

ABSTRACT

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The purposes of this study were to evaluate the factors important to rock climbers when choosing to visit state or federally managed rock climbing areas. In comparing these sites, which factors differentiate site choices? Are these factors similar? Does travel cost, past climbing trips, site attributes/amenities, and years of climbing experience influence a climber's choice of visiting either a state or federal climbing site? If so what implications are identified for area managers? To answer these research questions, a nominal regression model was utilized which describes the relationships between a state and two national park units and those factors considered desirable by climbers when choosing the site. Importance variables grouped into eight separate categories were found to influence respondents' climbing area decisions. Significant differences existed between the three climbing sites on six site attributes/amenities: (1) number of available sport climbs (2) number of available top-rope climbs, (3) ease of access to climbing areas, (4) availability of camping, (5) regulations governing site use, and (6) the presence of park rangers. In addition differences were found between the three sites in regards to climber habit behavior with respect to climbing experience and frequency as well as associated travel cost. The use of a nominal regression model to identify decision variables important to climbers at state and federally managed sites was found to be a useful approach to supply managers with information about how climbers value certain climbing area aspects in their decision making process. Results suggest resource managers should focus on implications stemming from the six site

attributes/amenities found to be significant in regards to climber habit behavior when making policy decisions.

Impact of Site Decision Variables on Visitors' Choices of State and Federal Rock Climbing Areas

by
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Biography

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TABLE OF CONTENTS

	Page
LIST OF TABLES	IV
LIST OF FIGURES	V
INTRODUCTION	1
LITERATURE REVIEW	2
METHODS	8
New River Gorge	8
Crowder’s Mountain	8
Grandfather Mountain.....	10
Choice Factors	11
Nominal Regression Specification.....	12
RESULTS	13
MANAGEMENT IMPLICATIONS	19
FUTURE RESEARCH	24
LIST OF REFERENCES	26
APPENDICES	29
Appendix A. Crowder’s Mountain Questionnaire	30
Appendix B. New River Gorge Questionnaire	42
Appendix C. Grandfather Mountain Questionnaire.....	48

LIST OF TABLES

	Page
Table 1	Survey Information and Climbing Site Characteristics7
Table 2	Sample Mean Values and Standard Deviations9
Table 3	Multi-nomial Logit Equations14
Table 4	Marginal Effects (dy/dx) After Multi-nomial Logit15
Table 5	Marginal Effects and the Statistically Significant Pair-wise Comparison Between Choice Factors and Climbing Sites17

LIST OF FIGURES

	Page
Figure 1 Map of Study Area Locations	6

Introduction

Over the past two decades, outdoor recreation activities that contain the elements of risk and adventure have grown in popularity (Cordell, et al., 1999). Much of this growth can be attributed to a variety of social and economic factors including: greater exposure through the media, the development of newer, safer, lighter, and more available equipment, the growth of instructional programs, training and instructional guides, books, and people seeking challenging and adventurous lifestyles (Attarian, 1992).

The adventure sport of rock climbing, a highly visible and diverse activity is no exception to this growth. Participation rates have been on the rise for the past 25 years. Beginning in the 1980s, participation in climbing increased 8% from 1980 to 1984 and 12% between 1985 and 1989 (Moser, 1990). The 1994-95 National Survey on Recreation and the Environment reported 300,000 to 400,000 active rock climbers in the United States, with this number expected to increase 50 percent nationally by year 2050 (Cordell, 1999). Both state and federal lands are accessed by climbers to pursue their sport with each showing a significant increase in climber visitation (Davidson, 1992). For example, the number of documented climbing routes in Yosemite National Park, one of the world's premiere rock climbing areas increased from 500 documented climbing routes in 1970 to over 3,000 in 1992 (Marshall, 1994). More recently, Toula (2003) documented over 2,000 climbing areas in the United States, with almost one-third (30%) managed by the United States Forest Service, 7% located on National Park Service land and 13% found in state parks (Stuart-Smith, 2003). Each of these areas is unique and provides climbers with a variety of options, challenges, settings, and decisions to pursue their sport. What factors or characteristics draw climbers to state versus federally managed areas? Is it the quality or variety of the climbs?

Is it the accessibility of the area, the natural surroundings? Is camping available, or is the area strictly controlled? As climbers seek out areas for climbing they are sometimes confronted by the choices they have to make when choosing a climbing site. When a climber looks for a place to climb, their decision extends beyond a classification or rating system, which describes the overall difficulty of a climb, and the amount of time required to complete the climb. Instead, it includes additional attributes such as approach time or access, length of climb, scenic quality, or the amount of crowding on a route. Therefore, climbing can be interpreted as a given set of attributes (Hanley, Wright & Koop, 2002).

The purposes of this study were to evaluate the reasons or attributes important to rock climbers when choosing to visit state or federally managed rock climbing areas. In comparing these sites, which factors differentiate site choices? Are these factors similar? Does travel cost, past climbing trips, site attributes/amenities, and years of climbing experience influence a climber's choice of visiting either a state or federal climbing site? To answer these research questions, a multi-nomial logit is utilized to explain the relationships between the choices of a state and two national parks and those factors considered desirable by climbers when choosing a site.

Literature Review

A number of studies have applied recreation choice models to rock climbing. Shaw and Jakus (1996) use a revealed preference site choice model with four site choices (Mohonk Preserve N.Y., Ragged Mountain M.A., the Adirondacks N.Y., and the White Mountains N.H.), and two site attributes, travel cost from the respondents' home and the number of available climbs within the individuals skill set. Data was collected from Mohonk Preserve

members in New York State. A double-hurdle count model was used to determine the consumer surplus from changes in climbing opportunities by controlling for participation decisions. The number of rock climbing areas and climate was used by Cavlovic, T., R. Berrens, A. Bohara, P. Jakus and W. D. Shaw (2002). A repeated nested random utility model estimated welfare losses associated with proposed site closures on United States Forest Service lands. These closures were a result of a proposed change in policy to prohibit the placement of permanent anchors by climbers in USFS managed wilderness areas. They found that the proposed closures would have an economic impact in excess of \$100 million per year. An impact in excess of \$100 million forces the United States Forest Service to undertake a benefit cost analysis to compare economic losses to climbers with benefits of wilderness preservation before any new regulations can be passed. Welfare estimates were reported by Hanley, Alvarez-Farizo and Shaw (2002), who used a repeated nested multinomial logit model to predict the impact of resource rationing mechanisms under consideration by management. Site choice was assumed to be dependent on travel cost from home as well as approach time to each site and a range of specific physical characteristics unique to each site. Hanley, Wright and Koop (2002) used choice experiments to determine the demand for climbing sites. Focus groups with university mountaineering clubs uncovered six main attributes associated with climbing decisions including length of climb, approach time, crowding of the climb, overall quality of the climb, scenic quality, and travel cost. In addition to the six climbing attributes, eight principle Scottish climbing areas were identified for study by the focus groups (Northern Highlands, Creag Meagaidh, Ben Nevis, Glen Coe, Isle of Arran, Arrochar, The Cullins of Skye, and The Cairngorms). The sample was comprised of randomly selected climbing club members in Scotland as well as individuals

administered questionnaires at climbing walls in Edinburgh, Glasgow, and Falkirk (N=267). Climbing attributes found to be most important included length of climbs (longer), approach time (shorter), crowding of climb (less), and scenic quality (more). Hanley, Koop, Wright, Alvarez-Farizo and Nevin (2001) used the same data set to compare a standard multi-nomial logit model with a random parameters approach. In doing so they examined seasonal differences in behavior and different treatments of travel time. Their findings mirrored those of Hanley, Wright and Koop (2002) by identifying similar site attributes to be important. Using a contingent behavior model, Grijalva, T., R. Berrens, A. Bohara and W. D. Shaw (2002) examined the welfare impacts from access restrictions at Hueco Tanks State Park in Texas and in a recent study Siderelis and Attarian (2004) used data to create a trip response modeling approach that combined past trips with future (intended trips) to assess potential regulatory changes at Crowder's Mountain State Park in North Carolina.

Research into individual choices of climbing sites has uncovered the following site characteristics that are particularly desirable to climbers: the quality of climbs, variety of climbs, difficulty of climbs, the number of sport climbs, traditional climbs, and top rope climbs, the availability of anchors, ease of access to climbing areas, the availability of camping and parking, the natural surroundings, consideration of the weather, presence of other climbers, visitors, park rangers, regulations, and area ethics. In comparing climbing sites, which of the factors are differentiating the site choices?

In answering the research questions, a nominal regression model is specified describing the relationships between climbers' choices of the New River Gorge, W.Va. (national park), Crowder's Mountain, N.C. (state park), or Grandfather Mountain Corridor, N.C. (national park) and those factors considered desirable by climbers when choosing the

site. It is assumed that respondents are knowledgeable about the suitability of climbing conditions and circumstances at all three substitute rock climbing sites, and that the three sites are not representative of climbing areas on the whole.

The New River Gorge National River located near Beckley, West Virginia is managed by the National Park Service and is characterized predominantly as a traditional and sport climbing area. The Gorge contains over 1600 recorded climbs making it an important national climbing destination (Cater, 1995). Crowder's Mountain State Park, located in the Charlotte metropolitan area of North Carolina has close to 140 different rock climbs and is considered a top rope climbing destination (Lambert & Shull, 2002). The Grandfather Mountain Corridor is located on the Blue Ridge Parkway near Blowing Rock, North Carolina and managed by the National Park Service. The area offers exceptional bouldering and traditional climbing, with over 400 boulder problems and 70 rock climbs in the area (A. Love, personal communication, April 15, 2004; Lambert & Shull, 2002), and has been described as "bouldering's holy grail" (Young, 2001, pg. 70). The location of each site is shown in Figure 1. Survey information and site characteristics for each of these areas are summarized in Table 1. Data from three individual survey questionnaires were combined to form one complete data set. The content of the three survey questionnaires were similar as shown in Appendix A, B, and C. The sampling time frames were New River Gorge National River, April 1997 to August 1997; Crowder's Mountain State Park, October 2001 to May 2002; and the Grandfather Mountain Corridor, October 2003 to November 2004.

Figure 1
Map of Study Area Locations

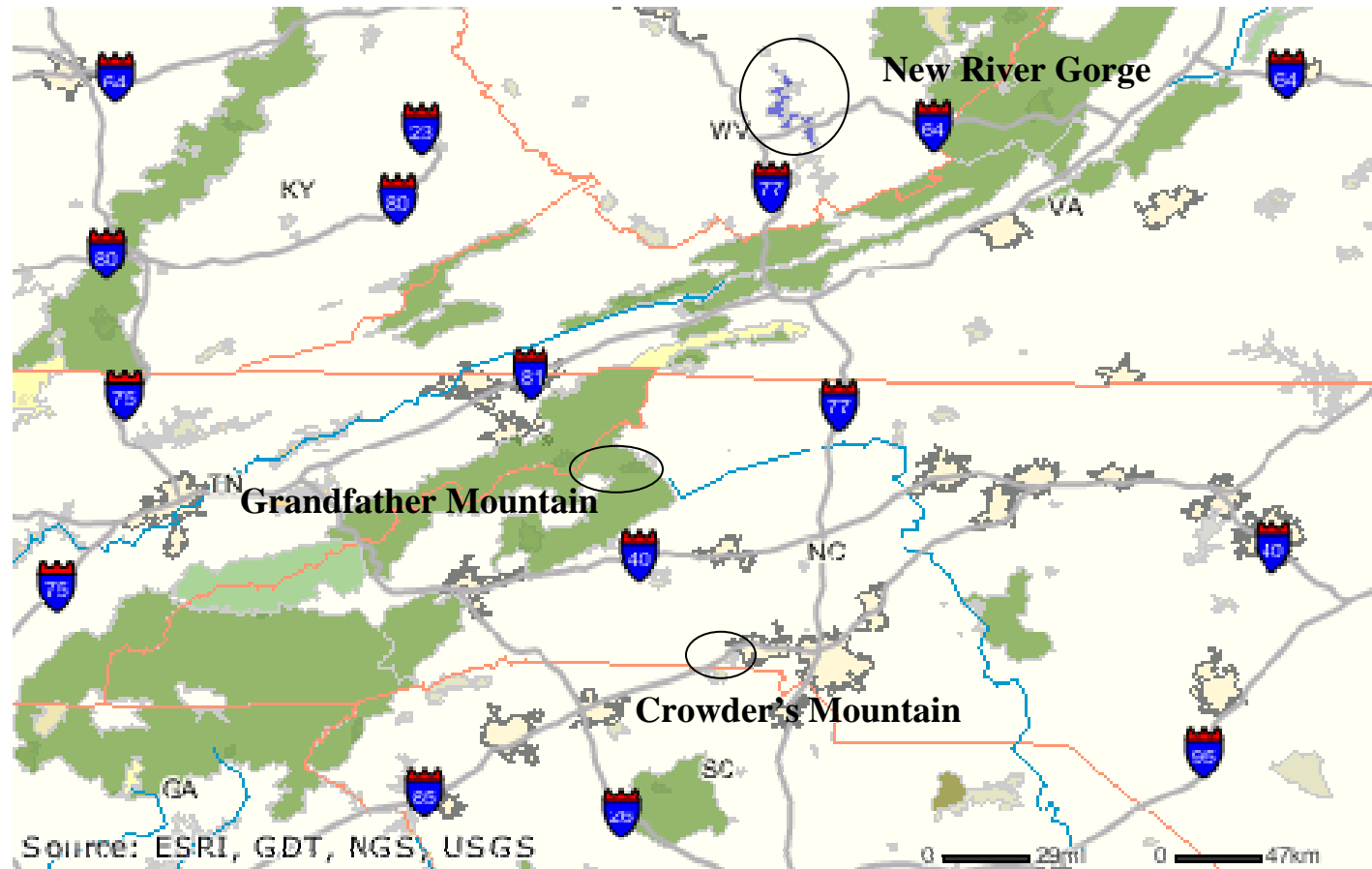


Table 1

Survey Information and Climbing Site Characteristics

<i>Characteristics</i>	<i>Grandfather Mountain Corridor</i>		
	<i>Crowder's Mountain State Park</i>	<i>(Blue Ridge Parkway)</i>	<i>New River Gorge National River</i>
Location	Kings Mountain, N.C.	Near Boone, N. C.	Glen Jean, W. V.
Management	N.C. State Park	National Park Service	National Park Service
Available climbs	118	470	1600
Dominant climbing	Top-rope	Boulder; Tradition	Tradition; Sport
Sampling	Random sample	On-site interviews	On-site interviews
Data collection	Mail questionnaire	Mail questionnaire	Mail questionnaire
Sample size (N)	186	90	148
Response rate	42.2%	50.8%	53.4%
Survey dates	10/2001 - 5/2002	10/2003 - 11/2004	4/1997 - 9/1997

Notes. Boulder problems and rock climbs are considered to be equivalent in calculation of available climbs.

Methods

New River Gorge. Data were collected at New River Gorge by randomly intercepting climbers entering or exiting climbing areas on both week and weekend days from three primary access points; Bridge Area, Fern Creek, and Kaymoor. On-site interviews lasting 5 to 10 minutes were conducted by research assistants in order to complete a Climber Information Form (CIF) on which information such as name, mailing address, age, previous climbing experience at New River Gorge, group size, travel information (distance and travel time from place of residence to New River Gorge) were recorded. Interviewers intercepted a total of 297 climbers from every third climbing party willing to participate, from which 287 usable mailing addresses were gathered. Within one week of their visit all 287 climbers were sent mail questionnaires following a modified Tailored Dillman Method (1978). Ten questionnaires sent to New River Gorge participants were returned by the Postal Service as “non-deliverable” leaving a total of 277 subjects contacted. Mail-back questionnaires and reminder postcards were sent through the month of September, this process yielded a total of 148 usable questionnaires a 53.4% response rate. Eighty percent of respondents were male. Respondents were on average 28 years of age, had an average of 3.6 years of climbing experience, traveled an average of 375 one way miles from home to New River Gorge, and had taken an average of 19.2 trips to New River Gorge over the past 12 months (Table 2).

Crowder’s Mountain. Climbing data were collected at Crowder’s Mountain from climbing and rappelling permits that were completed by a group member prior to climbing. Park personnel estimate that at least 90% of all climbers fill out the permit (M. Derstine, personal communication, October 11, 2001). Names and addresses on permits from the time period October 2001 to May 2002 were entered into an Excel spreadsheet enabling any

Table 2

Sample Mean Values and Standard Deviations in Parentheses by Rock Climbing Sites

<i>Choice Factors</i>	<i>Crowder's</i>	<i>Grandfather</i>	<i>New River Gorge</i>
Quality of climbs	0.930 (0.296)	0.922 (0.308)	0.946 (0.255)
Variety of climbs	0.897 (0.355)	0.856 (0.412)	0.885 (0.360)
Difficulty of climbs	0.804 (0.437)	0.611 (0.612)	0.770 (0.496)
Number of sport climbs	0.443 (0.692)	-0.222 (0.776)	0.554 (0.693)
Number of traditional climbs	0.440 (0.652)	0.378 (0.801)	0.534 (0.704)
Number of top rope climbs	0.668 (0.622)	-0.222 (0.832)	-0.108 (0.842)
Availability of anchors	0.652 (0.581)	0.189 (0.847)	0.777 (0.506)
Ease of access to climbing sites	0.451 (0.684)	0.033 (0.800)	0.764 (0.576)
Proximity from home	0.422 (0.704)	0.300 (0.827)	0.642 (0.583)
Availability of camping areas	0.135 (0.713)	-0.178 (0.758)	0.764 (0.513)
Availability of parking	0.422 (0.647)	0.478 (0.674)	0.628 (0.652)
Presence of park rangers	0.243 (0.723)	-0.522 (0.585)	-0.054 (0.781)
Presence of regulations	0.016 (0.783)	0.100 (0.735)	-0.162 (0.833)
Natural surroundings	0.804 (0.449)	0.856 (0.384)	0.939 (0.291)
Typical weather conditions	0.815 (0.403)	0.856 (0.412)	0.811 (0.410)
Presence of other climbers	0.043 (0.713)	0.067 (0.818)	0.007 (0.769)
Presence of other visitors	-0.195 (0.711)	-0.022 (0.821)	-0.297 (0.723)
Site ethics	0.576 (0.596)	0.778 (0.469)	0.710 (0.512)
Trips over the past 12 months	9.19 (8.85)	35.79 (36.55)	19.24 (38.03)
Years of climbing experience	8.202 (7.291)	8.393 (6.864)	3.601 (3.579)
Travel cost ^d	29.80 (68.95)	31.48 (68.36)	119.98 (144.83)

Notes. Responses to the first 18 factors are rescaled to a -1, 0, and 1 scale format to indicate the negative, neutral, and positive desirability of choice factors. Boulder problems and climbs are considered to be equal in the calculation of number of available climbs.

duplicates to be dropped, and a 50% random sample to be generated. As a result, 441 climbers were identified and sent mail-back questionnaires. Two weeks following the initial mailing, non-respondents were sent reminder and thank you postcards (Dillman, 2000). One hundred and eighty six usable questionnaires were returned out of the total 441 mail-back questionnaires sent to Crowder's Mountain climbers (42.2% response rate). Almost the entire sample (91%) were male. Respondents were on average 31 years of age, had an average of 8.2 years of climbing experience, traveled an average of 93 one way miles from home to Crowder's Mountain, and had taken an average of 9.2 trips to Crowder's Mountain over the past 12 months (Table 2).

Grandfather Mountain. Data were collected at Grandfather Mountain on random week and weekend days from October 2003 to November 2004. Climbers and boulderers were systematically contacted at three trailheads as they entered Ship Rock, Grandmother, or the Blowing Rock Boulders and asked to participate in the study by a trained research assistant. Through this process, a total of 177 climbers and boulderers agreed to participate. Each respondent was asked to complete a CIF. All 177 climbers and boulderers were sent a mail-back questionnaire, with a reminder and thank you postcard one week later (Dillman, 2000). A total of 90 usable questionnaires were returned out of the 177 sent to Grandfather Mountain Corridor climbers (50.8% response rate). Eighty one percent of respondents were male. Respondents were on average 28 years of age, had an average of 8.4 years climbing experience, traveled an average of 98 one way miles from home to the Grandfather Mountain Corridor, and had taken an average of 35.7 trips to the Grandfather Mountain Corridor during the past 12 months (Table 2).

Since this study is comprised of 3 separate studies over a 7 year span changes in the landscape of recreation participation and more specifically rock climbing participation and perception must be considered. The percent of U.S. adults who participate in rock climbing was found to be 4.32% in 2000-01 with a 26.86% increase since 1994 (National Survey on Recreation and the Environment). The gain in participation rates was not controlled for in this study. It is assumed that the effects are minimal for the small percentage of U.S. adults who participated in rock climbing during the 7 year span of this study.

Choice Factors

Eighteen measures of the desirability of site characteristics climbers consider when choosing a site are listed in Table 2. Respondents were asked to rate the desirability of each site characteristic when choosing a climbing area. The New River Gorge questionnaire was based on a nine point response scale, while both the Crowder's Mountain and Grandfather Mountain Corridor questionnaires were on five point response scales (see Appendix A, B, and C for copies of questions and response formats). Responses were rescaled to a -1 "Undesirable", 0 "Neutral", 1 "Desirable" scale for the purpose of this analysis. This approach is not without drawbacks, as a degree of specificity is lost in this conversion. Climbers' perceptions are simplified and no longer is there any magnitude to the degree of importance or unimportance a site attribute or amenity may have simply they are either of importance, unimportance, or considered to be indifferent. While specificity is lost it is still possible to observe some degree of magnitude within each decision variable when an average is calculated (Table 2), but the comparison of importance variables is in smaller increments from -1 to 1 instead of higher increments as in a 5 or 9 point scale. Also included in the data

sets were the travel costs to and from the site, years climbing, and past trips to the study sites to better understand how the characteristics may influence the choice process.

Several characteristics common to each of the three sites were identified by climbers as desirable site characteristics they considered when choosing a climbing site. These included the quality of climbs (Crowder's: $M = .930$, $SD = .296$; Grandfather: $M = .922$, $SD = .308$; New River Gorge: $M = .946$, $SD = .255$) variety of climbs (Crowder's: $M = .897$, $SD = .355$; Grandfather: $M = .856$, $SD = .412$; New River Gorge: $M = .885$, $SD = .360$), and the difficulty of climbs (Crowder's: $M = .804$, $SD = .437$; Grandfather: $M = .611$, $SD = .612$; New River Gorge: $M = .770$, $SD = .496$). Undesirable site characteristics include the presence of regulations (Crowder's: $M = .016$, $SD = .783$; Grandfather: $M = .100$, $SD = .735$; New River Gorge: $M = -.162$, $SD = .833$), and the presence of other visitors (Crowder's: $M = -.195$, $SD = .711$; Grandfather: $M = -.022$, $SD = .821$; New River Gorge: $M = -.297$, $SD = .723$).

Nominal Regression Specification

The nominal regression model is a pooled model from the three data sets collected at state and federal sites. Formally, the multi-nomial logit model is written as:

$$\ln \Omega_{m|b}(\mathbf{x}) = \ln [\Pr(y = m|x) / \Pr(y = b|x)] = \mathbf{x}\beta_{m|b}, \text{ for } m = 1 \text{ to } J \text{ climbing sites.} \quad (1)$$

Where, b is the base category or comparison group. Since the natural log (\ln) of one equals 0, it holds the $\beta_{b|b} = 0$ (Long & Freese, 2001). That is, the log odds of an outcome compared to itself is always 0 and the effects of any independent variable must also be 0. Since respondents were assigned to rock climbing sites where they were sampled, the J equations in

the specification above were equal to the three rock climbing sites in this study, \mathbf{x} 's were the independent variables, and β 's (beta's) were the coefficients.

Results

The three logit equations are displayed in Table 3. Overall, the multi-nomial results are significant (LR $\chi^2(42) = 460.14$, $\text{Pr} > \chi^2 = 0.000$; Maximum Likelihood $R^2 = 0.683$) with the inclusion of the independent variables providing a significant improvement in the explanation of the data when compared to the constant-only equations. Overall the equations explained 54% of the variation in choice behaviors (Pseudo $R^2 = 0.544$). Wald and Likelihood Ratio (LR) tests for combining the climbing sites with the null hypotheses that all coefficients except intercepts associated with given pair of climbing site are zero, were rejected ($\text{Pr} > \chi^2 = 0.00$; Summary statistics bottom of Table 3). Evidence from the Small-Hsiao tests of the independence for irrelevant alternatives (IIA) assumption to determine if the alternatives are independent was significantly against the null hypothesis—that the choices of climbing sites by respondents are not independent (Table 4, Note). The sites were in fact independent.

The values in Table 4 are the marginal effects. The effects reflect the probabilities of respondents choosing rock climbing sites based on the reported level of desirability (importance) of the various site characteristic to them when making a site choice decision. For example, as the desirability of the number of available top rope climbs increases, as perceived by the respondents, the probability of choosing Crowder's Mountain increased by approximately 30%, whereas the probability of choosing Grandfather Mountain Corridor

Table 3

Multi-nomial Logit Equations, Coefficients, Standard Errors in Parentheses ($n = 400$)

(1) Crowder's Mountain, (2) Grandfather's Mountain, (3) New River Gorge

<i>Variables</i>	<i>2 versus 1</i>	<i>3 versus 1</i>	<i>2 versus 3</i>
Quality of climbs	0.207 (1.011)	-0.630 (0.770)	-0.838 (1.078)
Variety of climbs	0.071 (0.625)	0.689 (0.567)	0.614 (0.684)
Difficulty of climbs	-0.545 (0.445)	-0.108 (0.399)	0.436 (0.479)
Number of sport climbs	-0.643* (0.312)	0.056 (0.291)	0.699* (0.334)
Number of traditional climbs	-0.134 (0.311)	0.011 (0.279)	0.146 (0.330)
Number of top rope climbs	-1.241* (0.295)	-1.181* (0.256)	0.059 (0.309)
Availability of anchors	-0.111 (0.364)	0.190 (0.370)	0.302 (0.411)
Ease of access to climbing sites	-0.571 (0.307)	0.858* (0.328)	1.429* (0.359)
Proximity of the site from home	0.136 (0.337)	0.187 (0.339)	0.051 (0.386)
Availability of camping areas	-0.626* (0.331)	0.919* (0.319)	1.545* (0.382)
Availability of parking	0.703* (0.345)	0.214 (0.312)	-0.489 (0.385)
Presence of park rangers	-1.633* (0.351)	-0.563* (0.290)	1.069* (0.366)
Presence of regulations governing use	0.791* (0.313)	0.145 (0.258)	-0.645* (0.323)
Natural surroundings	0.135 (0.506)	0.873* (0.560)	1.008* (0.667)
Typical weather conditions	-0.060 (0.568)	-1.418* (0.485)	-1.358* (0.612)
Presence of other climbers	0.061 (0.356)	0.052 (0.277)	-0.009 (0.381)
Presence of other visitors	0.750* (0.361)	0.057 (0.287)	-0.693 (0.387)
Site ethics	0.928* (0.458)	0.473 (0.371)	-0.454 (0.494)
Years climbing	-0.018 (0.034)	-0.229* (0.050)	-0.211* (0.054)
Trips past 12 months	0.057* (0.013)	0.047* (0.013)	-0.010 (0.007)
Travel cost	0.006 (0.005)	0.021* (0.003)	0.015* (0.005)
Constant	-1.821 (1.019)	-1.638 (0.925)	0.182 (1.122)
Summary Statistics and Tests for Combining Climbing Sites		<i>Wald</i>	<i>LR</i>
	2 versus 3	80.74	217.64
	2 versus 1	76.30	192.40
	3 versus 1	96.14	255.59
LR $\chi^2(42) = 460.14$, $Pr > \chi^2 = 0.000$; Maximum Likelihood $R^2 = 0.683$; Pseudo $R^2 = 0.544$			

* Significant at the 0.05 statistical level.

Table 4

Marginal Effects (dy/dx) After Multi-nomial Logit (n = 400)

	Crowder's	Grandfather	New River Gorge
Estimated Probability / (Actual)	0.48 (0.42)	0.17 (0.21)	0.35 (0.37)
<i>Variables</i>			
Quality of climbs	0.088	0.066	-0.154
Variety of climbs	-0.122	-0.029	0.151
Difficulty of climbs	0.062	-0.07	0.007
Number of sport climbs	0.043	-0.093	0.050
Number of traditional climbs	0.009	-0.019	0.010
Number of top rope climbs	0.300	-0.104	-0.195
Availability of anchors	-0.022	-0.026	0.049
Ease of access to climbing sites	-0.097	-0.130	0.227
Proximity of the site from home	-0.042	0.008	0.034
Availability of camping areas	-0.103	-0.141	0.244
Availability of parking	-0.093	0.086	0.007
Presence of park rangers	0.228	-0.196	-0.032
Presence of regulations governing use	-0.089	0.102	-0.013
Natural surroundings	-0.135	-0.070	0.205
Typical weather conditions	0.243	0.074	-0.317
Presence of other climbers	-0.013	0.005	0.008
Presence of other visitors	-0.071	0.010	-0.030
Site ethics	-0.155	0.102	0.052
Years climbing	0.040	0.010	-0.051
Trips past 12 months	-0.012	0.005	0.007
Travel cost	-0.004	-0.000	0.004

Note. Evidence from the Small-Hsiao test of the independence for irrelevant alternatives or IIA was significantly against the null hypotheses that the choices of climbing sites are not independent (Site 2 omitted, $\chi^2(22) = 71.55$; Site 3 omitted, $\chi^2(22) = 44.68$).

decreased by -10%, and New River Gorge decreased by -20% although not statistically different across sites (Table 4, row 10).

In constructing Table 5, attention was placed on the significance of the pair-wise comparisons in Table 3 and the probabilities from Table 4. The resulting statistically significant outcomes are displayed in Table 5. Following the results displayed in Table 5, evidence is summarized concerning factors that contributed either positively or negatively to the site choice process below:

1. The desirability about the numbers of sport climbs, increased the probability of climbers choosing Crowder's Mountain (4.3%) or New River Gorge (5%) in comparison to choosing Grandfather Mountain (-9.3%).

2. Respondents agreement about the desirability of the number of top-rope climbs clearly favored Crowder's Mountain (30%), where the probabilities decreased markedly with the choices of Grandfather Mountain (-10.4%) or the New River Gorge (-19.5%).

3. The ease of access to climbing sites (22%) and the availability of camping (24.4%) definitely appealed to those respondents who climbed at the New River Gorge as opposed to either choice of Crowder's Mountain and Grandfather Mountain.

4. The desirability about the presence of park rangers certainly increased the probability (22.8%) of selecting Crowder's Mountain in contrast with respondents who reported visiting the national parks where the desirability of the presence of park rangers decreased the probability of participation.

5. When comparing the presence of regulations governing the use at the three sites, the desirability of those regulations had a positive (10.2%) influence on respondents' choices

Table 5

Marginal Effects and the Statistically Significant Pair-wise Comparison Between Choice Factors and Climbing Sites (n = 400)

<i>Choice Factors</i>	<i>Crowder's</i>	<i>Grandfather</i>	<i>New River Gorge</i>
Number of sport climbs	0.043	-0.093	0.050
Number of top rope climbs	<i>0.300</i>	-0.104	-0.195
Ease of access to climbing sites	-0.097	-0.130	<i>0.227</i>
Availability of camping areas	-0.103	-0.141	<i>0.244</i>
Availability of parking	-0.093	0.086	ns
Presence of park rangers	<i>0.228</i>	-0.196	-0.032
Presence of regulations governing use	-0.089	<i>0.102</i>	-0.013
Natural surroundings	-0.135	-0.070	<i>0.205</i>
Typical weather conditions	0.243	0.074	<i>-0.317</i>
Presence of other visitors	-0.071	0.101	ns
Site ethics	<i>-0.155</i>	0.102	ns
Years climbing	0.040	0.010	<i>-0.051</i>
Trips past 12 months	<i>-0.012</i>	0.005	0.007
Travel cost	-0.004	-0.000	<i>0.004</i>

Note. Where appropriate, the value in italics is the comparison cell. For the first row, those respondents who visited Crowder's and New River Gorge assumed the number of sport climbs was a significantly more important factor than those respondents using Grandfather Mountain.

of Grandfather Mountain as opposed to Crowder's Mountain (-8.9%) and almost no influence on climbing at New River Gorge (-1.3%).

6. The desirability of weather conditions assumed a highly probable role (24.3%) in respondents' choices of Crowder's Mountain, a minor one for Grandfather Mountain (7.4%), and an undesirable one for climbers who visited New River Gorge (-31.7%). In contrast natural surroundings were found to have an inverse relationship to the role of typical weather conditions. With an undesirable (-13.5%) role in respondent's choices of Crowder's Mountain, a minor one for Grandfather Mountain (-7.0%), and a positive role (20.5%) associated with New River Gorge.

7. The desirability of the presence of other visitors and site use ethics in the decision processes of climbers were significantly different for only Crowder's Mountain and Grandfather Mountain. In choosing to visit Crowder's Mountain both the presence of other visitors and the concern for site ethics had a negative influence in the choice of climbing area at Crowder's Mountain (-7.1% and 15.5%, respectively). Alternatively, the presence of other visitors (10.1%) and site ethics (10.2%) were more highly valued by respondents in choosing Grandfather Mountain.

8. In the comparisons of the users to the three sites, climbers with more years experience had a higher probability (4%) of choosing Crowder's Mountain, than Grandfather Mountain (1%) and were less likely to be experienced at the New River Gorge (-5.1%). In comparing the frequency of visits to the different sites, we were attempting to evaluate the habit behavior of respondents. Climbers visiting Crowder's Mountain (-1.2%) were less in the habit of climbing than those climbers choosing Grandfather Mountain (0.05%) and New River Gorge (0.7%). There was a higher probability (0.4%) of climbers visiting the New

River Gorge paying higher travel costs when compared with probability of climbers to Crowder's Mountain (-0.4%) paying less.

Management Implications

What implications do climbers' perceptions of site attributes and amenities have for climbing area managers? Significant differences existed between the three climbing sites on six site attributes/amenities: (1) number of available sport climbs (2) number of available top-rope climbs, (3) ease of access to climbing areas, (4) availability of camping, (5) regulations governing site use, and (6) the presence of park rangers. This information allows climbing area managers to include variables important to climbers' site choice decision making process into a management policy framework. Depending on the desired result from an ensuing policy change these six attributes and amenities could be manipulated to change climbers' perceptions in both direction and magnitude depending on what end result (probability of visitation) was deemed necessary by management.

To better understand the effect a change in policy regarding one of the previously identified attributes and amenities will have on a specific site it is important to examine the similarities and differences that the site shares with the three areas studied. It has been shown that Grandfather Mountain Corridor, Crowder's Mountain, and New River Gorge are distinctly different areas not only on the management level, but also different in attributes and amenities offered to climbers. It is necessary for managers to recognize to what degree their climbing area is similar to any of the three examined here when trying to apply the findings from this study to other climbing areas. While no two climbing sites are exactly the same many share similar core attributes and amenities. By examining the effects these core

attributes or amenities have on the decision variables managers will be able to understand the effect each has on climbers' perceptions and the probability of participation at a given site. It is recommended that managers use caution when implementing these results since the specialization of climbing activities has not been controlled for in this study rather all studied types of rock climbing (traditional, sport, top rope, and bouldering) have been grouped together and simply defined as climbing. Analysis of decision variables can be divided into three main categories; physical site characteristics (type of climbing available), on-site amenities (park infrastructure i.e. available parking), and management philosophy.

In order to determine the effects of physical site characteristics two main decision variables were significant; the number of available top rope climbs and number of available sport climbs. Top rope climbing, popular with beginner climbers usually requires relatively easy access and variety of climbs. Well maintained fixed anchors and an understanding from managers about the demands of the sport are also important considerations. In many state and federal areas, anchor management is an issue, especially when top rope and sport climbing are the primary attractions for climbers, as both rely heavily on the safety and integrity of fixed anchors. Findings suggested that climbers favored Crowder's Mountain for both sport and top rope climbing and New River Gorge for sport climbing. It is important to recognize that both Crowder's Mountain and New River Gorge are well established climbing areas, and in the case of Crowder's Mountain more closely patrolled by management personnel than the Grandfather Mountain Corridor. The core climbing site attributes associated with sport and top rope climbing stem from safety concerns. Therefore management trying to regulate sport or top rope sites should be most concerned with how safe climbers' perceive their area to be. It is also important to recognize that many of the climbers have been climbing for a number

of years but not as frequently as other types of climbers as is the case with Crowder's Mountain.

The variables grouped as on-site amenities as well as typical weather conditions and natural surroundings were found to be most significant at New River Gorge. This is likely a result of the higher travel costs and distance traveled by climbers from their homes to New River Gorge. This leads climbers to stay in the area for multiple days, versus the day trips which are the norm at both Crowder's Mountain and Grandfather Mountain Corridor. Ease of access (trails) and availability of camping were found to be the most important site attributes for New River Gorge climbers. Properly designed, engineered and marked trails allow use to be controlled and dispersed, provide access for rescue and emergency personnel, reduce impacts to soils and vegetation, and may prevent the development of illegal trails to climbing sites. Adequate parking prevents illegal parking and trespass. The provision of camping, either by the park or private provider is especially important when climbers are traveling long distances to access federal climbing areas and need lodging for multiple nights. Without adequate lodging, illegal camping, trespass, and other issues may become a problem.

Within this study climbers' perceptions of management philosophy were based on how they perceived the presence of park rangers and regulations governing site use. By choosing a state managed climbing site and two that are federally managed it is possible to compare how climbers' perceive each managing body. Rock climber perceptions of regulations governing site use and the presence of park rangers had an effect on the probability of using Crowder's Mountain in contrast to Grandfather Mountain Corridor. As the presence of park rangers as a reason for using a particular site increased, the probability of choosing Crowder's Mountain increases while it decreases for the Grandfather Mountain

Corridor. This finding can be justified since North Carolina State Parks requires a self-registration permit for climbing. This policy is closely monitored by Crowder's Mountain through periodic ranger patrols of the climbing areas. This increases the chance of a ranger making face to face contact with climbers providing an opportunity for ranger-climber interaction, creating a more collegial relationship. Because of this, climbers at Crowder's Mountain have become accustomed to a ranger's presence and as a result have developed a good rapport with them.

In contrast, as the presence of regulations governing site use as a reason for using a particular site increased, the probability of choosing Crowder's Mountain decreases while it increases for Grandfather Mountain Corridor. This suggests that a difference exists between climber's perception of park rangers and regulations at state and nationally managed climbing areas. At state areas the presence of park rangers increases the probability of choosing to climb at the site while the presence of regulations decreases the probability. An inverse relationship is found at the nationally managed Grandfather Mountain Corridor where the presence of park rangers leads to a decrease in the probability of choosing the site while regulations increase the probability. This finding is not surprising, as climbing activity in the Grandfather Mountain Corridor has come under intense scrutiny by Park Service managers. Managers have voiced concern over the potential damage to sensitive vegetation, impacts to wildlife, the development of illegal trails, the use and placement of fixed anchors, and damage to cultural sites (Attarian, 2005). However, the climbing community (which has a strong stewardship ethic) embraces the idea of regulations, especially those that support the areas' natural and climbing resources.

The differences found between state and federally managed parks serve to highlight areas where each management organization can look to improve. Park rangers, especially at the federal level need to be more visible to climbers. Their roles and concerns need to be conveyed to the climbing public and collaborative efforts will help make the climber-Ranger relationship better. Bouldering is a relatively new activity at the Grandfather Mountain Corridor and is established and growing at New River Gorge. Conversations with NPS managers at the Grandfather Mountain Corridor revealed concerns regarding impacts to vegetation, trails, wildlife, and cultural and historic resources. This translated into apprehension from climbers regarding future access (i.e. areas will be closed to climbing in order to protect resources). This is not the case at Crowder's Mountain where climbing is well established and park managers and climbers have a good rapport based on trust and collaboration. A positive climber-manager relationship may make managing the federal climbing resource easier, increase trust, and create a more satisfying recreation (climbing) experience. To enhance cooperation between climber and manager more self-regulation by climbers with over-site provided by park managers is needed. To help in this process Local Climbing Organizations (LCOs) have been initiated in many areas nationwide to help manage and maintain climbing areas. By involving climbers as well as managers in the management process of climbing areas, sites will be better protected from misuse and damage. This is especially important for federally managed climbing areas which tend to be much larger and therefore more difficult to manage from a man power stand point.

Future Research

This research has shown that it is possible to combine previous studies to examine new research questions. Through this process the previous base of literature was expanded with further testing of identified site attributes and amenities determining their effect on rock climber decision-making behavior. Specialized types of climbing (bouldering, top rope, sport, traditional, and aid) present opportunities to further this research. By examining each individually it will be possible to differentiate and identify specific resource and infrastructure needs, climber attitudes, important site characteristics and decision-making variables for each. This in turn provides resource managers with specific findings for each climbing discipline identifying important sets of attributes/amenities as well as management implications applicable to more climbing areas.

The paradigm found between regulations governing site use and the presence of park rangers highlights an important difference between state and federally managed climbing areas. It is an issue that carries both ethical and environmental concerns. The predominately larger physical scale of federally managed climbing areas in reference to state controlled areas, and the manpower issues associated with having a consistently visible ranger presence at federal areas requires closer attention. While it may never be feasible to create a ranger presence at federal climbing areas consistent with that found at smaller state climbing areas it may be possible to study climbers who frequent both state and federal climbing areas in comparison to those who visit only one area. This could determine what effect the paradigm between regulations governing site use and the presence of park rangers has on climber ethics and environmental outlook. Depending upon results it may be possible to associate positive ethical and environmental behaviors with the increased ranger interaction at state climbing

areas, and to determine whether climbers who frequent both areas transfer behavior from one site to another.

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APPENDIX

Appendix A

NC STATE UNIVERSITY



AN ANALYSIS OF GUIDED ROCK CLIMBING AT CROWDERS MOUNTAIN STATE PARK

This survey questionnaire will be used to collect baseline information on guided rock climbing at Crowders Mountain State Park. The results of this study will help park manager's focus on key management issues and help them enhance the rock climbing resources and experience at Crowders Mountain State Park. Your name was randomly chosen from the climber's registration permit you completed on your most recent visit to the park.

We encourage you to carefully read this survey. We realize that the survey contains questions that may take time to answer. Your cooperation is extremely important to us and to the success of this study since each randomly selected person will represent many other climbers who were not surveyed. Your responses are completely confidential.

The identification number on the survey is for mailing purposes only. Once you return the survey we will use the identification number to remove your address from our mailing list so that you do not receive any follow up reminders. All results will be summarized so that the answers you provide cannot be associated with you.

It's very important that the person whose name appears on the address label complete the questionnaire. Thank you in advance for your cooperation. If you have questions or comments about this study feel free to contact the researcher by telephone: 919.515.3709 or e-mail: aram_attarian@ncsu.edu.

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**AN ANALYSIS OF GUIDED ROCK CLIMBING AT
CROWDERS MOUNTAIN STATE PARK**

For use in this study, guided rock climbing refers those individuals (guides or leaders) or organizations that provide services such as supervision, protection, education, training, or other assistance to individuals or groups in their pursuit of rock climbing.

Part I. Your climbing visits to Crowders Mountain State Park. In this section we are interested in learning more about your rock climbing trips and experience to Crowders Mountain State Park (CMSP).

1. How many rock climbing trips* have you taken to CMSP during the *past twelve months*?
(* A "climbing trip" is any time you leave your home, whether it be for a few hours, one day or many days in order to go technical rock climbing).

___ Trips

2. How many rock climbing trips are you planning to take to CMSP during the next twelve (12) months?

___ More Trips

3. Which of the following North Carolina areas do you consider as alternatives for rock climbing trips to CMSP? (Please check all that apply)

- ___ Pilot Mountain State Park
___ Hanging Rock State Park (Moores Wall)
___ Stone Mountain State Park
___ Table Rock Mountain – Linville Gorge Wilderness
___ The Chimneys – Linville Gorge Wilderness
___ Others (please list) _____

Part II. About your most recent rock climbing trip. In this section we would like to learn more about your most recent rock-climbing trip to CMSP. Please answer the questions in this section for that visit only.

1. How many days in total* did you spend climbing during this trip?

Days _____ (*A partial day should be recorded as a full day).

2. Your most recent climbing visit to CMSP was as:
- A. The leader of a guided rock climbing group (*more than 6 members*)
 B. The leader of a guided rock climbing group (*at least 6 members*)
 C. As the member of a private rock climbing party (*2-5 members*)
 D. Alone
3. Including you, how many members were in your rock-climbing group during your most recent rock-climbing trip to CMSP?

_____ Total members
 Number of Adults ages 16 and over _____
 Number of Children under 16 years of age _____

4. Which rock climbing areas did you visit *on your most recent rock-climbing trip to CMSP?* (you can check more than one)

- Practice Wall
 David's Castle Wall
 Fortress Wall
 Middle Finger Wall
 Other (Please Identify _____)

5. Approximately how many other rock climbing groups (6 or more climbers) did you see during your visit your most recent rock-climbing trip to CMSP?

_____ Number of rock climbing groups

6. If there were fewer rock climbers on the day of your most recent rock climbing trip to CMSP, would you take more climbing trips to CMSP?

Yes No

Part III. Managing rock climbing at CMSP. In this section we are interested in your reactions to a number of *hypothetical management initiatives*. One of the many challenges facing State Park personnel is how to preserve park resources and quality experiences while providing for rock climber access and needs. One significant management concern has become the condition of the park's rock climbing resources and the quality of the climbing experience.

1. Which of the following sites do you *visit most often* when you rock climb at CMSP? Please rank the four rock climbing areas listed below from 1 ("most often") to 4 ("least often") in the order you would visit them.

RANK	CLIMBING AREA
	Practice Wall
	David's Castle Wall
	Fortress Wall
	Middle Finger Wall

2. What proportion of your rock climbing trips at CMSP are spent climbing in the following areas?

Practice Wall

- 100 percent
 75 to 100 percent
 between 50 and 75 percent
 less than 50 percent

David's Castle Wall

- 100 percent
 75 to 100 percent
 between 50 and 75 percent
 less than 50 percent

Fortress Wall

- 100 percent
 75 to 100 percent
 between 50 and 75 percent
 less than 50 percent

Middle Finger Wall

- 100 percent
 75 to 100 percent
 between 50 and 75 percent
 less than 50 percent

3. On a typical weekend, anywhere from three to five guided groups may be seen rock climbing in the park. Suppose that state park management decides to *reduce the number* of guided rock climbing groups to a maximum of two for the primary area you identified in Part III, question #1.

If this were the case, how many trips would you probably take to CMSP during the next twelve months?

- I would take MORE trips (If so, about how many MORE? _____ Trips)
 I would take FEWER trips (If so, about how many FEWER? _____ Trips)
 I would take the SAME NUMBER of trips

4. Currently, park management limits rock climbing group size to 20, including leaders. Suppose that state park management decides to *reduce the size* of guided rock climbing groups in the primary area you identified in Part III, question #1.

A. If the maximum rock climbing group size were reduced to 15 climbers, how many trips would you probably take to that area during the next twelve months?

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

B. If the maximum rock climbing group size were reduced to 10 climbers, how many trips would you probably take to that area during the next twelve months?

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

5. Currently, there are four primary areas open to rock climbing at CMSP. Suppose that park management decides to *reduce the number of climbing areas* open to climbing.

A. If Practice Wall were closed to rock climbing, how many trips would you probably take during the next twelve months?

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

B. If David's Castle Wall were closed to rock climbing, how many trips would you probably take during the next twelve months?

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

C. If Fortress Wall were closed to rock climbing, how many trips would you probably take during the next twelve months?

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips) I would take the SAME NUMBER of trips

D. If Middle Finger Wall were closed to rock climbing, how many trips would you probably take during the next twelve months?

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

6. Group leaders have the responsibility for both the safety of the group and the protection of the environment. Suppose that all *rock climbing guides and group leaders* at CMSP were required to attend an annual orientation session on Leave No Trace and safe climbing practices.

If this requirement were initiated how many trips would you probably take to CMSP during the next twelve months

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

7. The quality and naturalness of CMSP rock climbing areas are being threatened by increasing numbers of rock climbers unknowingly creating adverse ecological impacts upon rock climbing areas. Suppose that *ecological impact issues* (damage to vegetation, trail and site erosion) at CMSP rock climbing sites were reduced and involved restricting site access.

If these impacts were reduced and access restricted, how many trips would you probably take to CMSP during the next twelve months?

I would take FEWER trips (If so, about how many FEWER? _____ Trips)

I would take the SAME NUMBER of trips

8. Many rock climbers see it as their responsibility to “give something back” to the climbing resource so that future generations can enjoy these same climbing areas. Suppose that all *guided rock climbing groups* at CMSP were required to perform at least two days of trail maintenance (or other service) for every ten days of climbing in the park.

If this plan were implemented, how many trips would you probably take to CMSP during the next twelve months

I would take FEWER trips (If so, about how many FEWER? _____ Trips)

I would take the SAME NUMBER of trips

Part IV. Your attitudes on CMSP management. In this section we would like to know more about your opinions about CMSP management.

1. Please indicate your thoughts about rock climbing at CMSP. Circle the number that best describes how much you agree or disagree with each of the following statements about climbing at CMSP.

	Don't Know	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There isn't enough parking to accommodate climber's vehicles.	<input type="checkbox"/>	-1	-2	0	1	2
There aren't enough trails to access climbing areas.	<input type="checkbox"/>	-1	-2	0	1	2
Trails used to access climbing areas are in poor condition.	<input type="checkbox"/>	-1	-2	0	1	2
Too much litter is visible in the climbing areas.	<input type="checkbox"/>	-1	-2	0	1	2
Staging areas (areas beneath climbs) are in poor condition.	<input type="checkbox"/>	-1	-2	0	1	2
There are too many climbers visiting on most days I've been climbing in the park.	<input type="checkbox"/>	-1	-2	0	1	2

3. Many local, state, and national parks charge entrance or user fees to help defray management and maintenance costs, as well as upgrade sites and facilities. Currently, no fees are charged at CMSP. Would you, as a rock climbing group leader be willing to pay \$_____ in order to support maintenance of trails, sites, facilities, and other climbing related projects at CMSP?

- Yes, I would be willing to pay this fee.
 No, I would not be willing to pay this fee.

Part V. Factors to consider when choosing a rock climbing site. Listed below are some of the characteristics that you might consider when choosing a rock climbing a site. Please think about each characteristic and circle the number that best indicates how desirable or undesirable it is to you when you select a climbing area at CMSP.

Characteristic	Extremely Undesirable		Neutral		Extremely Desirable	
Quality of Climbs	-2	-1	0	1	2	
Variety of Climbs	-2	-1	0	1	2	
Difficulty of Climbs	-2	-1	0	1	2	
Number of Sport Climbs		-2	-1	0	1	2
Number of Traditional Climbs		-2	-1	0	1	2
Number of Top Rope Climbs		-2	-1	0	1	2
Availability of Anchors		-2	-1	0	1	2
Ease of Access to climbs	-2	-1	0	1	2	
Proximity of site to Home	-2	-1	0	1	2	
Proximity of site to EMS		-2	-1	0	1	2
Availability of Camping		-2	-1	0	1	2
Availability of Parking		-2	-1	0	1	2
Presence of Park Rangers	-2	-1	0	1	2	
Regulations Governing Use		-2	-1	0	1	2
Natural Surroundings		-2	-1	0	1	2
Weather	-2	-1	0	1	2	
Presence of Other Climbers		-2	-1	0	1	2
Presence of Other Visitors	-2	-1	0	1	2	
Area Ethics	-2	-1	0	1	2	

Part VI. Attitudes on guided rock climbing in CMSP. In this section we are interested in your thoughts about the use of CMSP rock climbing areas by guided rock climbing groups. Please circle the number that best describes how much you agree or disagree with each of the following statements about guided rock climbing groups. *

	Don't Know	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Group size should be limited.	<input type="checkbox"/>	-1	-2	0	1	2
Groups should only climb in specially designated areas.	<input type="checkbox"/>	-1	-2	0	1	2
Groups larger than six climbers from my climbing experience.	<input type="checkbox"/>	-1	-2	0	1	2
Guided groups are a safety hazard.	<input type="checkbox"/>	-1	-2	0	1	2
Too many groups in one area cause conflict with other climbers.	<input type="checkbox"/>	-1	-2	0	1	2
Limiting group size will reduce environmental impacts.	<input type="checkbox"/>	-1	-2	0	1	2
Group leaders should be required to submit credentials as part of the permit process.	<input type="checkbox"/>	-1	-2	0	1	2
Permits for guided groups should be limited.	<input type="checkbox"/>	-1	-2	0	1	2
Group use of climbing areas in CMSP are a problem.	<input type="checkbox"/>	-1	-2	0	1	2

* Guided rock climbing refers to those individuals (guides or leaders) or groups who provide services such as supervision, protection, education, training, or other assistance to individuals or groups in their pursuit of rock climbing.

Part VII. About you and your rock climbing. We would like to gather some information about you, as a rock climber. The information below is important to the analysis of results.

1. How many years have you been rock climbing?
_____years

2. Please describe yourself as a rock climber: (check the most appropriate response)

- Sport rock climber (seek out bolted climbs)
- Traditional rock climber (only seek out rocks needing protection)
- Boulderer – mostly go bouldering
- Both a sport rock climber and a boulderer
- Hybrid - Both a sport and traditional rock climber
- Equally enjoy sport climbing, traditional climbing, and bouldering
- Gym climber – pretty much stick to workouts in the gym

3. About how frequently do you go rock climbing out of doors? (check the most appropriate response).

- One or two times per year
- Between three and six times per year
- About once a month
- About two times per month
- About once a week
- More than once a week

4. Do you climb indoors? (check the most appropriate response).

- Yes circle the season(s) you do: winter / spring / summer / fall
- No

5. Do you lead sport climbs? (check the most appropriate response)

- Yes for how many years? _____
- No

6. Do you lead traditional climbs? (check the most appropriate response)

- Yes; for how many years? _____
- No

7. What range do you consistently climb? If you have never led a climb, consider your best top rope achievement. Please enter the appropriate range (5.0 – 5.14abcd)

___ Traditional climb ___ Sport climb ___ Top rope climb

8. Approximately, how much money do you believe you have invested in the past 12 months in climbing gear and equipment (for example, ropes, shoes, climbing protection, climbing guides, crash pads)? \$_____.00

Part VIII. Some information about you. We would like to gather some information about you, as a CMSP rock climber. The information below is important to the analysis of results. This information will be kept confidential and your identity will not be revealed in any way.

1. Your Gender (check one): ___ Male ___ Female

2. Your current age in years: ___ years

3. What is the highest educational level you've achieved? Circle the highest grade completed.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
Primary School High School College Graduate Work

4. What is your current employment status? (check most appropriate category)

___ employed full time
___ employed part-time
___ unemployed, but seeking work
___ unemployed or between jobs

5. Which of the following best describes your 2000 household income before taxes?

\$_____ .00

6. What is your present occupation?

___ Professional / Technical ___ Managerial
___ Service/Sales ___ Farming
___ Precision Production ___ Operator / Fabricator
___ Clerical ___ Craftsman
___ Laborer ___ Homemaker
___ Retired ___ Student
Other (please identify _____)

7. On average, how many total hours per week do you work?
_____ Hours/week

8. Please indicate the state, city, and zip code of your place of residence during the past 12 months. This will help us calculate the distance you live from CMSP. The distance you live from the park helps us explain your trips to the park.

State of Residence _____
Nearest city or town _____
Zip Code _____

Please use the space below for any additional comments about rock climbing at Crowders Mountain State Park.

Thank you very much for completing this survey questionnaire. Your responses will be used along with those responses of other rock climbers to focus on key management tasks, help determine future policies, research programs, and enhance the rock climbing resources and experience at Crowders Mountain State Park. Please return this questionnaire in the postage-paid envelope as promptly as possible.

Appendix B

FACTORS INFLUENCING RESPONSIBLE ROCK CLIMBING BEHAVIOR

Thank you for agreeing to participate in this study conducted by North Carolina State University. The results of this study will help resource managers develop climber education programs and assist them in enhancing your future climbing experiences.

Your participation in this survey is voluntary. There are no penalties for not answering all of the questions, but since each randomly selected person will represent many other climbers who were not surveyed your cooperation is extremely important. All of the answers you provide are strictly confidential and all files containing names and addresses will be destroyed after all surveys have been mailed. Please read the instructions at the beginning of each question and answer to the best of your ability.

Part I. Your recent Visit To New River Gorge National River (NERI). In this section we would like to learn about your use of the climbing areas in NERI on the day that you were interviewed. Please answer questions as they relate to that trip only.

1. Was this your first time rock climbing at NERI?

() YES () NO

2. Approximately how much time did you spend “on the rock” that day?

_____ HOURS

3. Overall, how satisfied were you with the trip you took that day? (circle your response)

extremely unsatisfied				neutral				extremely satisfied
1	2	3	4	5	6	7	8	9

Part II. Your Rock-Climbing Preferences. In this section we are interested in your rock climbing preferences.

1. How important is the sport of rock climbing to you?

not important				neutral				extremely important
1	2	3	4	5	6	7	8	9

2. Listed below are some of the characteristic climbers might consider desirable for *any* rock-climbing site. Please consider each characteristic and **circle the number** that best indicates how desirable on undesirable it is to you when you select a place to rock climb.

Characteristic:	extremely undesirable		neutral					extremely desirable	
natural surroundings	1	2	3	4	5	6	7	8	9
difficulty of climbs	1	2	3	4	5	6	7	8	9
variety of climbs	1	2	3	4	5	6	7	8	9
availability of protection	1	2	3	4	5	6	7	8	9
quality of climbs	1	2	3	4	5	6	7	8	9
number of top rope	1	2	3	4	5	6	7	8	9
number of sport climbs	1	2	3	4	5	6	7	8	9
number of trad climbs	1	2	3	4	5	6	7	8	9
number of 5.6-5.9 climbs	1	2	3	4	5	6	7	8	9
number of 5.10-5.13 climbs	1	2	3	4	5	6	7	8	9

Characteristic:	extremely undesirable		neutral					extremely desirable	
proximity to home	1	2	3	4	5	6	7	8	9
parking availability	1	2	3	4	5	6	7	8	9
access to climbs	1	2	3	4	5	6	7	8	9
availability of camping	1	2	3	4	5	6	7	8	9
presence of other climbers	1	2	3	4	5	6	7	8	9
presence of other recreationists	1	2	3	4	5	6	7	8	9
regulations governing use	1	2	3	4	5	6	7	8	9
presence of park rangers	1	2	3	4	5	6	7	8	9
area ethics	1	2	3	4	5	6	7	8	9
weather	1	2	3	4	5	6	7	8	9

3. Which of the following climbing activities have you EVER ENGAGED IN? *Please place a check in front of each that applies to you.*

- Bouldering
- Rock Climbing Indoors
- Rappelling
- Mountaineering
- Rock Climbing Outdoors
- Climbing/Bouldering Competition
- Alpine Rock Climbing
- Ice Climbing

Part III. Your Rock-Climbing Experience. In this section we are interested in your experience as a rock climber.

1. How long have you been rock climbing

_____ months/years (circle one)

2. How many times in the past twelve months have you climbed in NERI?

_____ times

3. How many times in the past twelve months have you climbed in *any* area?

_____ times

4. How important is climbing at NERI to your participation in the sport of rock climbing?

not important				neutral				extremely important
1	2	3	4	5	6	7	8	9

5. Approximately how many days per year do you rock climb?

_____ days

6. How would you rate your overall climbing ability?

beginner							intermediate								expert
5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	5.10	5.11	5.12	5.13	5.14	

7. To which of the following organizations affiliated with rock climbing or the environment do you currently belong? (please check all that apply).

- () Access Fund
- () American Alpine Club
- () American Mountain Guides Association
- () American Sports Climbing Federation
- () Appalachian Mountain Club
- () Canadian Climbers Association
- () Leave No Trace
- () Nature Conservancy
- () Sierra Club
- () Wilderness Society
- () Other (please specify _____)

8. Please indicate with a check the number of times you have read any or all sections of the following climbing publications in the past 12 months.

Publication	Never	1-4 times	5-10 times	More than 10 times
Access Notes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accidents in North American Mountaineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
American Alpine Club Journal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boulderdash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crux	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High Mountain Sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rock and Ice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Summit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Have you ever volunteered for a climbing area maintenance project (trail construction, trash clean up, etc.)?

Yes No

10. Have you ever volunteered for a NERI climbing area maintenance project (trail construction, trash clean up, etc.) anywhere else?

Yes No

11. Did you know that volunteer climbers undertake maintenance projects at NERI?

Yes No

12. Do you think rock climbers should share responsibility for climbing area maintenance?

Yes No

PART IV. Your Leave No Trace Rock-Climbing Behavior. In this section we are interested in your rock-climbing behavior in any climbing area. Please circle the number that best describes how much you agree or disagree with each of the following statements.

Behavior	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I should always pack out waste	1	2	3	4	5
I should always access climbs using official trails	1	2	3	4	5
I respect revegetation efforts	1	2	3	4	5
I avoid trails that have been closed	1	2	3	4	5
I should always plan ahead when I climb	1	2	3	4	5
I should leave no trace when I climb	1	2	3	4	5
I should camp in existing campsites rather than create new ones	1	2	3	4	5
I should comply with local climbing regulations	1	2	3	4	5

Behavior	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I usually try to keep my noise level down	1	2	3	4	5
Old slings should be removed from belay and rappel sites	1	2	3	4	5
It is ok to use chalk when I climb	1	2	3	4	5
I park my vehicle in designated areas	1	2	3	4	5
I should carry a first aid kit when I climb	1	2	3	4	5
I always consider area ethics when I climb	1	2	3	4	5
I use removable protection whenever possible	1	2	3	4	5
Discrete anchors should be used at the top of climbs	1	2	3	4	5
It is wrong to climb in a park after closing time	1	2	3	4	5
It is alright to climb w/o helmet	1	2	3	4	5
Campfires are unacceptable at the base of any crag	1	2	3	4	5
I would walk 1/4 mile to use a toilet facility	1	2	3	4	5
Bolting should be allowed in all climbing areas	1	2	3	4	5
It is okay to remove Vegetation	1	2	3	4	5
Chiseling handholds is an acceptable practice	1	2	3	4	5



**Survey of Rock Climbing in the Grandfather Mountain
Corridor,**

Blue Ridge Parkway, North Carolina

This questionnaire has been designed to collect baseline information on rock climbing and bouldering in the Grandfather Mountain Corridor (GMC) of the Blue Ridge Parkway, North Carolina. The GMC includes the following climbing and bouldering areas: Ship Rock, Grandmother Boulders, and the Blowing Rock Boulders. The results of this study will help Blue Ridge Parkway managers focus on key management issues and assist them in the creation of a Climbing Management Plan for the area.

We encourage you to carefully read this survey. We realize that the survey contains questions that may take time to answer. Your cooperation is extremely important to us and to the success of this study since each randomly selected climber will represent many others who were not surveyed. Your responses are completely confidential.

The identification number on the survey is for mailing purposes only. Once you return the survey we will use the identification number to remove your address from our mailing list so that you do not receive any follow up reminders. All results will be summarized so that the answers you provide cannot be associated with you.

It's very important that the person whose name appears on the address label complete the questionnaire. Thank you in advance for your cooperation. If you have any questions or comments about this study feel free to contact the researcher by telephone: 919.515.3709 or e-mail: aram_attarian@ncsu.edu.

Aram Attarian, Ph.D.
Associate Professor
North Carolina State University
College of Natural Resources

The funding for this study was made possible through a Climbing Preservation Grant from the ACCESS FUND, a national, non-profit organization dedicated to keeping climbing areas open and to conserving the climbing environment.

*Survey of Rock Climbing in the Grandfather Mountain Corridor,
Blue Ridge Parkway, North Carolina*

The Grandfather Mountain Corridor includes the following climbing and bouldering sites: Ship Rock, Grandmother Boulders, and the Blowing Rock Boulders. For use in this survey the word "climbing" refers to both technical rock climbing and bouldering.

Part I. Your most recent climbing visit to the Grandfather Mountain Corridor. In this section we are interested in learning more about your climbing trips and experience in the Grandfather Mountain Corridor (GMC) **on the day you were interviewed**. Please answer the questions in this section for that visit only.


1. About how many miles is it from your home to where you climbed in the GMC on that day?

___ One-way miles

2. How long did it take you to travel from your home to where you climbed in the GMC on that day?

___ Hours

3. Was this your first time climbing in the GMC?

___ No  ___ Yes (If "Yes" go to question #4)

a. If "NO" about when was your first visit to the GMC? ___ Month ___ Year

b. How many climbing trips* have you taken to the GMC during the *past twelve months*? (* A "climbing trip" is any time you leave your home, whether it be for a few hours, one day or many days in order to go technical rock climbing or bouldering).

___ Times I visited the GMC during the *last 12 months*

c. Since your first climbing trip to the GMC, the overall quality of the experience has:

- ___ Remained the same
- ___ Improved
- ___ Gotten worse
- ___ Not applicable

d. What is the main reason the quality has changed?

4. This trip to the GMC is:

- My primary destination
- Part of a longer climbing trip
- Other (explain) _____

5. How many hours in total did you spend climbing during this trip? _____Hours

6. How many people including yourself were in your climbing party during this visit? _____People

7. Where did you stay overnight during this trip to the GMC?

- Blue Ridge Parkway campground (identify: _____)
- Private Campground
- Primitive Camping
- Friends/Family
- Hotel/Motel
- Own home
- Rent
- Not applicable
- Other (identify: _____)

8. How many climbing trips are you planning to take to the GMC during the next twelve (12) months?

More Trips

9. Which of the following sites do you visit when you climb in the GMC? Place a check in the space beneath your response. You may check more than one site.


Climbing Area	Most Often (100-75% of time)	Often (74-50% of time)	Least Often (49-1% of time)	Not At All
Shiprock				
Grandmother Boulders				
Blowing Rock Boulders				

10. Answer the following series of questions if you identified Shiprock as the site you visit (*most often*) or (*often*) when you climb in the GMC.

a. List your three favorite Shiprock climbing routes.

b. In your opinion, are more rappel stations needed to descend Shiprock?

Yes No

 If you answered "yes", where do you recommend additional rappel stations be located? Please specify:

-

c. How did you access Shiprock *on the day that you were interviewed?*

Tanawa Trail *
 Walked south along Parkway to the cliffbase
 Other (explain: _____)

*If you accessed Shiprock via the Tanawa Trail, did you leave the trail to explore?

Yes No

The next series of questions are designed to gather information on the amount and condition of fixed protection (bolts and pitons) on Shiprock.

d. Have you replaced any fixed protection on Shiprock in the past 6 months?

Yes No Don't Know

e. In your opinion, does fixed protection on Shiprock need to be replaced?

Yes No Don't Know


f. In your opinion, is there enough fixed protection on Shiprock to adequately safeguard climbers?

Yes No Don't Know

The following questions are designed to gather information on your knowledge about Shiprock's natural environment.

g. Did you know that Shiprock (cliff-face) and Rough Ridge (cliff-top) support a variety of rare and sensitive vegetation?

Yes No

 If you answered "yes" how did you first learn about these sensitive resources?

Blue Ridge Parkway brochure Climbing Guidebook
 Ranger contact "Word-of-Mouth"
 Blue Ridge Parkway Guidebook Interpretive program
 Newspaper article Magazine article
 Don't Remember Other source (Please

list: _____)

Part II. Factors to consider when choosing a rock climbing or bouldering site. Listed below are some of the characteristics that you might consider when choosing a climbing or bouldering site. Please think about each characteristic and circle the number that best indicates how *important* or *unimportant* it is to you when you select a climbing area at GMC.

Characteristic	Extremely Unimportant	Unimportant	Neutral	Important	Extremely Important
Quality of climbs	-2	-1	0	1	2
Variety of climbs	-2	-1	0	1	2
Difficulty of climbs	-2	-1	0	1	2
Number of sport climbs	-2	-1	0	1	2
Number of traditional climbs	-2	-1	0	1	2
Number of top rope climbs	-2	-1	0	1	2
Variety of boulder problems	-2	-1	0	1	2
Difficulty of boulder problems	-2	-1	0	1	2
Number of boulder problems	-2	-1	0	1	2
Availability of fixed anchors	-2	-1	0	1	2
Ease of access to climbs	-2	-1	0	1	2
Proximity to home	-2	-1	0	1	2
Proximity to medical services	-2	-1	0	1	2
Availability of camping	-2	-1	0	1	2
Availability of parking	-2	-1	0	1	2
Presence of park rangers	-2	-1	0	1	2
Regulations governing use	-2	-1	0	1	2
Natural surroundings	-2	-1	0	1	2
Weather	-2	-1	0	1	2
Presence of other climbers	-2	-1	0	1	2
Presence of other visitors	-2	-1	0	1	2
Area ethics	-2	-1	0	1	2

Part III. Your attitudes towards GMC management. In this section we would like to know more about your opinions on how the GMC is managed for climbing. Circle the number that best describes how much you agree or disagree with each of the following statements about climbing in the GMC.

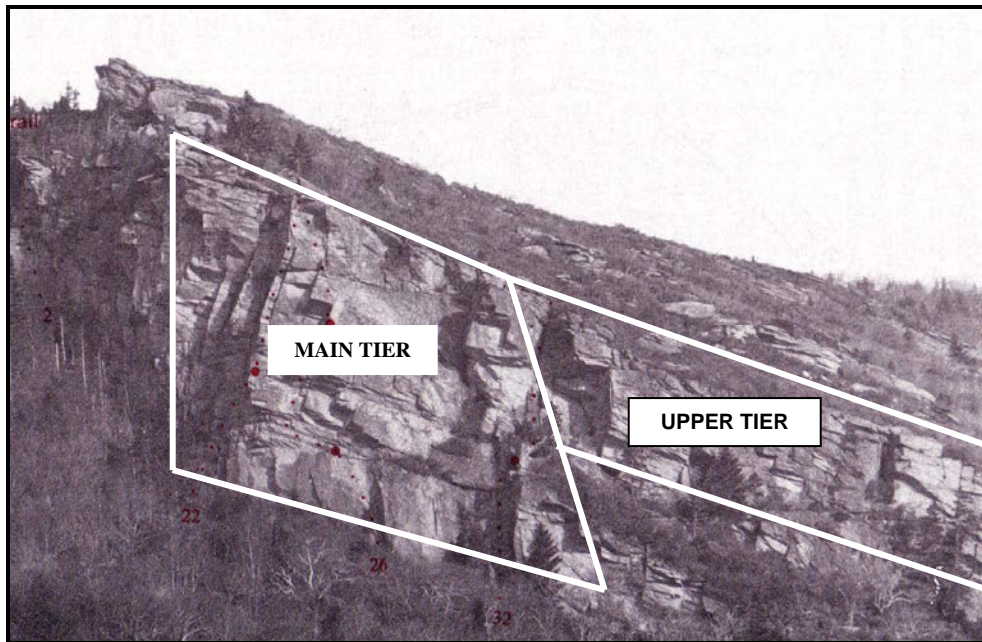
Management Item	Don't Know	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There's not enough parking for climber's vehicles.	<input type="checkbox"/>	-2	-1	0	1	2
There aren't enough trails to access climbing areas.	<input type="checkbox"/>	-2	-1	0	1	2
Trails to climbing areas are in poor condition.	<input type="checkbox"/>	-2	-1	0	1	2
Too much litter is visible in the climbing areas.	<input type="checkbox"/>	-2	-1	0	1	2
Staging areas are in poor condition.	<input type="checkbox"/>	-2	-1	0	1	2
There are too many climbers visiting on most days I've been climbing in the GMC.	<input type="checkbox"/>	-2	-1	0	1	2
There aren't enough climbing areas to accommodate the number of climbers visiting the GMC.	<input type="checkbox"/>	-2	-1	0	1	2
There's not enough information on rules and regulations.	<input type="checkbox"/>	-2	-1	0	1	2
Other climbers in the GMC haven't bothered me.	<input type="checkbox"/>	-2	-1	0	1	2
I'm concerned that climbers are degrading the rock at GMC.	<input type="checkbox"/>	-2	-1	0	1	2
I'm concerned that climbers are damaging the natural environment at GMC.	<input type="checkbox"/>	-2	-1	0	1	2
Other climbers being around makes me enjoy my trip to the GMC less than I would if they were not near me.	<input type="checkbox"/>	-2	-1	0	1	2

Part IV. Potential management actions. In this section we are interested in your reactions to a number of *potential management actions*. One of the many challenges facing managers is how to preserve resources and quality experiences while providing climber access. One significant management concern has become the condition of the GMC climbing resources and the quality of the climbing experience. Please respond to the following potential management actions.

1. Climbers have the responsibility for both their safety and the protection of the environment. Suppose it was suggested that all climbers attend an annual orientation session on Leave No Trace and safe climbing practices. *If this management action were taken, how many trips would you take to the GMC during the next twelve months?*

- I would take MORE trips (If so, about how many MORE? ____ Trips)
- I would take FEWER trips (If so, about how many FEWER? ____ Trips)
- I would take the SAME NUMBER of trips

2. Shiprock is an ideal habitat for a variety of rare and endangered plant species. In fact rare lichen can be found growing on the rock face and the cliff top is home to a variety of sensitive vegetation. In other areas, resource managers have closed climbing sites in order to preserve unique habitats and rare plants.



Shiprock
(Kelley, 1995)

- a. Suppose that the MAIN TIER of Shiprock was closed to rock climbing in order to protect rare and endangered plants. *If this management action were taken, how many trips would you take to Shiprock during the next twelve months?* (Please refer to the photograph of Shiprock when responding to this question).

I would take MORE trips (If so, about how many MORE? _____ Trips)
 I would take FEWER trips (If so, about how many FEWER? _____ Trips)
 I would take the SAME NUMBER of trips

- b. Suppose that the UPPER TIER of Shiprock was closed to rock climbing in order to protect rare and endangered plants. *If this management action were taken, how many trips would you take to Shiprock during the next twelve months?* (Please refer to the photograph of Shiprock when responding to this question).

I would take MORE trips (If so, about how many MORE? _____ Trips)
 I would take FEWER trips (If so, about how many FEWER? _____ Trips)
 I would take the SAME NUMBER of trips

c. Which of the following climbing areas do you consider as alternatives for climbing trips to Shiprock? (Please check all that apply)

- Moores Wall
- Table Rock Mountain, NC
- North Carolina Wall
- Hawksbill Mountain
- Shortoff Mountain
- Rumbling Bald
- Looking Glass Rock
- Stone Mountain, NC
- New River Gorge, WVA
- Other (please list _____)

3. Some resource managers argue that fixed protection (bolts) damages the rock, are unaesthetic, and increase climbing activity in areas previously unused, for example valuable wildlife and plant habitats. Suppose that all fixed protection were removed from Shiprock to reduce impacts to vegetation and wildlife. *If this management action were taken, how many trips would you take to Shiprock during the next twelve months?*

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

4. The upper portion of the Grandmother Mountain Boulders contains a Spruce-Fir forest. This type of forest supports many species that may be common in boreal habitats in the northeastern United States, but are found nowhere else in the southeast. Suppose that the bouldering areas above the Mighty Mouse boulder were closed in order to protect the unique habitat of the Spruce-Fir forest. *If this management action were taken, how many trips would you take to the Grandmother Boulders during the next twelve months?*

- I would take MORE trips (If so, about how many MORE? _____ Trips)
- I would take FEWER trips (If so, about how many FEWER? _____ Trips)
- I would take the SAME NUMBER of trips

Part V. About you and your climbing. We would like to gather some information about you as a climber. The information below is important to the analysis of results.

9. How many years have you been climbing? _____ years

10. Please describe yourself as a climber: (check the most appropriate response)

- Sport climber (seek out bolted rock climbs)
- Traditional rock climber (only seek out climbs needing protection)
- Boulderer (mostly go bouldering)
- Both a sport rock climber and a boulderer
- Hybrid (Both a sport and traditional rock climber)
- Universal climber (Equally enjoy sport climbing, traditional climbing, and bouldering)
- Gym climber (pretty much stick to workouts in the gym)
- Other (please explain: _____)

11. About how frequently do you climb outdoors? (check the most appropriate response).

- One or two times per year
- Between three and six times per year
- About once a month
- About two times per month
- About once a week
- More than once a week
- Other (please describe: _____)

12. What range do you consistently climb or boulder? If you have never led a climb, consider your best top rope achievement. Please enter the appropriate range (YDS 5.0 – 5.14abcd) or V0-V15 for bouldering

- Traditional climb Sport climb Top rope climb Bouldering

13. Approximately, how much money do you believe you've invested in the past 12 months in climbing gear and equipment (for example, ropes, shoes, climbing protection, guide books, chalk, crash pads)? \$_____.00

14. Which of the following climbing publications do you read on a regular basis? You may check more than one.

- Rock and Ice*
- Climbing*
- Vertical Times*
- Accidents in North American Mountaineering*
- American Alpine Club Journal*
- Other (please list all: _____)

15. Which of the following climbing or conservations organizations do you belong? You may check more than one.

- | | |
|---|--|
| <input type="checkbox"/> Access Fund | <input type="checkbox"/> American Alpine Club |
| <input type="checkbox"/> American Mountain Guides Association | <input type="checkbox"/> Appalachian Mountain Club |
| <input type="checkbox"/> Boone Climbers' Coalition | <input type="checkbox"/> Carolina Climbers' Coalition |
| <input type="checkbox"/> Leave No Trace, Inc. | <input type="checkbox"/> Nature Conservancy |
| <input type="checkbox"/> Sierra Club | <input type="checkbox"/> Southeastern Climbers Coalition |
| <input type="checkbox"/> Wilderness Society | <input type="checkbox"/> Other (please list all: _____) |
| _____ | |
| _____ | |

Part VI. Some information about you. The information below is important to us since it will help us to better understand the characteristics of climbers visiting the various climbing and bouldering sites in the GMC. This information will be kept confidential and your identity will not be revealed in any way.

6. Your Gender (check one): Male Female

7. Your current age in years: years

8. What is the highest educational level you've achieved? Circle the highest grade you've completed.

- Some high school Technical school instead of high school
 Completed high school (12 years) Post-high school (business school/tech school)
 1-3 years of college Completed college
 Advanced degree

9. Which of the following best describes your present occupation? (Please check one)

- Managerial or professional specialty Operator, fabricator or laborer
 Technical, sales or administrative support Homemaker
 Service occupation Retired
 Farming, forestry, or fishing Student
 Precision production, craft or repair occupation Other (Please specify:
_____)

10. What was your total household income for the year 2002 before taxes? \$_____00

6. Please indicate the state, city, and zip code of your place of residence during the past 12 months. This will help us calculate the distance you live from GMC.

State of Residence _____
City or town _____
Zip Code _____

Please use the space below for any additional comments about climbing in the GMC.

Thank you very much for completing this questionnaire. Your responses will be used along with the responses of other climbers to help focus on key management issues and to enhance the climbing experience in the Grandfather Mountain Corridor. Please return this questionnaire in the postage-paid envelope provided.