

EXPERIENCES OF CAMPERS AND CAMPSITE IMPACTS IN THE ST. REGIS CANOE AREA WILDERNESS

Chad P. Dawson, Professor

State University of New York
College of Environmental Science and Forestry
cpdawson@esf.edu

Rudy M. Schuster

State University of New York at time of research
Currently with the U.S. Geological Survey

Blake M. Propst

State University of New York

Corene Black

State University of New York

Abstract.—Visitors who camped during the summer of 2007 in the St. Regis Canoe Area (SRCA) in the Adirondack Park, New York, were surveyed via an on-site interview and diary about 14 detracting situations or problems they may have experienced, how they coped with these situations, and how they rated satisfaction with various attributes of the trip. Campsite condition assessments were also conducted at 56 SRCA campsites. Data for camper experiences on a specific site were matched with the campsite assessment for that site to create a single data set with trip information related to a specific campsite. Three research propositions were explored and supported by the analysis: visitors perceive problems with both social and resource conditions; visitor satisfactions were affected by social conditions and resource conditions; and campers used coping mechanisms to deal with problems and intended to modify future behavior in response to on-site conditions.

1.0 INTRODUCTION

The Adirondack Park State Land Master Plan (APSLMP) requires the New York State Department of Environmental Conservation (NYSDEC) to develop management plans for each unit of the park. The management plans must have information on visitor use, including “an assessment of the impact of actual and projected public use on the resources, ecosystems, and public enjoyment of the area with particular attention

to portions threatened by overuse” (New York State Department of Environmental Conservation 2001, p. 10). The study area for this research is the St. Regis Canoe Area (SRCA), an 18,400-acre management unit in the northern-central region of Adirondack Park that is managed as wilderness under the APSLMP. The SRCA includes 58 water bodies (1,452 acres), 75 primitive campsites, three lean-tos, and 19 miles of portage and hiking trails. The SRCA is a popular destination for canoeing, kayaking, camping, fishing, hiking, and cross-country skiing.

Under the APSLMP, primitive campsites within the SRCA are required to be more than 100 feet from the shoreline, screened from the water by vegetation, and located 0.25 miles apart to be out of sight and sound from each other. They are also required to have campsite space for no more than three tents and eight people and a pit privy located more than 150 feet from the shoreline. Non-conforming uses include visitor-created campsite improvements, expansion of the campsite, and the addition of satellite campsites (user-created sites that adjoin the designated campsite). Some of the unit management plan objectives for the SRCA that pertain to this study include: “allow for camping opportunities in a variety of settings in the SRCA while protecting the natural resources; increase the amount of vegetation screening between campsites; limit the disturbed area associated with each campsite to what is required to accommodate no more than three tents and eight people”; and develop a campsite management plan for restoration and rehabilitation (New York State Department of Environmental Conservation 2006, p. 89).

A limited amount of information is available regarding visitor use and impacts in the SRCA that addresses the assessments required by the APSLMP (Fuller and Dawson 1999, Dawson et al. 2000, Pfaffenbach et al. 2003). Recent research by the authors (Dawson et al. 2008, Propst et al. 2009) began to address impacts of actual public use on the public enjoyment and on the resources of the SRCA. Visitor satisfaction is a

measurable outcome from a recreation experience process that includes encountering problems, coping, and experiencing satisfactions or dissatisfactions. Satisfaction has been used as a surrogate for evaluating recreation experience quality, and some research has shown that satisfaction measures may be appropriate indicators of short-term outcomes (Manning 1999).

The research herein integrated field data on visitor experiences and physical conditions of the campsites in the SRCA. The following analysis was based on three propositions about visitor perceptions of impacts to the campsites and social conditions: (a) visitors perceive problems with both social and resource conditions; (b) visitor satisfactions are affected by social conditions and resource conditions; and (c) campers use coping mechanisms and intend to modify future behavior in response to on-site conditions.

2.0 METHODS

Data were collected in the SRCA between mid-June and early September 2007. The overall study consisted of field interviews and diaries of campers in the SRCA, and objective measures of campsite conditions within the SRCA.

2.1 Camper Study

Convenience sampling was used to contact visitors at five water access points around the SRCA. Paddlers staying at least one night in the SRCA were asked to participate in the daily diary portion of the study. Paddlers carried the diary with them and filled it out each night at their campsite, then returned it in a stamped, addressed envelope to the researchers. Participants were given a free waterproof map-case as an incentive to participate. The diary was designed to collect information related to problems (hassles), coping, satisfaction, and trip characteristics. Other research (Schuster et al. 2003, 2006) has used the scale employed in this study to assess 14 problems (e.g., difficulty finding open campsite, behavior of other campers, human impacts to physical campsite conditions). The diary also included measures of satisfaction that parallel similar studies (Pfaffenbach et al. 2003) and measures of camper intentions to return to that campsite and management area.

2.2 Campsite Study

The procedure was to sample the most often used sites on the main travel and portage routes within the SRCA and complete the measurements and assessments for as many of the sites as time and weather would allow between mid-June and early September. Objective measures of campsite conditions within the SRCA were taken using 19 variables (e.g., soil exposure, vegetative ground cover, tree damage, litter) and a rapid assessment of the overall condition class of the campsite. Standard measurement and assessment procedures were used as reported by Cole (1989) and Frissell (1978). A research technician trained in reliable and repeatable campsite assessment techniques collected the assessment data.

Computer-assisted analysis was conducted using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL). Data analysis included descriptive statistics, chi-square bi-variate analysis, and multi-variate discriminant analysis.

3.0 RESULTS AND DISCUSSION

The following results represent only a small portion of the overall information collected in these studies (Dawson et al. 2008). These results are from the camper study, the campsite assessment study, and some combined results across the two studies.

3.1 Camper Study

The interviewer approached 488 paddlers, six of whom refused contact, for an on-site response rate of 98.7 percent. Of the 482 paddlers who agreed to participate, 189 paddlers (39.2 percent) indicated that they would be staying overnight in the SRCA. All except two paddlers agreed to participate in the daily diary. We distributed 187 daily diaries; 104 were returned and usable, for a response rate of 56 percent.

Paddlers were asked to indicate their level of satisfaction with eight different characteristics of the daily SRCA experience and their overall trip satisfaction. Of the five characteristics of the daily SRCA experience that are relevant to this manuscript (see Figure 1), all five were viewed as either satisfactory or very satisfactory by a

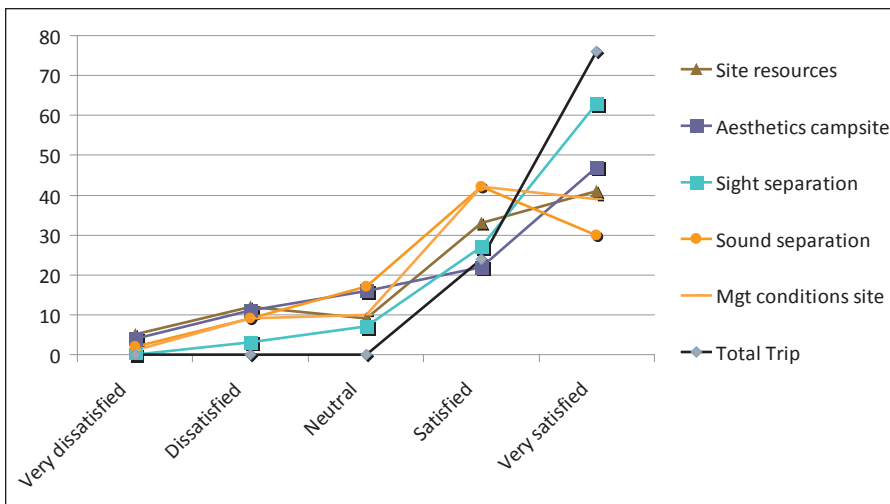


Figure 1.—Percent of SRCA campers reporting satisfaction with five characteristics of their campsite and their total trip satisfaction.

Table 1.—Rapid assessment ratings for 56 campsites in the St. Regis Canoe Area in the summer of 2007

Condition class description (Frissell 1978)	Condition class	Number of campsites
Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock fireplace.	1	0
Ground worn away around fireplace or center of activity.	2	6
Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.	3	19
Bare mineral soil widespread. Tree roots exposed on the surface.	4	12
Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.	5	19

majority of the respondents. Overall, 77.1 percent of the boaters who camped were very satisfied and 22.9 percent were satisfied with their total camping trip experience. Ninety-three percent of respondents reported one or more management or resource-related problems at a slight to more serious level of severity and 55 percent of respondents reported one or more social-related problems at a slight to more serious level (5-point scale). Refer to Propst et al. (2009) for a detailed report of social condition data.

3.2 Campsite Study

The campsite assessment investigated 56 of the 75 designated sites within the SRCA along the most heavily traveled routes through the SRCA waterways. Campsite locations and numbers were recorded in a manner that allowed the camper diary information to be linked to the data for the field study of the campsite conditions.

The majority (89 percent) of the assessed campsites were highly impacted with a Frissell (1978) overall condition class rating of class 3 and above (Table 1). Over time campers had expanded the average campsite to 2,300 square feet and these 56 sites ranged from 400 to 12,800 square feet in size. Campers had also created 46 satellite sites adjoining these 56 designated sites with an average size of 400 square feet and a range of 100 to 1,700 square feet in size. Overall, the level of impact from these and other variables indicated that most of these sites probably do not meet the APSLMP condition requirements for a primitive site.

3.3 Combined Camper and Campsite Study Data

The multi-variate discriminant analysis models predicted daily satisfaction ratings based on related camper perceptions of social and resource problems

Table 2.—The number of campers who reported satisfaction with campsite aesthetics versus reported problems with the physical condition of the campsite due to human impacts (n=93)

Satisfaction Rating	No problem	Slight problem	Moderate problem	Serious problem
Very dissatisfied	0	0	1	2
Dissatisfied	0	1	3	1
Neutral	5	4	1	0
Satisfied	3	7	4	1
Very satisfied	31	10	1	0

Table 3.—The number of campers in each overall campsite condition class that reported a problem with the physical conditions of that campsite (n=93)

Campsite Condition Class	No problem	Slight problem	Moderate problem	Serious problem
Class 2	2	0	1	0
Class 3	9	1	0	0
Class 4	13	10	2	0
Class 5	15	11	13	4

(14 variables), actual measured resource conditions (19 variables), and coping use (55 percent or more of cases were correctly classified). However, since all campers were either satisfied or very satisfied with their total trip experience (Figure 1), this model was not considered to be very insightful or parsimonious. The most discriminating variables were the camper perceptions of physical campsite impacts and social condition; least discriminating were variables of objective measures of resource conditions. This observation led to a bi-variate analysis, where possible, between camper perceptions of physical and social conditions and satisfactions and between camper perceptions and objective measures of campsite impacts.

The camper-reported satisfaction ratings with campsite aesthetics were significantly associated with their reported problems with the physical conditions of the campsite (Table 2; chi-square = 77.7; $p < 0.05$). While the trend in Table 2 is along the diagonal from no reported problems and very satisfied campers (lower left) to a serious problem and very dissatisfied campers related to aesthetics (upper right), there are numerous cases that do not follow the expected trend. Possible explanations are that some campers did not perceive the human impacts at

campsites or they did not find that the impacts detracted from campsite aesthetics.

An example of the observation that some campers did not perceive the human impacts is seen by comparing the objective campsite condition class with the campers' reported problem rating for human impacts to the campsite (Table 3). While the trend in Table 3 is significant (chi-square = 25.7; $p < 0.05$) along the diagonal from no reported problems and class 2 campsite conditions (upper left) to a serious problem and class 2 campsite conditions (lower right), the majority of the cases do not follow the expected trend. Sixty percent of the respondents who stayed in heavily physically impacted sites (condition classes 4 and 5) reported having no problems or only slight problems with the physical condition of the campsite.

An example of the observation that some campers do not consider physical conditions at the campsite as detracting from the campsite aesthetics is seen by comparing the actual campsite distance from shore with the campers' reported problem rating for the campsite distance to the shore (Table 4). There is no significant trend (chi-square = 6.2; $p > 0.05$) in Table 4 because the vast majority of the

Table 4.—The number of campers in each campsite distance to shoreline category versus reported problems with campsite distance to shoreline (n=93)

Campsite distance to shoreline	No problem	Slight problem	Moderate problem	Serious problem
25 ft. or less	33	3	0	0
26 to 50 ft.	34	0	0	0
51 to 75 ft.	13	0	0	0
76 to 100 ft.	8	0	0	0

Table 5.—Future behavioral intentions of campers in the SRCA by the number of cases (n=93)

As a result of my St. Regis Canoe Area camping experience on this trip I am likely to . . .	Very unlikely	Unlikely	Neutral	Likely	Very likely	Total
Return to the St. Regis Canoe Area and...						
...use the same campsite	3	9	21	31	36	100
...avoid this campsite and seek another one	30	23	32	11	4	100
...avoid certain times of the day	32	25	32	10	1	100
...avoid certain times of the week	19	20	26	23	12	100
...avoid certain times of the year	18	19	35	19	9	100
...avoid certain ponds/travel routes	24	32	32	10	2	100
Return to the St. Regis Canoe Area on a day trip...						
...but not camping again	38	29	22	4	7	100
Not return to the St. Regis Canoe Area and...						
...will go to a different wilderness area within the Adirondack Park	41	11	26	12	10	100
...will go to a different wilderness area outside the Adirondack Park	47	5	29	7	12	100

campers (95 percent) did not perceive the distance to the shore as a problem regardless of the actual distance. The APSLMP requires primitive campsites to be more than 100 feet from the shoreline; none of the SRCA campsites met that distance requirement but campers did not generally consider it a problem.

In addition to questions about trip satisfaction, one way to understand how social and biophysical settings in the SRCA affected camper experiences was to ask about how they dealt with problems. Propst et al. (2009) reported that 63 percent of campers used one or more of the following three types of coping during their trip in the SRCA: rationalization, acceptance-avoidance coping, and confrontational coping. Another way to understand how camper experiences were affected was to ask campers about their intention to return to the SRCA

in future trips (Table 5). Sixty-seven percent of campers reported they would return to the SRCA and use the same campsite. However, when presented with five types of situations to avoid (see Table 5), campers frequently reported that they would return to the SRCA but would be either likely or very likely to employ one or more spatial or temporal displacement behaviors: avoid certain times of the week (35 percent), avoid certain times of the year (28 percent), avoid current campsite (15 percent), avoid certain ponds and travel routes (12 percent), and avoid certain times of the day (11 percent). Additionally, 11 percent of campers reported that they would be likely or very likely to return only as day users to the SRCA and another 22 percent of campers would go instead to another Adirondack wilderness area (22 percent) or to a wilderness outside the Adirondack Park (19 percent).

4.0 CONCLUSIONS

Data illustrated in Figure 1 show that visitors perceived problems with both social and resource conditions. Discriminant analysis found significant correlations between visitor satisfactions and both social conditions and resource conditions, as well as bi-variate measures of association between these variable types (for an example, see Table 2). Results reported herein and in Propst et al. (2009) confirm that campers did use coping mechanisms and intended to modify future behavior in response to on-site conditions in the SRCA. The original propositions, however, did not predict the low measures of association (chi-square statistics and Tables 3 and 4) that were found between camper perceptions of problems with physical conditions and objective measures of physical conditions.

Campers did report experiencing detracting situations, especially related to campsite conditions and visitor interactions, and exhibited coping behaviors in response to these problems. Even though a large percentage of the designated primitive campsites in the SRCA were in unacceptable condition classes (compared to the SRCA UMP and the APSLMP), campers generally did not report them to be a problem or perceived their condition as a less serious problem when compared to the campsite assessments objectively measured in the field. Camper satisfactions remained high through various coping mechanisms.

Managers need to consider that more than half (63 percent) of the paddlers who camped were utilizing at least one coping strategy. As we note here and as Propst et al. (2008) reported, if most people need to employ coping mechanisms to have a high-quality visitor experience, then managers may need to address the problems that provoke these coping behaviors. Furthermore, managers need to understand the use of coping schemes in order to further assess the influence of public use and past visitor impacts on visitor experiences.

While coping activities appeared to be effective in mediating stressful situations during the trips in this study (i.e., all campers reported satisfying trip experiences), they may not continue to be effective when

the campers make future decisions regarding travel to the SRCA. Most campers in the study intended to return to SRCA, but large percentages of campers also intended to change their behaviors related to visiting the SRCA. This response is another indication that campers perceived the cumulative conditions in the SRCA and were displacing them temporally and spatially as a longer-term coping strategy.

Campers do not perceive the resource conditions as problems to the same degree as reported by the field measurements, but they did perceive and were reacting to the problems they experienced while on their trip in the SRCA. These data support the NYSDEC's plans to improve campsite conditions and camper experiences by reducing the campsite impact area, providing more vegetative screening, and developing a campsite management plan for restoration and rehabilitation (New York State Department of Environmental Conservation 2006).

5.0 CITATIONS

- Cole, D.N. 1989. **Wilderness campsite monitoring methods: A source book**. Gen. Tech. Rep. INT-259. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 57 p
- Dawson, C.P.; Newman, P.; Fuller, C. 2000. **User satisfactions and perceptions of crowding in four Adirondack wilderness areas**. In: Kyle, G., ed. Proceedings of the 1999 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-269. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 120-126.
- Dawson, C.P.; Schuster, R.; Propst, B.; Black, C. 2008. **St. Regis Canoe Area Visitor and Campsite Study**. Research report to the NYS Department of Environmental Conservation. Syracuse, NY: SUNY-ESF. 69 p.
- Frissell, S.S. 1978. **Judging recreation impacts on wilderness campsites**. Journal of Forestry. 76(8): 481-483.

- Fuller, C.; Dawson, C. 1999. **A comparison of wilderness privacy within two New York State wilderness environments.** In: Vogelsong, H. ed. Proceedings of the 1998 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-255. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 51-56.
- Manning, R. 1999. **Studies In outdoor recreation: search and research for satisfaction (2nd ed.).** Corvallis: Oregon State University Press.
- New York State Department of Environmental Conservation. 2001. **Adirondack Park state land master plan.** Raybrook, New York.
- New York State Department of Environmental Conservation. 2006. **Saint Regis canoe area final unit management plan.** Albany, NY. 199 p.
- Pfaffenbach, B.; Zinn, H.; Dawson, C. 2003. **Exploring satisfaction among paddlers in two Adirondack canoeing areas.** In: Schuster, R., ed. Proceedings of the 2002 Northeastern Recreation Research Symposium. Gen. Tech. Rep. NE-302. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station: 222-228.
- Propst et al. 2008 was cited in Section 4.0.
- Propst, B.; Schuster, R.; Dawson, C.P. 2009. **An exploratory analysis of coping schemes used by paddlers who camped in the St. Regis canoe area, New York.** In: Klenosky, David B.; Fisher, Cherie LeBlanc, eds. Proceedings of the 2008 Northeastern Recreation Research Symposium; 2008 March 30 - April 1; Bolton Landing, NY. Gen. Tech. Rep. NRS-P-42. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station: 139-146.
- Schuster, R.M.; Hammitt, W.E.; Moore, D. 2003. **A theoretical model to measure appraisal and coping response to hassles in outdoor recreation settings.** Leisure Sciences. 25: 277-299.
- Schuster, R.; Hammitt, W.; Moore, D. 2006. **Stress appraisal and coping response to hassles experienced in outdoor recreation settings.** Leisure Sciences. 28: 97-113.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.