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INTERGROUP CONFLICT IN WILDERNESS: BALANCING OPPORTUNITIES FOR EXPERIENCE WITH PRESERVATION RESPONSIBILITY

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Intergroup conflict in wilderness: balancing opportunities for experience with preservation responsibility

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Abstract

In contrast with the days of the early explorers, when wilderness travel in America was predominantly a solitary activity, the wilderness resource is now shared among many interests. Interaction among these various interests leads to varied amounts of conflict. Studies in the United States, conducted in multiple National Wilderness Preservation System units, across geographic regions and across agencies, closely examine the role of behavioral and attitudinal contributors to conflict between hikers and recreational packstock users as a case study conflict situation. A survey of previous literature indicates a lack of consistency in measurement of conflict in past studies. Results from five related studies suggests there are portions of conflict which can be addressed using light-handed, indirect methods such as education and persuasive communication to change behaviors or attitudes of visitors on either side of the conflict. Some contributors to conflict may be better addressed through more direct methods involving regulation and restrictions. Factors besides the conflict between recreational users must be considered in selection of management actions, however. In addition to quality of visitor experiences, preservation and scientific values of wilderness must also enter the decision about appropriate management actions.

Keywords: recreational conflict, hikers, stock users, wilderness management

Introduction

In contrast with the days of early explorers, when wilderness travel in America was predominantly a solitary activity, the wilderness resource is now shared among many interests, representing both recreation and nonrecreation uses. Interaction among these various user groups, with often contrasting values, leads to varied amounts of intergroup conflict. Much of the conflict research associated with wilderness has been the study of competing recreational users. There are other values of wilderness described within the Wilderness Act of 1964 besides recreation, however, and these other values and uses can also often conflict with recreational use and with each other. The most basic conflict in wilderness management may be between the mandate to provide opportunities for recreation in wilderness while maintaining natural conditions.

Currently, a major emphasis in U.S. Forest Service research is the need to understand conflicting demands on natural resources. With an increasing focus on ecosystem management and social acceptability of forest management decisions, the goal is to enhance our understanding of the sources of conflict, identify potential ways to address the conflict, and anticipate both costs and benefits associated with various conflict management actions.

Conflict between recreation users has been a popular research topic for the last 20 years in the United States. Beginning with studies of conflict between anglers of varying degrees of specialization (Bryan 1977), studies have been conducted on the conflict between canoeists and other boaters (Lucas 1964), skiers and snowmobilers (Knopp & Tyger 1973), snowboarders and skiers (Baird .1994), different types of seaside visitors (Ruddell 1989), bicyclists and hikers (Watson et al. 1991), skiers and heli-skiers (Gibbons & Ruddell 1994), and others. For most of these studies the conflict has been between what might be considered traditional users and users of new technology, or between non-motorized and motorized uses. Most recently, however, and contributing substantially to a resurgence of recreational conflict research in the U.S., intense efforts have been aimed at in-depth study and analysis of conflict between hikers and recreational packstock use, specifically, use of horses or mules as riding or packing stock in American wilderness. In this case, the conflict does not involve a new, invading one, but rather a long-term problem where two very different types of users have been expected to share a common resource.

The recent research on hiker and packstock conflict serves as a source for in-depth understanding of conflict and its potential

contributors. This understanding provides an opportunity for scientists and managers to work together in developing new and better approaches to conflict management. Because conflicts are an inevitable part of human life, complete elimination of conflict is rarely possible or desirable. Instead, resource managers may need to accept the inevitability of some ongoing conflict and work to make the conflicts as productive as possible, or at least minimize their negative impacts (Coser 1956, Deutsch 1971). The role of science is to help managers accomplish the objective of constructive conflict management by informing them about the likelihood of success and the costs associated with different management actions.

The present paper focuses on the conflict between hikers and recreational stock users with the purposes of (1) increasing our understanding of recreational conflict, (2) providing a base for discussion of alternative management techniques, and (3) discussing potential application of this knowledge to other conflict situations in wilderness, including, but not limited to, recreation use.

Hiker and recreational stock user conflict

The extent of the problem in United States wilderness

Use of horses and mules as a wilderness travel method is well established in most wildernesses in the western United States. Use of llamas and goats is increasing though it is still a novelty in most places. The proportion of horse and mule use by outfitters and guides, compared to use of privately owned stock, varies from area to area, as does the proportion of stock users to hikers. In the Bob Marshall Wilderness Complex (Montana), the relative proportion of stock use to hiker use decreased from 1970 to 1982 (Lucas 1985). However, the actual annual total of stock use had not decreased; in fact, stock use had increased by an estimated 20 percent. Hiking use had grown much faster (nearly doubled). With this overall increase in wilderness use came a substantially greater number of reports of hiker conflicts with stock users.

In some western areas, particularly the wildernesses along the crest of the Sierra Nevada Mountains in California, and in the Cascades and Wallowa Mountains of Central and Eastern Oregon, despite restrictions on use to control visitor impacts, conflict between stock users and hikers has been a long-term problem (Snyder 1966, Hendee et al. 1968, McClaran 1989). Hikers have complained about unacceptable impacts to trails, campsites, and meadows, as well as unpleasant confrontations

with recreational packstock and stock users. Many of the complaints suggest that stock use and its associated impacts are not appropriate for these areas and that the managing agency should act to reduce the impacts of stock use. Absher and Absher (1979) reported that less than 15 percent of hiking parties surveyed in a Sierra Nevada study approved of horses or mules as a means of recreational travel.

In the eastern United States, a region of dense population and typically small wilderness units, stock use appears to be growing in some wildernesses. Accurate stock-use statistics do not exist for eastern wildernesses, but some managers report that environmental damage related to stock use and concern by hiker groups about these impacts are increasing. Many hikers perceive that stock use in some of the relatively small wildernesses in the East and South (mostly ranging from 12 000 to 35 000 acres) is incompatible with the goals of ecosystem preservation and maintaining opportunities to experience wilderness qualities, such as solitude and naturalness.

At some areas, stock use is forbidden on some hiker trails. For the most part, however, stock use is not restricted in wilderness. This is probably related to the American National Wilderness Preservation System's heritage; the system grew somewhat out of the desire to preserve skills associated with horsemanship and packtrain travel (Leopold 1966). Historically, wilderness managers and stock users have seen stock use of wilderness as appropriate in most places.

Stock-related impacts to wilderness are also important for other reasons besides the way they affect recreational hiker experiences. In addition to maintaining the recreational values of wilderness, the Wilderness Act (P.L. 88-577) requires managers to maintain natural conditions and the educational and scientific values that wilderness provides. When stock use occurs in wilderness, high environmental and maintenance costs might be expected with this activity that benefits a relatively small proportion of the visitors (Cole 1990). Many values of wilderness may be at risk from this one type of use.

Hiker and recreational stock user conflict studies

Five significant studies of the conflict between wilderness hikers and stock users have been conducted in the United States since 1990. Studies were conducted at the John Muir Wilderness, on the Inyo and Sierra National Forests in the Sierra Nevada Mountains of California (Watson & Niccolucci 1992, Watson et al. 1993, Watson et al. 1994), the Sequoia-Kings Canyon National Parks Wilderness, also in the Sierra

Nevada Mountains, adjacent to the John Muir Wilderness (Watson et al. 1993), the Charles C. Deam Wilderness, on the Hoosier National Forest in Indiana (Watson et al. 1993), the Eagle Cap Wilderness, on the Wallowa-Whitman National Forest in the Wallowa Mountains of eastern Oregon (Kajala 1994), and the Lewis Fork and Little Wilson Creek Wildernesses, on the Jefferson National Forest in the Southern Appalachian Mountains of Southwest Virginia (Roggenbuck et al. 1994). In all five cases, emphasis has been on accurate measurement of the level of conflict occurring, understanding some of the contributors to this conflict, and discussing possible ways managers might address this conflict situation.

The amount of conflict was measured in several ways in these various studies. Using a traditional measure of how many hikers and stock users disliked encounters with the other group, an asymmetric relationship was found as in most previous recreational conflict studies. While generally less than 8 percent of stock users at these areas disliked encounters with hikers, up to 44 percent of hikers disliked encounters with stock users. Generally, hikers did not mind meeting other hikers, and stock users did not mind meeting other stock users on their trips.

However, the level of conflict varied somewhat across the five wildernesses studied, and conflict between hikers and stock users was not the only type of unpleasant encounter. For example, 20 percent of hikers at the Deam Wilderness *enjoyed* meeting horses or mules during their visits and about one-half of all hikers reported that they did not mind meeting them. Hikers in the Deam Wilderness disliked encounters with dogs nearly as much as they disliked encounters with horses or mules, and stock users disliked seeing dogs at about. the level hikers did. The cumulative level of conflict with dogs is higher than with stock at that wilderness.

Another attitudinal measure of conflict, used by Watson et al. (1993), measured visitor predisposition to conflict by assessing how desirable visitors considered various kinds of encounters on any wilderness trip. The proportion who reported encounters with stock groups were undesirable exceeded the proportion reporting negative encounters. It could be that those who anticipate these encounters to be undesirable take action to travel in places and at times where these encounters are less likely. More accurate measures of this coping behavior response to potential conflict need to be developed in the future.

These studies also incorporated two new ways to measure conflict, in addition to simple attitudinal measures drawn largely from previous recreation conflict research. In the studies by Watson et al. (1993),

Kajala (1994) and Roggenbuck et al. (1994), a more specific measure of conflict, more in line with Jacob and Schreyer's (1980) goal interference definition and Owens' (1985) call for a cumulative measure, was used. Visitors were asked if the behavior of any other group had interfered with the quality of a wilderness experience at that particular place. If the respondent said yes, he or she was asked to identify the type of group that was responsible and to specify the behavior that interfered with enjoyment of the wilderness. In these studies, significantly more hikers than stock users tended to indicate the behavior of others had interfered with this enjoyment of the wilderness, but in two of the five studies the tremendously asymmetric relationship found with other measures was no longer evident. About one-fourth of each group associated the goal interference with the other group in the John Muir and Sequoia-Kings Canyon Wildernesses. At the Sequoia-Kings Canyon Wilderness and the John Muir Wilderness, at least half of the visitors who noticed impacts due to inappropriate behavior of other visitors listed littering as a major impact, without associating this impact with a particular type of user group. In prioritization of problems to address at these wildernesses, based only on user reports of distraction from the experience, general problems with litter control appear to have more extensive impacts on visitors than interactions with recreational stock.

Kajala (1994) also included a measure of social conflict (Fink 1968) that keyed in on antagonistic interaction between user groups. In her survey, visitors were asked if they had ever been "bothered" by specific different user types. With this measure, the asymmetry of conflict was less strong than with the enjoy/dislike measure, but still present. The percentage of hikers in conflict with stock users remained at about half of all hikers, but the percentage of stock users having been bothered by hikers amounted to about one-fourth, which was significantly more than the eight percent of stock users disliking meeting hikers.

Research by Watson et al. (1993) found that previously hypothesized contributors to conflict (focus of trip/expectations, definition of place, specialization level, and lifestyle tolerance) predict attitudinal measures of conflict (enjoy/dislike, desirable/undesirable) more accurately than they predict a goal interference (or behavior-based) measure of conflict, as previously defined by Jacob and Schreyer (1980). The relationship between attitudinal measures of conflict and the set of potential predictors varied across the areas studied, showing that the relationship between these predictors and conflict depends on site-specific influences. Generally, hikers in conflict with stock use are not as likely to accord high status to stock users, they have stronger relationships with the wilderness, and they place more value on opportunities for

solitude than those who are not in conflict with stock use. Furthermore, hikers in conflict with stock users not only proved to be different from those not in conflict in some basic values attached to wilderness, they realized the extent of this difference. Some hikers who dislike meeting horses or mules in wilderness simply believe that these animals should not be in wilderness; they believe they are an inappropriate use of the resource.

Management options

Wilderness management techniques are often divided into indirect and direct ones, with indirect ones being the more subtle, light-handed approach to changing behaviors or attitudes. Indirect management approaches to conflict management would include (1) education to increase visitors' understanding of the reasons for conflict, similarity to other visitor groups, and appropriate ways to minimize conflict, (2) persuasive communication to change inappropriate or unacceptable behaviors or impacts, and (3) discouraging use at certain times (e.g., when conflict between the stock users and hikers is likely to be high or when impacts are likely to be high). Direct approaches include (1) separating the uses physically or temporally in order to avoid contact or witnessing evidence of impacts and (2) limiting or removing certain types of use. Each potential action has its own cost as well as benefits. Both must be determined to allow responsible management decisions.

In the hiker/recreational stock user studies presented above, some assessment was made of what visitors saw as appropriate management actions in response to conditions in those wildernesses. In many cases, there was again asymmetry in attitudes with hikers much more supportive of more direct conflict management actions than stock users were. Most management actions proposed apparently were perceived as more threatening to stock users; they generally implied some increased level of control over stock use. However, some stock users supported direct management actions as well. Although most stock users oppose restrictions on stock use in these wildernesses, there might be potential for some support if they understand the legitimacy of imposed limitations.

Indirect measures

If we want to reduce the proportion of hikers who dislike encounters with stock users, our options are somewhat limited. Visitor education

may be one light-handed approach to influencing hikers' attitudes toward encountering stock in wilderness. A message could be developed that emphasizes the historic role of horses and mules in wilderness exploration: American settlement by Europeans, the role of horses in Native American society, and the value of preserving wilderness horse management skills in light of the overall decline in opportunities to demonstrate these skills due to accelerated loss of remote natural places. These skills are said to be part of the cultural heritage that wilderness allows us to preserve. This appeal may persuade some hikers to be more tolerant of stock in wilderness.

Hikers also need information on what to expect when encountering horses or mules on trails in the wilderness and reasons behind expected behavior. Some hikers infer that they have lower status than stock users when they are informed that they are expected to step off the trail to allow horses or mules to pass. They need to learn of the resource benefits of such a tradition; the hikers will cause much less damage to vegetation and soil when stepping off the trail than would a horse or a mule and there is less likelihood of an accident due to a panicky horse or mule. This educational information will not alleviate all conflict, but it may only persuade those with moderate opposition to stock and their impacts.

Education could also work by teaching stock users to use minimum impact camping techniques (i.e., encouraging less damaging behavior). Those hikers who dislike stock users because of their impact on nature, would probably feel less antagonistic toward stock if they knew that stock users also strive for minimizing their impacts in much the same way as hikers do, thereby realizing similarities in values. However, this information may not affect those hikers who think any stock use has too high an impact on nature, no matter what attempts are made to control impacts.

The options are similar if we want to influence the predisposition of hikers toward conflict with stock users at these wildernesses. About half of the hikers have this predisposition. Earlier suggestions about (1) explaining the role of stock use in maintaining primitive skills, (2) explaining why hikers need to step off the trail instead of stock, and (3) motivating stock users to strive for minimizing their ecological and social impacts as well as other similar educational tactics may do more to reduce hikers' predisposition to experience conflict than to affect whether they enjoy or dislike specific encounters. Specific encounters are subject to influence by many situational variables.

Problems of noise and perceived stock user rudeness could be at least partially addressed with educational or persuasive messages.

Hendee and others (1990) classified these types of behaviors as careless actions, which the recreationist knows are wrong or inconsiderate, but are done without thinking. Roggenbuck (1992) suggests that persuasion is probably only moderately effective in reducing such problems, Making the offenders aware of their impacting behaviors may improve them. For the persuasion to be highly effective, however, the reminder must be repeated, and unless the persuasive cue is frequently changed, it may lose its effectiveness.

Manfredo and Bright (1991), as well as others have found that more experienced recreational users were less responsive to information intended to influence their behavior. Since site-specific experience levels tend to be higher for stock users than for hikers, education and persuasive communication may be less successful in trying to change behaviors of stock users. Because most wilderness visitors are highly educated, educational messages and justifications for restrictions can be presented in a fairly complex manner. Educational levels of hikers and stock users are generally comparable, though at one site (the Deam Wilderness) they were significantly lower for stock users (65% had no more than high school education; only 36% of hikers had that maximum).

Members of conservation or outdoor recreation organizations are easiest to reach with persuasive messages. Managers are able to target local and regional organizations whose members are believed to visit the wilderness, providing written messages or presenting talks with suggestions on appropriate behavior and ways to avoid conflict. The unaffiliated user is hard to target, but may be reached at trailhead bulletin boards, at nearby visitor centers, and through chance encounters with wilderness rangers. Since the relative success of these approaches to influencing behavior is unknown, they need to be evaluated more closely. Continued experimentation with the use of videotaped presentations explaining how visitors can reduce impacts and conflict, advance registration or permits requiring contact with managers, and intentional contacts at trailheads as visitors enter the area, may prove beneficial in influencing both affiliated and unaffiliated visitors.

In the hiker/stock user studies, about half of the hikers indicated that the behaviors of others had interfered with their enjoyment of a wilderness trip, and half of those said stock user groups had interfered. Therefore, managers may be able to increase the enjoyment of one-fourth of the hikers by addressing specific behaviors of stock users. At the John Muir and Sequoia-Kings Canyon Wildernesses the majority of these problem behaviors were related to allowing horses or mules to defecate in places where hikers have to walk and noisy or rude stock groups. Hikers in the Deam Wilderness had fewer complaints about

manure and more about stock-related trail damage.

Problems with stock manure on trails are not easily managed, short of direct measures of eliminating stock use or restricting it from some trails used by hikers. Around campsites, at popular vistas, at self-registration stations, and at major trail junctions or other places where hikers and stock users often stop; manure can be an especially irritating problem. Educational messages that make stock users aware of this problem and suggest they avoid taking horses or mules to those spots or remove the manure before leaving the spot could reduce the problem. Hendee and others (1990) would classify this type of impact as potentially unavoidable, and Roggenbuck (1992) has suggested that persuasive communication has little potential to reduce unavoidable impacts. Roggenbuck (1992) does point out the benefit of persuasive messages that help recreationists select places to recreate where the areal extent of impact is minimized. This can be done through discouraging use when the potential for damage is high (e.g., the trails are wet), encouraging use of particularly resistant environments, and containing impacts to sacrificed sites (Cole 1990). These options seem particularly relevant for stock users.

Direct measures

While indirect measures have potential to reduce conflict between hikers and stock users, failure to reduce the number of conflicting encounters or stock impacts that hikers label as inappropriate may force managers to apply more direct measures (i.e., separating or reducing use). Numerous studies have concluded that reducing amount of use is unlikely to greatly reduce ecological impacts to trails and campsites (Cole 1990). Therefore, stock use would have to be eliminated in problem areas in order to greatly influence physical impacts associated with their presence. Providing some portion of the wilderness that is free from horses and mules and the impacts associated with their use will increase the quality of wilderness experiences for the minority of hikers who believe that these animals should not be in wilderness. Opportunities for all hikers to view some portions of wilderness free of stock-related impacts also seem desirable. This management option of separating uses by providing some trails just for hikers was generally supported by hikers but not by stock users. At the same time, these restrictions will help managers meet other wilderness management responsibilities, such as maintaining opportunities for visitors to experience natural conditions in wilderness and maintaining the

educational and scientific values of wilderness. Managers, scientists, students and visitors all need opportunities to examine the wilderness resource in its least modified state.

The spatial separation of uses can be encouraged through application of the Recreation Opportunity Spectrum (ROS) (Brown et al. 1979, Hammitt 1988), or the Limits of Acceptable Change (LAC) (Stankey et al, 1985, Haas et al. 1987) planning system. ROS and LAC can be helpful conflict management tools in the case of conflicts between hikers and stock users because --as Daniels and Krannich (1990) point out about ROS-- it can relieve conflict by both spatial separation and by establishing more realistic expectations about the area. Spatial separation might be accomplished by making either separate trails or separate zones more attractive for hikers or stock users in some portions of a wilderness. With separation of uses, hikers would be better informed of where stock use would likely be encountered in wilderness. This would allow them to plan their travels with the least amount of stock animal encounters and exposure to little of their impacts. Those hikers having realistic expectations regarding the amount of stock use in an area may accept actual stock use more easily than those who expect to find very little or no stock use in the area and then encounter substantial numbers. On the other hand, zoning may serve to intensify conflict if someone violates the officially accepted rules that have created more specific expectations. For example, if a hiker encounters signs that s/he attributes to stock use within an area that s/he knows to be assigned for foot-travel only, her or his conflict with stock users might be stronger than if s/he held only personal standards of disapproving stock use.

Spatial separation of hikers and stock users is likely to be a successful solution in cases where hikers are concerned about stock users' impacts (whether ecological or social) on their hiking experience. On the other hand, the spatial separation of hikers and stock users will do little to reduce conflict if that conflict derives from a perception that stock use in general is an inappropriate use of wilderness, irrespective of whether hikers see the impacts. The latter is a more complex conflict situation to manage, but some hikers apparently feel that way. For example in the Eagle Cap Wilderness almost half of hikers who dislike meeting stock users agree that wilderness areas are not primarily for recreational purposes, and one-third think that parts of the Eagle Cap Wilderness should be closed to all recreational use.

Conclusions about possible management actions

As shown in the management prescriptions for hiker/stock user conflict, there are various potential approaches for managing conflict. When considering what kinds of management actions any given conflict situation warrants, the following three principles should help deciding.

Apply the minimum tool rule

Kajala (1994) suggests that whatever conflict management action we choose we should always use the minimum tool rule described in Hendee et al. (1990). This approach suggests that management should be situationally sensitive and involve only the minimum regulations or tools necessary to achieve the management objectives. Thus, indirect and more light-handed measures should be favored over direct, heavy-handed measures where feasible.

Because there are various levels of conflict, ranging from very mild to violent, and one conflict can evolve from one form to another (Keltner 1990), different levels of conflict warrant different management strategies. For example, even within one wilderness and one type of conflict (i.e., hiker/stock user conflict in the Eagle Cap Wilderness), different degrees of conflict exist ranging from mild differences (those hikers who slightly dislike stock users) to dispute (those hikers who strongly dislike stock users and feel the wilderness should be a place with no horses or mules allowed) (Kajala 1994). Therefore, a combination of management actions might be appropriate to reduce the antipathy of hikers toward stock users without escalating the conflict of stock users toward hikers more than necessary. For example, simultaneous with an initiation of a public participation program, the Forest Service could start an education program targeted both at hikers (e.g., how to meet stock on the trails, why stock has the right-of-way) and stock users (e.g., minimum impact behaviors and techniques). The education program might suffice in alleviating conflict for those hikers who slightly dislike stock use in the Eagle Cap Wilderness, while those more strongly in conflict with stock users might be willing to invest their time in a public participation program to help in managing the conflict.

The minimum tool approach is generally the one taken in wilderness management by the U.S. Forest Service. The National Park Service is slightly more inclined to move ahead faster with regulations when the resource is threatened, but still advocates light-handed methods when

possible (Watson 1989). However, in the United States there currently is no systematically applied examples of use of the minimum tool rule in hiker/stock user conflict based upon the knowledge gained in the research reported here. The potential certainly exists, however.

In northern wilderness areas and particularly in the Nordic countries, due to a traditional right of common access (i.e., people can move freely about on anybody's land with certain restrictions), the minimum tool rule may be even more important because direct methods of limiting some types of uses is often both impossible and illegal (Hammitt et al. 1992). However, some spatial separation, especially restrictions on the time and location of off-road vehicles can be implemented in legal and de facto wildernesses of the Nordic countries based on legislation. Furthermore, in certain nature conservation areas restricting use is possible if the primary purpose of the area (i.e., nature preservation) becomes threatened.

Application of the minimum tool concept implies we understand how each management option affects the visitor experiences, It assumes that such techniques as taking a visitor's time to explain desired behaviors in the wilderness is of less impact on that visitor's ability to obtain an enjoyable wilderness experience than if you simply gave him or her a list of regulated behaviors. This assumption is untested. What managers may perceive as light-handed may be judged by the visitor as having substantial impact on his or her experiences. Where light-handed and heavy-handed labels are judgments of the managers, the level of impact that each management technique has on the visitors necessarily must be determined by the visitors. Another limitation is that there is a trade-off between using a "minimum tool" and preventing unnecessary conflict escalation. If the minimum tool is ineffective, the conflict might have escalated by the time more stringent management actions are implemented.

Select a technique that provides the greatest reduction in conflict with the least cost to those in conflict

The choice of a conflict management technique should aim at selecting the tool that provides the greatest reduction in conflict with the least cost to those inciting the conflict (such as recreational stock users in the case studies reported here). Based on an accurate perception of how much conflict exists and the sources of that conflict, managers need to decide on how much of the conflict they want to try to eliminate (setting a goal). Then they need to decide on methods for reaching that

goal. A reasonable way to select actual techniques for implementing the goal would be to estimate the proportion of conflict each technique would address and the impacts each technique would have on visitor experiences. Most conflict management discussion centers on either changing behaviors of some offending group or changing perceptions of the offended group about the values or characteristics of the offenders. However, we must acknowledge that all legal users of the wilderness are legitimate users, regardless of method of transportation or the use they make of the resource. We need to pay more attention to the amount of negative impacts on the group being managed or influenced.

Aim at a balance between preserving nature and providing wilderness experiences

Other issues may drive the choice of management action besides merely attitudinal considerations. For instance, in addition to reducing conflict, protection of educational and scientific values merit the need for some packstock-free zones in wilderness. Conflict management techniques that are primarily based on recreational visitors' conflict reports run a risk of undermining these other values of wilderness. Thus, managers should be concerned with balancing visitor needs for experiences and the preservation mandate. For instance, agreement to create separate trail systems within a wilderness may be a logical choice agreed upon by opposing groups of hikers and stock users. However, the preservation of wildlife values, watershed protection, and sensitive species of plants may make this an unfeasible option. False expectations may arise if management is not intimately involved in representing the resource at the time of addressing the user conflict.

As in all conflicting demand decisions, it is not easy to seek public input in a way that considers all the trade-offs involved. In the research reported here, stock users were asked if they would support several different management techniques, including some horse and mule-free zones in the wilderness. Nearly unanimous resistance to this option by stock users on a visitor survey makes managers hesitant to consider it as feasible (98% opposed this management proposal in 3 wildernesses) (Watson et al. 1993), and Virginia stock users supported this option at a significantly lower level than hikers (Roggenbuck et al. 1994). The assumption is that it is socially unacceptable, given the apparent strength of the resistance by the potentially restricted group. However, there is logic to this option that is appealing to stock users when explained. The Backcountry Horsemen of America is a group that originated with the

express interest of maintaining continued access for horses and mules to the backcountry. This membership group is likely to understand the value of baseline comparison areas in determining the level of impacts their use causes elsewhere and the success of currently used low impact practices. Furthermore, the stock group is likely to realize that their support of stock-free areas to reduce conflict and promote the range of values of wilderness enables them to demonstrate responsible stewardship, thereby reducing hiker conflict reports and increasing the chances of continued stock users' access to the wilderness. The International Llama Association and Low Impact Mountain Biking are two other groups with similar interests among their members. Self-policing and remaining informed are critical activities for these organized groups.

Discussion

From examination of the five recent studies of this particular wilderness conflict, taking place across two management agencies, across four states, across four geographical regions, and across considerable variation in user characteristics, we have not only examined this particular conflict from different measurement perspectives, we have generated possible management alternatives keyed to these various measures. We have also realized some potential for application of this knowledge to other natural resource conflicts. It has become evident that we need more rigorous testing on the effectiveness of different management actions. For instance, in order to properly assess the social acceptability of proposed conflict management actions, we have to be able to present the trade-offs (such as impacts on users' future access to the area, or the benefits to be achieved from the restriction) involved to the public when public input is elicited on the proposed actions. Merely asking if people support specific management actions, without explaining the costs and benefits to both individual users, society and the resource is not a very useful exercise. Later, when these trade-offs do become apparent, the public evaluation of the options may be very different. Too often in the past, we have asked wilderness users if they support direct management actions with only presenting the resource benefits of such actions, not the likely costs in beneficial enjoyment for the visitor. We have interpreted their positive responses as a signal of tolerance of heavy-handed approaches (Watson & Niccolucci in press). That interpretation may not be correct.

Conflicts between recreational users is just one of the many types

of conflicts occurring in wilderness (Hammitt 1388, Schreyer 1990). In northern wilderness areas that are far from population centers, the amount of recreational use tends to be relatively low. Conflicts between local subsistence users and recreationists are more likely to be of greater issue than conflict between different types of recreation uses. In Finland, Saastamoinen (1982) has addressed this kind of broader conflict by analyzing the compatibility of outdoor recreation, reindeer grazing, and timber production in the Saariselki forest and fell area that is now a national park. A more broad conflict study was conducted by Lehtinen (1991) on conflicts between nature conservation and timber interests in northern Finnish wilderness areas.

Similarly, researchers in the United States are expanding their research on conflicting demands on wilderness resources to other situations where recreation is the threatening factor to other resource uses. For example, research on perceptions of appropriateness and conflicting values related to llama packstock in wilderness and National Parks in the United States has been initiated. Both visitor and manager perceptions of the level of physical impacts (how llamas threaten resource protection values) and social impacts (mainly the impacts of llama presence on the recreational experiences of others) is being studied. This has become an issue because llama use is growing in some places in the United States and this new method of travel raises some questions about the impacts associated with increased access to remote areas for some hikers, and growing conflict reports, particularly with users of horses and mules.

Recreational conflict researchers in the United States have initiated studies to provide input on managing conflicts between recreation and subsistence interests in Alaska wilderness and wildlands. A problem analysis to define researchable questions on this topic has been completed and its potential for application discussed. Furthermore, it has been realized that personal and social meanings are increasingly important to provide researchers with an expanding model of contributors to conflict, when that conflict is occurring between different social groups, with very different orientations toward the resource, not just different recreation user types.

Another value somewhat in conflict with recreation use of wilderness is the cultural values of wilderness. In the United States, there are many historical and pre-historical sites within wilderness, which are currently managed very little differently than outside wilderness. No firm direction on management of these special places has been set, yet recreational users often seek them out and are believed to receive enjoyment from finding and exploring such places. The typical model within wilderness

(LAC) is to establish limits on what are the acceptable recreational impacts on resources or experiences and then to take desirable light-handed management actions to control these impacts. In this case, however, the model may not work well with such a finite resource to be protected.

And, finally, in the United States it is an agreed upon priority by management to restore fire in wilderness in its natural role where possible. This management principle is not approved by all of the public (Manfredo et al. 1991). Such a policy is in very direct conflict with many adjacent landowners and many users who perceive threats to landscape aesthetics, personal property, wildlife values, or safety to humans. In this case, the conflict is between wilderness preservation and other human values (Love & Watson 1992).

In the United States, the work on appropriate definitions of conflict and of social acceptability of management techniques in a broader context, (i.e., ecosystem management) has only recently begun. This coordinated examination of recreational conflict is a start for re-examining previously contributed research, refining measurement techniques, and demonstrating application potential. Wilderness, where such basic values as human use and preservation are noticeably in conflict, is a valuable laboratory providing us with excellent opportunities to advance human attitude and behavior research in natural settings.

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