FEATURE

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SOUL OF THE WILDERNESS

Recreation Management Priorities Are Misplaced—Allocate More Resources to Low-Use Wilderness

BY DAVID N. COLE

Abstract: Wildernesses and places within wilderness that receive heavy recreation use typically are allocated the most wilderness management resources. I argue that more resources should be allocated to lightly used wilderness areas because these are the places that are most precious, most vulnerable, and most responsive to management. These resources should be used to monitor conditions and implement management actions where needed to keep these places from degrading.

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EVERY YEAR, millions of people enjoy the benefits of the outstanding recreational opportunities that the United States' wilderness system provides. Wilderness recreation use and, presumably, resultant benefits have increased greatly since establishment of the National Wilderness Preservation System in 1964 (Cole 1996). However, recreation use inevitably degrades natural conditions intended for preservation and can also degrade the quality of the wilderness experience. Although there are some success stories—places where impact problems have declined—trend studies provide strong evidence that ecological impact problems are worsening, probably in most, if not all, wildernesses (Cole 1993). Similar studies provide little evidence that the quality of wilderness experiences is declining (Cole, et al. 1995), but declining quality may be difficult to detect if displacement and succession of users has occurred (Clark, et al. 1971). In most wildernesses, use density is increasing, conflict potential is increasing (because the diversity of users is increasing), and ecological impacts are increasing. This suggests the potential for declining quality, although the ultimate response is largely dependent on visitors' tolerance of and ability to cope with changing conditions.

Managers have responded to both the social and ecological impacts of recreation by employing a variety of management strategies and tactics (Cole, et al. 1987; Hendee, et al. 1990). They monitor conditions, identify problems, isolate specific causes of those problems, and select management tactics that attack those causes. When appropriate management actions are selected and adequately implemented, they can be highly effective in protecting wilderness quality. However, this requires resources—people, time, information, and money. These resources are not distributed equally. More resources are available for recreation management in some wildernesses than in others. Within individual wildernesses, more resources are expended in some places than in others.

In this article I would like to address three questions. First, how are priorities currently set for expenditures on wilderness recreation in the United States? Second, what should be the priorities for allocating resources? And third, how might these priorities be changed to increase management effectiveness? My comments are directed only at recreation management within wilderness and the allocation of resources to recreation management. My conclusions would be quite different if I were attempting to address the entire suite of threats to wilderness values.

Current Priorities

One criterion—amount of recreation use—explains most of the variation in expenditures on wilderness recreation management. This is particularly true for resource allocation within individual wildernesses. Aside from trail construction and maintenance, most field-level recreation management expenditures are on wilderness rangers. Wilderness rangers spend the vast majority of their time on the trail system and particularly on the most heavily used trails and in the most frequented destination areas. They seldom visit the majority of wilderness acreage, which is trail-less and lightly used. This seems to make sense. After all, most of the people and most of the severe problems are on popular trails and in popular destinations. If the job of the ranger is to work with visitors and to deal with the

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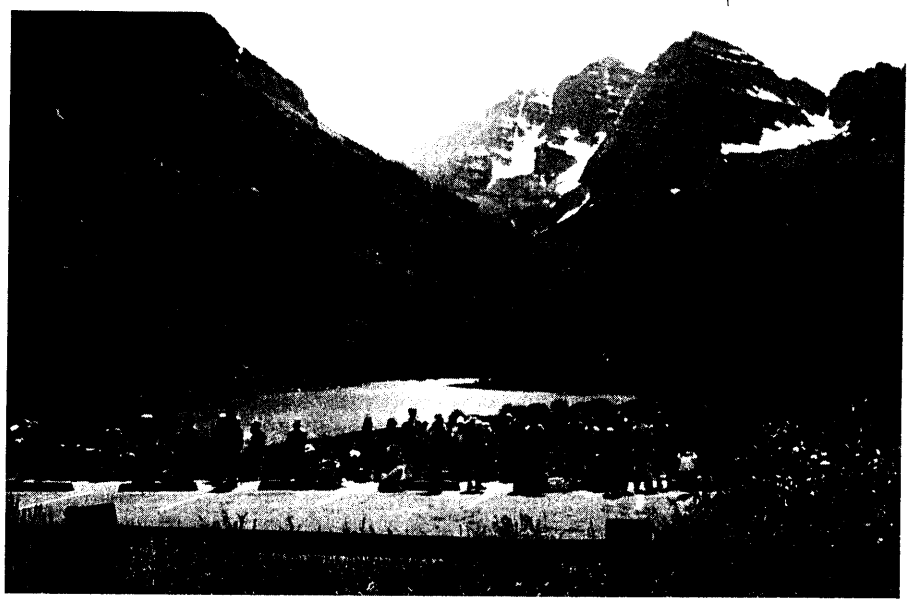
problems they have created, then this is where they should be.

Resources are also allocated between wildernesses largely in relation to how much recreation use they receive. In the U.S. Forest Service (USFS), for example, the funds appropriated to each region for wilderness management in 1994 varied from $5.2 million for the Pacific Southwest region (California) to $1.2 million for the Alaska region. The funding allocation given to each region was highly correlated with the wilderness visitation each region receives (r=0.83) and very poorly correlated with wilderness acreage (r=0.13). The Pacific Southwest region, with 11% of the nation's wilderness acreage and 18% of the nation's wilderness use, received 20% of USFS wilderness management funds. The Eastern region, with 4% of the acreage and 13% of wilderness use, received 11% of funds. The Alaska region, with 16% of the acreage but only 6% of wilderness use, received 5% of the wilderness funds. The Northern region (Montana and northern Idaho), with 14% of the acreage and 7% of wilderness use, received 9% of funds. A current proposal would allocate USFS wilderness resources largely on the basis of amount of recreation use and total population within the region.



Most of the resources allocated to wilderness recreation management are focused on heavily used places in wilderness. Photo by David N. Cole.

Priorities for Allocating Scarce Resources

Is it appropriate to allocate recreation management resources primarily on the basis of amount of recreation use? Clearly, the answer to this question is dependent on one's beliefs about how recreation management programs should operate. I would argue that wilderness managers should be proactive more than reactive. The first priority should be establishing a management regime that minimizes further degradation of wilderness. Only when this regime is in place should the focus shift to restoring the qualities of places that are already highly degraded. The rationale behind my argument is that it is more cost-effective to prevent problems than to fix them, and, therefore, more of the wilderness can be protected with a proactive management stance. Moreover, a proactive approach adheres to one of several proposed principles of wilderness management—nondegradation—the objective of which is "to prevent degradation of current naturalness and solitude in each wilderness ... rather than letting all areas ... deteriorate to a minimum standard" (Hendee, et al. 1990, p. 183).

Further, I suggest that to be proactive, resources should be allocated primarily on the basis of three criteria—preciousness, vulnerability, and responsiveness to management. In short, we should allocate more resources to those places in wilderness that are most precious, most vulnerable to degradation, and most likely to respond positively to "good" management. When resources are scarce, fewer resources should be allocated to places that are less precious, less likely to degrade further, and less likely to respond positively to good management.

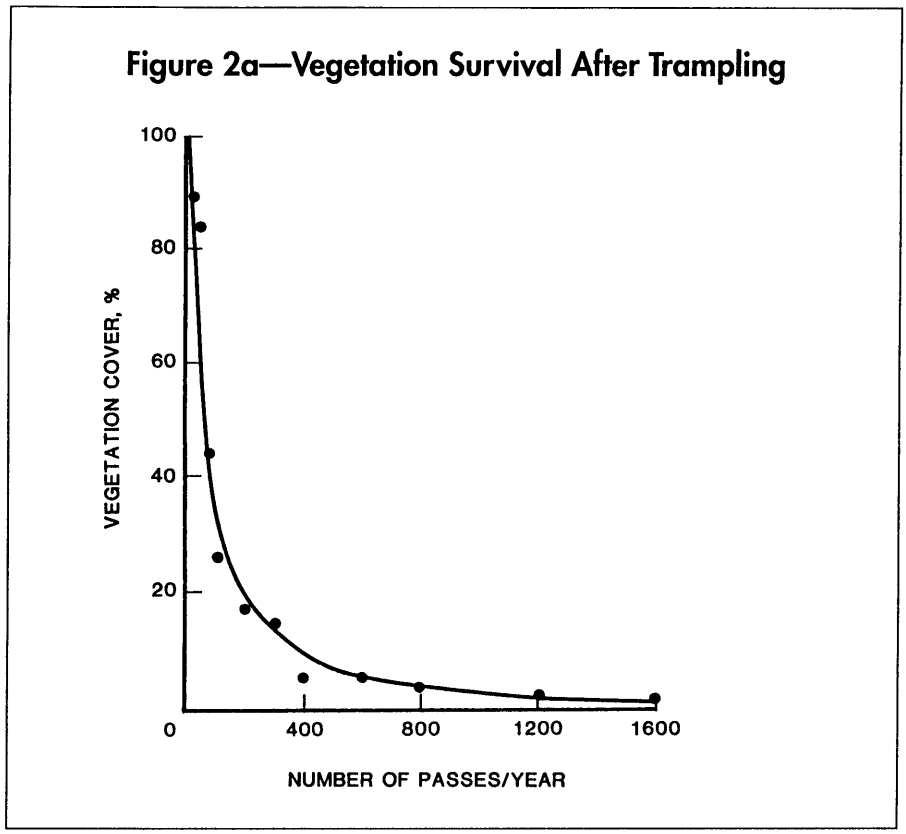
Preciousness

Which wildernesses and places within wilderness meet these criteria? Preciousness is a subjective quality that could legitimately be evaluated in many ways. Nevertheless, I argue that in wilderness, the most precious places are those that are closest to the wilderness ideal, as expressed in The Wilderness Act of 1964, and those that offer the most contrast with other recreational landscapes. On both of these bases, the most precious wildernesses and locations within wilderness are those that are most undisturbed and undeveloped. These places approach the ideal of being "untrammeled by man." They are among the last places that differ dramatically from the highly modified landscapes that cover most of the United States. In contrast, trailed areas, heavily used wilderness destinations, and heavily used wildernesses are much less unique.

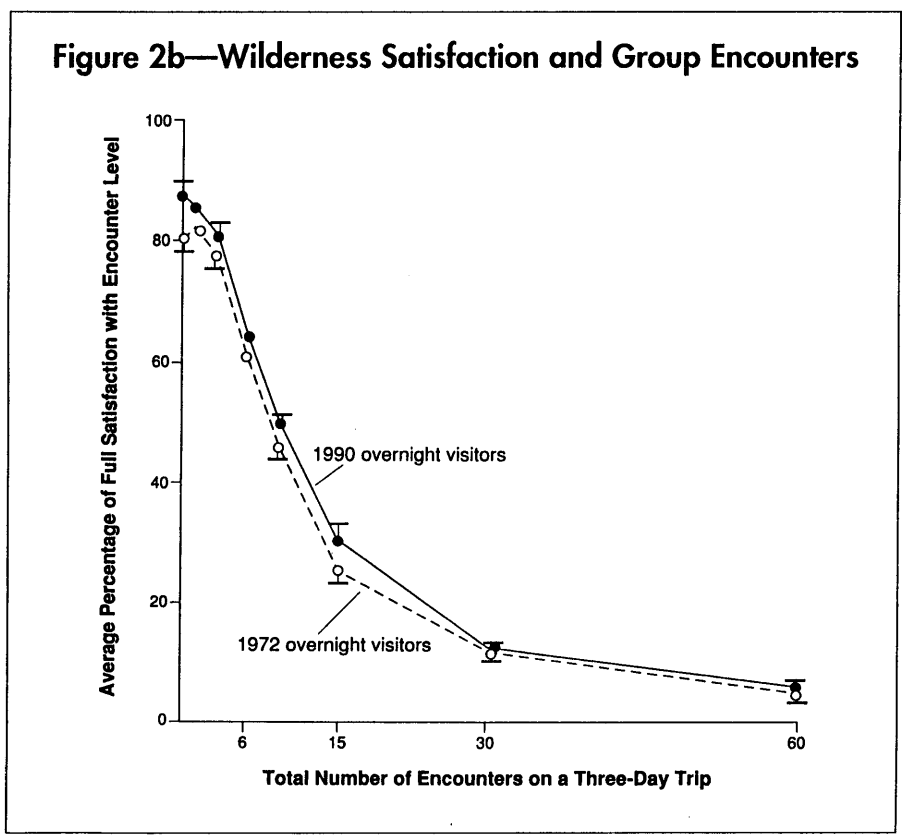
Frequent encounters, abundant impact, and facilities, such as trails, make these places more similar to developed, wildland recreation areas such as state parks. While highly valuable—particularly in terms of the quantity of recreation benefits they provide—these places are much further from the wilderness ideal.

Vulnerability

Scientific research can assist in identifying those wildernesses most vulnerable to further degradation. Numerous studies of ecological impact show that most impacts occur rapidly and that even light use causes near-maximum levels of impact (see Figures 2a and 2b; Marion and Cole 1996). The clear implication is that recreation sites that have been used for a long time or that are heavily used are not



The relationship between amount of use and both ecological and social impact is curvilinear. Data show (a) surviving vegetation after various trampling levels and (b) reported satisfaction in relation to number of other groups encountered on a three-day trip, overnight visitors to Desolation Wilderness, 1972 and 1990. Bars indicate 1 standard error.



likely to experience further deterioration. This prediction has been verified in trend studies (Cole and Hall 1992). In contrast, places that have not been visited before or places that are lightly used are highly vulnerable to deterioration. Even slight increases in use of these places can result in substantial increases in impact.

Research on the relationship between number of encounters and the quality of visitor experiences suggests a similar principle. Lightly used wildernesses and wilderness locations are also probably more vulnerable to degradation of experience quality than heavily used wildernesses and locations. Interpretations are less clear-cut, however, due to various theoretical and methodological problems (Manning 1986). The data in Figure 2b are from a question overnight visitors to Desolation Wilderness were asked in 1972 and 1990 about how they would feel if they encountered various numbers of average-size backpacking groups on a three-day trip. Both in 1972 and in 1990, the reduction in satisfaction caused by an incremental increase in number of encounters is greatest between 3 and 15 groups (between 1 and 5 encounters per day). The reduction in satisfaction resulting from meeting 10 groups per day instead of 5 is minor in comparison. This makes intuitive sense. Isn't the difference between a day in which no other groups are encountered and a day in which 3 other groups are encountered much greater than the difference between a 7-encounter day and a 10-encounter day? The implication is that slight increases in use and encounter rates are most likely to cause a meaningful loss of solitude in lightly used places.

Responsiveness to Management

Which places are most likely to deteriorate dramatically if neglected by management or not to deteriorate or even improve if given management attention? Again, I conclude that the less-used wildernesses and places within wilderness should be most responsive to management. This follows largely from the implications of the research discussed under the vulnerability criterion. In a lightly

used place, subtle increases in use or shifting use patterns often occur without detection by management. The result is a loss of solitude where outstanding opportunities existed before, disturbance of animal populations that had been undisturbed, creation of user trails in trail-less areas, and proliferating evidence of human use (e.g., campsites, litter). All of this could be avoided with a modest level of management activity—monitoring of use and impact and implementation of a few restrictions where needed. In lightly used places, relatively minor decreases in use intensity or per capita impact can have substantial positive effects.

In contrast, what has been accomplished by the substantial management attention given to the heavily used places in wilderness? Most of these places still do not offer outstanding opportunities for solitude; recreation impacts are evident wherever visitors go; and animal populations have either disappeared or become habituated to human presence. The sad fact is that it is impossible—aside from virtually closing these places to all recreation use—for management to make substantial progress in moving these places toward the wilderness ideal. While we clearly need to manage heavily used places to keep them from getting worse (and this management will require substantial investments), both the opportunities for meaningful improvement in conditions as a result of active management and the likelihood of substantial further deterioration in the absence of active management are relatively meager here.

Short of enacting draconian measures, high-use places are simply not very responsive to management. Given meager management resources and substantial management needs, shouldn't most available resources be allocated to places where they are likely to have substantial positive effects?

Conclusions and Suggestions

My fundamental conclusion is that current priorities in allocating recreation management resources are misplaced. The places most in need of management attention are the wildernesses and places within wilderness that currently receive the least attention. Current priorities reflect a reactive management stance. The places that have already been highly degraded are the places that receive most resources, while less disturbed places get very little attention. If we want to protect the most precious and vulnerable wilderness places—if we are serious about the principle of nondegradation—then we must change these priorities. We must allocate a much larger proportion of available resources to lightly used wildernesses and to lightly used places within wilderness.

I am not advocating a complete reversal of priorities. Highly used wildernesses are precious because they provide benefits to many visitors. Substantial resources must be devoted to maintaining these places in as wild a state as possible, to seeking to reduce conflict between recreationists, and to providing visitors with information—both to protect the wilderness environment and to enhance visitor experiences. What I am advocating is the elevation of acreage and vulnerability as criteria in allocating resources and a de-emphasis of current use levels. This would shift some resources to lightly used wildernesses and places within wilderness where resources are sorely needed.

What should be done with increased resources in these lightly used wildernesses? Three activities are clearly needed. First, it must be decided whether or not the principle of nondegradation is to be adhered to. If this principle is to guide management, plans will need to be developed for lightly used wildernesses or portions of wildernesses that stress maintaining the outstanding opportunities for solitude and low levels of impact that currently exist there. This can be accomplished by developing standards that tolerate no further loss of solitude or increase in ecological impact. Some proponents of strict adherence to the concept of nondegradation fail to understand its implications. There is little evidence that we can substantially reduce the per capita impact of wilderness visitors. Therefore, to allow no further degradation, use limits are virtually a necessity as use levels continue to rise. If some further degradation is to be tolerated, limits of acceptable change (Stankey, et al. 1985) that limit the extent of further deterioration should be defined.

A second activity is condition monitoring in lightly used places. Monitoring of trails, campsites, encounter rates, and use levels are most common in the more heavily used wildernesses. Moreover, within individual wildernesses, the best data are available for the most heavily used places. More lightly used places must also be covered by monitoring programs if they are to be protected.

Finally, there may be more need for use restrictions in lightly used places than elsewhere. This is precisely the reverse of the most common situation, in which use limits and other restrictions are implemented first in the places where use is greatest and impacts are most profound. As noted before, however, even dramatic changes in amount of use may have relatively little positive effect in high-use places. In a study of six high-use wilderness destinations, Cole, et al. (1997) conclude that the benefit-cost ratio of limiting use declines as amount of use increases. On summer weekends at Snow Lake (Alpine Lakes Wilderness, Washington), for example, other visitor groups are encountered every three minutes on average. Even a 50% reduction in use would not provide a meaningful increase in solitude; other groups would still be encountered every six minutes. Environmental impact levels would also not be likely to decline meaningfully.

Recreation use inevitably degrades natural conditions intended for preservation and can also degrade the quality of the wilderness experience.

Contrast this with the effect of a 50% use reduction in a wilderness where trails and campsites are just beginning to appear and groups typically encounter one other group per day. This reduction might lower trampling levels to the point where long-term impact does not occur. It might permit recovery of impacts that are just developing, because resilience is still high during the early stages of the impact process (Willard and Marr 1971). Finally, it should greatly increase the frequency of days in which no other visitors are encountered. The need for visitor education may be more significant in lightly used places. Low-impact materials stress the "special responsibility" (Hampton and Cole 1995, p. 15) that must be accepted to visit off-trail areas. The need for behavioral restrictions (e.g., length of stay limits) and prohibitions on particular types of use (e.g., pack stock or large groups) are also greater in more lightly used places.

In conclusion, most wilderness recreation management resources are allocated to heavily used places. These are also the places that are most likely to limit use and have restrictive management programs. This prioritization of resources reflects a reactive management stance in which it is implicitly assumed that most attention should be given to fixing the most obvious problems. It would be wiser, I believe, to adopt a proactive stance and to shift these priorities dramatically. This shift in priorities should involve reallocation of a substantial proportion of funds to those wildernesses and portions of wildernesses that are most precious, most vulnerable to degradation, and most responsive to management—those that are relatively lightly used. These resources should be used to establish standards for conditions, to monitor conditions, and to implement use restrictions where they are needed to meet standards. Management programs should be established that will protect the vast majority of wilderness that still approximates the wilderness ideal before attempting to restore conditions in those relatively few wilderness locations where conditions are far from this ideal. **IJW**

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