

## The Nature of Conflict Between Hikers and Recreational Stock Users in the John Muir Wilderness

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The purpose of this research was to determine the extent of conflict between hikers and recreational stock users in a Sierra Nevada wilderness and to test the relative importance of various hypothetical predictors of conflict using multiple conflict measures. A survey of hikers and recreational stock users of the John Muir Wilderness in California revealed the ability to predict expression of conflict was high using measures of definition of place, specialization, focus of trip/expectations, and lifestyle tolerance. The strongest relationship, however, was between hypothesized determinants and attitudes hikers maintain toward encountering stock groups, rather than between hypothesized determinants and a goal interference measure of conflict.

**KEYWORDS:** Horses, definition of place, specialization, focus of trip, lifestyle tolerance

### Background

Historically, hikers in the Sierra Nevada Mountains of California have reported feelings of conflict resulting from meeting recreational stock users or seeing impacts they attributed to stock use (McClaran, 1989; Snyder, 1966). Research on interactions between hikers and recreational stock users is sparse. However, conflicts among other recreation user groups of national forest lands have been studied, including those between cross-country skiers and snowmobilers (Knopp & Tyger, 1973), between floaters and motorized river boaters (Shelby, 1975), between canoe paddlers and those who use motorcraft (Adelman, Heberlein, & Bonnicksen, 1982; Ivy, Stewart, & Lue, 1992; Lucas, 1964), and between mountain bike riders and hikers (Watson, Williams, & Daigle, 1991). While most of these studies have been highly descriptive (Owens, 1985), some theoretical discussion (Jacob & Schreyer, 1980; Owens, 1985; Ruddell, 1989) suggests more in-depth analysis is needed to understand the nature of conflict and the reasons for conflict.

The purpose of this paper is to describe the extent of conflict between hikers and stock users in one Sierra Nevada wilderness and to test the relative importance of various hypothesized predictors of conflict using multiple con-

flict measures: (1) whether a hiker likes or dislikes a specific set of encounters with stock on a wilderness trip; (2) whether, in general, a hiker finds it desirable or undesirable to encounter stock in wilderness; and (3) whether specific behaviors of stock users have interfered with the hiker's enjoyment of visits to the wilderness.

### The Nature of Conflict

Psychology, the parent discipline for interpersonal conflict research, has numerous studies on the concept. One of the leading criticisms of these studies, however, is the lack of comparability of research findings because of differences in the definitions and conceptualization of conflict (Wall, Galanes, & Love, 1987). Within the field of psychology, the definition of conflict has ranged from intellectual disagreement to physical violence (Thomas, 1976).

Jacob and Schreyer (1980) offered a theoretical basis for thinking about conflict in recreation settings. They defined conflict for an individual as goal interference attributed to another's behavior. They emphasized that conflict is not an objective state, but must be understood as an individual's interpretation and evaluation of past and future social contacts. Owens (1985) also emphasized the cumulative aspect of conflict. Conflict episodes have a foundation in previous events. The definition by Jacob and Schreyer assumes that recreation behavior is influenced by the expected achievement of defined goals and that behavioral interference with these goals by others leads to feelings of conflict. Jacob and Schreyer (1980, p. 369) proposed that "social contact," defined as "knowledge of another's behavior, is a necessary condition for conflict. Contact can be direct . . . or indirect, such as seeing a tent on the other side of the lake, but not having face-to-face contact with its occupants." In the case of hikers and stock in wilderness, indirect contact could include behavioral impacts such as a campsite which shows considerable damage from previous poor stock handling practices.

Historically, recreation conflict research has emphasized description of the extent of conflict between members of specific groups (Adelman et al., 1982; Knopp & Tyger, 1973; Lime, 1975, 1977; Lucas, 1964; McCay & Moeller, 1976; Shelby, 1975; Shelby & Nielsen, 1976a, 1976b; Stankey, 1973; Watson et al., 1991). Although Jacob and Schreyer (1980) advanced a definition of conflict, they did not offer a specific method of measuring the extent of conflict, thus measurement methods have varied. Interpersonal conflict has most commonly been measured through a set of forced-choice questions asking respondents to evaluate specific encounters (enjoyed, disliked, or did not mind meeting other types of users) or by obtaining an indication of general disposition toward other groups based on Likert scale responses. These Likert scales are typically anchored by "very desirable" and "very undesirable."

The most consistent research finding has been that responses were generally asymmetrical, or one sided; only one of the groups expressed negative evaluations, or one group expressed significantly more negative evaluations.

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This asymmetry has persisted for canoe paddlers and motorcraft users in the Boundary Waters Canoe Area Wilderness (BWCAW) (Adelman et al., 1982; Lucas, 1964). Two studies nearly 20 years apart using a forced-choice question found asymmetrical conflict situations that were similar.

#### *Hypothesized Determinants of Conflict*

According to Jacob and Schreyer (1980), there are four major classes of factors which contribute to conflict in outdoor recreation: (a) differences in the level of significance attached to using a specific recreation resource, (b) differences in personal meanings assigned to an activity, (c) differences in expectations of the natural environment, and (d) differences in lifestyles.

Users who become "attached" to a resource are believed to develop a sense of possession or perception of the place as a "central life interest." The degree to which a particular activity or place represents a central life interest can vary substantially among groups using an area, even among groups participating in the same activity. Thus, one individual or group may believe they are more attached to an area or an activity than a competing individual or group. This perception of differences can initiate feelings of conflict.

Variation in the personal meanings visitors attach to particular activities may also be linked to conflict (Bryan, 1977). A specialized visitor, with well developed meanings for an activity, is said to have an "intense activity style" (Jacob & Schreyer, 1980, p. 371). More specialized participants are believed to apply more specific norms of behavior to other participants. Jacob and Schreyer (p. 371) proposed that "the more intense the activity style, the greater the likelihood a social interaction with less intense participants will result in conflict."

A "status" hierarchy is often associated with specialized activity styles. Such status hierarchies in recreation are often based on equipment and expertise, with the more specialized participants using more specialized and advanced equipment and techniques. In snowmobile studies, power, noise, and brand name identification provided considerable satisfaction to the owner or user because of the higher status attached to these characteristics (Knopp & Tyger, 1973). Cross-country skiers may express conflict because they do not value these characteristics, but are often forced to tolerate them. Similarly, hikers are often expected to step off the trail when meeting horse groups. Although it is safer for the hikers to step off than the horses, and easier on the land, hikers may experience conflict because stepping aside may imply that horse riders have higher status.

Another element of specialization is simply the amount of past experience a recreation visitor has in a particular activity or in a particular type of recreation setting. Novices have little experience on which to base their judgment of other groups. Their tolerance of conditions is based on less extensive information than that of the veteran user and thus they are less prone to conflict (Jacob & Schreyer, 1980).

A third class of conflict determinants is that of "mode of experience" (i.e., the degree to which individuals direct their senses toward a detailed examination of the environment versus a broad, sweeping impression of the landscape) (Jacob & Schreyer, 1980, p. 370). Jacob and Schreyer proposed that people vary the focus of their visits based on their expectations. When a person in the focused mode interacts with a person in the unfocused mode, conflict is likely to occur for the person with specific expectations.

More recently, Williams (1988) has suggested an outdoor recreation experience has three primary modes or focuses: activities, companions, and settings. For some, the setting may be central to the experience (entailing a detailed examination of the environment), but for others the setting may be only a backdrop for achieving particular social or activity goals.

"Lifestyle tolerance" is the last major factor Jacob and Schreyer (1980, p. 376) proposed to explain recreational conflict. People may be unwilling to share resources with members of other lifestyle groups. Research on snowmobiles and cross-country skiers has demonstrated that different types of people are involved in these two activities (Knopp & Tyger, 1973). Their educations, types of jobs, and incomes are quite different. It has been assumed that these differences contribute to the conflict between these two groups. In an exploratory analysis, Ivy et al. (1992) examined the role of lifestyle tolerance in conflict between canoeists and motor boaters. They found that a combination of lifestyle tolerance and canoeist expectations for the visit explained a significant amount of variance in trip-specific conflict.

#### *Implications of Literature Review*

The psychology literature has not settled on the best way to measure conflict. At this time, generally accepted measures of recreation conflict have yet to emerge (Ivy et al., 1992; Ruddell, 1989). With few exceptions, the recreation conflict literature has tended to include expressions of enjoy/dislike or desirable/undesirable as measures of conflict. It is not clear, however, that these are measures of conflict. In fact, Adelman et al. (1982) suggest that the measure of enjoy/dislike is focused more on the positive side (attraction theory) than may be desirable for a measure of conflict (which is more closely related to discrepancy or reactance theories). The most specific definition of recreation conflict appeared in Jacob and Schreyer (1980). The standard enjoy/dislike or desirable/undesirable measures do not precisely fit their definition. The study reported here uses the standard enjoy/dislike and desirable/undesirable measures so the hiker/stock user conflicts can be compared with other studies. But there remains a need to study conflict in a manner more compatible with the definition offered by Jacob and Schreyer.

The potential determinants of conflict discussed by Jacob and Schreyer (1980) remain largely untested. From their discussion of a hypothetical model, and subsequent conflict research, we could label the major domains likely to influence conflict as (a) definition of place, (b) specialization level,

(c) focus of trip/expectations, and (d) lifestyle tolerance. Research has not specifically documented the relevance of these domains. The elements within these domains need to be measured to assess their relative importance to conflict prediction.

### Methods

A survey site was selected that exemplified a conflict situation of interest, sampling methods were developed to assure a representative sample of hikers and stock users, multiple measures of conflict and potential predictors of conflict were tested, and analysis procedures were developed which evaluated the role of each potential predictor for each conflict measure.

#### *Survey Site*

The John Muir Wilderness consists of 580,675 acres on the Inyo and Sierra National Forests in California. In 1986, use was estimated at 451,000 recreation visitor days (RVD's) per year (0.77 RVD/acre). All overnight use is rationed by a trailhead permit system, but day use does not require a permit. Hikers and stock users who obtained permits to camp overnight in the John Muir Wilderness during the summer and fall of 1990 made up the sampled population.

John Muir Wilderness managers have received reports of conflict between horse riders and backpackers for many years (Snyder, 1966). In the early 1960s, backpackers made up more than half of the visiting public, with an abundance of private and outfitted stock use. Now, stock use of the wilderness is dominated by commercial outfitters. Hikers send the Forest Service many letters each year complaining about horse use in the wilderness.

#### *Survey Method*

Permits were systematically sampled from a random start for the period June 1, 1990 through the end of November 1990 to provide a sample of visitors. The last question in a 16-page mailback questionnaire sent to these permit holders asked them to provide the names and addresses of up to two others on the trip so party members could be sampled. Party members were then systematically sampled from this subject pool. We mailed 493 questionnaires to permit holders (300 hikers and 193 stock users). An additional 152 questionnaires were sent to a sample of party members (85 hikers and 58 stock users). We sent a postcard reminder and two replacement followups. The final usable sample size of 515 (330 hikers and 185 stock users) represented an 86% response rate for hikers and 77% for stock users.

#### *Measures*

Three conflict-related measures were used. First, to maintain comparability with previous recreation conflict research, each visitor was asked to

respond to a forced-choice conflict question. Visitors could express feelings of enjoyment, dislike, or neutrality toward encounters with various types of groups on trails in the John Muir Wilderness. Encounters they disliked were considered conflict. Encounters that elicited responses indicating enjoyment or "didn't mind meeting them" were not considered conflict. Some hikers did not meet stock users, and some stock users did not meet hikers.

Second, a Likert-type scale response (very desirable to very undesirable) to encountering other groups on any wilderness trip measured a more general attitude toward the potential conflict group. Any level of undesirability was considered an expression of conflict. All positive responses to meeting the potential conflict group, including the neutral response, were considered "no conflict" for this analysis. Maintaining this dichotomous expression of conflict, versus using the interval expression offered on this one item, was desirable in order to maintain consistency in analysis methods across the three conflict measures.

The third and final measure of conflict was more in line with both Jacob and Schreyer's (1980) 'goal interference definition of conflict and Owens' (1985) call for more cumulative measures of conflict. We asked if the behavior of any group had interfered with their enjoyment of past visits to this wilderness. If the respondent said yes, he or she was asked to identify the type of group that interfered with their enjoyment of a trip and to specify the interfering behavior. A yes response indicated that the visitor's experience goals were interfered with and specification of the interfering group attributed that interference to the behavior of a certain type of visitor.

The rest of the questionnaire included items hypothesized to predict how visitors would respond on the conflicting measures. The 17 items included in this analysis, and believed to assess various aspects of the four principal conflict determinant factors, were selected from past recreational conflict or associated research (Table 1).

Most items used to predict conflict were multiple-item summative scales (Nunnally, 1978) (see Watson, Nicolucci, & Williams, in press, for details on individual scale items). Most used a Likert format, anchored by "strongly agree" and "strongly disagree." For example, the "Place identity" scale was formed by summing Likert responses on seven items. One "Place identity" item was "I get more satisfaction out of visiting this place than from visiting any other recreation place." Another scale ("Importance of solitude to activity enjoyment") was based on the degree to which nine solitude items influenced the quality of respondents' wilderness visits. This set of responses was recorded on a six-point scale from "not at all influential" to influences "an extreme amount."

Reliability of the summative scales was tested using interitem correlation analysis (Nunnally, 1978). Decisions on the reliability of the summative scales were based on a commonly used reliability coefficient. Cronbach's Alpha (SPSS, 1990). Individual squared multiple correlation coefficients were estimated and reviewed to determine the sensitivity of Alpha to deletion of individual items. The highest possible Alpha, generally above 0.80, was tar-

geted. This guaranteed that each summative scale consisted of items which were strongly related. The summative scale scores were derived by adding the individual items identified through reliability analysis and dividing by the number of items in the scale to obtain an average score. Thirteen individual items that were not retained in the summative scales were entered in the predictive analysis as individual items.

One departure from the summative scales was the measure of past wilderness experience. Following the logic of Watson and Niccolucci (1992), place-specific past experience (number of previous visits, number of years since first visit, and average number of visits) and general past experience (number of other wildernesses visited and number of visits to any wilderness in the past 12 months) were combined using factor analysis techniques. Based on the size of the eigenvalues and the rotated factor pattern matrix, the number of factors and their composition were determined. Based on the resulting factor structure, factor scores were generated and used as experience variables in the predictive analysis. Three factors emerged from this analysis, two with high loadings on place-specific experience measures and one with high loadings on general past wilderness experience measures.

**TABLE I**  
*Potential Conflict Predictors and Methods of Measure*

Causal Domain	Potential Predictors
<b>Definition of place</b>	Place identity <sup>c</sup> Place dependence <sup>c</sup> Place attachment <sup>c</sup> Place-specific past wilderness experience, factor 1 <sup>b</sup> Place-specific past wilderness experience, factor 2 <sup>b</sup>
<b>Specialization level</b>	Definition of place in solitude terms <sup>c</sup> General definition of place <sup>c</sup> Intensity of activity style <sup>c</sup> Activity-associated status <sup>c</sup> General past wilderness experience, factor 3 <sup>b</sup> Importance of solitude to activity enjoyment <sup>c</sup>
<b>Focus of trip/expectations</b>	Degree of focus on the activity <sup>c</sup> Degree of focus on the physical setting <sup>c</sup> Degree of focus on the social setting <sup>c</sup> Desired place characteristics <sup>c</sup>
<b>Lifestyle tolerance</b>	Perceptions of similarities between groups <sup>c</sup> Degree of tolerance of different user groups <sup>c</sup>

<sup>a</sup>Summative scale ("strongly disagree" to "strongly agree").

<sup>b</sup>Linear combination factor coefficients.

<sup>c</sup>Summative scale (amount of influence on quality of wilderness experience. "not at all influential" to "an extreme amount").

### *Analysis Procedures*

Two types of analyses were conducted. The extent of interpersonal conflict expressed by members of each user group was described. Second, there was the need to take this analysis beyond that of other conflict analyses by trying to directly specify a linear model which relates these potential predictors of conflict to the conflict evaluations given. Because the conflict measures (response variables) could be represented on nominal scales (conflict/no conflict), and the predictor variables were interval and ratio scale variables, discriminant analysis was selected as the appropriate statistical technique. The discriminant model uses linear combinations of potential predictor variables to predict whether recreation users will indicate conflict or no conflict. A stepwise procedure (SAS, 1987) was used to aid model development. We required that potential predictors be significant at the  $\alpha = 0.10$  level for inclusion in the model.

The predictive power of the final models was measured using the cross-validation technique described in Lachenbruch and Mickey (1968) and found in SAS (1987). This crossvalidation technique does not require that the data be split into two sets, one for model development and one for model validation. Crossvalidation treats the first  $n - 1$  observations as the model development set and the remaining observation as the model validation set. The discriminant models were developed using the  $n - 1$  observations and then used to classify the observation left out. This is repeated for each observation, and the misclassification proportion results from this process. Also, the crossvalidation error rates and error rates derived from using all observations to estimate the model were compared to determine the stability of the models. Models were rejected if crossvalidation error rates increased noticeably.

The relative importance, or predictive power, of the potential conflict predictors was based on the standardized discriminant coefficients. The interpretation of the standardized coefficients is analogous to the interpretation of standardized coefficients in regression analysis. A larger standardized coefficient, in absolute terms, suggests a higher rank order for the predictor variable. Variance decomposition (Belsley, Kuh, & Welsch, 1980) was used to identify collinearity, since collinearity can cause coefficient instability.

### Results

Results are presented in the following order: (1) extent of interpersonal conflict based on the three conflict measures and (2) relative importance of significant predictors of the three conflict measures.

### *Extent of Conflict*

The anticipated asymmetric conflict situation emerged, much as in previous recreation conflict research. Although only 4% of stock users disliked their encounters with hikers on the specific trip, over one-third (36%) of

the hikers who met horses disliked the encounters. Only 4% of stock users did not meet hikers on this trip, and about 27% of hikers did not meet stock users (Table 2). Generally, hikers did not mind meeting other hikers and stock users did not mind meeting other stock users.

When hikers or stock users were asked about their general attitudes toward meeting the other group in wilderness, the number of negative evaluations increased (this included those hikers and stock users who did not meet the other type of user on this particular trip). Over 10% of stock users consider encounters with hikers in the wilderness to be undesirable or very undesirable. More than half (53%) of the hikers consider encounters with stock users in wilderness to be undesirable or very undesirable. Surprisingly, 21% of the stock users answering this question stated it is undesirable or very undesirable to meet other stock users in the wilderness. Only 9% of hikers found encounters with other hikers undesirable or very undesirable.

Nearly half (47%) of hikers indicated the behavior of other groups had interfered with their enjoyment of one or more trips to this particular wilderness. Stock users were the group that interfered for 55% of the respondents. Overall, 26% of hikers reported conflict with stock users. Nearly one-third (30%) of stock users indicated interference by other groups. Hikers were the group that interfered 69% of the time. Overall, about 21% of stock users were in conflict with hikers. Using this measure of conflict, there is no strong asymmetric conflict situation.

#### *Relative Importance of Significant Indicators of Conflict*

Variance decomposition (Belsley et al., 1980) indicated there were no collinearity problems within the set of independent variables used in the discriminant analysis. When discriminant analysis was used to classify hikers on the three conflict measures, slightly different models emerged. They included some differences in variables retained and in classification success (Table 3). The model for the like/dislike conflict measure correctly classified 84% of the visitors-87% of those expressing conflict and 83% of those expressing no conflict based on 5 individual items and 4 summative scales of the potential 13 individual items and 17 scale predictors. These variables represent all four of the domains identified in the Jacob and Schreyer con-

**TABLE 2**  
*Extent of Conflict Based on Three Conflict Measures*

Group Type	Conflict Measures (Percent)		
	Dislike	Undesirable	Goal Interference
Hiker toward stock user	36	55	26
Stock user toward hiker	4	11	21

flict model, with the most items, though not the most important items, coming from the definition of place domain. The most important predictors relate to focus of trip/expectations and specialization. Overall, the model was highly significant ( $p < 0.001$ ).

The model for the desirable/undesirable conflict measure correctly classified 84% of the visitors-85% of those expressing conflict and 83% of those not expressing conflict, based on nine significant predictor variables (six summative scales and three individual items). This model also contains elements from all four domains of the Jacob and Schreyer (1980) conflict model. The specialization and focus of trip/expectations domain again contributed the most important items. This model also was significant at the  $p < 0.001$  level.

The model using the goal interference measure correctly classified 72% of respondents-70% of those expressing conflict and 73% of those expressing no conflict based on 11 significant predictor variables (3 summative scales, 6 individual items, and 2 experience factors). This model had the highest error rate of the three models examined. This model was also significant at the  $p < 0.001$  level, though it looks very different from the other two models in terms of the most important variables in the discriminant analysis. In this case, the three most important variables in the model were scattered across three domains: specialization, definition of place, and focus of trip/expectations. For the first time in these analyses, the lifestyle tolerance domain was not represented in the final model.

#### Conclusions

The asymmetric conflict relationship found in other recreational conflict studies existed between hikers and stock users in the John Muir Wilderness. About one-third of the hikers who met stock disliked the encounter, while more than half of all hikers generally find it undesirable to meet stock in wilderness. Far fewer stock users indicated they did not like meeting hikers or generally find meeting hikers undesirable, about one-seventh to one-fifth as many.

This asymmetrical relationship is not so apparent when the measure of conflict is more consistent with Jacob and Schreyer's (1980) and Owens' (1985) suggestions regarding cumulative goal interference attributable to the behavior of others. Only slightly more hikers (26%) report conflict toward stock users than stock users (21%) toward hikers.

Discriminant analysis supports the relevance of Jacob and Schreyer's (1980) four principal conflict determinant domains. In all cases, the models had significant predictive capabilities. Two of the three models retained significant predictor variables from each of the four principal domains. The third model, however, in an effort to predict a goal interference measure of conflict, did not contain a lifestyle tolerance measure. This finding is in direct conflict with conclusions by Ivy et al. (1992). though measurement of lifestyle tolerance differed substantially across the two studies. The high in-

TABLE 3  
Conflict Discriminant Models with Crossvalidation Results

Conflict Model Domain	Like/Dislike Model			Desirable/Undesirable Model			Coal Interference Model		
	Rank	Coefficient <sup>a</sup>	F-value	Rank	Coefficient <sup>a</sup>	F-value	Rank	Coefficient <sup>a</sup>	F-value
<i>Specialization</i>									
Activity-associated status	2	-0.174	9.01***	1	-0.285	20.30***	—	—	—
Hikers are often rude to horse riders they meet along the trail	—	—	—	—	—	—	1	0.174	12.43***
Horse riders are often rude to hikers they meet along the trail	3	0.167	7.21***	—	—	—	—	—	—
Intensity of activity style	—	—	—	6	0.110	4.29**	5	-0.112	6.73***
There are some situations where horses should have the right-of-way and some situations where hikers should have the right-of-way when they meet	—	—	—	8	-0.081	8.49***	11	-0.069	5.48**
Importance of solitude to activity enjoyment	—	—	—	3	0.184	20.01***	9	0.106	20.79***
Hikers should have the right-of-way when meeting horses in the wilderness	9	-0.097	5.13**	—	—	—	7	-0.109	4.30**
<i>Definition of place</i>									
Definition of place in solitude terms	5	0.144	8.48***	4	0.154	8.80***	—	—	—
This wilderness is a place to be alone	7	-0.113	3.97**	7	-0.082	5.65**	—	—	—
<i>Lifestyle tolerance</i>									
Factor 2, past wilderness experience	—	—	—	—	—	—	2	0.164	15.83***
Factor 1, past wilderness experience	—	—	—	—	—	—	6	0.110	4.06**
A place with some areas where only hikers go	—	—	—	—	—	—	8	-0.108	4.77**
This wilderness is a place to test my skills	—	—	—	—	—	—	10	0.098	3.52*
Place attachment	4	0.148	11.20***	—	—	—	—	—	—
This wilderness is a place with too many regulations	6	-0.121	6.93***	—	—	—	—	—	—
<i>Lifestyle tolerance</i>									
Degree of tolerance for different user groups	8	0.109	2.91*	5	0.130	4.63**	—	—	—
<i>Focus of trip/expectations</i>									
This wilderness should be a place with no horses allowed	1	0.243	9.82***	2	0.220	19.43***	3	0.151	4.39**
Degree of focus on the social setting	—	—	—	9	0.065	4.83**	4	0.141	11.84***
<i>Overall model significance</i>									
Wilks' Lambda	0.595			0.512			0.802		
F	25.91***			43.04***			9.34***		
Predictive power	84.1%			84.2%			72.2%		
<i>Correct classification by group</i>									
Conflict	87.2%			85.2%			70.0%		
No conflict	83.3%			83.5%			73.0%		

<sup>a</sup>Indicates relative importance of variables.

\* $p \leq .10$ ; \*\* $p \leq .05$ ; \*\*\* $p \leq .01$

ternal consistency reliability scale used in this research was largely an adaptation of items Adelman et al. (1982) found to be related to conflict in the Boundary Waters Canoe Area Wilderness. Ivy et al. developed a specific tolerance measure for their study of conflict, but had difficulty with internal consistency reliability for one of the conflict groups. We agree with Ivy et al. that measurement problems with lifestyle tolerance need to be addressed in future research.

The models for predicting attitudes toward encountering the other type of group have the greatest predictive ability. This analysis suggests that these attitudinal-type items best predict a predisposition toward conflict, generally (disliking of encounters and undesirability of encounters), not conflict itself (goal interference attributed to the behavior of others).

These findings suggest the need, first of all, for further examination of recreational conflict situations to determine if these conflict determinants are consistent across areas or situations. If the predictors found to be important in this research are consistently found to be important in recreational conflict situations generally, or at least in the hiker/stock user conflict context, some justification will exist for concentrating on a few specific aspects of the complex attitudes hikers have toward horse users in wilderness in order to manage that conflict better.

These findings suggest that there may be some limitation in the theory advanced by Jacob and Schreyer due to the stronger relationship between the hypothesized predictors and attitudinal measures of conflict than between these predictors and a goal interference measure of conflict, as they suggested. These findings, and those by Ruddell (1989), further suggest that recreation conflict may arise from other incompatibilities besides goals (eg. differences in group norms). Further analysis of the goal interference measure and the specific behaviors that hikers list as sources of the conflict will likely provide greater understanding of differences in hiker and horse user norms about impacts to the wilderness resource.

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