site			.77
Bare soil at the base of the cliff	.63		
Bare soil at the top of the cliff	.63		
Attitude toward impact at the top of the cliff			.89
Erosion at the top of the cliff	.82	.84	
Bare soil at the top of the cliff	.79	.85	
Trampled vegetation at the top of the cliff	.72	.86	
Dead/damaged trees at the top of the cliff due to top-rope anchors	.70	.87	
Dead/damaged trees at the top of the cliff from rappelling	.60	.89	

4.0 Discussion

These results shed some light on climbers' attitudes toward resource impacts associated with rock climbing. Heretofore little information was available that characterized climbers attitudes toward impacts, and the previous studies primarily examined impacts occurring

on the rock face (chalk marks and chipping holds) or the use and proliferation of fixed anchors (Waldrup and McEwen 1994; Schuster et al. 2001). This study is a preliminary step at assessing attitudes towards common associated impacts in locations other than the cliff face. These adjacent impacts are commonplace in popular

Table 3.—Reliability analysis of wilderness and management concepts

Concept and Variable Identification	Item total correlation	Alpha if item deleted	Cronbach's alpha
Attitudes toward crowding at climbing site			.65
Seeing a large party reduces the feeling that I am out in the wilderness	.44	.59	
Crowding at a climbing site affects my wilderness experience	.56	.41	
Solitude is important in choosing a climb	.39	.64	
Attitudes toward noise at climbing site			.65
Human-made noise inside the wilderness area reduces the feeling that I am out in the wilderness	.52		
Quiet is an important factor in choosing a place to climb	.52		
Wilderness awareness ¹			N/A
I am aware of the wilderness system in the areas I climb			
Wilderness importance			.76
Wilderness preservation is a worthwhile use of the land	.66	.59	
More land should be preserved as Wilderness	.57	.71	
Wilderness areas are important/valuable to me personally	.59	.71	
Attitudes toward management of climbing areas			.82
Official agency management of climbing areas is necessary	.62	.81	
There should be official regulations concerning where, when, and how bolts should be used.	.72	.70	
There should be official regulations concerning where, when, and how fixed anchors should be used.	.70	.73	

¹Single item indicator

climbing areas and can be of significant management concern.

Results indicate that the majority of climbers visiting the Adirondacks find resource impacts such as erosion, multiple training and damage to trees at least somewhat offensive (Table 4). Results were similar in an open

question format (Table 1), supporting that these impacts are generally of importance to climbers. In scaled responses, tree damage appears to be an overriding concern with the highest mean score reported ($M = 3.62$; Table 4) while bare soil is the least offensive with the lowest mean score ($M = 2.86$). Although not addressed by quantitative measures, litter is also a primary concern,

Table 4.—Frequencies of responses for resource impact concepts

Concept ¹	Frequency (%)			Mean ± SE
	Not/slightly offensive	Somewhat offensive	Moderately/extremely offensive	
Erosion	36	45	18	3.10 ± 0.11
Multiple Trails	35	36	29	3.22 ± 0.12
Damaged Trees	20	39	41	3.62 ± 0.11
Trampled Vegetation	27	41	32	3.30 ± 0.12
Bare soil	42	38	20	2.86 ± 0.12
Top of cliff impact	29	47	24	3.34 ± 0.11

¹Concepts are measured using scales calculated from multiple items (Table 2).

Table 5.—Frequencies of responses for social and management concepts

Concept ¹	Frequency (%)			Mean ± SE
	Strongly disagree/ disagree	Neutral	Agree/Strongly Agree	
Crowding	1	20	77	4.05 ± 0.08
Noise	11	39	48	3.85 ± 0.08
Wilderness Awareness	25	21	54	3.37 ± 0.14
Wilderness Importance	3	8	89	4.45 ± 0.08
Management	29	41	27	3.18 ± 0.12

¹Concepts are measured using scales calculated from multiple items (Table 3).

appearing most frequently (53%) in open responses (Table 1). These results suggest that climbers may be more accepting of impacts that are unavoidable in the context of pursuing the activity, such as soil exposure at the base of a climb, and less accepting of impacts deemed avoidable with proper minimum impact practices (i.e., damage to trees). This finding has important management implications as programs seeking to reduce the overall impact of climbing activities should consider beginning with initiatives well received by climbers.

Mellor (1995) proposes that the climbing in the Adirondack Park is markedly different than other climbing centers in the U.S., largely due to the wilderness character of the area and the ethics adopted by the climbing community. These results support this proposition, with the overwhelming majority of climbers (89%) agreeing on the importance of wilderness (Table 5). Other setting attributes associated with wilderness,

such as solitude and small party size (crowding concept) are also important to the majority (77%) of climbers ($M = 4.05$; Table 5). Human made noise is somewhat of an exception to this trend, which is less important to most climbers ($M = 3.85$). Perhaps climbers are accepting of this condition since many popular areas are within earshot of main roads.

Adirondack climbers are not strongly in support of more management of climbing areas, including official management of fixed anchors, with 70% of those surveyed either disagreeing or neutral in responses to the management questions (Table 5). These results are similar to those reported by Schuster et al. (2001) where climbers felt that managers did not adequately understand the activity and that climbing was not treated fairly in the management process. This has important implications to managers, particularly as the NY Department of Environmental Conservation continues

Table 6.—A comparison of resource impact attitudes by climbers' experience level

Concept ²	Experience Level ¹			f-value	p-value
	≤ 2 years	3-5 years	> 6 years		
Erosion	3.16	3.05	3.09	.07	.93
Multiple Trails	3.09	3.33	3.24	.29	.74
Damaged Trees	3.62	3.80	3.53	.50	.61
Trampled Vegetation	3.35	3.30	3.27	.03	.97
Bare soil	3.03	2.70	2.85	.48	.62
Top of cliff impact	3.35	3.40	3.31	.06	.95

¹Values are means.

²Concepts are measured with a five point scale from 1 = "not offensive" to 5 = "extremely offensive".

Table 7.—A comparison of social and management attitudes by climbers' experience level

Concept 2	Experience Level ¹			f-value	p-value
	≤ 2 years	3-5 years	> 6 years		
Crowding	3.90	3.96	4.18	1.45	.24
Noise	3.78	3.94	3.84	.29	.75
Wilderness Awareness	3.24	3.61	3.30	.54	.58
Wilderness Importance	4.59	4.42	4.38	.56	.57
Management	3.33	2.92	3.24	.92	.40

¹ Values are means.

² Concepts are measured with a five point scale from 1= "strongly disagree" to 5= "strongly agree".

the development and revision of unit management plans that involve climbing sites.

Unlike previous studies, no difference in responses among climbing subpopulations was found. This study examined subpopulations based on experience level in years (Tables 6 and 7) whereas previous research examined groups based on style of climbing, either traditional or sport. The Adirondacks tends to attract more traditional climbers who seek climbs without an abundance of fixed anchors and in this study nearly 90 percent of the climbers surveyed identified themselves as traditional climbers.

5.0 Conclusions

Climbers in the Adirondack Park report that some common resource impacts potentially found near climbing areas are of concern. Primary impact concerns

include litter, damage to trees, vegetation disturbance and crowding. Other common impacts, such as bare soil near cliffs and noise are less of a concern. Climbers tend to strongly value wilderness but tend not to support official management of climbing areas and activities. No significant differences were found in attitudes toward resource, social and managerial conditions based on climbers' experience level.

This work forms a basis for future work utilizing normative approaches to assess thresholds of acceptability in resource impact. These results suggest that some meaningful indicators of impact perceptions would be damage to trees, top of cliff impact, trampled vegetation and crowding. Future work should also address the issue of the acceptability of certain impacts, such as bare soil at the base of cliffs, in more detail.

6.0 Citations

- Hammit, W.E. and Cole, D.N. 1998. **Wildland Recreation: Ecology and Management (Second ed.)**. New York: John Wiley.
- Jones, C.D. and Hollenhorst, S. J 2002. **Toward a resolution of the fixed anchors in wilderness debate**. International Journal of Wilderness. 8(3): 15-20.
- Leave No Trace (LNT), Center for Outdoor Ethics**. 2005. Available at website www.lnt.org. Verified June 2005.
- Manning, R.E. 1999 **Studies in Outdoor Recreation (Second ed.)**. Corvallis: Oregon State University Press.
- Manning, R.E., Lawson, S., Newman, P., Budrul, M., Vallerie, W., Laven, D. and Bacon, J. 2004. **Visitor perceptions of recreation-related resource impacts**. In: Buckley, R., ed. The Environmental Impacts of Ecotourism. CABI: London. p. 259-271.
- McCool, S.F. and Cole, D.N., comps. 1997. **Proceedings— Limits of Acceptable Change and related planning processes: progress and future directions**. Gen. Tech. Rep. INT-371. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 84p.
- Mellor, D. 1995. **Climbing in the Adirondacks: A Guide to Rock and Ice Routes in the Adirondack Park**. (Third ed.) Lake George, NY: Adirondack Mountain Club.
- Merriam, L. and Smith C. 1974. **Visitor impact on newly developed campsites in the Boundary Waters Canoe Area**. Journal of Forestry. 72: 627-630.
- Schuster, R.M., Thompson, J.G., and Hammit, W.E. 2001. **Rock climbers' attitudes toward management of climbing and the use of bolts**. Environmental Management. 28(3): 403-412.
- Stewart, W.P. and Cole, D.N. 2003. **On the prescriptive utility of visitor survey research: A rejoinder to Manning**. Journal of Leisure Research. 35(1): 119-127.
- Waldrup, R., and McEwen, D. 1994. **Rock-climbing and wilderness: a study of climber's attitudes toward wilderness, climbing impacts and regulation**. Trends. 31(3): 38-42.

Citation:

In: Peden, John G.; Schuster, Rudy M., comps., eds. Proceedings of the 2005 northeastern recreation research symposium; 2005 April 10-12; Bolton Landing, NY. Gen. Tech. Rep. NE-341. Newtown Square, PA: U.S. Forest Service, Northeastern Research Station