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Rock Climbers' Attitudes Toward Management of Climbing and the Use of Bolts

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ABSTRACT / The purpose of this research was to verify that various segments of the rock climbing community have different attitudes toward resource management and to aid in the understanding of attitudinal differences that can affect rock-climbing management. Respondents were given an on-site questionnaire; 400 usable surveys were collected from 13 different locations in the United States. Respondents identified themselves according to the type of climbing they participated in (e.g., traditional climbing, sport climbing, and hybrid climbing). Factor analysis identified five usable factors: bolt placement/use, need for management, reservations about management, appropriateness of bolts, and climbers' self-perception. A repeated-measures analysis of variance identified significant differences among responses from traditional and sport climbers on four of the five scales used to measures attitudes. The variance among the climbing subgroups indicated that various climbing groups had significantly different attitudes toward management. All climbers surveyed had reservations about the management process. Results from the analysis indicated that climbers from all three groups (traditional, sport, and hybrid) felt that managers did not adequately understand the activity of climbing, climbers did not adequately understand the management process, climbing was not treated fairly in the management process in comparison to other activities, and climbing was micromanaged.

Recreationists' attitudes toward a management situation influence human perception and behavior regarding that specific situation (Manfredo and others 1992). Bright and Tarrant (1999) posit that understanding recreationists' attitudes about recreation experiences is essential to improving management of public outdoor recreation. Specifically, these authors note that attitude research can help managers identify desired experiences and preferences, define standards and target management, identify minimal and optimal conditions for experiences, identify important impacts to address, and learn how much agreement there is among the public about resource conditions and management actions. Stankey (1972) asserted that accounting for diverse attitudes of recreation groups is necessary in the management process. To ignore variance in attitudes would be to "assume that all people have similar tastes and preferences, which is simply not true, whether one is talking about food, clothing, or recreation" (Stankey 1972, p. 93).

Managers should recognize the commonalities and differences among the management objectives they set and the attitudes of the recreation groups involved in the management process. Identifying these commonalties and differences will promote a cooperative process and assist in the development of palatable management policy. "A cooperative process tends to increase sensitivity to similarities and common interest, while minimizing the salience of differences" (Lewicki and others 1994, p. 181). It is vital that commonalities are communicated accurately between managers and recreationists. Assuming that commonalities exist when they do not, or ignoring commonalities, can result in distortions of one group's perception of the other and may lead to bias and error in subsequent management processes.

The purpose of this research was to verify that various segments of the rock climbing community have different attitudes toward resource management and to aid in the understanding of attitudinal differences that can affect rock-climbing management. Specifically, the following two questions were addressed: (1) what are the attitudinal dimensions of American rock climbers

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toward management? (addressed using exploratory factor analysis), and (2) are there attitudinal differences among rock climbing subgroups? (addressed using repeated measures analysis of variance). The objective of providing information concerning rock climbers' attitudes is relevant to managers who engage in cooperative management of rock climbing and the resources where this activity occurs.

The Need to Understand Rock Climbers' Attitudes

The need for information concerning management of outdoor rock climbing areas is becoming more important as the popularity of climbing increases. Several public land agencies and members of the climbing community are asking for help in understanding the issues associated with placing permanent steel expansion bolts in rocks as a form of climbing gear, as well as other issues. Every resource agency that manages land containing a climbing area is facing these issues.

Recently, many major resource agencies in the United States have been drafting regulations for the use of bolts and other fixed gear. However, after meetings with numerous climbing groups, such efforts have not always been successful. Current forms of public comment to resource agencies do not provide sufficient information for managers to fully understand the issues; more formal research is necessary (Dennis 1993, Hawkes and others 1992). One example of climber reaction to management is the June 1998, United States Department of Agriculture Forest Service's (USFS) ban of fixed anchors, which includes bolts, in congressionally designated wilderness areas. The activity of climbing may be viewed as a legitimate/traditional use of wilderness. Banning fixed anchors will limit access to existing and potential future climbing opportunities in certain types of wilderness areas. In general, the American climbing community feels that this management action is unwarranted and has organized to rebut the USFS's decision. Public response to this action contributed to the USFS rescinding the ban in August 1998, for one year to initiate negotiated rulemaking to clarify national policy (USDA 1998). A second climbing management example is the Mount Hood (Oregon), USFS environmental assessment (EA), which was released in January 1999. This EA proposed action to manage for the solitude experience of climbers by limiting numbers of climbers on the south side of Mount Hood. Climbers voiced that they did not support regulations reducing the number of climbers currently using the mountain. This action was also rescinded. The issue at Mount Hood might have been avoided if the USFS had researched, and better understood, the climbing communities' attitudes concerning climbing the mountain and, more specifically, solitude, prior to proposing the action.

Members of the American climbing community believe that government agency management is unavoidable, as the following quote suggests, "Climbing has boomed and land managers from Washington, DC, to Joshua Tree have us under the microscope . . . make no mistake about it: climbing will be managed in the future" (Lenard 1995, p. 200). Climbers also have a desire to cooperate with managing agencies to settle the bolting and fixed-anchor issue while promoting a wilderness ethic to protect the resource (Davidson 1994, Lenard 1995, Menocal 1992, Nickle 1995, Tacy 1994). However, the desire to cooperate in the development of regulations is not shared by all climbers: "We the staff at *Onsight!* Magazine are STRONGLY OPPOSED to any form of government regulation in our sport! Climbing-related decisions should be made by climbers, not bureaucrats" (Faulk 1994, p. 1, emphasis not added).

It appears that the climbing community understands that there is conflict associated with these issues. American climbers are also aware that "little squabbles" are no longer confined within the close-knit climbing community and that external groups are becoming involved (Tacy 1994). These groups (or stakeholders) include the climbing community, climbing advocacy groups, land managers, environmental groups, and other recreation users. Climbers' response to recent federal agencies' management actions suggests that there is a disparity in the attitudes toward management actions between rock climbers and recreation managers. In addition, the progression of the recreation–management paradigm indicates that managers are becoming increasingly dependent on partnerships with recreation groups to achieve management goals. In order to foster viable partnerships, managers must understand the attitudes of the groups they are attempting to partner with. The perceptions, attitudes, and values of stakeholders need to be understood both independently and collectively to improve the management process and avoid future complications.

Understanding the Climbing Community

There has been an increase in the popularity of rock climbing in the past ten years. Currently, it is estimated that there are 400,000 active climbers in the United States compared to fewer that 100,000 ten years ago, and the number of active climbers is expected to continue to increase (Moser and Davidson 1999). This increase in participants with different interests, values,

and goals substantiates the need to establish an understanding of climbers' attitudes toward specific management issues.

Within the greater climbing community there appear to be two subcultures of rock climbers: traditional climbers, who generally do not use bolts, and sport climbers, who rely heavily on the use of bolts. The major difference between traditional climbing and sport climbing is the gear used to protect the climber in the event of a fall. Traditional climbing relies on gear that is typically placed in weaknesses in the rock (e.g., a crack) and removed by the second climber in the climbing party. Sport climbing relies on gear that is fixed to the rock. A small (permanent) hole is drilled in the rock and a steel expansion bolt is placed in the hole. The bolts remain in the rock and create an established climbing route. Bolts may be used in traditional climbing; however, they are not a regularly used form of gear. Sport climbing can be considered an activity that is an offshoot of traditional climbing. Bolts are an advancement in technology that allowed climbers to place gear where gear could not be placed in the past. As a result of this advance in technology, many new climbing routes were developed, which subsequently resulted in the development of new climbing areas. Many new participants engage exclusively in sport climbing and do not use traditional climbing methods. It should be noted that while this paper addresses traditional climbers and sport climbers as two major climbing subgroups within the climbing community, there are other groups that do exist.

Throughout its history, there have been numerous technological developments causing rifts within the climbing community. Eventually these developments became part of the norm. However, the use of bolts may have created a completely divergent subculture (sport climbing) from traditional climbing, and the differences between the two groups may not be negotiable. While the climbing communities' ability to evolve and accept change over time may ease tensions within the climbing community, it can also create management difficulties. The attitudes, beliefs, and concerns of the climbing community can change over a relatively short period of time. Consequently, land managers must monitor and frequently update management plans.

Methods

All of the data were collected in the United States. In-depth interviews, which revealed pertinent management issues, were conducted with members of the American climbing community. Information from the interviews was used to develop a structured questionnaire. Respondents were interviewed in Wyoming, Colorado, and New York, USA. Purposive and snowball sampling procedures were used to obtain the in-depth interview sample (Chadwick and others 1984, Denzin 1970, Fowler 1988). Initial interview respondents included members of the following stakeholder groups: the climbing community, climbing advocacy groups, land managers, environmental groups, and retail climbing goods merchants. Each respondent was asked to suggest additional respondents who could provide insightful information (snowball sampling). Theoretical sampling (Denzin 1970) was used to determine when an adequate sample had been obtained. Theoretical sampling proposes that if information received from respondents becomes repetitive and no new information is being received, then the researcher has found or identified the majority of relevant aspects of the issues being investigated. A total of 14 interviews were completed, based on the theoretical sampling philosophy.

The on-site survey questionnaire sample population was area-stratified; each stratum consisted of a separate climbing area. Each climbing area generally lent itself to a specific type of climbing (sport or traditional). Within each stratum respondents were selected to participate in the survey using a convenience sampling method. The questionnaire was pretested at Vedauwoo, Wyoming, USA. In all cases, participants were given the instrument along with a brief narrative describing its purpose, and they were asked to complete it on-site. A total of 452 climbers were approached with the survey at 13 different locations, 400 usable surveys were collected (Table 1)—providing an adjusted response rate of 88.5%. Approximately 78% of those sampled (N = 307) were male and 21.9% (N = 86) were female. Years of climbing participation ranged from first time climbers to 39 years; the average was eight years. On average the respondents climbed 90 days each year (range 2–300, mode = 100, median = 75).

Survey respondents were asked to categorize themselves according to type of climber (e.g., traditional, sport, hybrid, mostly sport/some traditional, mostly traditional/some sport, gym climber, and other). Very few respondents selected the categories "gym climber" and "other;" therefore, these categories were coded as missing due to lack of respondents. The response "mostly traditional/some sport" was combined with "traditional" and "mostly sport/some traditional" was combined with "sport." Sport climbing and traditional climbing can both be characterized as part of a similar "technological cluster" (Devall and Harry 1981). Because of their close relationship, there are crossover participants—climbers who think of themselves as both traditional and sport climbers. Crossover participants (here-

Table 1. Sampling locations of the rock climbing questionnaire

Site and state	Type of climbing area	Surveys collected[a]
Boulder Rock Gym, Colorado	Indoor gym	4
Boulder Canyon, Colorado	Mostly traditional, some sport	4
Devils Tower, Wyoming	Mostly traditional, some sport	52
Eldorado Canyon, Colorado	Mostly traditional, some sport	9
The Shwangunks, New York	Traditional	100
Lander Rock Gym, Wyoming	Indoor gym	5
Lumpy Ridge, Colorado	Mostly traditional, some sport	86
Rifle Canyon, Colorado	Sport	42
Climber festival slide show, Wyoming	Traditional and sport	6
Sinks Canyon, Wyoming	Sport	15
Climber festival trade show, Wyoming	Traditional and sport	19
Vedauwoo, Wyoming	Mostly traditional, some sport	31
Wild Iris, Wyoming	Sport	27

[a]Usable surveys collected at each location, $N = 400$.

Table 2. Self-reported climbing ability level for the three climbing subgroups

Type of climber	Type of climbing	Ability level (mean ± SD)[a]
Traditional ($N = 203$, 53%)[b]	Sport	2.73 ± 1.48
	Traditional	3.50 ± 0.77
Hybrid ($N = 112$, 29%)[b]	Sport	3.69 ± 0.79
	Traditional	3.47 ± 0.91
Sport ($N = 67$, 17%)[b]	Sport	3.86 ± 0.83
	Traditional	2.98 ± 1.02

[a]Mean based on the scale: 1 = no experience to 5 = expert.

[b]$N = 382$.

in referred to as hybrid climbers) may complicate the structure of the climbing community, making distinguishing group membership difficult.

Respondents self-evaluated their ability level for both traditional and sport climbing. Table 2 illustrates the mean ability levels for each group in both traditional and sport climbing. It should be noted that difficulty-rating systems in rock climbing are subjective and vary from climbing area to climbing area and even between climbing routes within an area. In addition, there may be social desirability bias because climbers may consider it ethical protocol to understate their ability. Therefore, the ability levels may not be valid.

This paper focused on 27 questions that directly addressed the topic of climbers' attitudes toward management. All 27 management variables were measured on a five-point Likert-type scale (1 = strongly disagree to 5 = strongly agree). An exploratory factor analysis using principal components extraction and varimax rotation was performed on the 27 management variables. The factor analysis extracted five factors used to create scales.

These five scales were used as the dependent variables in a repeated-measures analysis of variance. Type of climber was the independent variable. A repeated-measures ANOVA is a dependent *t* test that accounts for shared error variance by including the correlation between the attitude scales for each group in the calculation of the *t*value. Tukey's mean separation tests were used to investigate significant differences among groups. All statistical analyzes were performed using SPSS version 8.0.

Results

Factor Analysis

The exploratory, principal components analysis produced a scree plot identifying elbows at three and six factors. The percentage of variance accounted for by each factor indicated that the five (45%), six (49%), seven (53%), and eight (56%) factor models were usable. Separate principal components analyzes were run for each of these models. Factor loadings of greater than 0.4 were required for a variable to be included in a factor. Variables with multiple loadings were excluded from further analysis. The six-factor model produced the simplest structure and was selected based on interpretability. A Cronbach's reliability coefficient (alpha) of 0.4 was required for a scale to be considered reliable. The sixth factor did not achieve an alpha of 0.4 and was excluded from further analysis. Factors were labeled based on the general theme that the variables appeared to address. The variables in each factor, factor loadings, and Cronbach's alpha are shown in Table 3. Table 3 also shows the mean of each variable for the three climber groups.

Factor loadings and Cronbach's alpha levels of 0.4 might seem low by some standards. However, the use of

Table 3. Factor identification, factor loadings, and mean scores for each variable by type of climber

Variable and factor identification	Factor Loading	μ[a] Trad (n = 187)	Hybrid (n = 92)	Sport (n = 58)
Bolt placement and use (α = 0.56[b])		2.88	2.34	1.90
Bolts should not be used at all	0.758	1.89	1.46	1.11
Where, when, and how a bolt is placed should be left up to the individual placing the bolt[c]	0.499	2.91	2.33	1.89
There should be limits on the amount of bolting in an area	0.506	3.93	3.27	2.43
The impact of bolts to the natural resource is minimal[c]	0.762	2.92	2.26	1.81
There should be official regulations concerning where, when, and how bolts should be used	0.567	3.04	2.40	1.93
Other recreational groups are not offended by bolts[c]	0.484	3.07	2.76	2.50
Fixed anchors are not necessary in the sport of climbing[c]	0.589	3.57	3.91	4.22
Need for management (α = 0.65[b])		3.71	3.52	3.31
The use of bolts and fixed anchors in wilderness needs to be regulated	0.505	3.65	3.20	2.73
Climbers need to be educated concerning their role in the management process	0.465	4.15	4.10	4.00
Most climbing areas need a management plan in order to provide sustained use	0.791	3.60	3.54	3.39
Managing climbing will be good for the sport in the long run	0.804	3.43	3.21	3.24
Reservations about the management process (α = 0.67[b])		Grand mean 3.61		
There is a conflict between land managers and the climbing community concerning the management of bolts	0.478	4.01	4.00	3.77
Land managers do not have adequate knowledge of climbing to properly manage it	0.634	3.61	3.77	3.93
Land managers are doing the best they can when trying to manage climbing[c]	0.489	2.92	3.22	3.09
The government management process is a mystery	0.607	3.81	3.70	3.93
Climbing is micro-managed or over-managed by land managers	0.714	3.28	3.37	3.46
Climbing is not treated fairly in the management process When compared to other recreation activities	0.692	3.61	3.83	4.09
Appropriateness of bolts (α = 0.41[b])		3.74	3.42	3.00
The use of bolts (on sport routes) and the use of fixed anchors (bolts, slings, pins, etc.) are two separate issues	0.491	3.53	3.07	2.87
The use of bolts is appropriate in some areas and not others	0.766	4.00	4.08	3.77
Power drills should not be allowed in wilderness areas	0.516	3.70	2.95	2.39
Climbers' self-perception (α = 0.47[b])		3.37	3.16	3.00
Climbers practice of land stewardship is not adequate	0.707	3.35	2.99	2.79
Climbers have a negative attitude toward management	0.648	3.40	3.30	3.20

[a]All means are based on a five point scale, 1 = strongly disagree to 5 = strongly agree.

[b]Alpha is Cronbach's reliability coefficient for variables in each scale.

[c]Variable was reverse coded.

these levels is appropriate in some cases (Cortina 1993, Little and others 1999). In this case, the factor loadings appear to be a reflection of the broadness of the dimensions resulting from the diversity of the climbing subgroups' interpretation of the indictors. For example, the items representing the "climbers' self-perception" factor (Table 3) can have greater distance from the construct centroid depending on the subgroup or the sampling location. Climbers accustomed to participating in frontcountry areas with high levels of management interaction might agree that the practice of stewardship is high. The converse is also possible; climbers in backcountry areas with relatively less management interaction might feel that stewardship is not adequate. The level of management interaction in the different settings creates multiple frames of reference for the climber to use when interpreting the question. "Assuming that more highly intercorrelated variables lead to better construct representations than do less intercorrelated variables . . . can be misleading . . . especially when one has relatively poor knowledge about the precise location of a construct's centroid in multivariate space" (Little and others 1999, p.194). Highly intercorrelated indicators will likely measure a single and spe-

Table 4. Pairwise comparisons of type of climber based on average of the five scales

Climber type	Climber type	Difference (mean ± SE)	Sig. level[a]
Traditional	Sport	0.457 ± 0.055	0.001
	Hybrid	0.234 ± 0.046	0.001
Sport	Hybrid	0.223 ± 0.061	0.001

[a]Adjustments for multiple comparisons: Bonferroni.

cific domain. However, in this case, we cannot be sure that it is the domain of interest. Indicators that are less intercorrelated will yield greater variability on the construct and spread out to sufficiently capture the centroid. Since there were 13 different sampling locations, each representing unique climbing areas, management styles, and climbers, these issues were expected. Finally, the only consequence of using indicators with lower intercorrelations will be less significant results. Please refer to Cortina (1993) and Little and others (1999) for a detailed discussion of the indicator selection theory and criteria employed.

Repeated-Measures ANOVA

A 3 × 5 mixed-factorial design with the repeated measure on the last factor was used. Multivariate *F*s were used to test all effects involving the repeated measure. The Wilks' lambda multivariate test was significant at the 0.001 level for the five scales collectively (Wilks' lambda = 0.29, $F = 199.66$, $df = 4/331$, $P = 0.001$) and for the interaction effect of the scales and the independent variable (Wilks' lambda = 0.79, $F = 10.01$, $df = 8/662$, $P = 0.001$). The between-subjects effects indicated that there was a significant difference between the types of climbers based on the average of all the scales ($P = 0.001$, $F = 39.03$, $df = 2$). Pairwise comparisons (Table 4) of the type of climber groups further investigated the differences among the groups. Results of these tests indicated that all three groups were different from each other at the 0.001 level, based on the average of all the scales.

Tukey's mean separation tests were used to investigate significant differences among the type of climber groups based on the individual scales. Table 5 details the results of these tests. Significant differences were found for four of the five scales. There were no significant differences among the three types of climbers based on the "reservations about management" scale. The following section discusses the significant differences found between type of climber groups based on the individual scales as illustrated in Table 5. The mean scores for each group based on the five scales and the individual variables in each scale were previously listed (refer to Table 3).

Bolt placement and use. This scale represented climbers' attitudes concerning how bolts should be used, necessity of bolts, regulatory limits on bolts, their impact to the resource, and impacts to other user groups. Traditional, hybrid, and sport climbing groups were all significantly different from each other based on this scale. The mean scores indicate (refer to Table 3 for a list of all mean scores) that traditional climbers had the most reservations concerning the use of bolts (2.88), hybrid climbers were in the middle (2.34), and sport climbers had the fewest reservations (1.90). However, the traditional climber mean was relatively low on the five-point rating scale. This indicates that while traditional climbers had the highest mean score, none of the groups had strong reservations concerning the use of bolts.

Need for management. Climbers' attitudes concerning the need for management of specific climbing activities in wilderness areas, the need for general management plans for sustained use of resources, and climbers' level of knowledge of the management process was measured by this scale. Traditional climbers (3.71) and sport climbers (3.31) were significantly different from each other based on this scale. Hybrid climbers were not different from either group. Based on the mean scores, traditional climbers perceived a greater need for management than sport climbers did. The mean difference between the groups was 0.392 (Table 5); while the mean difference was statistically significant, it is not an easily interpretable difference based on a five-point rating scale. It should be noted the difference between the two group means listed (3.71 − 3.31 = 0.4) and the mean representing the significant mean difference (0.392) was a result of varying cell sizes and computer rounding during statistical analysis.

Reservations about the management process. Based on the variables identified by the factor analysis, this scale measured climbers' attitudes concerning the managers' role in the management process, managers' ability and efforts to manage climbing, and how climbing is treated in the management process in relation to other recreational activities. None of the groups were significantly different from each other based on this scale. A grand mean for the three groups of 3.61 indicated that, in general, the climbers surveyed had reservations or were concerned about management of the sport.

Appropriateness of bolts. This scale represented climbers' attitudes toward details associated with the management of climbing. Traditional, hybrid, and sport climbing groups were all significantly different from each other based on this scale. The mean scores indicate that

Table 5. Differences among type of climber groups based on individual scales

Climber type	Climber type	Difference[a] (mean ± SE)		Sig. level
Bolt placement and use				
Traditional	Sport	0.973[b]	0.097	0.001
	Hybrid	0.539[b]	0.082	0.001
Sport	Hybrid	0.434[b]	0.108	0.001
Need for management				
Traditional	Sport	0.392[b]	0.096	0.001
	Hybrid			0.053
Sport	Hybrid			0.142
Reservations about management process				
Traditional	Sport			0.060
	Hybrid			0.379
Sport	Hybrid			0.561
Appropriateness of Bolts				
Traditional	Sport	0.739[b]	0.116	0.001
	Hybrid	0.324[b]	0.098	0.003
Sport	Hybrid	0.414[b]	0.130	0.004
Climbers' self-perception				
Traditional	Sport	0.363[b]	0.111	0.003
	Hybrid			0.067
Sport	Hybrid			0.424

[a]Refer to Table 3 for means of each group.

[b]Significant mean difference at the 0.05 level.

traditional climbers (3.74) were willing to exercise the greatest discretion in the use of bolts, hybrid climbers (3.42) were in the middle, and sport climbers (3.00) were willing to exercise the least discretion. It should be noted that while sport climbers had the lowest mean score, they still agreed that discretion should be exercised.

Climbers' self-perception. Climbers' attitudes toward the practice of stewardship and attitude toward management was represented by this scale. Traditional climbers (3.37) and sport climbers (3.00) were significantly different from each other based on this scale. Hybrid climbers were not different from either group. Based on the mean scores, traditional climbers had a more negative attitude than sport climbers did. Traditional climbers perceived that there was not adequate practice of land stewardship and that climbers had a negative attitude toward management in general.

Collectively, these results indicate that when compared to sport climbers, traditional climbers: (1) had more reservations about bolt use, (2) were more open to the need for management, (3) were willing to exercise greater discretion concerning the use of bolts, and (4) had a more negative attitude about the climbing communities' participation in management. All three groups expressed equal reservations about the management process, in general.

Discussion

Significant differences were found among responses from traditional and sport climbers on four of the five scales used to measure attitudes. In accordance with the purpose of this paper, the variance among the climbing subgroups indicated that climbers had significantly different attitudes toward management. These diverse attitudes must be accounted for in the management process; if not "we will find ourselves bound on a course having equally unpalatable possible outcomes" (Stankey 1972, p. 93). Climbers with enough interest in the management process to formulate attitudes are a valuable asset in a management paradigm that has grown to rely on the inclusion of the recreationist to accomplish necessary goals. These climbing subgroups are stakeholders in the management process and may represent candidates for management partnerships.

However, the varying attitudes and dynamic nature of the climbing community may also be a factor complicating the management process. Managers must account for the differing attitudes of the specific subgroup being addressed. When trying to fulfill the desires of one group, managers may easily disrupt the experience of another. Contributing to this problem are land managers who may not be familiar with the dynamics of the activity being managed. Management procedures require the inclusion of recreationist attitudes, but including attitudes based on misperceptions

may result in alienating the true needs of the recreationist. Knowledge of the specific activity and participants being managed is an essential component of the management process. Further complications occur when climbers are unfamiliar with the management process. Lack of knowledge or participation on the part of climbers may also lead to needs not being satisfied when management plans are implemented. Finally, climbers may not understand or be sympathetic to the desires of other user groups sharing a resource. Not understanding another party's position can result in an undesirable outcome when negotiating legitimate uses of a shared resource. Results from this research indicated that these conditions might currently exist in association with management of rock climbing and climbing resources.

There were no significant differences between climber groups based on the "reservations about the management process" scale; all climbers surveyed had reservations about the management process. Results from the analysis indicated that climbers from all three groups felt that managers did not adequately understand the activity of climbing, climbers did not adequately understand the management process, climbing was not treated fairly in the management process in comparison to other activities, and climbing was micromanaged. Further discussion is warranted concerning the attitudinal discrepancies described above in order to lessen climber reservations about management by increasing managers' understanding of climbers' attitudes. The following section discusses the specific significant attitudinal differences between traditional and sport climbers found during the analysis.

Understanding Attitudinal Differences Between Traditional and Sport Climbers

Traditional climbers may have a more "purist" orientation toward management based on the attitude measures used in this study. The purist concept as defined by Stankey (1972) was a measure of attitudinal congruency between wilderness users' definition of wilderness and the definition of wilderness presented by the Wilderness Act passed by the United States Congress in 1964. Shafer and Hammitt (1995) revisited the purism concept and defined it as congruency between recreationist attitudes and policy decisions determined appropriate by managers.

Based on the comparison of means between traditional and sport climber groups, on the "need for management" scale, the results indicated that traditional climbers may have been more open to management of climbing. Often, managers must take a conservative approach to resource development. Attitudes are likely to coincide between managers who must take conservative approaches and traditional climbers who have reservations about developing resources through the use of bolts. Traditional climbers who are willing to exercise greater discretion concerning the use of bolts will likely have attitudes that are more congruent with policy that limits development. Finally, a more negative attitude about the climbing communities' current level of participation in the management process, coupled with the attitude that there is a need for management, may be an impetus for additional participation in the management process. Increased climber participation would be congruent with managers' needs in a management paradigm that embraces recreationist inclusion.

The variance in attitudes between climbing subgroups clearly indicates that they cannot be lumped together. The unique qualities of each climbing area attract a specific type of climber; that area then lends itself to that group. Traditional and sport climbing often occurs in different settings. Traditional climbing is more likely to occur in backcountry settings and sport climbing is more likely to occur in frontcountry settings. There is a difference in character and degree of management that occurs in frontcountry and backcountry settings. The results of Stankey's (1972) purism study suggest that "local or unique sets of conditions can modify attitudes" (p. 114). Socialization and continued participation in climbing at frontcountry sites may provide sport climbers with a frame of reference for responding to questions that is different from that of traditional climbers.

Climbing at frontcountry sites may be subject to a higher level of management interaction than climbing at backcountry sites. Climbers often see more signs of management (e.g., visitor centers, parking lots, kiosks posting rules) at frontcountry sites. In addition, frontcountry climbers are more likely to interact with other user groups and may be subject to regulations due to resource sharing. In these cases, frontcountry climbers may feel that unnecessary regulations are being imposed. In settings where there is a high level of manager/climber interaction, climbers may feel overmanaged and have a decreased openness to management.

The final topic to be address is the result of one of the major differences between traditional and sport climbing—sport climbing necessitates the use of bolts and traditional climbing does not. Most sport climbing occurs in areas that managers have designated as appropriate for that type of development. Managers typically do not have the technical ability or time/resources to participate in the development of the individual climbing routes; this responsibility is given to

the climbers themselves. In these settings, climbers who are attracted to that unique resource are granted a great deal of autonomy to determine how, when, and where bolts are placed. In addition, climbers at popular frontcountry sites may participate in the general development and management of the resource. This participation is often seen as trail maintenance, cliff clean-up days, and the donation of funds to construct facilities such as pit toilets and parking areas. Sport climbing may be characterized by the following points: (1) it occurs in areas where bolting has been approved by management, (2) sport climbers have been given the responsibility to place bolts, (3) its users choose to participate in a sport that necessitates bolt use, and (4) sport climbers may take an active part in on-site management. These points account for sport climbers having fewer reservations concerning the use of bolts, thinking the use of bolts is appropriate, and having a more positive self-perception concerning participation in the management process than traditional climbers.

Summary of Major Points

1. Significant differences were found among responses from traditional and sport climbers on four of the five scales used to measure attitudes. The variance among the climbing subgroups indicated that various climbing groups had significantly different attitudes toward management.
2. These diverse attitudes must be accounted for in the management process. However, the varying attitudes and dynamic nature of the climbing community may be a factor complicating the management process.
3. All climbers surveyed had reservations about the management process. Results from the analysis indicated that climbers from all three groups (traditional, sport, and hybrid) felt that managers did not adequately understand the activity of climbing, climbers did not adequately understand the management process, climbing was not treated fairly in the management process in comparison to other activities, and climbing was micromanaged.
4. Traditional climbers may have a more purist orientation toward management based on the attitude measures used in this study. A purist attitude is represented by congruency between recreationist attitudes and policy decisions determined appropriate by managers.
5. Collectively, the results indicate that when compared to sport climbers, traditional climbers: (1) had more reservations about bolt use, (2) were more open to the need for management, (3) were willing to exercise greater discretion concerning the use of bolts, and (4) had a more negative attitude about the climbing communities' participation in the management process.
6. Socialization and continued participation in climbing at frontcountry sites may provide sport climbers with a frame of reference for responding to questions that is different from traditional climbers.
7. The following points account for sport climbers having fewer reservations concerning the use of bolts, thinking the use of bolts is appropriate, and having a more positive self-perception concerning participation in the management process than traditional climbers: (1) sport climbing occurs in areas where bolting has been approved by management, (2) sport climbers have been given the responsibility to place bolts, (3) its users choose to participate in a sport that necessitates bolt use, and (4) sport climbers may take an active part in on-site management.

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