

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

Megha Budruk  
Graduate Research Assistant,  
361 Aiken Center, School of Natural Resources,  
University of Vermont,  
Burlington, VT 05405

Robert Manning  
Professor and Chair,  
Recreation Management Program,  
356 Aiken Center, School of Natural Resources,  
University of Vermont,  
Burlington, VT 05405

---

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

---

### Introduction

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

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

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

### Carrying Capacity

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

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

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

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

### Litter and Graffiti

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

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

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

### **Methods**

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

### Indicators and Standards of Quality

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

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

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

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

#### Standards of Quality for Litter

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

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

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

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

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

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

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

### Standards of Quality for Graffiti

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

### Study Findings

#### Standards of Quality for Litter

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

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

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

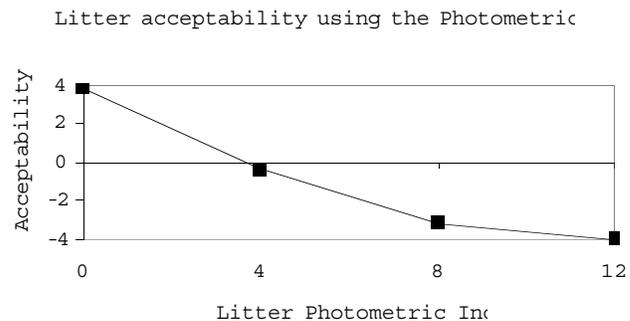
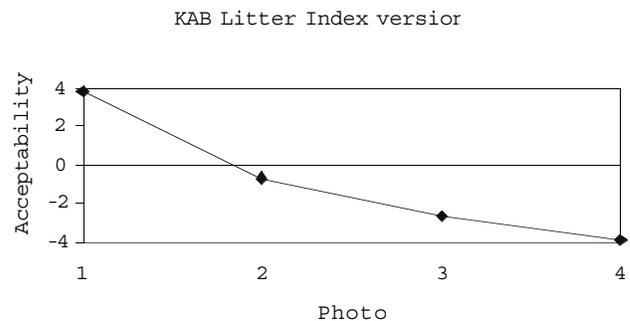
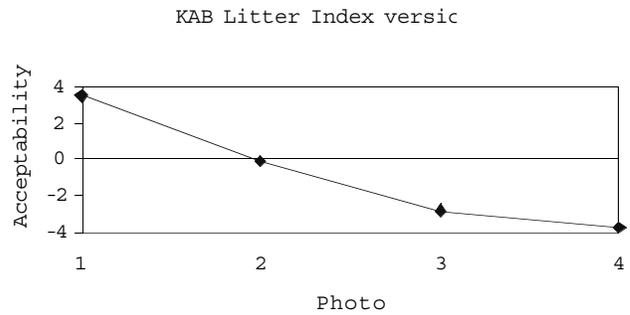


Figure 1. Norm curves for litter as measured using KAB litter Index version I, II and litter Photometric Index

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

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

**Table 1. — Visitor norms for litter**

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

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

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

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

Standards of Quality for Graffiti

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

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

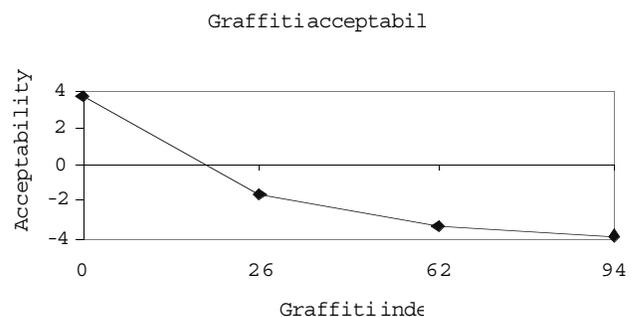


Figure 2. Norm curve for acceptability ratings of graffiti

**Table 2. — Visitor norms for graffiti**

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

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

### Discussion

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

Boston Harbor Island National Recreation Area.

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

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

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

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

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

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

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

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

## References

- Anderson, D.H. & Brown, P.J. (1984). The displacement process in recreation. *Journal of Leisure Research*, First Quarter, 61-73.
- Christensen (1984). Vandalism and depreciative behavior. A Literature Review. The President's Commission On American Outdoors. *Management*. 73-87.
- Donnelly, M., Vaske, J. & Shelby, B. (1992). Measuring backcountry standards in visitor surveys. *Defining Wilderness Quality: The Role of Standards in Wilderness Management*. USDA Forest Service General Technical Report PNW-305, 38-52.
- Graefe, A., Vaske, J., & Kuss, F. (1984). Social carrying capacity. An integration and synthesis of twenty years of research. *Leisure Sciences*, 6, 395-431.
- Hammitt, W.E., & Cole, D.N. (1998). *Wildland Recreation Ecology and Management* (2nd ed.). New York: John Wiley & Sons, Inc.
- Heywood, J. L., Mullins, G.W., & Blower, S. (1983). A user-orientation to managing vandalism. *Trends*, 21(1), 25-27.
- Ibitayo & Virden, R. J. (1996). Visitor and manager perceptions of depreciative behaviors in urban park settings. *Journal of Park and Recreation Administration*, Winter 1996, 36-51.
- Jackson (1965). Structural characteristics of norms. *Current studies in Social Psychology*: New York, NY: Holt, Rhinehart and Winston, Inc., 301-309.
- Keep America Beautiful (1993). *Pre-certification Manual*, 143-192.

Manning, R. E. (1999). *Studies in Outdoor Recreation. Search and Research for Satisfaction* (2nd ed.). Corvallis: Oregon State University Press.

Manning, R. E., Lime, D.W., Freimund, W.A. & Pitt, D.G. (1996). Crowding norms at frontcountry sites: A visual approach to setting standards of quality. *Leisure Sciences*, 18, 39-59.

Manning, R.E., Valliere, W., Wang, B., & Jacobi, C. (1999). Crowding norms: Alternative measurement approaches. *Leisure Sciences*, 21, 219-229.

Manning, R.E., Wang, B., Valliere, W., Lawson, S., & Newman, P. (2002). Research to estimate and manage carrying capacity of a tourist attraction: A study of Alcatraz Island. *Journal of Sustainable Tourism*, 10 (5), 388-404.

Samdahl, D. M., & Christensen, H. H.(1985). Environmental cues and vandalism: An exploratory study of picnic table carving. *Environment and Behavior*, 17(4), 445-458.

Shelby & Vaske (1991). Using normative data to develop evaluative standards for resource management: A comment on three recent papers. *Journal of Leisure Research*, 23(2), 173-187.

Vaske, J., Donnelly, M., & Petruzzi, J. (1986). Country of origin, encounter norms and crowding in a frontcountry setting. *Leisure Sciences*, 18, 161-176.

**Pages 24-31 in:**

Murdy, James, comp., ed. 2004. **Proceedings of the 2003 Northeastern Recreation Research Symposium**. Gen. Tech. Rep. NE-317. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 459 p.

Contains articles presented at the 2003 Northeastern Recreation Research Symposium. Contents cover planning issues, communications and information, management presentations, service quality and outdoor recreation, recreation behavior, founders' forum, featured posters, tourism and the community, specialized recreation, recreation and the community, management issues in outdoor recreation, meanings and places, constraints, modeling, recreation users, water-based recreation, and recreation marketing.

---

---

Published by:  
USDA FOREST SERVICE  
11 CAMPUS BLVD SUITE 200  
NEWTOWN SQUARE PA 19073-3294

For additional copies:  
USDA Forest Service  
Publications Distribution  
359 Main Road  
Delaware, OH 43015-8640  
Fax: (740)368-0152

July 2004

---

---

Visit our homepage at: <http://www.fs.fed.us/ne>