

DRAFT

CLIMBING MANAGEMENT PLAN



ACADIA

National Park • Maine

Draft
Climbing Management Plan and
Environmental Assessment

**Acadia National Park
Maine**

The National Park Service proposes to manage climbing at Acadia National Park to protect park resources and visitor experiences. This draft Climbing Management Plan and Environmental Assessment describes five alternatives and their environmental consequences. The alternatives range from continuing existing management through a continuum of increasing restrictions related to these major issues: new route development (defined by route cleaning or installing fixed protection), commercial use, group use, individual use, and area or route closures for natural or cultural resource protection. New route development alternatives include the formation of a committee of climbers, park staff, and others to review and make recommendations on proposed routes. Under one option, proposals would be considered for any climbing area. Under a second, new route development (as defined above) would be permitted only for nine specified climbing areas and prohibited in all other locations. Under a third, all route cleaning would be prohibited and only replacement of existing fixed protection allowed. Options two and three would still allow new routes not cleaned and not requiring fixed protection to be established freely without a permit or approval. A fourth option is attrition and removal of fixed protection; no committee would be needed. Permission to establish new routes without cleaning or fixed protection would be granted by the superintendent. Commercial use alternatives include an incidental business permit program as currently managed or with stricter administration and enforcement, or a concession operation. Group use and individual use alternatives include a permit system without restrictions and a permit system with restrictions, reservations, and carrying capacities as needed. Natural resource closure alternatives include closing areas to protect endangered species, closures for any resource based on quantitative information (if available) related to problems, and temporary or permanent research and preservation closures. Cultural resources closure alternatives include prohibiting climbing on carriage road bridges and prohibiting climbing on carriage road and Park Loop Road bridges. A complete prohibition on climbing, not managing climbing, and education only alternatives were not considered reasonable.

PREFERRED ALTERNATIVE. New route development would be allowed only at nine already developed cliffs. A committee would review all new routes in these areas if they involve route cleaning or the installation of fixed protection. New routes could still be established freely throughout the park provided they are not cleaned and do not use fixed protection. Commercial use would be managed through concessions, but until a review of all commercial operations is completed, incidental business permits will be more strictly enforced. Groups and individuals would be required to have a climbing permit, and reservations and carrying capacities would be developed for climbing areas as needed. Permits for individuals may be delayed for up to three years. Maximum group size would be 12 and group use of Otter Cliffs would be regulated through a reservation system. Climbing and bouldering on the historic carriage road and Park Loop Road bridges would be prohibited. Inventory, monitoring, and research would be conducted to support climbing management, and education projects undertaken to mitigate the effects of climbers. Trails and staging areas would also be rehabilitated and then managed to protect soils and vegetation. The preferred alternative would preserve park resources and a diversity of climbing experiences. It would also preserve clean climbing opportunities for future climbers.

The public is invited to review this draft document and submit written comments by May 31, 1996 to:

Paul Haertel, Superintendent
Acadia National Park
P.O. Box 177
Bar Harbor, Maine 04609

For further information about this document contact Charles Jacobi, Natural Resource Specialist or David Manski, Chief of Natural Resources at the same address.

DRAFT CLIMBING MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT ACADIA NATIONAL PARK, MAINE

SUMMARY

Acadia National Park preserves a coastal Maine landscape of seashore and granite mountains created during the last continental glaciation. As the glaciers receded, many small cliffs suitable for climbing were revealed. The sea cliff climbing in the park is unique for the United States, and is notable for its accessibility and variety of climbing routes.

About 2.7 million visitors entered the park in 1994. Park use has generally increased at the rate of 5-7 percent per year for the past ten years. Park managers have observed an increase in rock climbing use also, although reliable figures are not available.

The National Park Service proposes to manage climbing at Acadia National Park to protect park resources and the experiences of climbers and other visitors. This draft Climbing Management Plan and Environmental Assessment describes five alternatives, including the preferred alternative, and their environmental consequences.

The issues associated with climbing at ANP include the development of new routes, (defined by installing fixed protection and cleaning routes) commercial use, group use, individual use, and the effects of climbing on natural and cultural resources. New route development and group use also are affecting the climbing experience. Installation of fixed protection on new routes limits opportunities for more highly skilled climbers in the future. The popularity of Otter Cliffs with groups limits route availability and may be displacing climbers to other places or times. The climbing experience is a sixth important issue, and it is addressed through new routes and group use.

Climbing management alternatives considered and rejected include not managing climbing, no climbing, and self-regulated climbing (education only). These did not meet park climbing objectives and were thought to be unreasonable options. Common to most alternatives listed below are inventory, research, and monitoring to provide better information, rehabilitation of soil erosion and vegetation damage in some areas, and an improved climber education program. The formation of a climbing advisory committee to make recommendations on all aspects of management, especially new route development, is common also.

Alternative A would continue present management. New route development, group use, and individual use would be unrestricted. An incidental business permit program with limited enforcement would continue. Climbing areas would be closed to protect nesting peregrine falcons. Climbing or bouldering would be prohibited on carriage road bridges but not Park Loop Road bridges.

Alternative B would create a general advisory committee of local climbers, park staff, and others whose primary duty would be to review proposed new routes (defined by route cleaning and fixed protection installation) and the replacement and removal of fixed

protection. The committee would make recommendations to the park superintendent. An incidental business permit program for commercial operators would be strictly enforced. Permit systems for groups and individuals would be required, primarily to educate climbers and measure climbing use, but there would be no restrictions on numbers of climbers. Climbing areas would be closed to protect nesting peregrine falcons. Climbing or bouldering would be prohibited on carriage road bridges but not Park Loop Road bridges.

Alternative C, the **PREFERRED ALTERNATIVE**, would restrict proposed new routes (defined by fixed protection installation and route cleaning) to these already affected cliffs: Canada Cliffs, Great Head, South Wall, Central Slabs, Beech Mountain, Eagles Crag, North Bubble, Precipice, and Enoch Mountain. A committee, as described in Alternative B, would still review new route proposals for these cliffs and any replacement or removal of fixed protection and make recommendations to the superintendent. New routes could still be established freely provided they are not cleaned and do not use fixed protection. Commercial use would be operated through one or more concessions, although until a review of all commercial use of the park is completed, the strict enforcement of incidental business permits would be followed. Groups and individuals would be required to have a climbing permit, and reservations and carrying capacities would be developed for climbing areas as needed based on effects on resources and visitor experiences. Permits for individuals may be delayed for up to three years. Maximum group size would be 12. Group reservations for Otter Cliffs would begin immediately. Climbing or bouldering would be prohibited on carriage road bridges and Park Loop Road bridges.

Alternative D would prohibit all route cleaning and limit fixed protection to only replacement at the nine cliffs listed in Alternative C. New routes could still be established freely provided they are not cleaned and do not use fixed protection. Commercial use, group use, individual use, and climbing or bouldering on park bridges would be managed as in Alternative C. Climbing would be prohibited at some cliffs for up to five years for baseline research and preservation.

Alternative E would prohibit all route cleaning and allow fixed protection to wear out and be removed. New routes could still be established by permission of the superintendent provided they are not cleaned and do not use fixed protection. Climbing would be prohibited at some cliffs permanently for research and preservation. Commercial use, group use, individual use, and climbing or bouldering on park bridges would be managed as in Alternative C.

Major environmental consequences of **Alternative A** include: 1) continued damage to soils, vegetation, and rock from uncontrolled new route development and increasing climbing use; 2) continued protection of nesting peregrine falcons; 3) the historic and structural integrity of carriage road bridges would be retained, but the integrity of Park Loop Road bridges would be compromised; 4) maximum freedom for climbers to develop new routes; 5) a decrease in clean climbing opportunities; 6) a decrease in the wild and natural character of the park; 7) reduced opportunities for solitude and continued displacement of climbers to new times or places; 8) increased crowding and waiting for routes at popular areas; 9) unlimited growth opportunity for climbing businesses; and 10) no effect on park administration.

Major environmental consequences of **Alternative B** include items 2, 3, and 8 from Alternative A and: 1) control of new route development would slow the rate of resource damage and prevent some from occurring; 2) prevention of irreversible loss of threatened and endangered species; 3) reduction of cumulative effects of new routes; 4) climbers would be free to propose new routes anywhere, but some may be refused; 5) opportunities for clean climbing improve over Alternative A; 6) greater preservation of wild and natural character of the park over Alternative A; 7) permit systems would reduce freedom of climbers; 8) crowding and waiting for routes would be alleviated somewhat by education to disperse groups and enforcement of an incidental business permit requirement; and 9) permit systems and an advisory committee would increase the administrative burden on park staff.

Major environmental consequences of **Alternative C**, the preferred alternative, include: 1) restriction of new route proposals (as defined) to nine already affected areas limits resource damage more than Alternative B, and provides greater protection to threatened and endangered species against irreversible loss; 2) group reservations for Otter Cliffs would reduce natural resource impacts there, but may increase effects at other areas; 3) group size limits, a climbing concession providing better education, and use limits for individual climbing areas (if adopted) would all provide greater protection to natural resources than Alternative B; 4) retention of historic and structural integrity of carriage road bridges and Park Loop Road bridges; 5) reduced freedom of climbers to propose new routes; 6) clean climbing opportunities preserved for future climbers; 7) greater preservation of wild and natural character of the park over Alternative B; 8) reduced climber freedom from permit and reservation systems; 9) crowding and waiting for routes would be eliminated and those with reservations assured of quality experience; 10) a diversity of climbing experiences from the solitary to the more social is preserved; 11) climbing concession would reduce choices available to visitors wanting these services, and increase cost to groups who must use concessioner; 12) concessioners would be given added responsibilities for climbing management and 13) the burden on park staff from concessions oversight, permits and reservations, and an advisory committee is greatly increased.

Major environmental consequences of **Alternative D** are largely the same as Alternative C except: 1) freedom of climbers is restricted further by prohibiting route cleaning and limiting fixed protection to replacement only; 2) natural resources are protected further by route cleaning prohibition and temporary area closures for research and preservation; 3) wild and natural character of the park is increased over Alternative C; and 4) administrative burden on park relieved slightly by temporary research and preservation closures.

Major environmental consequences of **Alternative E** are largely the same as Alternative C except: 1) permanent research closures provide greatest natural resource protection; 2) some climbing routes become impossible or top rope only as fixed protection is removed; 3) more clean climbing opportunities reappear; 4) climbing freedom would be further restricted by park review of all proposed new routes; and 5) park staff would need to inspect and remove fixed protection as it becomes unsafe.

CONTENTS

INTRODUCTION 1

PURPOSE AND NEED 1

Goal of Climbing Management 1

AUTHORITIES 1

Legislation 1

General Management Plan 2

NPS Management Policies: Recreation 2

Regulations 3

BACKGROUND 4

PARK AND ECOSYSTEM DESCRIPTION 4

VISITOR USE ANALYSIS 4

REGIONAL/NATIONAL CONTEXT 7

PLANNING AND MANAGEMENT HISTORY 8

CLIMBING HISTORY 8

CLIMBING AREAS 9

EXISTING FACILITIES 9

SEARCH AND RESCUE 10

LITERATURE REVIEW 10

ISSUES 12

WILDLIFE 12

VEGETATION 13

SOIL EROSION 13

GEOLOGICAL RESOURCES 14

VISITOR EXPERIENCES 15

COMMERCIAL USE/GROUP USE 16

CULTURAL RESOURCES 16

HUMAN WASTE 17

SAFETY 17

CHALK 17

WATER QUALITY 17

LITTERING 17

FIRE 17

MANAGEMENT OBJECTIVES 18

WILDLIFE 18

VEGETATION 18

SOIL 18

GEOLOGY 18

VISITOR EXPERIENCES 18

COMMERCIAL USE/GROUP USE 19

CULTURAL RESOURCES 19

HUMAN WASTE 19

SAFETY 19

WATER QUALITY 19
LITTERING 19
FIRE 19

ALTERNATIVES 20

ENVIRONMENTAL CONSEQUENCES 21
EFFECTS OF COMMON ACTIONS 21

PLAN REVIEW AND UPDATE 26

PUBLIC INVOLVEMENT 26

STAFF RESPONSIBILITIES 27

LITERATURE CITED 28

APPENDIX 1: GLOSSARY AND OVERVIEW OF CLIMBING TECHNIQUES 30

APPENDIX 2: LIST OF GROUPS AND INDIVIDUALS CONSULTED 38

LIST OF TABLES

Table 1: Acadia National Park Climbing Management Plan Alternatives. 22
Table 2: Effects of Acadia National Park Climbing Management Plan Alternatives A - E on Natural and Cultural Resources, Park Administration, Visitor Experience, and Economy. 24

LIST OF FIGURES

Figure 1: Acadia National Park and Vicinity 5
Figure 2: Acadia National Park Rock Climbing Areas 6

INTRODUCTION

PURPOSE AND NEED

The National Park Service (NPS) recognizes climbing as a longstanding and legitimate recreational activity in the National Park System (NPS 1991a). This climbing management plan, a supplement to the Resource Management Plan for Acadia National Park (NPS 1993a), arises from a service wide recognition of an increase in climbing and its effects on park resources and visitor experiences. Climbing is little different from other recreational uses in this respect; the NPS must determine when those effects become unacceptable. Advances in technology such as the use of power drills, an increase in bolting¹, and the diversification of climbing styles have contributed to the increase in effects. Acadia National Park (ANP) has experienced these changes throughout the 1980's and 1990's.

Goal of Climbing Management

The main goal of climbing management in ANP is to preserve and protect the natural and cultural resources of the park. A secondary goal is to provide high quality experiences for climbers and other visitors. All policy and actions will be derived from these goals. Appropriate, sustainable levels of climbing effects (physical, biological, and social) will be determined based on the best available scientific information. This plan begins the process of working toward these goals.

Specific objectives described later in this plan were developed to support these overall goals. The climbing community, other interest groups, and general park visitors will have a continuing role in climbing management through various public involvement processes.

AUTHORITIES

Authority and direction for managing ANP and its recreational use comes from the legislation and policy documents described below.

Legislation

Legislation creating the NPS in 1916 defined its purpose as "... to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 USC 1).

ANP was created in 1916 as Sieur de Monts National Monument. The initial legislation (39 Stat. 1785) mentions the history of the area, its topography, geology, flora, and fauna, as

¹ A description of technical climbing and a glossary are found in Appendix 1. Readers unfamiliar with climbing terminology should review this Appendix and refer to it as needed.

being of great scientific interest and specifically protects its features and objects from injury, destruction, or removal. In 1919, the monument was reclassified and renamed Lafayette National Park. This legislation (40 Stat. 1173) dedicated the park for the benefit and enjoyment of the people. The park was renamed Acadia in 1929 (45 Stat. 1083).

Natural resources are also protected by the Endangered Species Act (87 Stat. 884), the General Authorities Act (84 Stat. 825), the Redwoods National Park Act (92 Stat. 163) and others. Historical and cultural resources are protected by the Act for the Preservation of American Antiquities (34 Stat. 225), the Archeological Resources Protection Act of 1979 (16 USC 470), and the Historic Sites Act of 1935 (49 Stat. 66) among others.

General Management Plan

Two goals from the park's General Management Plan (GMP) (NPS 1992) are: 1) to improve visitors' understanding of their effect on park resources and 2) to develop carrying capacity objectives and measures for the park or parts of the park. These goals are appropriate for and applicable to climbing management. The NPS Visitor Experience Resource Protection (VERP) carrying capacity process (NPS 1993b) will be used to develop indicators and standards to manage climbing to protect park resources and visitor experiences.

NPS Management Policies: Recreation

NPS Management Policies (1988) state that the actions used to manage any recreational activity will be the minimum necessary to protect the resource and provide for visitor safety and enjoyment. These actions include general or special regulations, permit or reservation systems, use limits, and closures. In addition,

The National Park Service will manage recreational activities on an individual park basis. Depending on its effects on park resources and visitors, an activity that is entirely appropriate when conducted in one location may be inappropriate if conducted in another. Without statutory authorization, the Park Service will not allow a recreational activity in a park or in certain locations within a park if it would involve or result in any of the following:

1. inconsistency with the park's enabling legislation or proclamation, or derogation of the values or purposes for which the park was established
 2. undue interference or conflict with other visitor use activities
 3. consumptive use of park resources other than certain traditional activities specifically authorized by NPS general regulations
 4. unacceptable impacts on park resources or natural processes
 5. danger to the welfare or safety of the public, including participants
- (National Park Service 1988:8).

Regulations

The NPS Code of Federal Regulations (CFR) is used to manage climbing through general regulations and park specific regulations. Examples are prohibitions on the use of motorized drills, designation of specific access trails or campgrounds, prescribed colors or type of chalk and equipment to reduce visual effects of climbing, and closing areas to bolting or other activities (58 Federal Register 6/14/93). Applicable general regulations are:

36 CFR 1.5 Closures and Public Use Limits-allows for closures or restrictions or the development of special rulemaking.

36 CFR 2.1 (a) Preservation of natural, cultural, and archeological resources. Except as otherwise provided, the following are prohibited:

- (1) Possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state:
 - (i) living or dead wildlife or fish, or the parts or products thereof, such as antlers or nests
 - (ii) plants or the parts or products thereof
 - (iv) a mineral resource . . .
- (3) Tossing, throwing, or rolling rocks or other items . . . down hillsides or mountainsides . . .
- (5) Walking on or climbing . . . an archeological or cultural resource . . .
- (6) Possessing, destroying, injuring, defacing, removing, digging, or disturbing... cultural or archeological resources.

36 CFR 2.12 (a) Audio disturbances. The following are prohibited:

- (1) Operating motorized equipment or machinery . . .
 - (ii) that makes noise which is unreasonable, considering the nature and purpose of the actor's conduct, location, time of day or night, purpose for which the area was established, impact on park users or other factors which would govern the conduct of a reasonably prudent person under the circumstances.
- (3) In nondeveloped areas, operating any type of portable motor or engine . . . except pursuant to the terms and conditions of a permit.

A service wide general regulation on climbing is stalled because federal land managing agencies have been unable to agree, particularly regarding bolting in designated wilderness areas.

BACKGROUND

PARK AND ECOSYSTEM DESCRIPTION

Acadia National Park consists of about 35,000 acres on the coast of Maine in Hancock and Knox Counties. Most of the park is on Mt. Desert Island (MDI), with outlying portions on Isle au Haut, Schoodic Peninsula, and other coastal islands (see Figure 1).

Most rock climbing in the park takes place on coarse grained pink granite that intruded the landscape about 365 million years ago. This intrusion created a shatter zone around its edges in existing volcanic and sedimentary rock (Gilman et al 1988). The climbing area at Great Head is perhaps the only one in the shatter zone rather than in the intruded pink granite.

Continental glaciers overran the coarse grained pink granite more than once. The last, the Wisconsin glaciation, ran from northwest to southeast and ended about 10,000 years ago. Through a process called glacial plucking, the cliffs we see today were created as pressure melted ice at the bottom of the glacier. Water seeped down through fractures in the rock and re-froze, forcing off large sections of rock (Gilman et al 1988). Although the geologic story of the park is far more complex, the intrusion and glaciation provide the simplest explanation for the several small but fine climbing areas in the park (see Figure 2).

A moist climate supports a diverse flora in the ANP landscape. Vegetative communities include spruce-fir, hardwood, mixed forest, and subalpine. Wetlands range from deep lakes to cedar swamps and raised coastal bogs. ANP also supports a typical Northeastern U. S. assemblage of mammals and an exceptional abundance of bird species. Most of the shoreline of the park is exposed bedrock, supporting a rich intertidal flora and fauna.

VISITOR USE ANALYSIS

Acadia National Park is a popular tourist destination that had 2.7 million visitors in 1994. Visitation is concentrated at specific times and places. July and August are the busiest months, but records show increasing numbers in late spring and early fall as well (NPS 1991b). The trend of increasing park use is expected to continue.

ANP is within a one day drive of more than 65 million people in the New York-New England area. Manning (1987) found most park visitors were from this area, and that the park was usually their primary destination. The Otter Point/Otter Cliffs area was visited by 63% of park visitors (Manning 1987). Otter Cliffs is probably the most popular climbing area in the park.

Like general visitation, climbing also attracts people from all over the New York-New England area according to voluntary climber register data. Many climbers are from Massachusetts. Substantial local use takes place (MDI and other areas of Maine), and climbing walls exist at the MDI YMCA in Bar Harbor and the University of Maine in Orono.

FIGURE 1: ACADIA NATIONAL PARK AND VICINITY

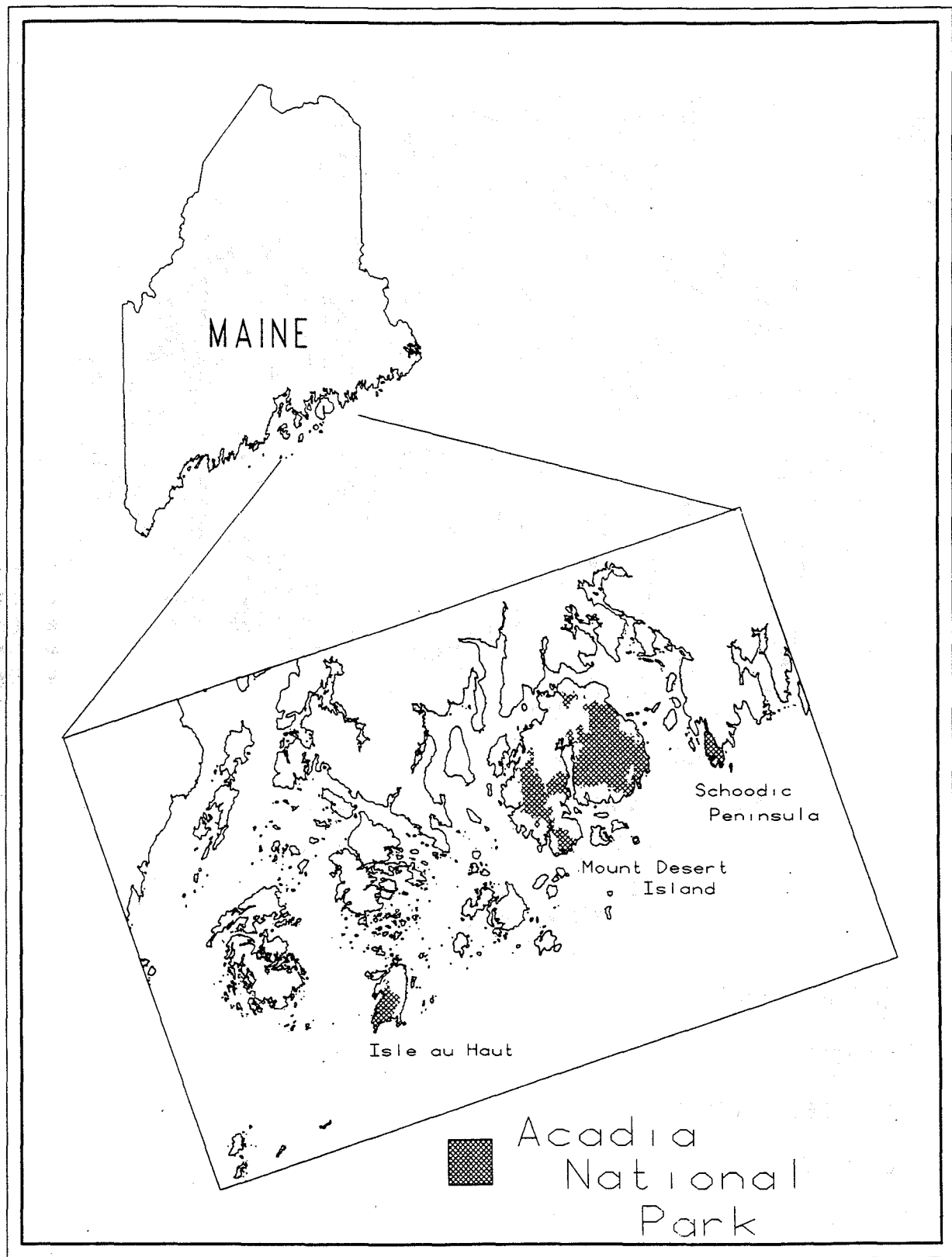
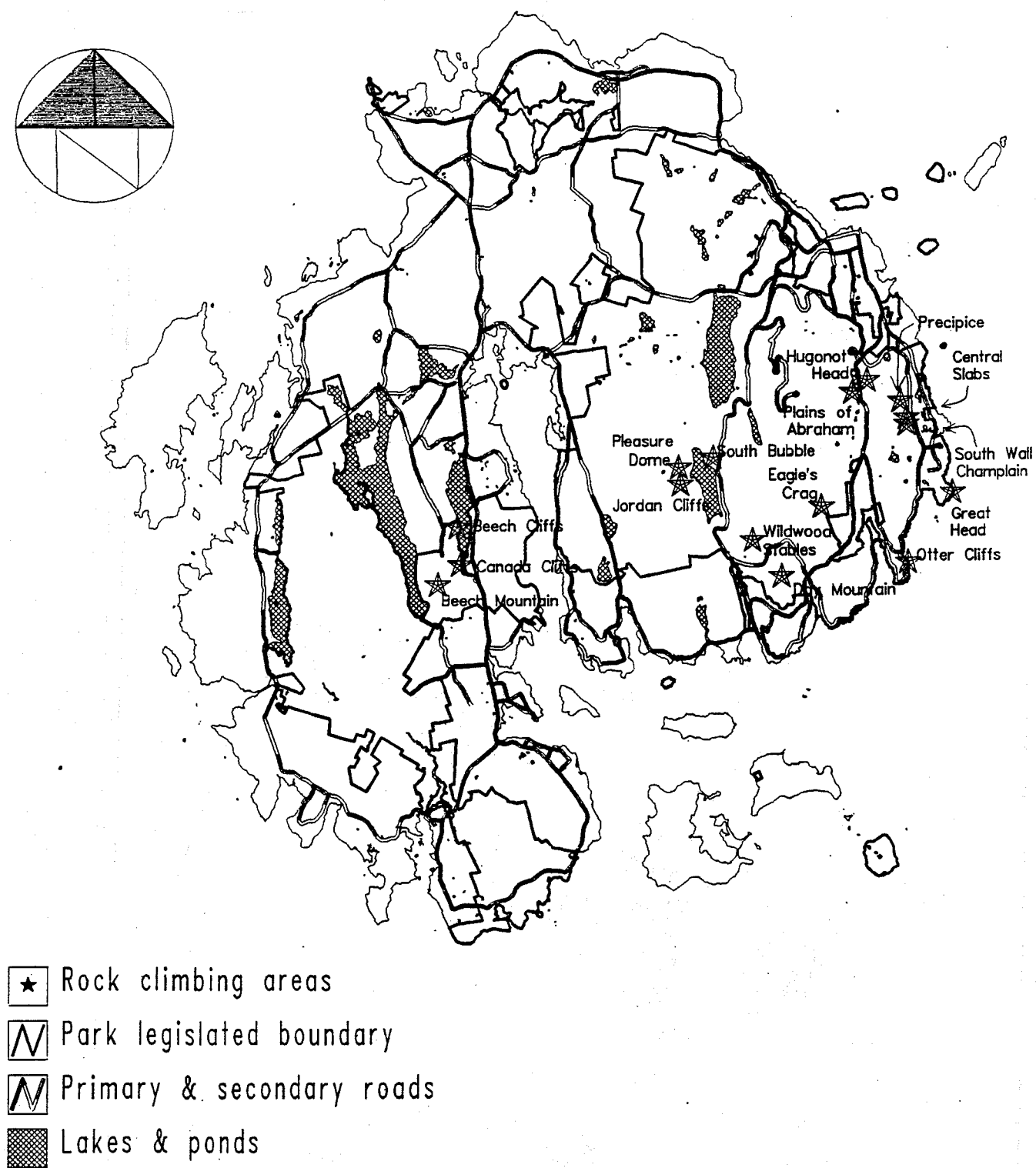


FIGURE 2: ACADIA NATIONAL PARK ROCK CLIMBING AREAS



Climbing walls are attracting new climbers to the sport. Some of these new climbers may hold views different from older, more traditional climbers. Climbers from Canada are also drawn to the park with some regularity.

Little or no reliable data on ANP climbing use levels is available. Voluntary climber registers, which underestimate use because not all climbers sign in, showed that 2,459 climbers used Otter Cliffs between April and December 1994. Nearly one third of those were in organized groups (739 people/49 groups). Five organizations accounted for two thirds of this organized group use. Licensed commercial operators accounted for 404 climbers, or one sixth total use at Otter Cliffs. Register data show 1,242 climbers at the South Wall of Champlain Mountain over the same time. Only about one tenth of this was organized group use (116 climbers/10 groups). Licensed commercial operators accounted for more than one quarter of this organized group use. This data must be treated with caution and is most useful for trend analysis.

Commercial climbing operations in ANP were reestablished in 1994 after several years absence. Four commercial use licenses were issued solely for climbing in 1994. One other license included climbing as one of several activities conducted in ANP. All but one of these five operators used the park extensively for climbing. Two of them operated directly out of Bar Harbor. Other groups climbing in ANP include summer camps, university outing clubs, scouts, and explorer posts. Many of these other groups should probably have commercial use licenses. Group use may be contributing greatly to the increase in climbing at ANP.

REGIONAL/NATIONAL CONTEXT

Acadia National Park seems to have developed into a climbing destination during the 1980's, probably due to the nationwide increase in the popularity of climbing and occasional publicity. Publicity about climbing areas in the park can influence use. For example, an article published in *Crux Northeast*, (a climbing magazine) in early 1994 reported an excellent 5.10 climb at Eagles Crag, a small, locally known climbing area. Saturday of Memorial Day Weekend 1994, Eagles Crag had about 40 climbers, far more than usual, according to local climbers.

Most of the rock climbing sites in the MDI area are within the park. Otter Cliffs and Great Head are nationally significant as premier sea cliff climbing areas in the United States. No other areas are comparable in scale or in the variety of climbs available, or so easily accessible. Great Head provides more difficult climbs for advanced climbers while Otter Cliffs offers climbs for all skill levels, including beginners, although beginning climbing routes are limited in number. West Quoddy Head State Park in eastern Maine also provides some less well known sea cliff climbing for highly skilled climbers.

The nearest other climbing areas to Mount Desert Island are in Clifton, Maine and Camden, Maine. The area in Clifton provides an interesting contrast to climbing areas in ANP. It is privately owned, used by mostly Maine climbers, and has more highly graded routes than ANP. With few cracks and more face climbs, most routes at Clifton require bolts for

safety. While climbers recognize the necessity of bolts to climb here, concerns about excessive bolting also exist within the climbing community (Jon Tierney, pers. comm.). Climbing also occurs in Maine at Baxter State Park, several other state parks, and private areas.

The most popular climbing in New England is in the White Mountains of New Hampshire. Climbing here is more extensive and varied than at ANP, with much longer and more difficult routes.

PLANNING AND MANAGEMENT HISTORY

Current management practices include monitoring use through a self-registration system and closing the Central Slabs and Precipice Wall areas of Champlain Mountain to climbing to protect nesting peregrine falcons (Falco peregrinus), a federally listed endangered species. This seasonal closure has been made every year since 1988. From 1991-1995, peregrine chicks were successfully reared on the Precipice Cliffs, and the closure has lasted from March through August. Climbers have been cooperative and respectful of the closure. The popular Precipice hiking trail was also closed concurrently since its route is in the nesting area.

Dogs were prohibited from climbing areas in 1994 based on the premise that a dog at a climbing area is essentially an unattended dog while its owner is climbing. Unattended dogs are prohibited throughout the park. Climbing or bouldering is also prohibited on carriage road bridges, and the manufacturing of holds is prohibited by the Code of Federal Regulations.

Guiding and climbing instruction services have been available intermittently since 1975. As already mentioned, five commercial use licenses for climbing were issued in 1994. These groups are managed by ANP through group size limits (maximum 12 persons, including instructors) and restrictions on the locations and times of permitted climbing.

CLIMBING HISTORY

The history of climbing at ANP is not well documented. The following information comes from the third edition of "A Climber's Guide to Mt. Desert Island," by Geoffrey Childs (no date). This guide was probably last published in 1979.

Fritz Weissner, an internationally well-known climber, climbed on the island with other members of the Appalachian Mountain Club in the 1920's. Routes were established at Otter Cliffs and on the walls of Champlain Mountain, today's most popular areas. It is likely that other climbs on South Bubble, Jordan Cliffs, and Beech Cliffs were made at this time also.

From the 1940's to the late 1960's, most climbing was by local college students and other local climbers and many new routes were established. Even in the late sixties and early

seventies when climbing activity was exploding elsewhere, Childs notes that climbing on MDI was still mostly by local residents and limited in scope. From 1975 on however, more difficult routes were established each year, and probably more climbers from out of the local area frequented the cliffs of MDI. Childs mentions overcrowding as an unheard of experience.

Childs also noted there were few piton scars and only five bolts on MDI. Concerning this type of climbing, he offers the suggestion that ANP seems like a reasonable alternative to the "mindless havoc" elsewhere. This may no longer be the case. According to one local climber who has been climbing here since 1976, the number of bolts has increased greatly (Tom Silocka, pers. comm.). Most of this has probably occurred in the last 5-7 years. The park has no current or past inventory of bolts.

By the mid 1980's and continuing into the 1990's, local climbers noted increasing use of ANP. Groups from all over New England (universities, summer camp groups, etc.) were coming to the park to climb and the heavy use was most noticeable at Otter Cliffs on weekends. We suspect local climbers began dispersing to less busy sites at this time because of the increased use.

Other changes reported by local climbers over the past 15 years include the use of rappel stations on the South Wall and other areas. They also noted an increase in soil erosion on access trails, and soil erosion and loss of belay trees at Otter Cliffs.

A new or updated climbing guide for the ANP area has not been published since Childs, although ANP has received publicity in magazine articles and regional guidebooks for New England.

CLIMBING AREAS

The two main areas at ANP are Otter Cliffs and Champlain Mountain (see Figure 2). At Champlain Mountain, the South Wall and the Central Slabs are the two walls climbed most often. The South Wall has the highest routes, with many two and three pitch climbs up to 250 feet high. Otter Cliffs is about 60 feet high with easy top roping options making it popular with instructional groups.

Many smaller climbing areas are found throughout the park. Some have only recently been developed. Newer areas receiving more use are Great Head, Eagles Crag, and Canada Cliffs. Popular bouldering areas include the shore from Sand Beach to Otter Cliffs, Blackwoods, and Park Loop Road bridges.

EXISTING FACILITIES

Existing facilities used by rock climbers at ANP are roads, parking areas, and maintained hiking trails providing access to areas. No toilets are maintained specifically for climbing. Abandoned hiking trails and trails developed through routine climber use also provide

access to some cliffs. ANP has not installed and does not maintain any fixed protection for climbing.

SEARCH AND RESCUE

ANP is responsible for search and rescue (SAR) missions within its legislated boundary. A SAR cache is maintained at headquarters and a SAR vehicle is equipped for immediate response.

The number of trained and available personnel for SAR incidents varies. Although park staff trains in search and rescue every year, it sometimes lacks the lead climbing capability to reach potential victims. The well trained, equipped, and dedicated volunteer Mount Desert Island Search and Rescue (MDISAR) group is available for help, but they also have few lead climbers. For a serious incident on a difficult climb, the park might need to recruit the best local climbers for assistance. MDISAR and ANP can each independently execute vertical rescues, and will generally work together on major incidents.

Serious climbing incidents at ANP have been few. Most accidents in the park involve scramblers and hikers. Over the past twenty years however, three climber deaths and perhaps a dozen other climbing accidents with injuries have been reported. Three serious incidents have taken place the past two years. Minor incidents appear to have become more common recently also.

LITERATURE REVIEW

Over the past thirty years a vast amount of research has been conducted about recreational effects on natural resources. Hammitt and Cole (1987) and Kuss et al (1988) provide comprehensive summaries of effects to soil (compaction, moisture, erosion, etc.), vegetation (amount, composition, condition), wildlife (habitat modification, alteration of behavior, reproduction, displacement, species composition and structure), and water (nutrients, bacteria, suspended matter, and turbidity etc.). Some effects from rock climbers are little different from those of other recreationists, such as access trail erosion and campsite vegetation losses. Other effects may be quite specific, like those on raptors and other wildlife, cleaning of vegetation on routes to secure better holds, erosion or vegetation loss at belay stations, and damage to rock from bolting.

Little research has focused on the effects of rock climbers. The few exceptions are studies of human disturbance to birds of prey, especially peregrine falcons. Snow (1972) found rock climbing near nest sites causes abandonment of peregrine nests. However, in Yosemite National Park, Asay and Davis (1984) reported a successful nest with climbers within 200 meters of the nest. Lanier and Joseph (1989) report four examples of peregrine-people interactions in New Hampshire. In one of these, climbers apparently kept a female off the nest enough in early spring to cause nesting failure. This climbing route was only a few feet from the nest.

A few authors have studied cliff communities. Maser et al (1979) concluded that cliffs in forested habitats were important to a variety of wildlife species. Ward and Anderson (1988) found cliff sites in south central Wyoming to have a higher diversity of vegetation. This diversity in vegetation was associated with an increase in small mammal and bird diversity and abundances as compared to control sites. Other studies have shown cliffs to have higher diversity of vertebrates than similar areas without cliffs (Reitan 1986a, 1986b, Rumble 1987, Hauri 1988).

ISSUES

WILDLIFE

Climber and hiker disturbance of peregrine falcons is now controlled through area closures. If peregrine numbers increase, new nest sites may be established on other cliff faces in the park. Eagle Cliffs on St. Sauveur Mountain overlooking Valley Cove was the site of an active peregrine falcon nest as late as the mid 1950's (Paul Favor, former Chief Park Naturalist, in correspondence files, Acadia National Park). Jordan Cliffs, the site of peregrine releases in the mid 1980's, and Beech Cliffs, are also potential nesting locations, but many others are possible, including sea cliffs such as Otter Cliffs.

If the peregrine falcon is removed from endangered and threatened status by the U.S. Fish and Wildlife Service, ANP will reconsider area closures. However, the Peregrine Falcon Management Plan (National Park Service 1994a) for ANP recognizes that continued successful nesting may not be possible without recreational closures because of the peregrine's sensitivity to human disturbance.

Bald Eagles (Haliaeetus leucocephalus) are now listed as threatened by the U.S. Fish and Wildlife Service but the state of Maine still lists them as locally endangered. Eagles nest on Sheep Porcupine Island, and Bald Porcupine Island is part of the nesting territory for that pair of eagles. Both islands have potential climbing routes on sea cliffs. The Bald Eagle Management Plan for ANP (National Park Service 1994b) recognizes disturbance as one of several possible reasons for the poor productivity of the Frenchman's Bay eagle population. The park has not officially closed these islands during the nesting season, but recommendations for island management are forthcoming in the park's Island Inventory Report (Mittelhauser, Connery, and Jacobs in prep. 1996). How much climbing use the islands of Frenchman Bay receive is not known, but the potential for conflict exists. New route development is a concern in these areas.

Another species of concern is the black guillemot (Cepphus grylle). Black guillemots currently use Otter Cliffs, Bald Porcupine Island, and an area of small cliffs just south of Sand Beach for nesting. Of these three areas, Otter Cliffs is climbed most often. Climbing and guillemot nesting occur concurrently at Otter Cliffs. Observations by park staff and climbers suggest guillemot reproduction may be affected. This is one of a few areas statewide with easy access to view or study their nesting. According to the Maine Department of Inland Fisheries and Wildlife, black guillemot populations are healthy now statewide (Brad Allen, pers. comm.). If their status changes, climbing on Otter Cliffs or these other areas may need to be restricted.

The park lacks the baseline information needed to decide if other cliff nesting birds, mammals, amphibians, reptiles, or invertebrates might require special protection or be affected unacceptably by climbing. Some studies discussed in the literature review suggest the potential for greater biodiversity fauna in cliff habitats. Further study is needed.

VEGETATION

Some climbing areas in ANP have been surveyed for the presence of state listed plant species of special concern. There are no known federally listed threatened or endangered plants in the park. Rock cliff areas and their bases that are not exposed to much sunlight are rich in mosses, lichens, and ferns. These plants are sensitive to visitor foot traffic.

Route cleaning - the comprehensive and systematic removal of soils and vegetation from new and existing climbing routes, including wire brushing lichens from the rock face - is a concern because little is known about cliff side plant communities. Effects of route cleaning are greatest with new route development. Existing routes were cleaned long ago, and what little maintenance occurs on them is of less concern.

Climbing areas where use has recently been established, such as Canada Cliffs, are subject to more vegetation damage along access routes and at staging areas. Research shows that in many environments, most of the damage to vegetation occurs from the first few users (Kuss et al 1990). Climbers have already cut tree limbs and brush at Canada Cliffs and trails are developing where none existed before. These cliffs are shady and populated with the vegetation sensitive to trampling as noted above.

The effect of all visitors on ground cover at Otter Cliffs is evident and restoration work combined with visitor management and education is needed. Social trails are continuing to develop from climbers and others using forested areas for toilets.

Because of the nature of the terrain and the boulder field, little additional effect to the ground cover of the Champlain Mountain climbing areas is expected. Belay trees, rappel stations, and walk-offs are well established and most damage may have already taken place. Nevertheless, as the second busiest climbing area in ANP, questions about whether the current effects are acceptable and whether they are increasing must be answered.

SOIL EROSION

Only one main access trail now provides access to Otter Cliffs from the Shore Trail. This short trail receives heavy use from climbers repeatedly going back and forth between the cliff and the nearby parking area, and continues to erode. Erosion on the cliff top and around belay trees is severe and will eventually cause tree loss. The trees can probably not continue to serve as climbing anchors and survive without restoration; it may already be too late to save them.

Access to the Champlain Mountain climbing areas is by one main trail (just past the Precipice parking area) and another less frequently used (from the Precipice parking area to the Central Slabs). The main trail is easily followed and on mostly level ground or boulders, so little soil erosion is occurring. The upper part of this trail goes through the boulder field, and some work was done recently by climbers that improved the treadway among the rocks. More trail work is needed at the base of the cliff beyond the route known as Chitlin's Corner, where the work by climbers ends.

Canada Cliffs has the potential for severe erosion problems if use increases. However, the two bolted cliff faces closest to the Lurvey Spring Road are probably accessible with little effect. Access trails are short, the terrain is not steep, and the vegetative communities are more resistant to trampling. However, the area to the north (toward Echo Lake) is a damp and steep boulder field conducive to lush growth of ferns, mosses, and lichens. These soils and associated plants are especially vulnerable to erosion and trampling, and effects are already noticeable. Development of new routes in this area is a concern because of the potential for increasing effects on natural resources from increased use.

GEOLOGICAL RESOURCES

The main concern for geologic resources is fixed protection. We will use the term fixed protection to refer to bolts, pitons, or any other hardware permanently attached to rock. Fixed protection is a permanent artificial alteration to a natural resource feature to accommodate use. Fixed protection installation damages rock. Climbers use fixed protection to protect face climbs and provide anchors for rappel stations where natural protection such as cracks and trees are not available. The use of fixed protection for rappel stations may sometimes help protect soils and vegetation by concentrating use and avoiding effects around belay trees and in walk-off routes.

No service wide general regulations for fixed protection exist. New fixed protection is now prohibited in wilderness areas in Joshua Tree National Monument, and regulated by permit in other areas of the Monument according to the park's recently completed climbing management plan (National Park Service 1993c). The preferred alternative in the draft Devil's Tower National Monument Climbing Plan includes no new fixed protection and replacement of existing fixed protection by permit (National Park Service 1994c). El Dorado Canyon State Park in Colorado has zoned its cliffs; in some areas fixed protection is prohibited and in others it is regulated by permit with an advisory committee (El Dorado Canyon State Park 1991). All new fixed protection in the Mohonk Preserve, a private area in New York, has been prohibited (Tom Schauer, pers. comm.).

No designated wilderness areas exist in ANP. However, park climbing areas are very small in comparison to many large western parks. All are in undeveloped areas, the natural zone as described by the GMP. The visual effect of fixed protection to the experiences of other visitors is a concern in these natural areas despite the infrequent use. Fixed protection is much more visible on Acadia's small cliffs. Park managers must be aware of the danger in allowing small incremental changes of any kind to occur which seem minor; they may go unnoticed until reaching a critical and perhaps undesirable mass. The potential effects of fixed protection are greatest in areas that have none now as new route development continues unregulated. Maintaining the naturalness and wildness of the park and its cliffs is an important goal.

Also of concern is the use of power drills to install or replace fixed protection. The Access Fund, a national climbers' organization, supports the position that power drills are not acceptable in undeveloped sections of NPS areas, and that restrictions in their use will generally result in less fixed protection and new route development.

Canada Cliffs, Great Head, Eagles Crag, and probably a few other areas not climbed often have the potential for more fixed protection. Otter Cliffs has no fixed protection and several local climbers believe it should remain that way, except possibly for anchors to protect belay trees. The South Wall of Champlain probably has limited opportunities for further fixed protection. An inventory of existing fixed protection in park climbing areas is needed.

VISITOR EXPERIENCES

Preserving high quality visitor experiences is an important goal of the park's GMP. Virtually no information is available from climbers or other visitors about climber preferences and attitudes or interactions among climbers and between climbers and others.

The most pressing experience issue is the popularity of Otter Cliffs with climbers. Climbing at Otter Cliffs is unique, accessible, and easy to top rope for beginners, especially groups. One group can quickly occupy many easier routes and monopolize them for a long time. Summer weekends and holidays are the busiest times, and we suspect climbers not in groups are being forced to move to other areas. In addition, a perception of crowding may exist for climbers or for visitors observing the cliff from the Park Loop Road. Fifty or more climbers may be concentrated in a very small cliff top area with many ropes strung across the top and over the edge. Distractions are many and safety may also be an issue, although no specific incidents can be related to this. Is this the kind of experience climbers want? Is noise an issue? We suspect group use (and of course, general overuse) also contributes greatly to soil erosion and social trail development on the cliff top. What are the ecological and social carrying capacities of the site and which one is reached first? Is the capacity exceeded already? Are any of these problems surfacing at the South Wall also? Many questions are unanswered.

The view of Otter Cliffs from the Park Loop Road is distinctive and often photographed, perhaps one of a few images defining the park for many visitors. What do other park visitors think of the crowds of climbers on Otter Cliffs? A 1991 visitor survey at Joshua Tree National Monument found that 80% of the respondents who observed climbing found it enjoyable to watch (National Park Service 1993c). Is it the same at Acadia?

Another important visitor experience issue is the diversity of climbing styles. As more routes are established with fixed protection, opportunities for clean climbing (also known as natural or traditional) are reduced. Future climbers with more advanced skills may ascend these routes without fixed protection, much as today's climbers do when compared with earlier climbers. The climbing community is divided on this issue - there are pure traditionalists, anything goes sport climbers, and a range of moderates in between. What kind of climbing experience(s) or style(s) are best for Acadia National Park? The visibility of fixed protection (including bolts, slings, and chains) and chalk marks may also be an intrusion to the experience of other park visitors.

COMMERCIAL USE/GROUP USE

The three licensed commercial operators who used the park extensively in 1994 and 1995 have a strong commitment to working cooperatively with ANP on climbing issues. Restrictions placed on them regarding times and locations of outings will be reviewed at the end of 1995 based on a season's experience. We have requested they avoid Otter Cliffs or use it at less busy times to reduce congestion. Their presence, however, may provide safety and education benefits for the park. Some balance between their contribution to congestion and their education of other climbers may be possible.

Two other issues with commercial and group use of the park are related. First, much climbing instruction/guiding is given as part of youth group camps, university outing clubs, and similar organizations. The park is unaware of the existence of many of these groups. Sometimes climbing may only be a part of the activities offered while visiting the park. If the service is provided for a fee however, an incidental business permit is required, even for a nonprofit group. Education of these groups is important to help reduce their environmental effects, and management of them is needed to provide quality climbing experiences, especially at Otter Cliffs.

Second, commercial use of all parks is regulated through either multiple incidental business permits or a limited number of concessions contracts. Both methods allow for multiple activities to be covered in the agreement. A concession contract limits provision of a particular activity or activities in a park to one or a few parties. At some point, efficiency will dictate whether ANP puts a concession contract out to bid for climbing. One concession contract for climbing is easier to manage than 10-20 incidental business permits. No concessioner service is used now to manage commercial climbing, but the need may arise if more climbing guide/instruction services develop or if incidental business permits are enforced strictly. A review of all commercial recreation activity in ANP is underway. Management decisions based on this review would affect climbing, hiking, biking, bus tours and all other forms of recreation.

CULTURAL RESOURCES

ANP has historic carriage road bridges and other road bridges that are suitable for bouldering because of their granite block construction. Bouldering is practicing climbing techniques by traversing rock faces near ground level rather than ascending them. It is done with climbing shoes and often chalk, and without ropes or climbing hardware.

Bouldering on the historic carriage road bridges, which are on the National Register of Historic Places, is prohibited by the Code of Federal Regulations. It is not known if bouldering affects the physical structure of bridges. It might, however, interfere with other visitor enjoyment and/or compromise the historical integrity of bridges. Park Loop Road bridges are now eligible for the National Register of Historic Places, and as such, warrant the same protection by law as if they were on the register.

HUMAN WASTE

Human waste is now an aesthetic problem and a possible health problem at Otter Cliffs. Using vegetated areas for toilets has also caused extensive social trail development. High visitor use and limited space for dispersing impact have made this problem acute. Climbers may not be aware of the convenient and easy access to the Fabbri picnic area restrooms or that urinating at the base of the cliff is preferable to contributing to the social trail problem. More education is needed. Human waste might not be a problem at other locations yet, but the greatest potential is at the South Wall, the other heavily used area.

SAFETY

While the NPS is responsible for visitor safety, it does not regulate climber safety. No service wide standards for commercial climbing instructors and guides exist; for example, no certifications are required and there is no set ratio of instructors to clients. ANP requires clients of licensed commercial groups to wear helmets and instructors are expected to follow standards of safety applicable to the sport. Current commercial licensees have expressed concern about the safety practices of other groups, and have reported many instances of helping them and others from potentially dangerous situations.

CHALK

Chalk is not believed to affect resources as frequent rains wash away the residue. Other parks have expressed a need for studying the effects of chalk use on vegetation.

WATER QUALITY

Water quality is probably not adversely affected, although no data support this conclusion. Champlain Mountain is the main area of concern, because it is part of an extensive watershed. Otter Cliffs has no watershed.

LITTERING

Based on recent observations, littering of climbing areas is no worse than areas not climbed and is probably better. Monitoring climbing areas for litter should continue.

FIRE

The risk of fire caused by climbers is low. ANP does not normally experience many wildfires annually. Ninety eight percent of the fires that do occur are human caused. High concentrations of climbers, especially during periods of high fire danger, can be expected to increase the risk of a wildfire in ANP.

MANAGEMENT OBJECTIVES

The objectives listed below are derived from the major climbing management goals of protecting natural and cultural resources and providing high quality experiences for climbers and other visitors. Additional specific objectives may be added in the future as more information becomes available. ANP will manage climbing areas independently. Each may have a different set of management prescriptions to meet these objectives. The amount of sustainable climbing use for each area will vary.

WILDLIFE

The NPS will protect all federal and state listed threatened and endangered species, and other species of concern, and their habitat.

The NPS will minimize the effects of climbing on wildlife activity, such as migration patterns, nest and den selection, feeding, resting, and reproduction.

VEGETATION

The NPS will protect all federal and state listed threatened and endangered species, and other species of concern, and their habitat.

The NPS will minimize the effects of climbers on vegetation (for example, trail development, trampling, route cleaning, belaying or other practices).

SOIL

The NPS will stabilize soil erosion effects caused by climbers.

GEOLOGY

The NPS will minimize climber effects to geological resources.

VISITOR EXPERIENCES

The NPS will provide unique high quality experiences for climbers at Otter Cliffs and throughout the park while protecting the experiences of other visitors. The NPS will reduce the visibility of climbers and their equipment including chalk, fixed protection, and rappel stations.

COMMERCIAL USE/GROUP USE

The NPS will manage commercial climbing use and group use to minimize their effects on other climbers and park resources and provide a safe way for the uninitiated to enjoy the park through climbing.

CULTURAL RESOURCES

The NPS will preserve and protect the integrity of carriage road bridges, Park Loop Road bridges, and other cultural resources from effects by climbers.

HUMAN WASTE

The NPS will reduce human waste impacts from climbers to water quality, visitor safety, and aesthetics.

SAFETY

The NPS will promote safe climbing practices.

WATER QUALITY

The NPS will minimize alteration to the chemistry and sedimentation load of waters affected by climbers.

LITTERING

The NPS will maintain the current low level of litter at climbing areas.

FIRE

The NPS will minimize the risk of wildfires caused by climbers.

ALTERNATIVES

Seven issues previously described (wildlife, vegetation, soil erosion, geological resources, visitor experiences, commercial use/group use, and cultural resources) are of greatest concern. These issues were reconfigured for greater clarity as new route development (defined by route cleaning or fixed protection installation), commercial use, group use, individual use, cultural resources, and natural resources. Five alternatives (A-E) for climbing management are presented in Table 1 for these reconfigured issues. These climbing management alternatives range from a no action alternative (existing management) through a continuum of increasing restrictions.

Three management alternatives were considered and rejected. "No climbing" was inconsistent with National Park Service policy supporting climbing as a legitimate recreational use. "Unmanaged climbing" would not protect park resources and visitor experiences, given current knowledge of existing conditions. An alternative of "education only", focusing on low impact practices, would not be sufficient to manage climbing based on experiences with other user groups. Education is important as a supplement to any preferred alternative.

Many non-controversial actions such as inventory, monitoring, research, education, and rehabilitation should be considered common to alternatives described in Table 1. These actions are listed below.

Educate climbers through a climber brochure, posters, and on-site signs. Encourage clean and low impact climbing including camouflaging fixed protection and using natural colored chalk and slings. Educate climbers to reduce effects on soils and vegetation, especially from route cleaning.

Inventory fixed protection and begin annual monitoring.

Inventory climbing areas and access trails for federal and state-listed threatened and endangered species, other species of concern, and special habitats.

Monitor climbing use with the best available methods.

Study biodiversity of cliff areas in the park in comparison with other habitats.

Study climber and other visitor attitudes and interactions.

Restore severely impacted climbing areas (trails, vegetative restoration, belay trees etc.), where and when possible and manage to prevent subsequent effects.

Seek funding support from cooperators such as the Access Fund.

Establish an advisory committee headed by Friends of Acadia (FOA) and consisting of FOA and park staff and local climbers to make recommendations on climbing issues.

ENVIRONMENTAL CONSEQUENCES

In this section, the effects of actions common to most alternatives (see page 20) are described first. Then the effects of each alternative A - E on natural resources, cultural resources, visitor experiences, economy, and park administration are described in Table 2.

EFFECTS OF COMMON ACTIONS

Education efforts will reduce some effects of climbers on soils, vegetation, rocks, other climbers, and other park visitors.

Inventory and monitoring of fixed protection will allow detection of changes in this activity and resulting effects on the rock and visitor experiences.

Inventory of federally and state-listed threatened and endangered flora and fauna will better enable managers to protect these populations from climbing.

Biodiversity studies would inform managers of the importance of cliff habitats for park flora and fauna compared with other habitats.

Monitoring climbing use levels may allow managers to relate use levels to climber effects on natural resources and the visitor experience, providing background information if use limits are needed in the future.

Social science studies of climbers and other visitors will provide quantitative information to managers about visitor knowledge, attitudes, behavior, and preferences to help manage climbing.

Rehabilitation of soil and vegetation in climbing areas and subsequent management will allow climbing to continue without additional effects.

Funding support from cooperators will allow further implementation of actions recommended in the climbing plan.

An advisory committee for climbing issues will provide perspectives of climbers and others and allow for open discussion and public participation.

Protecting threatened and endangered species or species of concern is required by law or policy; actions taken for this purpose may take many forms but the result is the same - species preservation and increased biodiversity.

The cumulative effect of all these actions on park administration is considerable; funding and staffing levels will determine what actions are taken and when.

TABLE 1: ACADIA NATIONAL PARK CLIMBING MANAGEMENT PLAN ALTERNATIVES.

ISSUE	ALTERNATIVE A: Existing Conditions	ALTERNATIVE B	ALTERNATIVE C: PREFERRED	ALTERNATIVE D	ALTERNATIVE E
NEW ROUTE DEVELOPMENT/ FIXED PROTECTION	No restrictions on new route development or fixed protection	All proposed new routes that include route cleaning or fixed protection installation, and all replacement or removal of fixed protection, would be submitted to a climbing advisory committee for review. The committee would recommend action to the park superintendent who makes the decision. New routes reviewed by committee may include routes of any degree of difficulty, top rope climbs, and alterations to existing routes. Proposals for new routes would be considered from all park areas. If approved, a permit would be issued for the new route and use of a power drill. Climbers install all fixed protection. New routes not cleaned and not using fixed protection may still be established without approval or a permit.	Same as Alternative B except new route proposals are limited to nine cliffs where route cleaning and fixed protection installation have already commonly occurred: Canada Cliffs, Great Head, South Wall, Central Slabs, Beech Mountain, Eagles Crag, North Bubble, Precipice, and Enoch Mountain. Removal of fixed protection from any area also will be reviewed by the committee. The park reserves the right to permit installation of fixed protection at any site for resource preservation and continued climbing. For example, top anchors or belay/rappel stations to reduce the effects of walk-offs and protect belay trees may be appropriate under some circumstances.	Under Alternative D no new fixed protection would be allowed. Replacement fixed protection would be allowed only at the nine cliffs listed in Alternative C. The committee would review proposals for replacement or removal of fixed protection. If approved, a permit would be issued for the use of a power drill for replacement. All new route cleaning would be prohibited. New routes not cleaned and not using fixed protection could still be established without approval or a permit. The park reserves the right to permit installation of fixed protection at any site for resource preservation and continued climbing. For example, top anchors or belay/rappel stations to reduce the effects of walk-offs and protect belay trees may be appropriate under some circumstances.	All new and replacement fixed protection would be prohibited. Existing protection would be allowed to wear out and removed by climbers or park staff when unsafe. All new route cleaning would be prohibited. New routes not cleaned and not using fixed protection could still be established by approval of the park superintendent. No committee would be established.
COMMERCIAL USE	Continue an incidental business permit program with limited enforcement.	Strict administration and enforcement of an incidental business permit program including cost recovery for monitoring.	Manage all commercial climbing operations through one or more concession contracts ¹ .	Same as Alternative C.	Same as Alternative C.
INDIVIDUAL USE	No permits or restrictions.	Establish a permit system without restrictions on use. The purposes of the permit would be to educate and climbers and obtain information on levels and patterns of climbing use.	Establish a permit/ reservation system to: 1- administer a carrying capacity at climbing areas as needed based on ecological or social standards, 2 - educate climbers, and 3 - gather use data. Individual, commercial, and group users would be accommodated in a fair manner. If climbing use in the park continues to increase park managers expect a permit system would eventually be needed to protect park resources and visitor experiences. In the near future, climbing would be managed for individuals as in Alternative A. Within the next three years, the park would evaluate the need for a permit system for individuals.	Same as Alternative C.	Same as Alternative C.

¹ A review of all commercial use of the park is underway. The existing level of commercial use would be difficult to manage under the incidental business permit system. A concession operation is seen as the most efficient, long range solution. In the interim, the strict administration and enforcement of the incidental business permit system is the preferred alternative.

TABLE 1: ACADIA NATIONAL PARK CLIMBING MANAGEMENT PLAN ALTERNATIVES.

ISSUE	ALTERNATIVE A: Existing Conditions	ALTERNATIVE B	ALTERNATIVE C: PREFERRED	ALTERNATIVE D	ALTERNATIVE E
GROUP USE	No permits or restrictions.	Establish a permit system for all groups without restrictions on use. Disperse group use through education to less used areas. The purposes of the permit would be educate climbers and obtain information on levels and patterns of climbing use.	The intent under this alternative would be the management of organized climbing groups, commercial and noncommercial. Group Size: Organized groups would be defined by a minimum size of six persons including any guides or instructors. Maximum group size with instructors or guides would be 12. Permits: The park would establish a permit/ reservation system to: 1- administer carrying capacities at climbing areas as needed based on ecological or social standards, 2 - educate climbers, and 3 - gather use data. All groups meeting the above definition must obtain a permit to climb anywhere in the park. Reservations would only be required for Otter Cliffs as described below. Any carrying capacities would be coordinated with management of individuals. Reservations, Otter Cliffs¹: Group reservations for Otter Cliffs will be required from Saturday of Memorial Day weekend through Labor Day. Reservations may be made only for half-day periods (one per day per group) from sunrise to 1300 hours and from 1300 hours to sunset. Each half-day will be reserved for one group only. Half-day reservations may be extended to a full day on the day before the reservation if space is available. Organizations are limited to the equivalent of 14 full days of climbing between the above dates. Reservations at other areas would not be required, but may be in the future.	Same as Alternative C.	Same as Alternative C.
NATURAL RESOURCES/ CLOSURES	Close the Central Slabs and the Precipice or other active peregrine falcon nesting habitat as needed.	Same as Alternative A.	ANP climbing areas would be closed according to NPS regulatory procedures just as any other site in the park would be closed. Climbing sites would be closed as needed based on available scientific information, preferably quantitative information from research or monitoring programs, that shows adverse effects to natural resources such as soils, flora, fauna, or rocks. For all closures, the quality of the resources affected, such as unique resources like threatened and endangered species, special communities, or unusual geological formations, would be an important consideration. A second important consideration would be the quantity of the resource affected—how widespread is the change that has occurred, even if it affects only a common resource throughout the park or region. Closures would be evaluated regularly for their continuing need and all other options for resource protection would be considered before closure. Areas closed to climbing might be closed to other visitors depending on their relation to the resource effects occurring.	Prohibit climbing at some cliffs temporarily (up to five years) for baseline research, preservation, and to protect habitat for expanding populations of raptors.	Prohibit climbing at some cliffs permanently for baseline research, preservation, and to protect habitat for expanding populations of raptors.
CULTURAL RESOURCES/ CLOSURES	Prohibit climbing on all carriage road bridges.	Same as Alternative A.	Prohibit climbing on all carriage road and Park Loop Road bridges.	Same as Alternative C.	Same as Alternative C.

¹ A reservation for Otter Cliffs would not give any group the exclusive right to particular routes. Groups would not occupy the same routes for extended periods to the exclusion of other climbers. Groups would share routes with other climbers in a mutually agreeable manner and group leaders would be required to take the initiative to contact other climbers to advise them of the availability of climbs.

TABLE 2: EFFECTS OF ACADIA NATIONAL PARK CLIMBING MANAGEMENT PLAN ALTERNATIVES A - E ON NATURAL AND CULTURAL RESOURCES, PARK ADMINISTRATION, VISITOR EXPERIENCE, AND ECONOMY.

	ALTERNATIVE A: EXISTING COND.	ALTERNATIVE B	ALTERNATIVE C: PREFERRED	ALTERNATIVE D	ALTERNATIVE E
NATURAL RESOURCES	1. Route cleaning would remove more lichens, soil, and other plants from cliffs; more holes would be drilled in rock to install fixed protection. 2. Peregrine falcon nest sites would be protected; effects of expanded climbing on other wildlife are unknown, but cliff nesting birds might be affected. 3. New climbing areas would be developed expanding potential impact sites. 4. Steadily increasing use of all areas would result in soil erosion and vegetation damage unless preventive measures are taken. 5. Cumulative effects of new route development and fixed protection would not be considered.	1. Some damage to lichens and other plants, soils, and rocks would be prevented. Some would continue. 2. Peregrine falcon nest sites would be protected. 3. All proposed new routes would be inspected for potential effects on all resources, especially threatened and endangered species. Some resources would be protected if proposed routes are rejected. 4. Cumulative effects of new route development and fixed protection would be considered by the committee and the park. 5. Education of climbers through the permit system would reduce but not eliminate effects on resources and visitor experiences.	Same as Alternative B plus: 1. Natural resources would be protected by limiting route cleaning and installation of fixed protection associated with new routes to nine climbing areas where these effects have already occurred. Lichens and other plants, soils and rock would receive greater protection outside these areas. Some limited incidental damage to vegetation and soils would occur as new routes are established without cleaning or fixed protection. 2. Group reservations for Otter Cliffs would reduce effects to natural resources there by dispersing use through the busy season. 3. Group reservations for Otter Cliffs might displace groups to other park climbing sites and increase effects on natural resources. 4. Group size limits at all areas might reduce effects to natural resources. 5. Climbing concessions, serving as a point of contact for all climbers, might provide better opportunities for education to reduce effects on natural resources. 6. Carrying capacities for individual climbing areas, if adopted, would reduce effects on natural resources. 7. Prudent installation of fixed protection for top anchors or belay stations would concentrate the effects of walk-offs and belays on soils and vegetation to a small area.	Same as Alt C., 2-7 plus: 1. Temporary closures for research and preservation would provide greater protection for all natural resources, particularly cliff nesting birds other than peregrine falcons. 2. Limiting fixed protection to replacements would prevent adverse effects from spreading. 3. Prohibiting route cleaning would eliminate all but incidental damage to soils, lichens and other plants.	Same as Alt. C, items 2-6, plus: 1. Permanent research closures would provide maximum protection, and would eliminate damage to rock from replacement of fixed protection. All new routes would continue to be reviewed by the park. 2. Some damage to rock would occur as fixed protection is removed.
CULTURAL RESOURCES	1. Historic and structural integrity of carriage road bridges would remain intact. Visitors would view bridges without the distraction of climbers. 2. Historic and structural integrity of Park Loop Road bridges would be adversely affected by climbers. Visitors could not view bridges without distraction. Safety hazards may exist if motorist attention is diverted. Bridge structure might be compromised by climbing.	Same as Alternative A	1. The historic and structural integrity of carriage road bridges and Park Loop Road bridges would remain intact. Visitors would view bridges without the distraction of climbers. Any damage climbers might cause to bridges would be eliminated. 2. Any safety hazards from climbing on bridges would be eliminated.	Same as Alt. C.	Same as Alt. c.
PARK ADMIN.	1. This alternative would have no effect on park administration. No further duties or projects are assumed.	1. Establishing permit systems for groups and individuals would increase the burden on all park staff. Permits must be issued and inspected and all employees must be informed or trained about procedures. 2. Participation on a climbing advisory committee and reviewing proposals in-house would require staff time at meetings and in the field.	Same as Alt. B plus: 1. Review and inspection of climbing concessioners would be required. 2. Although the concessioner might be required to assume management of all reservations for groups and individual climbers, park oversight would still be required. 3. With use limits and reservations phased in at sites as needed, the park would need to have more detailed and quantitative information to set ecological or social standards for management of particular areas. Acquiring this information in-house or from outside researchers would require great time and effort. A monitoring program would also be needed to decide when standards are exceeded.	Item 1 from Alt. B applies. Items 1, 2, and 3 from Alt C apply plus: 1. Administrative burden would be relieved somewhat if some climbing areas are closed temporarily, although enforcement patrols would be increased.	Same as Alt. D plus: 1. Park staff would need to inspect and remove fixed protection as it becomes hazardous.

TABLE 2: EFFECTS OF ACADIA NATIONAL PARK CLIMBING MANAGEMENT PLAN ALTERNATIVES A-E ON NATURAL AND CULTURAL RESOURCES, PARK ADMINISTRATION, THE VISITOR EXPERIENCE, AND ECONOMY. (CONT.).

	ALTERNATIVE A: EXISTING COND.	ALTERNATIVE B	ALTERNATIVE C: PREFERRED	ALTERNATIVE D	ALTERNATIVE E
ECONOMIC EFFECTS	1. Commercial climbing operators would not be affected. Several competing businesses could continue to grow through unlimited use of the park. 2. The contribution of climbing on the overall local economy is unknown, but is likely minor. This alternative would allow climbing to grow and continue to contribute to that economy. 3. Closure of sites to protect falcons would continue to affect commercial climbing operators.	1. Strict enforcement of the incidental business permit requirement would add a cost of \$200 per operator per year that might eliminate use of the park by some operators. It would have a negligible effect on the overall local economy. 2. Closure of sites to protect falcons would continue to affect commercial climbing operators. 3. Higher incidental business permit rates may cause commercial operators to raise fees. Visitors may choose not to use a guide, thereby possibly jeopardizing personal safety and perhaps increasing resource damage.	1. Awarding concession contracts would affect some local climbing businesses negatively if they are not selected. 2. The concessioner(s) would likely be given added responsibilities related to climbing management. Opportunities for added revenue may occur. 3. Groups climbing at the park would be required to use the concessioner and pay extra fees. 4. Effects of a concessioner on the local economy compared with incidental business permit operators would be minor, since there are currently only two such operators. 5. Group size limits would put some economic strain on groups coming to the park and using the concessioner. 6. Area closures might reduce revenues of a concessioner.	Same as Alt. C plus: 1. Restrictions on fixed protection and new route cleaning and any temporary research/preservation closures would deter some climbers from coming to the park to climb, but economic effects would probably be minor.	Same as Alts. C and D.
VISITOR EXPERIENCE	1. Climbing would continue to be seasonally prohibited near peregrine falcon nest sites. 2. Climbers would be free to develop new routes and install fixed protection anywhere. 3. Opportunities for clean climbing would decrease. Future climbers with more advanced skills than current climbers would find more routes compromised by fixed protection. 4. More cleaned routes and fixed protection would further diminish the wild and natural character of the park for visitors. 5. Increasing climbing use would result in reduced opportunities for solitude at less known areas. It would displace climbers to new areas or times to find that experience. 6. Increasing climbing use would result in crowding or waiting for routes at popular areas.	1. Climbing would continue to be seasonally prohibited near peregrine falcon nest sites. 2. Climbers would be free to propose new routes with route cleaning or fixed protection anywhere. Some proposals would be refused by committee or park, reducing climber freedom. 3. Opportunities for clean climbing of new routes would improve over Alt. A. Future climbers would find fewer routes compromised by fixed protection. 4. Climbers would be free to establish new routes not cleaned and not using fixed protection without a permit. 5. Limiting new routes and fixed protection and occasional removal of fixed protection would reduce effects on the wild and natural character of the park. Allowing the use of power drills would reduce effects of noise on other visitors and provide safer climbing. 6. Permit systems for individuals and groups would reduce freedom of climbers. 7. Increasing climbing use would result in reduced opportunities for solitude at less known areas. Climbers would be displaced to new areas or times to find that solitude. Dispersing group use through education would reduce opportunities for solitude. 8. Increasing climbing use would increase crowding and waiting for routes at Otter Cliffs. Dispersing group use through education would alleviate crowding at popular sites. 9. Strict administration and enforcement of the incidental business permit system would reduce crowding and waiting for routes at Otter Cliffs but it would also affect groups when they are asked to leave the cliffs and are fined for violations.	Items 1, 4, and 5 from Alt. B apply plus: 1. Some proposals for new routes at nine listed sites would be refused by committee or park resulting in reduced freedom of climbers. 2. Opportunities for new clean climbing routes would improve over Alts. A and B. Future climbers would find routes outside nine listed areas not compromised by route cleaning and fixed protection. 3. Limiting route cleaning and fixed protection to nine listed areas would reduce the effects of these activities on the wild and natural character of the park more than in Alt. B. Allowing use of power drills at listed areas would reduce effects of noise on other visitors and provide safer climbing. 4. Permit/reservation systems for individuals and groups would reduce climber freedom. Crowding would be eliminated. Some climbers would not be able to make reservations for the time or place desired. Those with reservations would be assured of a less crowded experience. 5. If use limits are adopted for individual areas, a diversity of climbing experiences would be preserved, from the social to the solitary. Displacement of climbers to new areas or times would be slowed or stopped. 6. Commercial climbing concessions would reduce choices of visitors wanting guiding or instruction service to one or a few operators. All groups coming to the park to climb would be required to obtain these services from the concessioner at an extra cost and with a loss of freedom. The safety of participants might be improved with greater control over qualifications of guides and instructors.	Items 1 and 4 from Alt B. apply. Items 2, 4, 5, and 6 from Alt. C apply plus: 1. The freedom of climbers would be restricted by limiting fixed protection to replacement only for the nine listed areas for and prohibiting new route cleaning. 2. Restricting the activities listed in No. 1 above would reduce their effects on the wild and natural character of the park more than Alt.C. Use of power drills at listed areas would reduce effects of noise on other visitors and provide safer climbing;	Item 1 in Alt B and items 4-6 in Alt. C apply, plus: 1. Some routes would become impossible or climbed by top rope only as protection wears out and is removed. Clean climbing opportunities would increase over time. 2. Permanent closures and review and monitoring of all proposed new routes would further restrict climbing options. 3. Freedom of climbers would be restricted more than all other alternatives.

PLAN REVIEW AND UPDATE

This plan should be reviewed annually and updated when new information becomes available or at least every three years.

PUBLIC INVOLVEMENT

A group of local climbers wrote a letter to the park in August 1992 offering their help in the development of the climbing management plan. In early 1993, two meetings, hosted by the park and attended by five and two local climbers respectively, were held and discussions began. Later that spring, park staff visited three climbing areas at different times with about five to seven people, again discussing general and site specific concerns and activity. Development of this plan was delayed until the summer of 1995, when public involvement was renewed. Seven meetings were held between July 13 and August 28 with park staff, a representative of Friends of Acadia, and local climbers. Thirteen different local climbers participated with a smaller core group of seven attending most meetings. A representative of the Access Fund attended one meeting. This group was asked to review an early draft of the climbing plan and its alternatives for the major issues, and then recommend preferred alternatives for each issue to the park. Charles Jacobi, a natural resource specialist for the park moderated discussions and summarized the results in writing. Results were mailed to participants for a review to assure they accurately represented the opinions of the group. A group consensus was reached on the issues. If minority opinions had been strong for any issue, they would have been reported. Alternatives and recommendations were reviewed by park staff before selecting the preferred alternative described in this plan. In June of 1995, a letter was sent to more than twenty organized groups known or thought to use the park for climbing. This letter introduced the draft climbing management plan, described some problems, and suggested ideas for managing climbing groups at Otter Cliffs. Written comments were requested about climbing issues and solutions, especially group use of Otter Cliffs. A list of groups and individuals consulted is found in Appendix 2.

STAFF RESPONSIBILITIES

SUPERINTENDENT

The superintendent has the overall responsibility for managing visitor use of the park. The role of the superintendent is to review plans, strategies, and proposed action alternatives and select preferred alternatives.

DEPUTY SUPERINTENDENT

The deputy superintendent has decision making authority in the absence of the superintendent, and has line authority over the division chiefs.

CHIEF, NATURAL RESOURCES

The chief of natural resources is responsible for preparing or reviewing plans, strategies, objectives, and action alternatives regarding visitor use and its effects on natural resources. The chief recommends management alternatives to the superintendent and then carries out the approved actions to reach the stated management objectives through his or her staff and other park staff as appropriate.

NATURAL RESOURCE SPECIALIST, VISITOR USE

The resource management specialist for visitor use is responsible for visitor use inventory and monitoring programs and for recommending and coordinating research, education, and protection programs to assure the integrity of natural resources in light of visitor use. He or she also maintains contacts and relationships with user interest groups.

CHIEF, INTERPRETATION

The chief of interpretation is responsible for integrating natural resource management and visitor use issues into the interpretation/education programs of the park.

CHIEF, VISITOR PROTECTION

The chief of visitor protection is responsible for enforcing all applicable laws regarding visitor use of the park and patrolling park areas to monitor effects from visitor use. The chief or his or her staff also checks incidental business permits and enforces any special regulations.

LITERATURE CITED

- Asay, C.E. and W.E. Davis.
1984 Management of an endangered species in a national park: the peregrine falcon in Yosemite. Technical Report No. 16, Univ. of Calif. Davis, Davis CA.
- Childs, G.
1979? A climbers guide to Mount Desert Island. Third edition. 48pp.
- El Dorado Canyon State Park
1991 Climbing Management Plan. Colorado Division of Parks. January 19pp.
- Gilman, R.A., C.A. Chapman, T.V. Lovell and H.W. Borns
1988 The geology of Mount Desert Island. Maine Geological Survey, Department of Conservation. 50pp.
- Hammitt, W.E. and D.N. Cole
1987 Wildland Recreation: Ecology and Management. John Wiley and Sons. New York, NY 341pp.
- Hauri, R.
1988 The avifauna of molasse cliffs on the Bernese Plateau. Ornithol. Beob. 85:1-79.
- Kuss, F.R., A. R. Graefe, and J.J. Vaske
1990 Visitor impact management: A review of research. National Parks and Conservation Association. Vol. 1 Washington, D.C. 256pp.
- Lanier, J.W. and R.A. Joseph.
1989 Managing human recreational impacts on hacked or free-nesting peregrines. Pp. 149-153 in Proc. of the northeast raptor management symposium and workshop. Natl. Wildl. Fed., Washington D.C.
- Manning, R.E.
1987 Visitors and neighbors of Acadia National Park: planning for the future. Study Completion Report. NPS Contract No. CA 1600-6-0001/11. 166pp.
- Maser, C., J.M. Geist, D.M. Concannon, R. Anderson, and B. Lovell
1979 Wildlife habitats in managed rangelands-the Great Basin of southeastern Oregon. U.S. For. Serv. Gen. Tech. Rep. PWN-99. 84pp.
- Mittelhauser G.H., J. H. Connery and J. Jacobs
1996 Inventories of selected flora and fauna on ten islands of Acadia National Park, Maine (in prep.).

National Park Service.

- 1994a Peregrine falcon management plan. Acadia National Park, Maine. May 1994. Unpublished 23pp.
- 1994b Bald eagle management plan. Acadia National Park, Maine. March 1994. Unpublished 31pp.
- 1994c Draft climbing management plan and environmental assessment. Devils Tower National Monument, Wyoming. July 1994. Unpublished 68pp.
- 1993a Resource management plan. Acadia National Park, Maine. December 1993. Unpublished 185 pp.
- 1993b VERP, a process for addressing carrying capacity in the national park system. Special Report: Denver Serv. Ctr. Working Draft, Feb. 14, 1993.
- 1993c Climbing management plan. Joshua Tree National Monument. February 1993. Unpublished 18pp.
- 1992 General management plan. Acadia National Park, Maine. Oct. 1992. 99pp.
- 1991a Memorandum from Acting Assoc. Dir. Ops. to Reg. Dir., July 19, 1991.
- 1991b Draft general management plan and environmental assessment, Acadia National Park, Maine. 286pp.
- 1988 Management policies.

Reitan, O

- 1986a Cliff-related breeding of passerines in a woodland area. Fauna norv. Ser. C., Cinclus 9:68-73.
- 1986b Fuglefauna i norske bergvegger. Fauna 39:18-23.

Rumble, M.A.

- 1987 Avian use of scoria rock outcrops. Great Basin Natur. 47:625-630.

Snow, C.

- 1972 Habitat management series for endangered species. Report 1: American peregrine falcon Falco peregrinus anatum and Arctic peregrine falcon Falco peregrinus tundrius. U.S. D. I., Bur. Land Mgmt. Tech. Note 167. 35 pp.

Ward, J.P. and S.H. Anderson

- 1988 Influences of cliffs on wildlife communities in southcentral Wyoming. J. of Wildl. Manage. 52(4):673-678.

APPENDIX 1: GLOSSARY¹ AND OVERVIEW OF CLIMBING TECHNIQUES²

GLOSSARY

Ascensionist - see "Climber."

Aid climbing/aid route - refers to a traditional method of recreational climbing performed with the aid of any number and various forms of artificial devices, primarily pitons, employed by the climber to obtain leverage in order to ascend. "Clean" aid climbing involves the use of removable protection only, but not pitons.

Anchor - see "Protection."

Approach - refers to a hiking trail by which climbers gain access to the base of a climbing route.

Belay or belaying - refers to the method by which one climber secures a rope in case the other climber falls. Typically, one climber (the "belay") remains on the ground and "belay" the other climber (the "leader") while he or she ascends the rock and places protection. Once the leader reaches the top of the pitch, he or she then belays the other climber up the route. The rope that serves as a safety line while climbing, is usually fed through a device controlled by the belayer and provides friction needed to "catch a fall."

Bolts or Bolting - see "Expansion Bolt."

Camming Devices - are mechanical devices, typically spring loaded, used for protection from falling. They are designed to expand once placed in a crack and are removed by manually retracting the spring. "Friends" and "Camalots" are examples of brand name camming devices.

Carabiners - are aluminum alloy snap-links used to connect protective equipment to the climber's rope.

Chains - see "Slings."

Chalk - typically consists of white magnesium carbonate this is used by gymnasts and climbers to dry sweaty hands and increase adhesion. It is pulverized and carried in a hand-sized bag carried during the climb. The persistence of the residue depends on the climate, rock type, and exposure to weather.

Chipping - see "Rock Alteration."

¹ Adapted from Devil's Tower National Monument Climbing Management Plan and Draft Environmental Assessment, July 1994

² Adapted from El Dorado Canyon State Park Climbing Management Plan, January 1991

Chocks or Chockstones - Also called nuts, they are typically made of aluminum alloy in various shapes, the most common being trapezoidal, with sizes ranging from 1/16 inch to 8 inches in width. A chockstone is attached to a sling or cable capable of accommodating a carabiner. Chockstones are designed to be placed and removed by hand in the natural constrictions formed by cracks with irregular widths. Because chockstones are manipulated by hand, there is usually no damage to the rock in their use unless the rock is fragile. Some naturally occurring rocks found in the cracks of a climbing route are also used as chockstones.

Chopping - is the removal or destruction of fixed protection, typically bolts, on a climbing route.

Clean climbing - is a climbing method that uses no permanent fixed protection to ascend a route. Only removable protection such as camming devices are used then removed by the last climber in the party. Clean climbing is considered minimum impact climbing that does little or no harm to the rock.

Climber - is a visitor who ascends an established and recognized route by means of technical ability and equipment.

Climbing - is defined to include rock climbing, winter and ice climbing, and mountaineering, where such climbing aids as pitons, carabineers or snap links, ropes, fixed or removable anchors, or other similar equipment are generally used to make the climb. This is the definition used in new proposed 36 CFR §2.63 climbing regulations.

Code of Federal Regulations - CFR - A codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the federal government.

Crack climbing (natural line) - refers to climbing along the natural fractures in a rock surface by means of natural hand and foot holds. Climbers wedge their fingers, hands, toes, heels, or feet into the crack to support their ascent. (Also see face climbing)

Effects (Impacts) - Environmental changes resulting from an action. Included are direct effects, that are caused by the action and are later in time or further removed in distance, but which are still reasonably foreseeable. Indirect effects may include growth-inducing results and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Endangered species - Any animal or plant species that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

Expansion bolts - are 2 to 4-inch long metal rods that are typically threaded on one end and machined on the other end so that the end expands with great force when the rod is either twisted or hammered into a drilled hole ("bolting"). After the bolt is placed in a hole in this

fashion, a "hanger" can be secured to the threaded end by use of a nut. Some varieties of bolts (eye-bolts) have hangers or eyes that are permanently pre-attached. Bolts are considered permanent fixed protection.

Eyes (eye-bolts) - are holes at the ends of certain types of bolts capable of accommodating a carabiner.

Face route/face climbing - refers to climbing by use of natural hand and foot holds out on the smooth, exposed rock surface between the natural fractures in the rock. (also see Crack Climbing) Face climbing usually relies on bolts for protection since no crack is available in which to place removable protection.

Fixed protection or fixed anchor - is permanently placed protection left in the rock, typically a bolt or a piton intended to be permanently placed. Fixed protection is usually applied when no "clean" opportunities are available.

Fixed piton - see "Fixed protection" and "Piton."

Free climbing/free route - is the sole use of the body and physical power to ascend; rope and equipment are used only as a backup should the climber fall.

Friends - see "Climbing Devices."

Gardening - gardening is the comprehensive and systematic removal of soils and vegetation from new and existing climbing routes.

Gluing - see "Rock Alteration."

Hand drill - see "Power Drill."

Hanger - is an L-shaped piece of metal that is attached to a bolt with a threaded nut and bears an eye or hole capable of accommodating a carabiner. A hanger attached to a placed bolt is usually considered to be as permanent as a bolt.

Hardware - climbing equipment placed in cracks or on faces to protect climbers from falling including chocks, nuts, friends, pitons, and bolts.

Hiker/climber - a non-technical climber who scrambles around or above the boulder field at Devils Tower. This also refers to the casual family visitor who is not attempting to perform "technical rock climbing" activities.

Holds - are ledges, cracks, depressions, or protrusions on the rock surface that are used to support a climber's weight when grasped by a hand or stepped onto by a foot.

Impact - see "Effects."

Incidental Business Permit - issued by the National Park Service annually to climbing guide

services and other commercial operations charging fees to clients. The NPS stipulates the conditions which the permittee must follow. To obtain a permit, the applicant must provide proof of liability insurance and pay a fee to the NPS.

Leading - refers to the act of a lead climber ascending a route, placing protection as he or she ascends while being belayed from below by a second climber. The term is used to distinguish between a climber ascending a route while being belayed from below. Lead climbers "get the rope up." When properly belayed, leading involves relatively little risk if the rock is firm and protection points are abundant.

Mitigation - includes: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and, (e) compensation for the impact by replacing or providing substitute resources or environments.

National Register of Historic Places - was established as part of the National Historic Preservation Act of 1966. The National Register documents the appearance and importance of districts, sites, buildings, structures, and objects significant in America's prehistory and history.

Natural Lines - see "Crack Climbing."

Nuts - see "Chocks."

Pitch - The distance a lead climber ascends before he or she stops to belay the second climber's ascent. The distance of a pitch is limited by the length of rope used by climbers and the location of ledges and anchor stations.

Pitons - are variously sized iron alloy spikes with an eye or hole at the end in which a "carabiner" can be clipped. Pitons are placed in naturally occurring cracks with repeated blows from a hammer. They usually can be removed by hammering the piton from side to side until enough of the surrounding rock is pulverized to allow withdrawal. Some pitons are considered to be permanently placed or "fixed" when placed and used for free climbing.

Power drill - battery operated boring tool used by climbers to pierce holes into rock for the installation of expansion bolts. Power drills can bore a hole into rock in less than a minute. Hand drills are manually operated, metal drill bits driven into the rock when stuck repeatedly with a hammer. A bolt installed with a hand drill can take up to 30 minutes to place.

Protection (anchor) - indicates the various devices that a climber places in or on the rock for safety or to descend. The term includes multi-bolt anchors, camming devices, pitons, hangers, and bolts and includes both "clean" or removable types and permanent types of protection. "Natural" protection is offered by the natural attributes of the rock, chockstones, trees, or bushes.

Rappel - is the method by which a climber descends a rope, usually by using a mechanical device that allows a controlled descent with little effort. Ropes are generally doubled or tied together and retrieved by pulling all the way through on one end after the rappel is finished.

Raptors - Predatory birds, such as falcons, hawks, eagles, and owls.

Removable protection - See "Nuts," "Camming Devices," "Friends," "Chocks," and "Clean Climbing."

Rock alteration - involves the physical modification of the rock surface and may include filing off rough edges, reinforcing loose hand and foot holds with epoxy glue, removing loose rocks or vegetation, or creating new holds with hammers, chisels, or drills.

Route - is the generally vertical path on the rock face that a climber ascends. A route is established when it is first climbed and is usually given a name by the first ascensionist, which is recorded in a guidebook for other climbers to use for finding, identifying, and duplicating the ascent path. Aid routes are usually renamed by the first free ascent party. A difficulty rating is assigned to routes by the first ascent party and may be revised by others that climb it afterwards.

Slings - are knotted or sewn loops of nylon webbing that are occasionally left behind when a climber descends from the top of a route, typically by rappelling or being lowered off by the belayer. Sometimes metal chains are used for the same purpose rather than slings because chains are easier to use once in place, last longer, and may be less conspicuous than webbing.

Social trails - Unauthorized foot paths established over time by repeated travel over previously undisturbed ground.

Software - refers to slings, webbing, and rope that attaches to climbing hardware.

Sport climbing - is a style of climbing typically involving short (less than a rope length) routes with fixed bolt protection. Previewing and practicing a climb is common and the emphasis is on technical difficulty rather than adventure. Sport climbs tend to involve less physical risk (due to the regular spacing of bolted protection points) and rarely continue to summits. Sport climbing routes generally end at top fixed anchors where the sustained difficulty of the climb diminishes or the character of the rock changes.

Substantive comment - Under the National Environmental Policy Act of 1969, an agency will consider and respond to substantive public comments when preparing a final document. Substantive comments must either:

- 1) Challenge the accuracy of the draft document's analysis
- 2) Dispute the accuracy of the draft document's information
- 3) Suggest different reasonable and viable alternatives
- 4) Provide new information that compels the decision maker to make a change in the

proposal (preferred alternative)

Technical climb - refers to the need for a rope and protection devices to ascend a route (5th class climbing). "Technical" is meant to distinguish from climbing in which a rope is needed, but protection devices are not (4th class climbing) or climbing in which a rope and protection devices are not needed (3rd class climbing) such as with hiker/climbers. Also see "Free climbing" and "Crack climbing." Technical climbs are rated for difficulty between 5.0 and 5.14.

Threatened species - Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. Also see "Endangered species."

VERP - The Visitor Experience Resource Protection process is a systematic and rational method for addressing carrying capacity in the National Parks or specific parts of the parks. It is intended to safeguard the quality of park resources and visitor experiences.

Webbing - tubular nylon material, often brightly colored, used by rock climbers to connect or carry climbing equipment. Also see "Slings."

OVERVIEW OF CLIMBING TECHNIQUES

For those unfamiliar with technical rock climbing, a general overview follows. Most climbers today practice what is termed "free climbing." A free climber uses only naturally occurring holds to move up the rock. Ropes and equipment are only used as a safety system to catch climbers if they fall. Thus climbers are literally hanging on by their fingers and toes. To begin a climb, two people (a leader and a belayer) tie into their harnesses with opposite ends of rope. The leader (the one who climbs first) clips the rope into pieces of protection with carabiners (metal snap-links). Thus, the rope runs from the belayer up through each point of protection up to the leader. Protection is a collective term to describe different means of anchoring the rock.

Pitons and bolts are generally considered fixed protection because once placed they remain in the rock for others to use. Pitons (metal spikes that are hammered into the rock) were the standard means of protection for the pioneers of rock climbing. During this time pitons were not considered fixed protection because they would be removed after each use. As a result, the first decade of modern technical climbing (generally from the mid 1950's to the mid 1960's) led to many rock scars from repeated piton placement and removal. Because they damage the rock, the use of pitons is currently avoided, or they are left in the rock for others to use.

Hammers and drills are occasionally used to make holes in the rock for bolts. For nearly three decades climbers placed bolts only on relatively short sections of crackless rock between crack systems.

"Clean climbing" techniques began to evolve in the late 1960's. These removable protection techniques rely on chocks (wedges or camming devices) that are hand-placed into cracks in the rock. A simple analogy would be to envision a machine nut with a loop of rope threaded through it (this is actually the origin of modern day chocks). The nut is slotted into a downward

tapering crack until it sets securely. Chocks not only prevent damage to the rock, they are usually less difficult to place than pitons. Imagine hanging one handed from a pull-up bar while simultaneously placing a piton into a crack, hoping it will stay put, and then reaching for a hammer to pound it in. Simply wedging a chock into a crack is generally easier and faster - important considerations when you're on the verge of falling.

While the leader moves up the rock placing protection and clipping the rope into each protection point, the second person (the belayer) is anchored and feeds the rope out through a braking device. If the leader falls, the belayer allows no extra rope to be paid out. The distance of the fall would be two times the height above his or her last piece of protection plus rope stretch. Climbing ropes stretch significantly under high loads to reduce the force on the protection systems and the climber.

Somewhere within a rope length the leader must find a convenient place to stop and belay his or her partner up the "pitch". The leader anchors to the wall and takes in the rope (remember the other end is tied to his or her partner) through a braking device as the other person climbs and removes the chocks for later use. If this person were to fall, the leader would lock up the rope so he or she would fall only a few feet due to rope stretch. Once the climbers arrive at the same point the process is repeated until the climb is finished.

To get down, the climbers either walk down the back side or "rappel" directly down the rock face. When rappelling, climbers run their rope through friction creating devices that are then attached to their harnesses. Enough friction is created so that climbers can control with one hand the rate at which they slide down the rope. The rope is looped at its midpoint through fixed anchors so that when the rappel is completed, the rope is retrieved simply by pulling on one end. Note that the anchor used to rappel must stay in place because the climbers have no way to retrieve it once they have descended.

Many climbs offer opportunities for climbers with proper training, experience, and conditioning to place enough protection to climb the routes in relative safety. Other climbs offer fewer and/or more difficult protection placements and are more serious undertakings. These climbs could be made safer by adding bolts. However, where would the masters of the sport test their nerve and skill if all climbs were as safe as an afternoon of golf?

Climbs in the U.S. are rated 5.0 (like climbing a ladder) to 5.14 (comparable to Olympic gymnastic routines). Originally, a 5.9 climb was considered the limit of human ability. Over the years climbing standards have skyrocketed. What used to be international test-pieces later became warm-up routes for those whose skills put them at the sport's cutting edge.

Several factors are responsible for pushing climbing standards into the stratosphere. In the 1970's, climbers started using white gymnastic chalk to absorb sweat and improve their grip. Chalk not only allows individuals to push their abilities, it also positively impacts the climber's experience on easier climbs by heightening their sense of control. The down side is that chalk leaves white marks on the rock. These marks are usually washed off by rain except in sheltered areas such as overhangs. Advances in equipment design and Olympic-like training regimes have also contributed to soaring standards.

Now, more on the bolting controversy. For a variety of reasons, climbers have recently begun the controversial practice of bolting rock faces void of cracks. One reason is to push the limits of the sport. The majority of the world's most difficult climbs ascend faces void of cracks. Another reason is that each generation of climbers desires to seek adventure and challenge on uncharted, unclimbed territory. Nearly all of the crack climbs at established climbing areas have been done. To chart out new territory, climbers are venturing out onto the featureless faces. On these climbs, bolts must be placed to provide for any margin of safety. Some of these climbs merely provide for climbing opportunities without pushing climbing standards. Yet another reason for bolting is to establish safe climbs. Without the need for fiddling with chock placements, climbers are free to concentrate only on the gymnastics of the ascent.

Although these reasons for bolting may seem valid to some climbers, the ethics of bolting have caused divisiveness and controversy within the climbing community. Some climbers are establishing new routes by starting at the top of the cliff. From there they rappel down and place bolts while descending. Once the protection bolts are in place, the climbers start from the bottom and try to ascend the route. "Traditional" climbers (those that feel that the "new wave" climbers are cheating. On the other hand, the new wave climbers feel that their climbs are so difficult that they couldn't be established from the ground up without the use of even more bolts. Many of the complaints on bolting center on route crowding. Some climbers feel that newer bolted climbs are installed too close to established climbs.

Climbers also occasionally disagree on where fixed (bolts and/or pitons) belay/rappel stations should be located.