

**CLIMBING AND NATURAL RESOURCES MANAGEMENT:  
AN ANNOTATED BIBLIOGRAPHY**

**SUPPLEMENT (November 28th, 2001)**

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**Wildlife**

Cecil, J. P. & McGrath, C. (2001). North Carolina Peregrine Falcon Restoration and Monitoring. Nongame Project Report. June 30<sup>th</sup> 2001 10pp. Available from North Carolina Wildlife Resources Commission, Nongame and Endangered Wildlife Program, PO Box 29613, Raleigh, North Carolina 27626.

This report summarizes 2001 nest monitoring activities of North Carolina Wildlife Resources Commission and is an update to the Cecil and McGrath report 2000 (see below) providing historical context to restoration success in North Carolina. In addition in 2001 special outreach efforts were undertaken by providing regular updates on closure listings throughout the nesting season to recreation group web sites.

Cecil, J. P. & McGrath, C. (2000). North Carolina Peregrine Falcon Restoration and Monitoring. Nongame Project Report. August 15<sup>th</sup> 2000 12pp. Available from North Carolina Wildlife Resources Commission, Nongame and Endangered Wildlife Program, Raleigh, North Carolina.

Following the removal of the peregrine falcon from the Endangered Species List in late 1999, post de-listing monitoring program have been implemented. In North Carolina the peregrine falcon remains state-listed as endangered. Conservation and management activities which have led to partial recovery of this species in NC, will be continued with the assistance of landowners at falcon nesting sites. This report summarizes 2000 nest monitoring activities of NCWRC at 13 sites. Climbing activity takes place at 7 of these sites and is subject to seasonal climbing restrictions during the spring breeding season. One of these sites, Whitesides Mountain was the site of a small experimental observation to determine if climbers using specific routes would cause any visible disturbance to the nesting falcons. Observations and documentation of the falcons' behavior, allowed the NCWRC to make recommendations to the US Forest Service that certain routes be opened to the climbing community. This example and the monitoring work at Linville Gorge illustrates how NCWRC work with the NC climbing community at appropriate locations to mitigate the effects of peregrine closures on recreation access while meeting resource protection objectives

Richardson, H., (1999). Threats posed by Rock-Climbers to Birds Nesting on Cliffs in the South Okanagan. In *Proceedings of a Conference on the Biology and Management of Species and Habitats at Risk*, Kamloops, B.C., 15-19 Feb., 1999. Volume 1. E.M. Darling, Editor, 2000. B.C. Ministry of Environment, Lands and Parks, Victoria, B.C. and University College of the Cariboo, Kamloops, B.C. 490pp.

**ABSTRACT:** An explosive growth in the sport of rock-climbing has brought previously isolated, cliff dwelling species into close contact with humans. Skaha Bluffs in the South Okanagan Valley,

B.C. is now a major rock-climbing destination and home to at least 13 Red- and Blue-listed species. Of these, by far the most visible is the white-throated swift (*Aeronautes saxitalis*). Peak use of this area by both swifts and climbers is April to September. Most of the swifts' nests are on cliffs little used by climbers, who also prefer to climb on open faces rather than the cracks frequented by swifts. There was no detectable difference in the proportion of successful nests on cliffs used by climbers compared to unused cliffs. Nor was there any decrease over the course of the study in the total number of nesting swifts in Skaha Bluffs, or a move from cliffs popular with climbers to unvisited ones. Canyon wrens (*Catherpes mexicana*) seem equally unaffected by the surrounding clamour. The swift population is larger than previously determined, scattered over a large number of cliffs in the Okanagan. About 10% of the valley's nesting swifts are found in Skaha Bluffs. The same happy state of affairs may well not exist for other threatened species in the area. Climbers need to be involved in, and more aware of, potential problems and their resolution if climbing is to be a perennial part of the local, recreational scene. Contact: Howie Richardson, Okanagan University College, B.C. Email:howie@vip.net.

Swarthout, E.C. H. and Steidl, R. J., (2001). *Flush responses of Mexican spotted owls to recreationists*. Journal of Wildlife management 65(2): 321-317.

**ABSTRACT:** Mexican spotted owls (*Strix occidentalis lucida*) occupy narrow canyons on the Colorado Plateau, some of which are subject to high levels of recreational activity. These activities represent a potential threat to owls, yet due to the confines of the canyon walls, spatial restrictions on recreational activities would likely eliminate all activity within these canyons. We assessed factors that influenced flush responses (flush or no flush), flush distances, distances of avoidance flights, and behavioral changes of owls in response to a single hiker that approached roosting owls. Increased perch height decreased the likelihood that adults (odds ratio = 0.09) and juveniles (odds ratio = 0.17) would flush in response to the presence of a hiker at distances 12 m and 24 m from hikers, respectively, and neither age class was likely to alter its behavior in response to the presence of a hiker at distances 55m. Based on these response thresholds, placing a 55-m buffer zone around roosting sites would eliminate virtually all behavioral responses of owls to hikers, but would restrict hiker access to 80% of canyons occupied by owls. A less conservative 12-m buffer zone would eliminate 95% of juvenile and 80% of adult flush responses, and restrict hiker access to 25% of canyons occupied by owls.

### **Vegetation**

Francis W. (2001). *Rock climbing is damaging cliff-dwelling plants in the Red River Gorge*. Article published in the quarterly newsletter - The Lady Slipper - publication of the Kentucky Native Plant Society Number 16:2. pp3.

**ABSTRACT:** 3 page article describing impacts from rock climbing on vegetation found around the sandstone cliffs in Red River Gorge, Daniel Boone National Forest, KY. See website: <http://www.biology.eku.edu/JONES/Knps.htm> for further information on the Kentucky Native Plant Society.

Marriott, H. (2001) *Identification and Mitigation of Climber Impact on Rare Plants, Custer State Park, South Dakota (Black Hills Needles Climbing Area)*. Report prepared for The Access Fund, PO Box 17010, Boulder, CO 80308 and SD Dept. of Game, Fish and Parks, Wildlife Division, 523 E Capitol, Pierre, SD 57501-3182. November 15<sup>th</sup> 2001. 22pp plus appendices. (Electronic file version available from the Access Fund).

**ABSTRACT:** Popular climbing areas in the Black Hills Needles, Custer State Park, South Dakota, were surveyed for rare plants with the goal of minimizing climber impact. Populations of seven different species of concern were found. Only one grows on the rock itself, in crevices. For this species, conflicts with climbing are minimal or none. Climbing in the Needles is mainly face-

climbing; crack routes are neither common nor popular.

Most rare plants were found in cool moist shaded habitat in gully and drainage bottoms, or at the bases of rock walls; in these situations, rare plant/climbing conflicts were identified. Climbing conflicts with rare plants where approach routes and staging areas are located in rare plant habitat. Trampling is a threat from several sources, not just climbers. Hikers and sight-seers have removed much of the vegetation around the bases of rock outcrops in some areas. Where species of concern were found, areas were assessed for climbing potential and threats to rare plants. Results and recommendations are discussed by individual climbing area. Possible solutions include trail rerouting or stabilization, signs, educational outreach and simple monitoring of areas with rare plants that may see increased climber use in the future. Two trail projects were undertaken by volunteers, after consultation with Park staff. More are planned for the 2002 climbing season.

### **Social**

Access Fund, (2000). *Results of Access Fund Membership Survey 1999*. Available from the Access Fund. 8pp.

ABSTRACT: In Sept 1999, 2,500 Access Fund members were surveyed about the organization's work and programs. The group surveyed represented all regions and in a variety of categories (major donors, event members, long and short term members, etc.) to ensure that the Access Fund was hitting as diverse a population of donor as possible. 35% responded to the survey. The results are used to assist the Access Fund in its ability to understand, communicate and develop the membership.

Ewert, Alan W., (1993). Differences in the level of motive importance based on trip outcome, experience level and group type. *Journal of Leisure Research*, 25 (4) 335-349.

ABSTRACT: This study investigated whether there are differences in the levels of motive importance based on trip success and group membership. Success was defined as reaching the summit of Mt. McKinley. Group data was categorized into guided, independent or solo climbers. Levels of motive importance were compared on outcome, experience level and group type. Significant differences in motive importance were observed for the items and factors selected. It was argued that the data provided partial support for a "motivational matching" concept.

Ewert, Alan W., (1994). Playing the edge – Motivation and risk taking in a high-altitude wilderness-like environment. *Environment and Behavior*, 26 (1) 3-24.

ABSTRACT: Activities in a natural environment that involve risk and danger to the participant have become more popular over the last decade. This article describes a study on the motivations for high-altitude mountaineering at Mount McKinley in Denali National Park, Alaska. Using a principal components factor analysis, five factors emerged, accounting for 92% of the explained variance. Overall, scale items such as exhilaration, excitement, and accomplishment appeared as important motivating variables. Risk taking as a motivating variable did not generate a high level of motivational importance. Based on experience levels in mountaineering, a number of differences were observed in the patterns of motivational importance. The findings suggest that participants in risk recreation report different patterns of motivations that are contingent on their levels of experience.

Johnston, B. R. and Edwards, T., 1994. The Commodification of Mountaineering. *Annals of Tourism Research*, 21 (3) pp 459-478.

ABSTRACT: This article argues that mountaineers, with their long-term relationships with specific regions and peoples, complex motivations structuring their presence and activities, and lengthy history as a distinct cultural community, represent what ecotourism is striving for. They are a group of socially aware, self-reflective travelers who are proactive in the growth and restructuring of the mountain experience. Mountaineering literature is used to describe the changes in the sport and in the mountains, and to illustrate some of the ways in which the cultural values, social meaning, and physical reality change when the human/nature relationship is commodified. Assessing consequences of a commodified alpine experience raises further questions as to the efficacy of ecotourism development models, and achievability of “sustainable” tourism.

Jones, C.D. and Hollenhorst S.J., 2001. *Assessing Visual Impacts of Rock Climbing in National Forests*. Presentation at the 2001 Human Dimensions of Natural Resources in the West Conference, Alta, WY 10-21<sup>st</sup> October 2001.

Contact details: Christopher D. Jones, Ph.D., Asst. Prof & Program Coordinator of Recreation Utah Valley State College, 800 West University Parkway, Orem, UT 84058-5999  
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ABSTRACT: This study examines visual impacts of rock climbing in Rock Canyon within the Uinta National Forest. Visitor responses to photo-based measures of visual preference were obtained during on-site interviews at Rock Canyon Park in Provo, Utah. A series of questionnaires were distributed by undergraduate research assistants during the summer of 2001. Questionnaires corresponded to digital photos taken systematically across the cliffs as consistent with ordering within the questionnaire. 210 respondents rated a series of 16 photos for visual preference on 5-point Likert-type scales. Three a priori hypotheses were tested to evaluate visual impacts of rock climbing: (1) Preference for photos containing evidence of fixed-anchors will not be significantly higher than preference for photos without evidence of fixed-anchors, (2) Photos containing evidence of climbing chalk will be significantly less preferred than photos containing little or no evidence of chalk, and (3) Visual preference of photos containing evidence of rock climbing will be significantly higher for climbers than non-climbers. Preliminary results of hypothesis testing suggested that proposed Forest Service regulations to eliminate fixed-anchors on the basis of visual impact may be unfounded. Likewise, gymnastic chalk was found to have no significant visual impact upon cliff environments in Rock Canyon. Climbers' ratings of photos containing evidence of rock climbing were not significantly different from non-climbers. Overall, the results suggest that rock climbing has no significant visual impact upon cliff environments in Rock Canyon.

Outdoor Recreation Coalition of America, (2000). *Outdoor Recreation Participation Study for the United States*. Second Edition. Prepared by Leisure Trends Group/Gallup, Boulder, CO March 2000. 60 pp. Available from ORCA – The Trade Association of the Outdoor Industry – [www.orca.org](http://www.orca.org).

ABSTRACT: This annually prepared report tracks nationwide participation levels and demographic trends for the following fourteen activities: Back packing, Bicycling- Paved Road, Bicycling (Single Track), Bicycling – Wide Dirt Road, Car Camping, Canoeing, Hiking, Kayaking, Rafting, **Rock Climbing**, Cross Country Skiing, Telemark Skiing, Snowshoeing, Trail Running. Data for this study were collected as part of the LeisureTRAK, an on-going study of Americans' leisure time behavior and attitudes. For comparative purposes the quarterly data collected for this report have been aggregated on an annual basis for 1998 and 1999. The findings from this data are projected to the United States population at a sample error rate of +2%. The report differentiates between outdoor activity participants and enthusiasts. The distinction is made because demographics and purchase behaviors among people highly committed to an activity (enthusiasts) differ from those who are casual participants.

## **Economics**

Cavlovic, T., Berrens, R., Bohara, A. and Shaw, W. (Accepted for publication 2002). Testing the Validity of Contingent Behavior Trip Responses. *American Journal of Agricultural Economics*. 25pp.

**ABSTRACT:** Following the prompting of Arrow et al. (1993) and others, the number of validity tests of contingent valuation data has grown rapidly. However, to date, only several studies have examined the validity of contingent behavior data. The objective of this study is to take advantage of a unique opportunity to test the validity of contingent behavior trip data on rock climbing trips to Hueco Tanks, a premier rock climbing destination. A construct validity test of scope is conducted using data from surveys implemented before and after a policy restricting recreational access was imposed. Results from generalized Negative Binomial and seemingly unrelated Poisson regression models suggest that contingent behavior data may be a valuable supplement to revealed preference data when policy proposals are outside the range of historical conditions.

**Key Words:** Contingent Behavior, Rock Climbing, Test of Scope

Cavlovic, T. A., (May 2000). Valuing the Loss in Access: An Institutional and Welfare Analysis of Rock Climbing on U.S. Public Lands. Ph.D Dissertation. University of New Mexico, Dept. of Economics, Albuquerque, NM 87131. p.p. 279. *Download this document and other publications by Therese Grijalva (formerly Cavlovic) at*

[http://www.weber.edu/tgrijalva/demand\\_for\\_rock\\_climbing.htm](http://www.weber.edu/tgrijalva/demand_for_rock_climbing.htm)

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**ABSTRACT:** The objective of this research was to estimate economic losses to climbers due to changes in institutional rules for climbing access on U.S. public lands. Two proposals for restricting climbing access on U.S. public lands were examined: the U.S. Forest Service (USFS) proposal to ration climbing in USFS wilderness areas, and Texas Parks and Wildlife Department's initiative to restrict climbing access at Hueco Tanks. To estimate economic losses to climbers, the dissertation uses unique survey data on trip-taking behavior for 597 climbers living throughout the U.S.; the data account for approximately 13,000 trips to 60 national dispersed climbing areas. Results showed that restricting climbing access in USFS wilderness areas has an economic loss to climbers of more than \$100 million annually, thus providing *prima facie* evidence that the proposal by the USFS may constitute a major regulatory change as set forth by Executive Orders 12866 and 12291. According to these Executive Orders a benefit-cost analysis must be conducted on all major federal regulations. Further, it is estimated that the economic losses due to the restrictions in open-recreational access at Hueco Tanks were approximately \$252 per climber in 2000.

Ewert, A. W (1996). Gateways to adventure tourism: The economic impacts of mountaineering on one portal community. *Tourism Analysis*, Vol. 1, Inaugural Volume, pp. 59-63.

**ABSTRACT:** Tourism activities that contain elements of risk and dangers, such as white-water boating, wilderness backpacking, and mountaineering, are often underrated in the economic contributions they make to specific localities. This article describes a recent study conducted with high-altitude mountaineering at Mt. McKinley in Denali National Park, AL. Results from this study suggest that expenditures for equipment, air travel, food, guide services, and transportation are substantial. Not surprisingly, when disaggregated by country of residence, significant differences were observed in all the variables previously mentioned, suggesting that adventure tourism can

make a positive and significant economic impact to local communities, particularly if specific desirable geographic attributes are present.

Handley, N., Alvarez-Farizo, B. and Shaw, W.D., (2000 – submitted to Land Economics). *Rationing an open-access resource: mountaineering in Scotland*. 24pp. Available from Dept of Applied Economics and Statistics, University of Nevada, Reno.

This paper considers alternative means of rationing access to outdoor recreation areas, focusing on rock-climbing sites in Scotland. Such rationing is deemed increasingly important due to crowding and environmental externalities, yet cultural and practical considerations mean that a system of simple entry fees to mountain areas is unrealistic. A repeated nested multinomial logit model is used to predict the impacts on welfare and trips of two alternative rationing mechanisms currently being considered by resource managers: (i) the imposition of car-parking fees and (ii) measures to increase access time.

Grijalva, T.C., Berrens, R.P., Bohara, A.K., Jakus P.M. and Shaw, W.D. (Feb 2002 – Accepted by Land Economics) *Valuing the loss of Rock climbing Access in Wilderness Areas: A National-Level Random Utility Model*. 40pp.

Given potential growth in outdoor rock climbing and its concentration on public lands, the management of climbing access in wilderness areas is an issue of considerable national controversy in the U.S. A proposed rule change by the U.S. Forest Service (USFS) would prohibit the use of fixed climbing protection in wilderness areas – effectively eliminating safe access to many sites. Using a unique data set on rock climbing trips, a repeated nested logit random utility model is used to analyze economic losses to climbers resulting from the USFS proposal. Results indicate that the USFS proposal may constitute a major regulatory change.

### **Cliff Ecology**

McMillan, M., (2000). The impact of rock climbing on vascular plants, bryophytes, lichens, and land snails of the Niagara Escarpment, Ontario, Canada. Master's Thesis. pp169.

This thesis addresses the question of whether recreational rock climbing is having a measurable impact on the vascular plants, bryophytes, lichens, and land snails of the Niagara Escarpment in Southern Ontario. Sampling was conducted quantitatively using 150, 1m x 2m quadrats on the plateau, cliff-face and talus habitats of 25 climbed and 25 unclimbed routes. The density, species richness and diversity of vascular plants were negatively affected by rock climbing and alien species were considerably more abundant in climbed areas. The percent cover and species richness of bryophytes were significantly lower in climbed quadrats. Lichen percent cover did not change with climbing; however, species richness was significantly lower in climbed quadrats and community composition differed with climbing. Land snail abundance, species richness and diversity all decreased with climbing and the community composition of snails differed between climbed and unclimbed sites.

### **Management**

Access Fund. (2001). *Climbing Management: A Guide to Climbing Issues and the Production of a Climbing Management*. Author Kath Pyke. 96pp + 52 illustrations. See [www.accessfund.org](http://www.accessfund.org) for Executive Summary and table of contents.

**ABSTRACT:** A guide to climbing issues and how to produce a climbing management plan. The document provides an overview on climbing activity and its effects on natural resources, and a detailed analysis of management options for preventing and mitigating climbing impacts. Special

attention is given to mitigating impacts on vegetation, cultural resources and management at bouldering areas.

The Access Fund, (2000). *The Conservation and Resource Work of the Access Fund*. Prepared by Kath Pyke. P21-22. In *Access Rights – a Worldwide Challenge*. World Mountaineering and Climbing – The Journal of the UIAA (2), 2000.

ABSTRACT: A two-page article describing the access work of the Access Fund and highlights from the 1999 Conservation Program.

The Access Fund, (2000). *Risk Management for Climbing*. The Access Fund, Boulder, CO. 8pp. Available on [www.accessfund.org](http://www.accessfund.org) - see Publications.

ABSTRACT: This document provides a general overview of the ranges of issues related to risk management for climbing on public lands. This includes, but is not limited to, rock climbing and ice climbing, mountaineering and bouldering. The issues presented are applicable to private individuals climbing for recreational purposes and are not intended to address issues that arise from commercial guiding, organized events, or group activities.

Achey, J. (1998). Access Denied - The National Forest Service Fixed Anchor ban – How did we get there? P 76 –80 & p 140-145. pp 9. In *Climbing magazine*. Article can be viewed under magazine back issues at <http://www.climbing.com>.

ABSTRACT: This articles provides discussion from all angles on the introduction of the Forest Service fixed anchor ban in the Sawtooth Wilderness in June 1998, the background leading to this action and implications on climbing in US wilderness areas.

American Alpine Club. (2000). *In Mountaineering is the Preservation of Wilderness. Wilderness Act History and Legislative Intent: An Inquiry into the Use of Fixed Anchors in Wilderness*. Prepared by Jeanne C. Klobnak-Ball April 2000. 98 pp.

ABSTRACT: This document contains 446 citations and provides a detailed analysis of the use of fixed anchors in Wilderness in the United States and interpretation of legislative intent of the Wilderness Act.

Dustin, D.L. & Schneider, I.E. (2001). Collaborative Conflict Resolution at Devils Tower National Monument. *Parks and Recreation* Vol 36 (7), 2001 p81-85.

ASTRACT: This short, illustrated article uses the NPS's management approach at Devils Tower National Monument as a case study of good example in collaborative conflict resolution. Public agencies charged with safeguarding the nation's resources are required to give an account of the rationale underlying their management actions. The more confident they can be that all stake holders have had a voice in the planning process, and that all claims on the public estate have been considered, the more confident they can be that their management practices serve the best interests of the public at large.

Ells, M.D. (1997). Impact of human waste disposal on surface water runoff – The Muir Snowfield, Mount Rainier. *Environmental Health*. 1997, April, p 6-12.

ABSTRACT: The summit of Mount Rainier is attempted by up to 10,000 climbers per year. During their two-day ascents, they use either a pit or solar-assisted toilet at Camp Muir, or the snowfields for disposal of their feces and urine. Mount Rainier National Park personnel know

neither the flow path directions nor the concentrations of microorganisms or chemicals from these wastes during annual runoff. This initial study attempted to determine the concentration of fecal coliforms, fecal streptococci, enterococci, *E coli*, *Pseudomonas aeruginosa*, chloride ion, conductivity and total dissolved solids (TDS) in runoff along the most frequently used ascent route to the summit, the Muir snowfield. During the five-week sampling period, no fecal organisms were found in the runoff. Although conductivity and TDS values approached those of distilled water, samples from the margins of the snowfields had values nearly twice as high as runoff sampled from fell fields within the snowfield. Computer modeling of the predicted flow paths of runoff completed after field work indicated that the main areas of runoff may be hydrologically different from those areas sampled. Further studies need to be completed to study the fate of feces and fecal organisms, and the flow paths of runoff contaminated by human wastes.

Ewert, E., 1990. Mount St. Helens: A case study of managing for change in wildland recreation. *Environmental Management* Vol. 14, No. 2, pp. 179-184.

**ABSTRACT:** Mount St Helens provides an interesting case study of a forest and wildland area that has been radically altered in recent history. As a result of volcanic activity, the recreation environment has changed with respect to the setting, climbing opportunities and motivations for mountaineering. An evaluation process using both qualitative and quantitative methods was developed to determine what the motivations, demographic characteristics and preferred management techniques were for the post-eruption Mount St. Helens climbing visitor. Results suggest that changes have occurred in the "new" or post-eruption climbing visitor. These changes have not all been congruent with those anticipated by management. This article discusses the findings of this research in light of how resource managers might consider the issue of visitor changes in both demands and types of use. Consequently management tools such as the Recreational Opportunity Spectrum (ROS) and Limits of Acceptable Change (LAC) may need to be altered to accommodate a changing resource or visitor base.

Joshua Tree National Park, The Access Fund, The California Native Plant Society, 2000. A Partnership project to address resources protection and quality visitor experience in rock climbing areas of Joshua Tree National Park. Final Report. Joshua Tree National Park, 29 Palms, California. pp 42.

**ABSTRACT:** The objective of Project Vertical Veg was to develop a long-term vegetation inventory and monitoring (I&M) system for high visitor use areas within Joshua Tree National Park through a community partnership approach. With funding provided by the National Park Service Challenge Cost-Share Program (CCSP), the park created a unique partnership with the California Native Plant Society (CNPS) and the Access Fund. This one-year project addressed human impacts on cryptobiotic soil crusts and plant cover in relation to rocky outcrops that are popular climbing areas. Related management issues include: (1) a need to manage social trails, (2) a lack of baseline data and a system for long-term monitoring of soil and vegetation adjacent to boulder formations, (3) a lack of outreach to the climbing community regarding resource impact issues, (4) the need for baseline data on park species of concern, and (5) the need for baseline data on exotic plant species. The I&M system is based on stratified random sampling using large (1000 m<sup>2</sup>), multi-scale plots for collection of soils and vegetation data. In 1999, 30 plots were established. We encountered 124 native plant species and seven exotic plant species. Overall, native vegetation and cryptobiotic soil crusts were negatively affected by disturbance. Based on concentrated recreation in rocky areas, delineation of trails leading to climbing areas and the development of outreach materials are critical to reducing negative impacts. This report recommends that Park Managers continue to monitor vegetation and soil crusts, work closely with Park users, and modify management as necessary to insure the protection of natural resources.

Rocky Mountain Field Institute, 2000. El Rito climbing area preliminary report. Prepared by Mark Stevens, Prescott College. pp. 48. Available from Rocky Mountain Field Institute, 1520 Alamo Ave, Colorado Springs, CO 90907.

ABSTRACT: The cliffs of El Rito are located in northern New Mexico in Rio Arriba County on the Carson National Forest, El Rito Ranger District. This report provides a brief discussion about how increase in climbing use may be affecting natural and cultural resource values, and identifies issues that need to be considered in strategic recreation planning in the area. These include: camping use at undeveloped sites, visitor education strategy, proliferation of social trails network, monitoring of use.

Schuster, R.M., Thompson, J.G. and Hammitt, W.E. (2001). *Rock Climbers' Attitudes Toward Management of Climbing and the Use of Bolts*. Environmental Management Vol. 28, No. 3, pp. 403-412.

ABSTRACT: The purpose of this research was to verify that various segments of the rock climbing community have different attitudes towards 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 useable 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 5 useable factors: bolt placement/use, need for management, reservations about management, appropriateness of bolts, and climber's 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 measure attitudes. The variance among the climbing sub-groups 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.

The Wildlife Society, (1999). *Effects of Recreation on Rocky Mountain Wildlife – A Review for Montana* Prepared by Montana Chapter of The Wildlife Society Sept 1999 307pp. The report can be accessed and downloaded from the Montana Chapter of TWS website ([www.montanatws.org](http://www.montanatws.org)).

ABSTRACT: This resource discusses consequences to wildlife of a variety of recreational activities from ATV and "jet ski" use to mountain biking and hiking with a dog. The report consists of 10 chapters that addresses six groups of wildlife species, as well as potential impacts of companion dogs on wildlife, and includes several appendices. Each species group chapter includes management and planning guidelines designed to minimize impacts of recreational activity on wildlife. The more than 1,500 references cited in the report are taken from a companion on-line bibliography, also compiled by the Montana Chapter. This bibliography of disturbance and ecological literature includes more than 4,500 references, a third of which are accompanied by an annotation or author's abstract.

United States Department of Agriculture. Forest Service. (2000). Book of Abstracts. 8<sup>th</sup> International Symposium on Society and Resource Management The case of the U.S. Forest Service proposal to ban fixed-anchors in wilderness and potential impacts to visitor experiences. Jones, C. & Hollenhorst, S. p. 161.

ABSTRACT: The paper outlines the shared rule-making process between the Forest Service and interest groups over the use of fixed anchors in wilderness and the implications for management practice and visitor experiences based on degrees of restrictions on fixed anchors. Paper can be obtained from the presenters [jonesh@unvsc.edu](mailto:jonesh@unvsc.edu) or [stevenh@uidaho.edu](mailto:stevenh@uidaho.edu).

United States Department of Agriculture. Forest Service. (1996). Environmental Assessment – An analysis of commercial guided rock climbing at Seneca Rocks, West Virginia. Seneca Rocks Opportunity Area #57.002. Monongahela National Forest. Potomac Ranger District. pp 31.

ABSTRACT: The EA documents the effects of guided rock climbing and instruction at Seneca Rocks to determine whether special use permits can be issued for commercial use and whether the permits (based on the impacts of the activity on natural resources) should have any special requirements attached.

United States Department of the Interior. National Park Service. (2001). *Trash Monitoring and Human Waste Study 2001 – Denali National Park*. Compiled by O'Neil, Kito, G. and Perdue, M. Concessions Division, Denali National Park. Copy can be obtained as electronic file by e-mail from Roger Robinson, Lead Mountaineering Ranger - Email: [roger\\_robinson@nps.gov](mailto:roger_robinson@nps.gov). pp.13.

ABSTRACT: This report describes the methodology and results obtained for a trash and human waste monitoring and mitigation project in Denali National Park. This study builds on efforts described since 1973 to mitigate human impacts in the park. This study is described in two parts and follows from an initial report and study in 2000. Part I: focuses on food packaging, meal planning and fuel use by visitors. Part II tests portable human waste carriers i.e. Clean Mountain Cans with expedition groups on a voluntary basis. The report cites statistical results from the 2001 season. The study forms the basis of providing a two-page education brochure for visitors with examples of efficient meal planning and repackaging of food and proper human waste disposal. This information will also be provided on the Park website. An expanded study is planned for 2002.

### **Ongoing Research**

Nodal, Kerry.. Values and management preferences of rock climbers in Northern Arizona. Master's thesis. Northern Arizona University, Flagstaff, Arizona.

OUTLINE: This study will examine environmental values and management preferences of rock climbers for nine different rock-climbing areas in Northern Arizona. Data will be obtained by questionnaire and survey. The study is being conducted in partnership with Coconino and Kaibab National Forests. Information obtained from this study will assist the Forest Service in determining how best to manage local areas for rock climbing, while giving the local climbing community input in management decisions.

Estimated date for completion of study - December 2001.

Contact: Kerry Nodal Tel: 520 774 7863 E-mail: [ken2@dana.ucc.nau.edu](mailto:ken2@dana.ucc.nau.edu)

Murdock, Erik. 2001. Inventory and Monitoring of Rock climber Use of Wilderness Areas. Start 2001-2004. School of Renewable Natural Resources, University of Arizona, Tucson, AZ.

The project will study climber use of wilderness areas including where they go, how they get there, where they stay, what they climb, awareness and their perceptions of wilderness policy. The data will allow researchers to determine what variables are most influential when a climber is deciding how to use a wilderness area. The project will accomplish two goals; the data will help researchers understand the spatial and temporal patterns of climber use. The established

patterns of climber use will allow researchers to create a model of climber behavior that could be adjusted to predict the implications of changes in wilderness policy.

This project will provide a better understanding of how climbers are using wilderness areas, and if, how, and what regulations have forced, or will force, climbers to modify behavior. Research methods such as the one proposed here have been successful in modeling backpackers in the Muir Wilderness, California, jeep tours in Sedona, Arizona, and river rafters in the Grand Canyon, Arizona. The proposed study areas for this project are the Desolation Wilderness, California and the Superstition Wilderness, Arizona.

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U.S. Department of the Interior, Final report due July 2001. Visitor capacity on public lands and waters – Making better decisions. Report of the Federal Interagency Task Force on Visitor Capacity on public lands. Draft (February 2001) available to interested parties from Task Force Chair – Dr. Glenn Haas E-mail: [glenn.haas@doi.gov](mailto:glenn.haas@doi.gov). Tel: 202 208 6212.

Abstract: The Federal Interagency Task Force on Visitor Capacity on public lands is a 12 –month effort involving agency professionals and stakeholders to provide guidance, and coordination for decision makers. The report is designed to improve visitor capacity decision making by developing a variety of decision analysis tools. These tools can be used as part of an agency's planning process. The final report is due July 2001.