STATE PARK TRAIL CONFLICTS AND RESOLUTION STRATEGIES

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Abstract

Trail development and use continues to expand
nationwide, following the 1986 predictions of the
Presidents Commission on Americans Outdoors. This
expansion sparks new conflicts and exacerbates old ones.
The nation's state park systems are leaders in developing
new recreation opportunities (e.g. mountain biking)
while continuing to provide for traditional activities such
as hiking. This makes state parks primary sites to study
trail-related conflicts and their resolution. The authors,
in cooperation with the National Association of State
Park Directors, administered a mail questionnaire to
the nation's 50 state park directors in July and August
2003 about state park trail conflict and resolution
strategies. Of the 50 states, 32 responded. The mean
state park system provided about 923 trail miles, with
62% for non-motorized use only, 33% shared non-
motorized/motorized use and 5% motorized use only.
Of the five types of conflicts studied (among or between
trail users, between trail users and other recreationists,
between trail users and adjacent private owners, within
a trail use activity or with non-recreation land users
and uses), conflicts among or between trail users were
rated as the most serious by a majority of respondents
who identified a most serious conflict. In particular,
conflicts among motorized and non-motorized uses and
between motorized uses were rated as the most serious.
Management responses included signage promoting
appropriate trail etiquette, seasonal restrictions on one or
more uses, motorized safety patrols on shared use trails,
ticketing illegal motorized use on non-motorized trails,
physical barriers to motorized vehicles and creation of
separate trails for conflicting uses.

1.0 Introduction

The Presidents Commission on Americans Outdoors
(President's Commission on Americans Outdoors
1986) predicted a "prairie fire" of growth in trail related
recreation opportunity and participation. Funding
for non-motorized, shared use and motorized trail
development has also been substantially increased at
the federal level through the two most recent omnibus
transportation appropriation statutes. In tandem, many
states have also given high priority to trail development,
partially as a match to available federal funds.
Finally, unique windows of opportunity, such as the
abandonment of rail-road rights of way, have provided
the foundation for extensive new linear parks, including
linear state parks. These parks link communities and
provide substantial new trail mileage within easy reach of
many recreationists.

Public interest in trail use has also expanded.
Technological innovation has spurred new activities and
bolstered traditional ones. For example, mountain biking
is a relatively new form of bicycling activity, spurred by
the development of lightweight, durable bicycles with
wider tires and rugged suspension. Road biking, with a
much longer history, has seen a resurgence in popularity
as rail-trails provide a safe, paved non-motorized trails
conducive to speed, family use, work related commuting
and healthful aerobic exercise. In the motorized arena,
snowmobiling has matured as machines now have
improved suspension and are faster and quieter. This
has led to the rise of multi-day snowmobile vacations
covering hundreds of trail miles (Lynch 2000).

As trail use, interest and provision have expanded,
conflict and the potential for conflict has also increased.
Recreational conflict has been most often defined as goal
interference in a recreational setting (Ewert et. al. 1999).
Roggenbuck (1992) has noted that recreational conflict
has physical, psychological and perceptual dimensions.
Hence, effective conflict resolution needs to consider
each of these dimensions.

When considering trails, they can be categorized into
three management orientations: non-motorized (hiking,
cross-county skiing, etc.), motorized (e.g. off-road vehicle
use, snowmobiling) and shared use (allowing both non-

Table 1.—State park trail mileage by type of use allowed.

Type of Trail	Number of States Reporting	Total Miles of Trail	Percentage of Total
Non-motorized only	29	16,631	62
Motorized and non-motorized	29	8,846	33
Motorized only	29	1,293	5
All trails	29	26,770	100

motorized and motorized uses). The range of conflicts on trails can be segmented into five types:

1. Among (hikers, mountain bikers and equestrians) or between trail users (e.g. cross country skiing and snowmobiling)
2. Between trail users and other recreationists (e.g. hikers and hunters)
3. Between trail users and adjacent private landowners (e.g. hikers and trailside cabin owners)
4. Within a single trail use (e.g. traditional cross country skiers and ski skaters)
5. With non-recreation land uses (hiking and forestry)

An important venue that provides for all types of trails and trail conflicts are the nation's state park systems. They have been traditional providers of outdoor recreation opportunity and have also often been on the forefront of innovation in providing recreation opportunity. Because they are found across the country, they provide a useful national laboratory for better understanding recreation management issues and alternatives. They are also represented by an active professional association, the National Association of State Park Directors.

2.0 Methods

As a prelude to a presentation to the National Association of State Park Directors (NASPD) annual meeting in September 2003, the authors conducted a mail census of the 50 state park directors to determine the number and type of trails in respective state park systems, the prevalence and seriousness of conflicts on those trails and conflict resolution strategies and their efficacy. The survey was reviewed by the director of planning for Michigan State Parks and the State Trail Coordinator for the Michigan Department of Natural Resources. It was

also vetted by the Michigan State University Committee on Research Involving Human Subjects. Funding for this project was provided by the Michigan Agricultural Experiment Station.

The 18-question, 7-page questionnaire was originally mailed in July 2003 with a cover letter and business reply envelope. The mailing list of state park directors was provided by the NASPD. A second mailing of the questionnaire with a revised cover letter and additional business reply envelope was sent to non-respondents in early August 2003. Data were entered and analyzed using SPSS. Since the questionnaire was distributed to the entire population of state park systems (census versus a probability sample) the results do indeed represent the whole population for the states that responded. Thus probability statistics are unnecessary as the whole population is described by the descriptive statistics.

3.0 Results

A total of 32 states completed and returned the questionnaire. States responding were: Arizona, California, Connecticut, Georgia, Hawaii, Iowa, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Maine, Michigan, Missouri, Montana, North Dakota, Nebraska, New Hampshire, New Jersey, Nevada, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Vermont, Washington, Wisconsin and Wyoming. Respondents tended to be from more northerly states, perhaps because the NASPD conference in 2003 was held in northern Michigan and their likelihood of attendance was increased by proximity.

3.1 State Park Trail Systems and Opportunities

Of the 32 states responding, they reported a total of 26,770 miles of trails in their combined state park systems or slightly more than 920 miles per state park system (Table 1). Trails solely for non-motorized use

Table 2.—Proportion of states providing selected trail activity on one or more state park trails.

Trail Use Provided	Number of States Responding	Percentage that Provide Use
Walk/hike	32	100
Equestrian	32	100
Mountain bike	32	97
Road bike	32	75
Cross country ski	32	72
In-line skate	32	59
Snowmobile	32	50
All terrain vehicle	32	38
Motorcycle	32	38

accounted for almost two-thirds of the total trail mileage while motorized only trails accounted for 5%.

Non-motorized trail activity was provided by more states than motorized trail activity (Table 2). Walking/hiking and equestrian trail opportunities were provided in all responding state park systems and the majority provided every type of non-motorized trail use queried. Motorized trail use was less prevalent, with snowmobiling being the most common type provided.

3.2 Prevalence, Seriousness and Response to Conflict

Conflict was assessed by a yes/no question as to whether it existed and, if yes, a rating question on the seriousness of the conflict with the scale being 1 (conflict of minimal seriousness) to 5 (conflict of critical seriousness). Following those ratings, management response(s) to conflict was requested and the perceived efficacy of the response was rated on a scale of 1 (unsuccessful) to 5 (highly successful).

Conflict between trail uses was most common between non-motorized uses (Table 3). However, for those who have the conflict, the conflict between motorized and non-motorized trail uses was judged as more serious than conflicts among non-motorized trail users, although motorized/non-motorized conflict was reported in fewer states. The greater level of seriousness was related to concerns about health and safety of trail users in a potential motorized/non-motorized collision. Approaches to reduce conflict between trail users included signage clearly denoting appropriate activities, etiquette oriented

signage, seasonal restrictions on certain uses (e.g. restricting mountain bike and equestrian use during spring to reduce physical damage to the trail), physical barriers to illegal motorized use and separate trails to segregate conflicting activities (e.g. going from shared use trails for hiking, mountain biking and equestrian to separate trails for each). Success in reducing conflict was assessed to be greatest in regards to conflicts between non-motorized uses and least in regards to conflicts between motorized and non-motorized uses and between motorized uses.

Conflict between trail uses and other recreation activities or non-recreation activities (e.g. forestry) non-trail use is less common than conflict between non-motorized trail activities (Table 4). However, conflict among trail users with and without dogs occurs in a majority of states. Also, conflicts between trail use and hunting occur in almost half the state park systems. To reduce dog related conflicts leash laws and their enforcement, prohibition of dogs from trails, etiquette training and mandatory dog feces removal are used in various states. These approaches appear to be moderately successful. Approaches taken to reduce conflicts between trail uses and hunting include temporary trail closures during some hunts, law enforcement against illegal hunting, closing some trail areas to hunting and controlled hunts using techniques such as a limited number of permits, archery only deer hunts and more restrictive hunting seasons in park areas. These approaches appear moderately successful. They also often walk a fine line between the need to control wildlife populations (e.g. white-tailed deer) which hunting can

Table 3.—Prevalence, seriousness and efficacy of response to conflicts between trail users on state park trails.

Conflict	Percent with Conflict	Mean Rated Seriousness of Conflict[a]	Mean Rated Efficacy of Management Response[b]
Hike/bicycle	69	2.0	3.6
Equestrian/bicycle	66	2.1	3.2
Hike/equestrian	58	1.3	3.6
Motorized/non-motorized	38	3.1	2.8
Cross country ski/ snowmobile	32	2.6	3.5
Off-road vehicle/ snowmobile	18	3.2	2.8

[a] Rating scale 1=Minimally serious to 5=Critically serious
[b] Rating scale 1=Unsuccessful to 5=Highly successful

Table 4.—Prevalence, seriousness and efficacy of response to conflicts within trail uses, with adjacent non-trail recreation and with adjacent land uses on state park trails.

Conflict	Percent with Conflict	Mean Rated Seriousness of Conflict[a]	Mean Rated Efficacy of Management Response[b]
Trail users with and without dogs	61	2.0	3.0
Hunting with trail use	47	2.1	3.3
Trail use with agriculture	34	1.9	3.0
Trail use with forestry	34	1.8	3.4
Trail use with nature observation	29	1.6	3.3
Skill level conflict within a trail use	17	2.2	1.7
Traditional cross country skiing with ski skating	13	2.0	4.0

[a] Rating scale 1=Minimally serious to 5=Critically serious
[b] Rating scale 1=Unsuccessful to 5=Highly successful

provide, provision of outdoor recreation (hunting and trail use) and the use of deadly weapons in proximity to a developed recreation site (trail).

The least success in resolving a conflict was reported in reducing conflicts among people involved in the same trail use with differing skill levels. Relating conflicts within a specific activity to the concept of recreational specialization (Bryan 1979) may enhance the ability of managers to conceptualize the conflict and provide for the range of users. For example, using a stacked loop trail design, trail difficulty can be increased on the more distant loops (steeper grade, narrower width, tighter turns, etc.), yet the stacked loop design allows for a single

trailhead, rapid separation of more and less skilled trail users (e.g. cross country skiers) and still provides for an understandable system that allows low skill users to be confident they are not far from their vehicle and to readily determine their position on the trail system.

Trail vandalism is found in more than half the state park systems (Table 5). Conflict with adjacent landowners, often one of the major concerns of locating new trails, was most common in the case of trespass and least common in regard to noise and vandalism of private property. While none of the conflicts was mean rated as especially serious, conflicts with neighbors can quickly escalate into very negative publicity for a park system.

Table 5.—Prevalence, seriousness and efficacy of response to vandalism and conflicts with adjacent private landowners on state park trails.

Conflict	Percent with Conflict	Mean Rated Seriousness of Conflict (a)	Mean Rated Efficacy of Management Response (b)
Vandalism to trail facilities	58	1.8	2.7
Trespass	42	2.1	3.3
Landowners harass trail users	19	2.3	3.3
Trail users harass landowners	13	2.0	3.5
Noise from trail users	9	2.0	4.0
Vandalism to private property	9	1.7	3.5

(a) Rating scale 1=Minimally serious to 5=Critically serious
(b) Rating scale 1=Unsuccessful to 5=Highly successful

Likewise, vandalism to trail facilities can affect a park system in many ways including increasing maintenance costs, creating a park image of disrepair, instilling a visitor climate of concern about personal safety and disrupting staff work plans by taking away employees from other regularly scheduled activities. Management responses to vandalism include rapid repair of vandalized locations, installing vandal resistant facilities, providing easier means of patrol such as improved sight lines and increased enforcement and surveillance. Trespass onto private property is reduced by signage clearly marking boundaries of park ownership, education at trail heads and visitor centers about respecting adjacent property owner rights and fencing in severe cases.

4.0 Management Implications

The most common state park trail related conflicts are those involving those hiking, mountain biking and riding horses, dogs on the trails and vandalism to trail facilities. However, the most serious conflicts are those involving motorized and non-motorized uses or multiple motorized uses. The potential for human injury or death is the factor that increases the seriousness of the conflict. A key management response is to use the range of options available including education, planning, design, maintenance and enforcement. It is critical that there be coordination among all these aspects of park administration as they have the potential to be mutually reinforcing and together can be effective in working with a diverse clientele group. For example, education may work well with youngsters or new trail visitors to clearly

explain rules and etiquette. For inherently conflicting activities such as cross country skiing and snowmobiling separate trail systems are much more realistic than asking snowmobilers to travel at the same pace as skiers or to "be quiet". For those who show little respect for others by knowingly disregarding the law, enforcement is a necessity. Thus the knowingly illegal motorized user on the designated non-motorized trail needs the certainty of punishment to positively change his/her behavior (Nelson et al. 1999).

In the future, one challenge that is likely to be exacerbated is that while state parks are not rapidly expanding in size, trail facilities and their use is likely to continue to grow. This results in a compression of use and users on a static acreage. In addition, continued technological innovation with activities that emphasize speed will also make once sufficient trail systems seem too short. These factors will likely lead to greater challenges for managers in conflict resolution. Cooperation among trained trail user volunteers from disparate activities such as off-road vehicle use, hiking, mountain biking and horse back riding in common functions such as trail grooming, search and rescue and resource protection may be valuable in creating tolerance. Conversely, solutions that solely emphasize development of additional trails on this static acreage will likely create new conflicts with dispersed recreation opportunity and may also lead to environmental conflicts as trails may be located in more ecologically sensitive areas to satisfy the demand by users for more mileage.

5.0 Citations

Bryan, H. (1979). Conflict in the great outdoors: Toward understanding and managing for diverse sportsmen preferences (Sociological Studies 4). Tuscaloosa Bureau of Public Administration, University of Alabama.

Ewert, A., Dieser, R. and Voight, A. (1999). Conflict and the recreational experiences. In E. Jackson and T. Burton (Eds.) Leisure studies: Prospects for the twenty-first century (pp. 335-345). State College, PA: Venture Publishing.

Lynch, J. (2000). Factors influencing snowmobilers' aberrant behaviors: a comparison of 1996-97 convicted snowmobile law violators and other snowmobilers. Ph. D. Dissertation. Department of Park, Recreation and Tourism Resources, Michigan State University.

Nelson, C., Colley, J. and Larsen, D. (1999). Law enforcement and security. In B. van der Smissen, M. Moiseichik, V. Hartenberg, L. Twardzik (Eds.) Management of park and recreation agencies (pp. 743-780). Ashburn, VA: National Recreation and Park Association.

President's Commission on Americans Outdoors (1986). The Report of the President's Commission on Americans Outdoors. Washington, DC: U.S. Government Printing Office.

Roggenbuck, J. (1992). Use of persuasion to reduce resource impacts and visitor conflicts. In M. Manfredo (Ed.) Influencing human behavior (pp. 149 – 208). Champaign, IL: Sagamore Publishing.