United States Department of the Interior

NATIONAL PARK SERVICE
Saguaro National Park
3693 S. Old Spanish Trail
Tucson, Arizona 85730

Dear Interested Party:

Attached for your review and comment is the *Cactus Forest Trail Environmental Assessment* for Saguaro National Park. This Environmental Assessment examines the environmental and social impacts associated with reinstating mountain bicycle use on a portion of the Cactus Forest Trail.

The National Park Service has examined three alternatives: a no action alternative and two action alternatives. The preferred alternative proposes to reinstate mountain bicycle use on that portion of the trail previously open to such use and provides mitigation measures to address any potential adverse impacts to park resources.

Public participation is very important to the successful development of this Environmental Assessment. Therefore, we ask for your thoughtful evaluation and comment. **Public comments will be accepted by Saguaro National Park until November 20, 2002.** Please send your comments by mail to:

Sarah Craighead, Superintendent
Saguaro National Park
3693 S Old Spanish Trail
Tucson, Arizona 85730

Or by email to: SAGU 1nformation@nps.gov

Please note that the names and addresses of people, who submit comments become part of the public record. If you want us to withhold your address, you must state this prominently at the beginning of your comments. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection, if asked for, in their entirety.

For information or questions concerning the Environmental Assessment, please call (520) 733-5150.

We thank you in advance for your attention, and we appreciate your concern for the future of Saguaro National Park.

Sincerely,

Sarah Craighead
Superintendent

National Park Service
U.S. Department of the Interior

Cactus Forest Trail Environmental Assessment

Saguaro
National Park • Arizona

National Park Service
Environmental Assessment/Assessment of Effect
Saguaro National Park,
Pima County, Arizona

Summary

At the Rincon Mountain District of Saguaro National Park, the National Park Service proposes to evaluate the environmental and social impacts of reopening a section of the Cactus Forest Trail to mountain bicycle use. The trail is currently used by hikers and equestrians. The section of the Cactus Forest Trail that was previously open to mountain bikes would be reopened for such use. The trail would remain open to hiking and equestrian use.

The preferred alternative would have no impact on geology and topography; prime and unique farmlands; air quality; water resources; historic structures; cultural landscapes; ethnographic resources; environmental justice; natural soundscapes; lightscapes; the socioeconomic environment of nearby communities; or the park's wilderness and scenic and aesthetic values.
Impacts to soils; park operations; and visitor use, understanding, and appreciation would be adverse, long-term and minor. There would be adverse, short- to long-term impacts on vegetation; and adverse, short-term, minor to moderate impacts on wildlife. There would be adverse, long-term, negligible to minor impacts on visitor safety; and negligible impacts to archeological resources.

Note to Reviewers and Respondents

If you wish to comment on the environmental assessment/assessment of effect, you may mail comments to the name and address below. Our practice is to make comments, including names and home addresses or respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. If you wish us to withhold your address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

Comments may be sent to:

Sarah Craighead
Superintendent
Saguaro National Park
3693 South Old Spanish Trail
Tucson, Arizona 85730-5601

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PURPOSE AND NEED

Introduction

Saguaro National Park was established (as Saguaro National Monument) on March 1, 1933, to preserve and protect "the exceptional growth thereon of various species of cacti including the so-called giant cactus." On November 15, 1961, lands in the Tucson Mountains were added to the monument because "they contain a remarkable display of relatively undisturbed lower Sonoran desert vegetation, including a saguaro stand which equals or surpasses saguaro stands elsewhere in the nation."

Subsequent legislation has been signed into law (PL 102-61, PL 103-364) that enlarged the boundaries of both districts. On October 14, 1994, PL 103-364 also redesignated Saguaro National Monument to Saguaro National Park. Today, the Tucson Mountain (West) District totals 24,034 acres and the Rincon Mountain (East) District totals 67,293 acres. The Cactus Forest Trail, which is located in the Rincon Mountain District of the park, is the subject of this environmental assessment.

Background

The Cactus Forest Trail is a multi use trail that originates at the northern boundary of the park and eventually bisects the Cactus Forest Loop Drive. Cactus Forest Loop Drive, an 8 mile paved loop road located in the western portion of the Rincon Mountain District, originates from the main entrance and visitor center and is the only paved road in the park (figure 1).

In the early 1990's, the NPS was in the process of preparing a trails management plan for the Cactus Forest section of the park. During the planning process, public scoping revealed that some members of the local community and the visiting public were interested in mountain biking trails in the park. Based on this information, the NPS analyzed the appropriateness of establishing mountain bike trails given such factors as park mission, park resource and visitor experience goals, and the current spectrum of recreational uses. The NPS concluded that the Cactus Forest Trail met these criteria and the park opened that portion of the trail inside the Cactus Forest Loop Rd. to mountain bicycle use for a one-year trial period. The park monitored the trail for resource and social impacts by implementing a monitoring plan that included sixteen photopoints along the trail. These locations were monitored by park staff on a monthly basis.

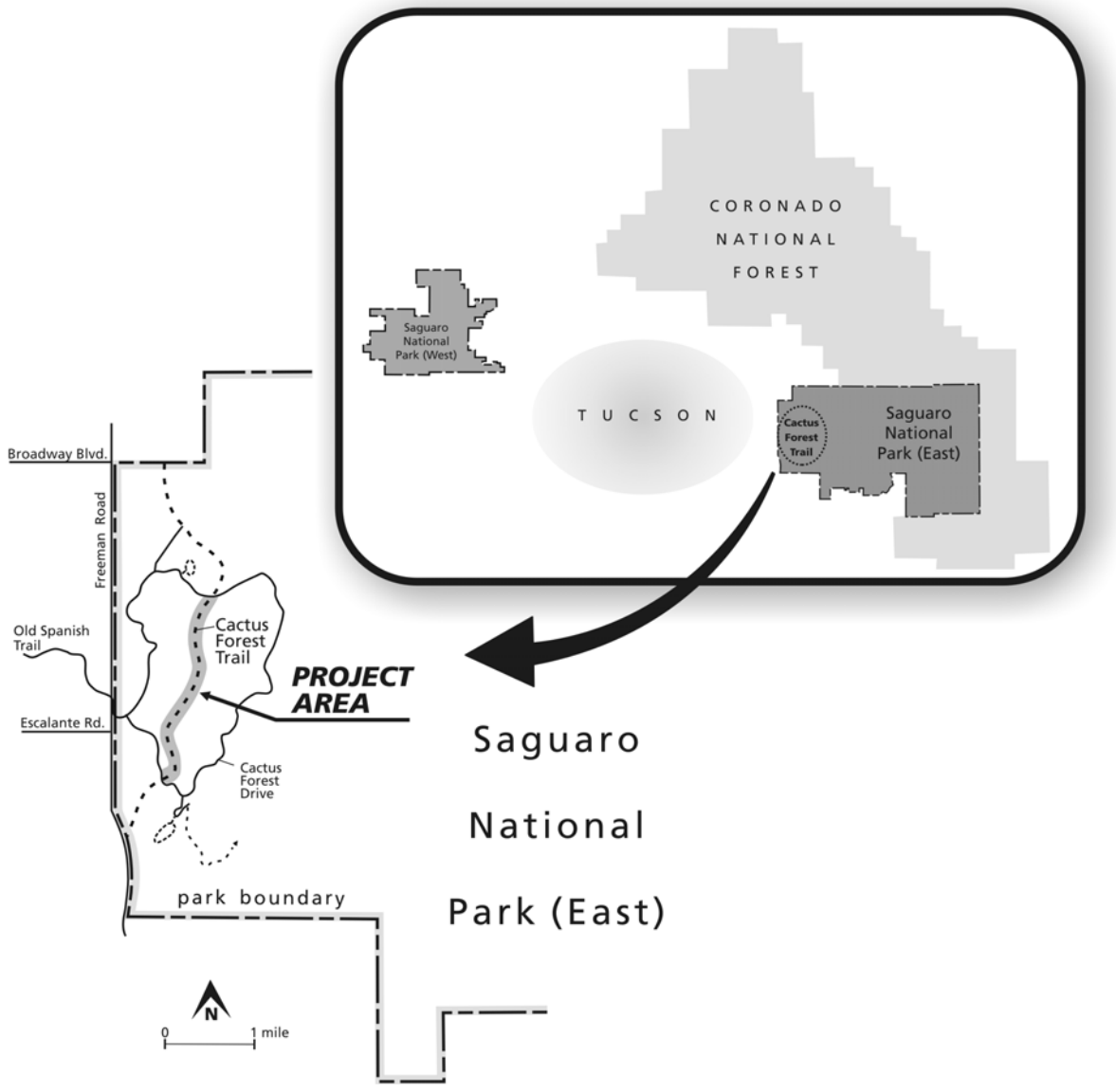
The park collected information on the amount of use, total number of complaints and compliments, major and minor incidents, and unauthorized mountain bike use in other areas of the park. The park had record of approximately 1,200 bicyclists, or nearly 50% of all trail users, on the trail between May 1, 1992 and June 30, 1993. There were no major incidents or accidents during the trial period. There were three minor incidents: including a compliant that a bicyclist yelled at a hiker; a compliant by a volunteer that 3 mountain bikers were riding too fast; and a ranger report that a bicyclist was stopped and advised to yield to equestrians. At the end of the one-year period, The park concluded that monitoring data revealed little measurable resource impacts caused by bicycle use and the decision was made to keep the Cactus Forest Trail inside the loop road open to bicycle use.

The park continued to monitor the trail for resource damage at the designated monitoring points, and performed patrols and informal contact with visitors using the trail.

Mountain bicycle organizations assisted the park in repairing and maintaining the trail. Approximately twice a year during and following the trial period, these organizations installed water bars and leveled damaged areas to mitigate impacts associated with the added use.

In April 2002, the park closed the trail to mountain biking in response to claims by an organization of environmental professionals that the trail was initially opened without proper authorization. The organization cited the Code of Federal Regulations for the National Park Service regarding bicycles (36 CFR 4.30). The regulation provides that, *"Routes may only be designated for bicycle use based on a written determination that such use is consistent with the protection of a park area's natural, scenic and aesthetic values, safety considerations and management objectives and will not disturb wildlife or park resources. Except for routes designated in developed areas and special use zones, routes designated for bicycle use shall be promulgated as special regulations."*

Figure 1. Regional Location of Saguaro National Park and Project Area.



Purpose and Need

Pursuant to 36 CFR 4.30, the purpose of this environmental assessment is to examine the environmental and social impacts of reopening the portion of the Cactus Forest Trail within the Cactus Forest Loop Drive to bicycle use. An environmental assessment is needed to determine if mountain biking is appropriate on that segment of the Cactus Forest Trail. If mountain biking is found to be an appropriate use, a special regulation would be written to allow such use to occur on the designated section of trail.

Legal and Policy Framework

National Park Service Management Policies

The NPS Management Policies (2001) provide further interpretation and policy guidance to laws, proclamations, executive orders, regulations, and special directives, including the National Park Service enabling legislation. Some of the management policies that provide direction to this environmental assessment are presented.

> 8.2. Visitor Use
> Enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks. However, many forms of recreation enjoyed by the public do not require a national park setting, and are more appropriate to other venues. The Service will therefore:
>
> Provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. Defer to local, state, and other federal agencies; private industry; and non-governmental organizations to meet the broader spectrum of recreational needs and demands.
>
> To provide for enjoyment of the parks, the National Park Service will encourage visitor activities that:
>
> - Are appropriate to the purpose for which the park was established; and
> - Are inspirational, educational, or healthful, and otherwise appropriate to the park environment; and
> - Will foster an understanding of, and appreciation for, park resources and values, or will promote enjoyment through a direct association with, interaction with, or relation to park resources; and
> - Can be sustained without causing unacceptable impacts to park resources or values.
>
> 8.2.2. Recreational Activities
> …The service will monitor new or changing patterns of use or trends in recreational activities, and assess their potential impacts on park resources. A new form of recreational activity will not be allowed within a park until after an environmental analysis has determined that it will not result in unacceptable impacts on park resources.

9.2.3.4 Bicycle Trails
The designation of bicycle routes, other than on park roads and in parking areas, requires a written determination that such use is consistent with the protection of a park's natural, cultural, scenic, and esthetic values, safety considerations, and management objectives, and will not disturb wildlife or other park resources.

Saguaro National Park General Management Plan
A park's General Management Plan (GMP) provides a vision and policy guidance for the preservation of park resources, visitor use and experience, the types and general intensities of development, visitor carrying capacities, and opportunities to address management issues internal and external to the park. It also identifies connections among the various park programs and provides a policy framework for more site-specific planning.

The Saguaro National Park GMP was completed in 1988. The management vision for the Rincon Mountain District proposes it being a main attraction for first-time visitors, with the focus on the Saguaro forest and the lower Sonoran desert. Suggested frontcountry recreational uses include, "….biking, jogging, picnicking, sunset watching, and horseback riding", while the "…..backcountry wilderness would continue to be used primarily by hikers and horseback riders." The Cactus Forest Trail is located in the frontcountry in the Natural zone and the Historic zone. The management emphasis of the Natural zone is on the conservation of natural resources and processes. The plan states that, "In certain locations, uses are allowed that do not adversely affect these resources and processes." The Historic zone, which is superimposed over other zones covering the park, contains "specific cultural resources of historic or archeological importance."

This environmental assessment seeks to examine the environmental and social benefits and consequences of reopening a portion of Cactus Forest Trail to bicycle use in keeping with the existing General Management Plan.

Saguaro National Park Trails Management Plan – Cactus Forest Section
The park's trail plan for the Cactus Forest section of the Rincon Mountain District was completed in 1991. The Cactus Forest section of trails encompasses an area extending from the park boundary along Old Spanish Trail, to the Cactus Forest trailhead on Broadway, the Wildhorse and Douglas Spring trailheads on Speedway, and ranging to the east and south `at an elevational level of approximately 4500 feet. The purpose of the plan is to protect resources, meet increasing visitor demands for recreation, and to formalize a trail system in terms of location, types of use, and proper signage.
The Cactus Forest trailhead begins on Broadway Blvd on the northern boundary of the park and serves both hikers and equestrian users.

In addition to hiking and equestrian use, the plan proposed that the Cactus Forest Trail inside the Cactus Forest Loop Road be open to bicycle use for a one-year trial period. The plan also proposed the monitoring program designed to evaluate the environmental and social impacts of mountain bike use on the trail.

Relationship to other plans and programs

Eastern Pima County Trail System Master Plan
The Eastern Pima County Trail System Master Plan (1989) serves to identify acquisition priorities for the development of a trail network for a variety of trail users across Eastern Pima County. The plan indicates the importance of securing access to trails on public lands, given the rapid development occurring on bordering private lands.

The plan identifies five existing access points into Saguaro National Park. It also identifies three proposed access points that are approved by Saguaro National Park and five suggested trail entry points that are currently not approved by Saguaro National Park.

Coronado National Forest
Coronado National Forest encompasses nearly 1.8 million acres of forest and recreation land in southeastern Arizona and southwestern New Mexico. The Catalina Ranger District of the forest shares the Eastern border, as well as portions of the Northern and Southern borders of the Rincon Mountain District of the park, and extends north to cover much of the Santa Catalina mountain range. The most popular recreational activities in the District include hiking, horseback riding, mountain biking, camping, picnicking, sightseeing, and visiting historic areas. The 38,590-acre Rincon Mountain Wilderness is found immediately east of the park, adjoining NPS wilderness. Several trails cross through NPS and USFS lands within these wilderness areas, and are managed for wilderness resources and values by both agencies. In accordance with federal wilderness management policies, hiking and equestrian use are permitted on these trails, while mechanized uses such as mountain biking are prohibited. However, mechanized use is accommodated in other areas of the District, including the Reddington Pass area located immediately north and east of the park, and the Happy Valley area located on the eastern side of the Rincon Mountains.

Public Scoping

Scoping is a process to identify the resources that may be affected by a project proposal, and to explore the possible alternative ways of achieving the proposal while minimizing impacts. Saguaro National Park conducted both internal scoping with appropriate NPS staff and external scoping with the public and interested and affected groups and agencies.

Internal scoping was conducted by an interdisciplinary team of Saguaro National Park, and planning professionals of the National Park Service, Intermountain Support Office in Denver. Team members conducted a field trip on July 11, 2002 to discuss the purpose and need for the project; important resource topics; past, present, and foreseeable impacts; ongoing maintenance activities; and possible mitigation measures of the proposed action. Affiliated Native American tribes were contacted by letter dated July 12, 2002 to solicit any interests or concerns with the proposed action.

A public scoping letter dated August 9, 2002 was mailed to interested and affected parties on the park mailing list. The NPS provided notification to the general public by mailing a press release describing the proposal to local newspapers. The Arizona Daily Star printed the description of the proposal on September 2, 2002.

A total of 91 public comments were received. A majority of the public felt that mountain bikes should be permitted on the trail. Many felt that the multi-use nature of the trail worked well in the past, and resulted in little resource damage or few visitor use conflicts. Some felt that the trail offered an easy alternative to roads and more difficult off-road trails, and many mentioned the riding experience as "safe, family-oriented and a perfect venue for beginners".

Many stated that there was little evidence of resource damage that was caused by mountain bikes, and that equestrian use caused as much or more damage that mountain bike use. Some equestrians were in favor of permitting mountain bikes and complimented bikers for slowing down and yielding the trail to them.

A majority of those against reinstating mountain bike use on the trail cited visitor use and safety conflicts. Many equestrians thought that mountain bikes and horses "don't mix", and that mountain bikes frighten horses. Some equestrians and hikers stated that they felt unsafe on the trail in the past when mountain biking was permitted. A majority of them noted the greater speeds that mountain bikes travel at, and raised issues of mountain bikers not stopping in time, hikers not being seen around a curve, added erosion on the trail, and vegetation being trampled by all groups stepping off the trail. Finally, some noted that their opportunities to appreciate the wildlife and the serenity of the Sonoran Desert were disrupted by mountain bicyclists.

Finally, some of the public suggested that mountain bicyclists have their own trail, or that equestrian and mountain bike use be permitted on different days.

Impact Topics Selected for Detailed Analysis

Soils

According to the National Park Service's Management Policies (2001), the National Park Service will strive to understand and preserve the soil resource of park units and to prevent, to the greatest extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources.

Soils of the Rincon Mountain District range from course rock and talus in the mountainous areas to increasingly fine alluvial soils in the lower elevations. Most soils are shallow, well-drained, and have very low water holding capacity. Collectively, these and other characteristics make soils found in the park and in the project area very susceptible to erosion. Soils in the project area are in the Anklam-Pantano-Cellar map unit (NRCS, 2002). Major soil types identified within this map unit are listed below.

Cellar-Lehmans complex: Soils in this complex are found on the northern and southern portions of the trail. These soils range from very gravelly and sandy to a sandy clay loam found at slopes of 5 to 25 percent. Soils are shallow and very well drained with very low water capacity. Hazards of erosion from water runoff and wind are relatively slight compared to other soils in the project area.
Chimenea: Chimenea is a very gravelly fine sandy loam found on slopes of 5 to 15 percent. The subsoil is reddish brown gravelly sandy clay loam Weathered granite is at a depth of 15 inches. In some areas, the surface layer is thicker and darker than is typical. Permeability of this soil is moderate and available water capacity is very low.

Palos Verdes-Jaynes complex: Soils of this regime range from gravelly to an extremely cobbley fine sandy loam. They are found in an alluvium of gently sloping terraces. These soils are very deep and well drained.

Pantano-granolite complex: These soils are found in the middle portion of the trail, in rolling and hilly pediments at the base of steeper slopes. It is an extremely gravelly loam that typically consists of larger rock outcrops. Soils are shallow and well drained. Permeability of this soil is slow and available water capacity is very low.
The hazard of erosion from water is higher than other soils in the project area.
Soil erosion and loss has occurred, at varying degrees, on all park trails. Soil erosion may initially occur from soils being loosened from visitor use, and then may be removed by wind and water associated with storm events. Some soils, particularly on steeper sections, are more susceptible to erosion than other sections. Past mountain bike use on the Cactus Forest Trail has proven to have measurable effects on soils, therefore this impact topic will be retained for further analysis.

Vegetation
The National Park Service strives to preserve and restore native plant communities contained in national park units while minimizing human impacts on native plants, animals, communities, and ecosystems, and the processes that sustain them (NPS 2001).

The region surrounding the city of Tucson is characterized as Sonoran Desertscrub biome, where the geography, elevation and climate (specifically the bimodal rainfall pattern) allow for a greater structural diversity of life forms and vegetation communities than surrounding southwestern deserts. Sonoran Desertscrub displays arboreal elements, truly large species of cacti and a great variety of species of succulents in comparison to these other deserts, which are mainly dominated by low shrubs (Shreve 1964, Turner and Brown 1994).

The Tucson basin and the project area specifically lie within the Arizona Upland subdivision of the Sonoran Desertscrub biome (Turner and Brown 1994). The Arizona Upland possesses a multi-storied canopy of vegetation, two of the most recognizable life forms being large columnar cacti (specifically the saguaro cactus, *Carnegiea gigantea*) and leguminous trees (foothill palo verde (*Cercidium microphyllum*), desert ironwood (*Olneya tesota*) and mesquite (*Prosopis* species)). It is some of the most famous and picturesque portions of the Sonoran Desert (Dimmitt 2000, Turner and Brown 1994).

Vegetation at the project site falls into two general associations. The palo verde / saguaro plant association is structurally and floristically diverse and species-rich. This association occurs at 650 – 1450m in elevation (about 2000 – 4500ft) on middle bajadas and well-drained rocky slopes, with a multi-storied mosaic of saguaros and mixed cacti, trees, shrubs and sub-shrubs, and grasses (Brown and Lowe 1974).

Along the drainages, the desert riparian scrub association predominates. Although the term riparian implies vegetation associated with perennial water, relatively mesic plant associations along drainages are integral parts of deserts (Rondeau et al. 1996). This association supports linear communities of vegetation of greater density and cover, often species of trees and larger shrubs.

Of the non-native invasive plant species found in the Tucson area, two perennial bunch grasses are of specific concern within Saguaro National Park: buffel grass (*Pennisetum ciliare*)

and fountain grass (*Pennisetum setaceum*). Buffel grass has been observed and eradicated along the Cactus Forest Trail, and both grasses have been observed along the Cactus Forest Loop Drive. These plants impact both ecosystem structure by crowding out native plants, and alter ecosystem function such as nutrient cycling, hydrology, and most importantly, fire regime. These grasses are believed to fuel larger and more frequent wildfires; the Arizona Upland is not a fire-adapted community, with high post-fire mortality to some of the community's most important floral species, the saguaro, foothill palo verde, and desert ironwood.

Since practically any recreational use that involves contact with the terrain has the potential to have direct and indirect impacts to biotic communities, impacts to vegetation will be analyzed in this environmental assessment

Threatened, Endangered, Candidate Species and Species of Special Concern

The Endangered Species Act (1973) requires an examination of impacts on all federally-listed threatened or endangered species. National Park Service policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species.

There are no Federal or State Listed plant species, nor candidate plant species for listing, within the project area, however, there are a number of federal and state listed animal species inhabit the Rincon Mountain District of Saguaro National Park. Therefore, Threatened and Endangered Species will be retained as an impact topic (Appendix B).

Wildlife

Wildlife resources at Saguaro National Park are diverse, reflecting the park's ecologically strategic location. The Park's Rincon Mountain District lies at the interface of the Sonoran and Chihuahuan deserts, and is part of the "sky-island" chain of scattered mountaintops in southeastern Arizona which connect the Rocky Mountains of the north to the Sierra Madre Mountains to the south. Faunal elements from each of these biomes are represented in the Rincon Mountains. In addition, the district's elevation ranges from 2,700'-8,666', and encompasses some six life zones, from Sonoran desertscrub to mixed conifer forests. The San Pedro River, just east of the District, and the major drainages of the Rincons, which form the headwaters of Tanque Verde Creek and Pantano Wash, add riparian components to the faunal diversity, as well as provide wildlife movement corridors between mountain ranges through the surrounding desertlands. Overall, the park supports a unique and diverse assemblage of thousands of invertebrates, and over 325 vertebrates, including about 70 mammals, 200 birds, 50 reptiles, and 8 amphibians. The challenge in maintaining this biodiversity is underscored by the fact that since the turn of the last century, desert bighorn, Mexican wolves, jaguars, grizzly and the Gila topminnow have been extirpated from lands that are now included in the RMD.

The Cactus Forest Trail (project area) occurs in the Sonoran desertscrub life zone in the lower elevations of the Rincon Mountain District. Wildlife here is comprised of species typical of the Arizona Upland Sonoran Desert, including over 230 vertebrate species. Resident fauna includes such well-known and conspicuous species as mule deer, coyote, javelina, western diamondback rattlesnake, roadrunner, Gambel's quail, and many other lizard, snake and bird species; as well as rarer and more reclusive animals, such as the Sonoran desert tortoise, golden eagle, mountain lion, and lowland leopard frog. The denser and larger vegetation along drainages and washes (xeroriparian) provides especially high quality habitat with good

cover and refuge for wildlife, and provides movement corridors for some species through the desert. The Cactus Forest Trail bisects several such drainages.

Any form of recreational activity and maintenance occurring on trails in the park has the potential to cause some disturbance to wildlife and their habitat. Therefore, impacts to wildlife will be analyzed in this environmental assessment.

Archeological Resources and Historic Structures

Five archeological sites are located in the immediate area of the Cactus Forest Trail. These sites were recorded during an intensive archeological inventory survey conducted in 1983 (Simpson and Wells 1983). The sites all lie within the Rincon Mountain Foothills Archeological District which was listed on the National Register of Historic Places on 10/16/79. The five archeological sites include four with prehistoric components and one that is exclusively a historic period site. Two of the sites have a historic period component overlain on the prehistoric site.

In accordance with the Arizona State Historic Preservation Office's *Draft Guideline for Undertakings Involving Archaeological Surveys Over Ten Years Old* (November 2001), archeologists at the Western Archeological and Conservation Center have reviewed the documentation for the archeological survey project. They have taken into consideration new archeological and geomorphological knowledge of the project area and assert that this survey project meets contemporary archeological survey standards, as well as those of the Arizona SHPO and National Park Service.

The National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq*.); the National Environmental Policy Act of 1969 (42 USC 4321 *et seq*.); and the National Park Service's Director's Order #28, *Cultural Resource Management Guideline (1997*), *Management Policies, 2001* (2000), and Director's Order #12, *Conservation Planning, Environmental Impact Analysis, and Decision Making* (2001) require the consideration of impacts on historic structures and buildings listed in or eligible for listing in the National Register of Historic Places.

The section of the Cactus Forest Trail under consideration also provides access to two historic Lime Kilns, located less than 50 feet off of the trail. Lime kilns, which were used to heat limestone to high temperatures to make lime plaster for adobe structures, are present in both the Tucson and Rincon Districts of the park and are on the National Register of Historic Places as a contributing property of the Rincon Mountain Foothills Archeological District, which was listed on the National Register of Historic Places on 10/16/79. The kilns are also listed on the State Register of Historic Places. The lime kilns were recorded as the historic component of the archeological site AZ BB:14:74.

The kilns are open to the public with an NPS interpretive sign explaining their history and use. The short access trail from the Cactus Forest Trail to the lime kilns has shown evidence of both foot and bicycle traffic in the past. At present, hikers continue to visit the structure as footprints on the spur trail indicate. However, there is no evidence of any direct or indirect impacts to the lime kilns as a result of mountain biking or other user activities.

The nature of archeological site information does not allow locations or specific site data to be included in public documents such as this EA. The specific information needed for SHPO consultation on the assessment of effect of this proposed undertaking is included in the Assessment of Actions Having an Effect on Cultural Resources report to be forwarded to the

Arizona SHPO. Because of the close proximity of the Cactus Forest Trail to these resources, Archeological Resources and Historic Structures will be retained as an impact topic.

Visitor Use, Understanding and Appreciation

The NPS recorded a total of 725, 874 recreational visits to Saguaro National Park in 2001. Approximately 211,023, or 29% of those visits were recorded at the Rincon Mountain District (personal comm, Danton). According to the park's year 2001 strategic planning results, 99% of park visitors reported being satisfied with their visit to the park, while 71% of the visitors claimed that they understood and appreciated park significance.

Visitors have opportunities to understand, appreciate, and enjoy the resource in a variety of ways. Popular recreational activities in both districts include auto touring, bird watching, hiking, nature walks, and wildlife viewing. The park also offers a number of educational programs to enhance visitor understanding and appreciation of the resource. The Rincon Mountain District offers ranger-guided nature walks, self-guided field trips, audiovisual programs, and a number of education and outreach programs. There are also a variety of educational brochures and books available at the visitor center.

The Cactus Forest Trail is one of the many trails found in the Cactus Forest area, or the lower Sonoran desert portion of the park. Of the over 40 miles of trail found in this area, the Cactus Forest Trail is considered relatively easy, occurring on fairly level terrain with some moderately sloping climbs and descents. The out and back orientation of the trail has been viewed as a disadvantage to some hikers who find making it a loop hike from the visitor center area too lengthy. Therefore, hikers often start from one end of the Cactus Forest Loop Drive and must either drop a shuttle vehicle at the other end of the loop drive or return to the point of origin.

Reopening a segment of the Cactus Forest Trail to mountain bike use may result in both beneficial and adverse impacts to the visitor's understanding, appreciation and enjoyment of park resources and values, therefore this topic will be retained for further analysis.

Visitor Safety

According to NPS *Management Policies 2001,* the Service will strive to identify recognizable threats to the safety and health of persons and to the protection of property. In addition, Title 36 CFR 4.30, regulations that provide for the use of bicycles on designated routes, requires a written determination that the safety of such use on a designated route has been considered.

The Rincon Mountain District of the park records a number of hiking, equestrian, and cycling related accidents each year. District-wide incident reports indicate that park rangers responding to visitors suffering from heat stroke, heart attacks, broken bones, and insect bites are not uncommon. Cycling-related accidents include broken arms and collar bones from falls occurring on the Cactus Forest Loop Road, and punctures and lacerations resulting from falls into desert shrubs and cactus.

Since a greater number of recreationists continue to experience park roads and trails by different means, the potential for visitor use conflicts may be greater as well. Because this EA explores the impacts of an additional recreational use, any potential impacts to visitor safety will be analyzed in this environmental assessment.

Park Operations
NPS law enforcement and maintenance staff assigned to the Rincon Mountain District provide trail repair, maintenance, and visitor safety measures for over 150 miles of trail. When fully staffed, a total of one to two NPS park rangers may occasionally patrol the Cactus Forest Trail by foot during the day. NPS rangers also patrolled the trail by mountain bike from 1991-2001 when such use was permitted. During that time, NPS rangers made informal contacts with visitors to discuss safety measures (adequate water, protection from heat, etc.), and proper trail etiquette.

The park maintenance staff has two full time trail foremen and a seasonal trail crew that varies in size depending on funding, need, etc. Mountain bike interest groups have also periodically performed volunteer trail maintenance on the Cactus Forest Trail. Park trail foremen and crews may provide training and guidance to these groups regarding proper trail maintenance, and any additional staff time spent on training may be offset by the beneficial efforts of these groups. Because opening the trail to mountain bikes has the potential to require additional staff resources for trail repair training as well as trail maintenance, park operations will be assessed as an impact topic.

Impact Topics Dismissed from Detailed Analysis

Geology and Topography
National Park Service *Management Policies 2001* (2000) require the protection of significant geologic and topographic features. The major landforms found in the Rincon Mountain District of the park include dry washes, alluvial fans at the mouths of canyons, long sweeping slopes known as bajadas, and pediments that form where eroded bedrock extends out from the mountains. The Cactus Forest Trail is an established trail in the park and would not be altered or redirected as a result of this proposal. Therefore, the impact topic of geology and topography has been dismissed from further analysis.

Cultural Landscapes
According to the National Park Service's *Cultural Resource Management Guideline* (DO-28), a cultural landscape is

> …a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

Thus, cultural landscapes are the result of the long interaction between man and the land, the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

The initial stage of Cultural Landscape identification, called Level 0 in the NPS Cultural Landscape Inventory (CLI) process, has identified several potential cultural landscapes at Saguaro National Park. Identification of a landscape at Level 0 indicates the need for both research and evaluation. Potential landscapes identified include the prehistoric, historic and ethnographic periods, making this quite complex. The prehistoric landscape is the Rincon Mountain Foothills Archeological District Landscape which would include all prehistoric cultural resources located below 4,000' in the Rincon Mountain District The historic-period landscape identified in the project area is the Lime-Making Industry Landscape which would include the kilns, the access road (now the trail), and the environment directly impacted by the lime industry.

The Cactus Forest Trail has been used historically as an access road to the Lime Kilns, as well as to the former ranger residence at the foot of Observatory Hill. Implementation of any alternatives presented in this environmental assessment would not alter the topography, vegetation, circulation features, spatial organization, or land use patterns of the landscape. Because the integrity of the existing landscape would be unaffected, cultural landscapes was dismissed as an impact topic.

Ethnographic Resources

Ethnographic resources are defined by the National Park Service as any "site, subsistence, or other significance in the cultural system of a group traditionally associated with it". (Director's Order – 28, Cultural Resource Management Guideline, 191). American Indian tribes traditionally associated with the lands of Saguaro National Park were apprised of the proposed action by letter dated July 12, 2002. Two letters were received; one dated July 22, 2002 from the Tohono O'Odham Nation and one dated August 1, 2002, from the Hopi Tribe. Although no substantive comments were received, the NPS is consulting with those tribes and copies of the environmental assessment will be forwarded to each affiliated tribe or group for review and comment. If subsequent issues or concerns are identified, appropriate consultations would be undertaken. Because it is unlikely that ethnographic resources would be affected, and because appropriate steps would be taken to protect any human remains, funerary objects, sacred objects, or objects of cultural patrimony inadvertently discovered, ethnographic resources was dismissed as an impact topic.

Prime and Unique Farmlands

In August, 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resource Conservation Service as prime or unique. Prime or unique farmland is defined as soil which particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts.

The narrow corridor of land occupied by the subject trail has never been available for farming. The proposed action would result in neither the degradation nor irreversible conversion of existing prime farmland to nonagricultural uses. Therefore, the topic of prime and unique farmland was dismissed as an impact topic.

Air Quality

Section 118 of the 1963 Clean Air Act (42 U.S.C. 7401 *et seq*.) requires a park unit to meet all federal, state, and local air pollution standards. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality related values

(including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.
Saguaro National Park is designated a Class I air quality area under the Clean Air Act, as amended. NPS Management Policies (2001) direct parks to seek the best air quality possible in order to "preserve natural resources and systems; preserve cultural resources; and sustain visitor enjoyment, human health, and scenic vistas."

The increased use that can be expected on a multi-use trail may have greater potential to generate dust than on hiking and equestrian only trails, however, the amount of dust generated by mountain bikes on this trail would contribute a negligible amount of dust to the parks overall air quality. Therefore, air quality has been dismissed as an impact topic.

Water Resources (Water Quality, Wetlands, and Floodplains)
National Park Service policies require protection of water quality consistent with the Clean Water Act. Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge of dredged or fill material or excavation within U.S. waters.

Saguaro National Park contains portions of the Rincon Mountain range, which contain watersheds draining into the Tanque Verde River Basin. The Cactus Forest Trail crosses a small number of smaller arroyos that eventually drain into this river basin. The park's present domestic water needs are provided by the City of Tucson.
The proposed action, which is confined to a portion of the Cactus Forest Trail, would have no effect on existing drainage patterns or nearby water supplies.

Executive Order 11990, *Protection of Wetlands*, requires federal agencies to avoid, where possible, adversely impacting wetlands. Proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings. The Cactus Forest Trail does not cross or affect any areas that would qualify as a wetland. Therefore, wetlands is dismissed as an impact topic and a Statement of Findings for wetlands will not be prepared.

Executive Order 11988, *Floodplain Management*, requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. Certain construction within a 100-year floodplain requires preparation of a Statement of Findings. The Cactus Forest Trail is outside of the 100-year floodplain. A Statement of Findings for floodplains will not be prepared.

Because water quality would be unaffected by the proposed action and there would be no impacts to either wetlands or floodplains, water resources was dismissed as an impact topic.

Environmental Justice
According to the Environmental Protection Agency, environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Presidential Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Draft Environmental Justice Guidance (July 1996). Therefore, environmental justice was dismissed as an impact topic.

Socioeconomic Environment

The proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. Therefore, the topic of socioeconomic environment was dismissed from this analysis.

Soundscape Management

In accordance with National Park Service *Management Policies* (2001) and Director's Order #47, *Sound Preservation and Noise Management*, an important part of the National Park Service mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among National Park Service units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas. The additional visitation that would result from mountain bike use on the trail would not be expected to have any long-term measurable impacts on the natural soundscapes found in the park. Therefore, soundscape management was dismissed as an impact topic.

Lightscape Management

In accordance with National Park Service *Management Policies* (2001), the National Park Service strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human caused light. Both districts of Saguaro National Park are closed to motor vehicles at sunset. The addition of mountain bikes on the trail would have no effect on ambient lightscapes, therefore, lightscape management was dismissed as an impact topic.

Wilderness Lands and Values

Saguaro National Park contains 71,400 acres of designated wilderness. The Wilderness Act prohibits the use of mechanized equipment such as bicycles. The Cactus Forest Trail is not within or adjacent to any wilderness lands within the park, therefore, wilderness lands and values are dismissed as an impact topic.

Scenic and Aesthetic Values

The Cactus Forest Trail is designed along the natural topography and vegetation of the area, and meanders through a relatively even elevation with rolling hills and gentle peaks. Because of this even terrain, and the variety and abundance of desert trees and shrubs, the trail is not visible from other viewpoints in the park, nor are there visible signs of excessive erosion and damage to natural resources. Therefore, the topic of scenic and aesthetic values is dismissed as an impact topic.

ALTERNATIVES

Alternative A – (No Action) Keep the Cactus Forest Trail Closed to Mountain Bicycles

Under this alternative, the Cactus Forest Trail would remain closed to mountain bike use and would remain open to hiking and equestrian use only. Mountain bicycling would be restricted to the 8-mile paved loop road (Cactus Forest Drive) inside the park. Otherwise, mountain bicyclists would need to ride on trails on adjacent US Forest Service land, or travel to other trails that permit mountain bike use in the surrounding Tucson metro area. Park trail crews would continue to maintain the trail given availability of staffing and other resources. The trail may receive some volunteer brushing and patrolling from organized hiking and equestrian groups, however, organized mountain bike groups would no longer volunteer their assistance in repairing and maintaining the trail.

Alternative B – (Preferred Alternative) Reopen the Cactus Forest Trail to Mountain Bicycles

Under this alternative, the segment of the Cactus Forest Trail inside the Cactus Forest Loop Drive would be reopened to mountain bike use. The trail would also remain open to equestrian and hiking use. The NPS would implement methods to inform trail users of proper trail etiquette. Information signs informing mountain bikers to yield the trail to hikers and equestrians would be placed at trail junctions with the loop road, and brochures would be available to mountain bikers at the fee booth as well as in the visitor center. To assure that no significant impacts occur on the trail as a result of anticipated additional use, the park would continue to monitor for environmental impacts and visitor use conflicts. To help offset resources impacts that may occur as a result of added visitation on the trail, the park would seek volunteer help from local hiking, equestrian, and mountain bike organizations to help repair and maintain the trail, and would instruct these groups on proper trail repair and maintenance.

Alternative C – Open the Cactus Forest Trail to Horses and Mountain Bicycles on Alternate Days

Under this alternative, equestrians and cyclists would be permitted to use the trail three days per week but on different and alternating days. Hikers would be permitted to use the trail every day of the week and one day would be open for all user groups. Equestrians and mountain bicyclists would each be given a weekend day. Park staff at the fee collection station would inform park visitors of this use-specific recreation schedule. The schedule would be available at the visitor center, the collection booth, and would be posted on trailhead signs. As in alternative B, the park would continue to monitor for environmental impacts and visitor use conflicts, and would seek volunteer help from local hiking, equestrian, and mountain bike organizations to help repair and maintain the trail, and instruct these groups on proper trail repair and maintenance.

Additional Mitigation Measures of the Preferred Alternative

- All volunteer trail crews will be asked to appoint a volunteer foreman to oversee trail maintenance activities. The NPS will train volunteer foremen and any other interested volunteers in trail repair and maintenance per NPS standards. Training will include instruction on proper water bar placement, drainage placement, brushing and clearing, revegetation, where to obtain fill and other materials for trails, and how to apply fill materials such as soil, gravel, rocks, etc. Trail foremen will be responsible for ensuring that their crew performs the necessary work in accordance with instructions and standards provided by the NPS.
- If concealed archeological resources are encountered along the trail, all necessary steps will be taken to protect them and to notify the park consulting archeologist immediately.
- Prior to any trail maintenance activities the resources division and/or trail crew at Saguaro National Park will contact the Western Archeology and Conservation Center (WACC). Maintenance activities will be designed to avoid inadvertent disturbance of archeological properties along and adjacent to the trail.

Alternatives Considered but Dismissed

Constructing/Opening Other Trails for Mountain Bike Use

Some public scoping comments suggested that the NPS construct or open additional trails to mountain bike use within the park. After careful consideration, the NPS determined that the proposal fell outside the purpose and need, and the scope of this analysis. Therefore, this alternative was dismissed from further consideration.

Table 1. Comparative Summary of Environmental Impacts

Impact Topic	Alternative A – (No Action) Keep the Cactus Forest Trail Closed to Mountain Bicycles	Alternative B – (Preferred Alternative) Reopen the Cactus Forest Trail to Mountain Bicycles	Alternative C – Open the Cactus Forest Trail to Horses and Mountain Bicycles on Alternate Days
Soils	Hiking and equestrian activity on the trail would continue to loosen and erode soils within the trail prism. Some sections of trail would continue to experience greater degrees of impacts depending on soil composition, slope, trail design, climate, and existing trail conditions. In areas of unstable soils and steeper grades, soils would be carried to lower elevations by wind, storm events, and continued trail use. Impacts on soils in these sections of trail are adverse, long-term and of minor intensity.	Reinstating mountain bike use would result in an overall increase in visitation on the trail. This type of use would also impact soils differently than hiking and equestrian use. The resulting impact to soils would be adverse, short- to long-term, localized to widespread, and of moderate intensity. Park staff would continue to maintain the trail depending on available staffing and funding levels. With proper trail repair and maintenance, the overall effect of added visitation on soils would be adverse, long-term, and of minor intensity.	Soil impacts would be similar to Alternative B. However, if use-specific recreation days result in more crowded conditions at times, soil erosion may occur if visitors need to pass others, stop suddenly, or move aside to yield the trail to others. As a result, soil erosion and loss may be more apparent in some areas than in alternative B. As in alternative B, the park would seek volunteer assistance to help offset trail impacts. Given these factors, the overall level of impact would be expected to be similar to Alternative B.
Vegetation	The elimination of mountain bikes on the Cactus Forest Trail would continue to result in less overall use on the trail. Decreased visitation on the trail would result in less trampling of small trailside shrubs and trees. Long-term, beneficial impacts to vegetation would continue to occur with less use through less soil erosion and disturbance. Overall, adverse impacts to vegetation would continue to occur from visitor use, and would be localized, short-term, and negligible to minor in intensity.	Impacts to vegetation would be similar to Alternative A, however, mountain bike use would contribute to a greater amount of disturbance of vegetation from riders dismounting from their bikes onto the side of the trail or one visitor yielding to another visitor. Vegetation that is affected is typically located in steeper slopes or where the trail curves and is lost through repeated trampling. Impacts from the added use would be adverse, short- to long-term, and of minor intensity. Trail repair and rehabilitation may offset	Mountain bike and equestrian use on different days would result in impacts that are similar to Alternative B. However, if use-specific recreation days result in more crowded conditions at times, vegetation loss through trampling and soil erosion could intensify if visitors need to pass others, stop suddenly, or move aside to yield the trail to others. As a result, vegetation loss may be more apparent in some areas than in alternative B. As in alternative B, the park would seek volunteer assistance to help offset trail impacts. Given these

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		some of the impacts associated with trailside vegetation loss. Trailside revegetation efforts could help to restore the natural scene, as well as contribute to a more defined trail path with greater soil stability. Trail revegetation efforts would result in long-term, beneficial impacts of minor intensity.	factors, the overall level of impact would be expected to be similar to Alternative B.
Park Wildlife, Including Threatened, Endangered, Candidate Species and Species of Special Concern	Many wildlife species such as smaller vertebrates and invertebrates have either somewhat adapted to the occasional presence of visitors, or avoid the trail when hikers and equestrians are present. Other larger vertebrates may avoid the loop road and the trail during daytime hours. As a result, some individual wildlife species may be displaced from their habitat at certain times, but would be expected to return to the immediate area after perceived threats are no longer present. Overall, impacts would be adverse, localized, short-term, and negligible to minor in intensity.	As in alternative A, wildlife would be frightened or displaced by the presence of visitors. However, given the higher speeds that mountain bicycles may reach on the trail, there may be a greater tendency for cyclists to encounter and frighten wildlife. There may also be a greater tendency for mountain bikers to run over smaller vertebrates such as snakes on the trail. These factors, along with an anticipated increase in the amount of use on the trail, are expected to result in more individual wildlife species being frightened and displaced from the immediate area. Overall, the impacts of this alternative on wildlife would be adverse, short-term, localized, and of minor intensity.	Mountain bike and equestrian use on separate days could result in different types of impacts on wildlife. If one recreational use proves to be more popular than another, the trail may receive fluctuating amounts of visitor use depending on what designated user day it is. More human activity at shorter intervals would increase the chances of frightening and displacing wildlife. Regardless, as in alternative A and B, smaller wildlife would be expected to return to the immediate area after perceived threats are no longer present. Therefore, impacts to wildlife would be expected to be different, but are characterized as adverse, localized, of short-term duration, and of minor intensity.

Impact Topic	Alternative A – (No Action) Keep the Cactus Forest Trail Closed to Mountain Bicycles	Alternative B – (Preferred Alternative) Reopen the Cactus Forest Trail to Mountain Bicycles	Alternative C – Open the Cactus Forest Trail to Horses and Mountain Bicycles on Alternate Days
Archeological Resources and Historic Structures	Hiking and equestrian use on the trail would continue to have negligible impacts on archeological resources and historic structures near the trail. Long-term trail maintenance and site monitoring should continue to help prevent site disturbance.	Reinstating bicycle use on the Cactus Forest Trail would not have any additional impacts on archeological resources or historic structures. As with any increase in visitation, however, there is a greater possibility that cultural resources could be discovered and/or damaged. It is anticipated that visitors would remain on the trail, therefore, impacts to archeological resources and historic structures would be similar to Alternative A.	Impacts to archeological resources and historic structures would be the same as Alternative B.
Visitor Use, Understanding, and Appreciation	Hikers and equestrians would continue to experience the Cactus Forest Trail by foot or horseback, and user conflicts with mountain bikers would not exist. The ability to share the trail with one less user group may be seen by hikers and equestrians as beneficial. Given the number of other trails within the park that are closed to mountain bikes the impact to hikers and equestrians would be localized and of negligible to minor intensity. Mountain bikers would need to seek off-road riding outside of the park. Impacts to these visitors would be adverse, long-term and may be negligible to moderate in intensity. Local mountain bikers that know the area may be	Bicyclists would view the opportunity for an off-road experience in the park as beneficial and long-term. However, some hikers and equestrians would feel as though their ability to experience park resources along the trail is diminished if they see mountain bike use as incompatible with their desired experience. Impacts to hikers and equestrians would be adverse, long-term, and minor.	Mountain bicyclists and equestrians would have opportunities to understand and appreciate park resources along the trail without the potential for visitor use conflicts between the two groups. Hikers would be able to choose a day that might result in less use conflicts and an enhanced visitor experience. Some recreationists may feel constrained, and others may be displaced. trail conditions. These. Impacts would be adverse, short- to long-term, and of negligible to moderate intensity depending on the individual. Overall, more focused management of the trail could offer both beneficial and adverse opportunities to all recreation groups.

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	less inconvenienced if they know there are no opportunities in the park, and more likely to ride trails outside of the park. Impacts to local mountain bikers would be adverse and long-term.		
Visitor Safety	Rangers would continue to respond to more common visitor safety incidents that occur on other backcountry trails, such as heart attacks, heat stroke, insect bites, and unfriendly encounters with native cacti. Overall, a negligible amount of visitor safety issues would be expected from continued hiker and equestrian use.	There would be a greater potential for visitor accidents under this alternative, when compared to Alternative A. Mountain bicycles traveling at higher speeds could inadvertently collide with other recreationists, regardless of their mode of travel. Horses may be frightened by cyclists and their response may result in a number of unsafe situations. Given the past record of incidents on this trail, however, reinstating mountain bike use would not be considered an unsafe use if recreationists continued to abide by the required trail etiquette rules of the trail. Overall, impacts to visitor safety would be adverse, long-term, localized to widespread, and of negligible to minor intensity.	There may be less potential for accidents to occur between different recreation groups in this alternative. Cyclists would be required to use the trail on different days than equestrians, therefore, the potential for bicycles to frighten horses on the trail would not exist. Cyclists would also be sharing the trail with other cyclists traveling at similar speeds. The potential for accidents could vary depending on such factors as the ability of the rider and the number of other cyclists and hikers on the trail. Past incident reports, however, do not indicate that safety was an issue between bicyclists and other trail users. Overall, visitor safety risks would be higher in this Alternative than Alternative A, but likely less than Alternative B. Impacts would be localized, long-term, and of negligible to minor intensity.

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Park Operations	NPS trail crews would continue to repair park trails as funding and staffing levels permit. Park trails would continue to be assessed and ranked in order of priority, and trail crews would repair and maintain trails in accordance with the prioritized schedule. Given the amount of resource damage that is commonly present as well as would be anticipated on the trail, the impact on park operations staff time resulting from the attention to this trail would continue to be negligible. Given the limited existing and projected staffing levels, park rangers would continue to patrol the trail on a very limited basis.	Additional repair and maintenance would be required on the trail to address resource impacts resulting from anticipated use increases, however, added resource impacts would not be expected to require substantial increases in staff time. One to two park staff would be required to spend approximately one day training volunteers to perform trail repair and maintenance. Once trained, volunteer assistance on the Cactus Forest Trail would allow park staff to focus efforts on other trails in need of repair. Overall, the impact of this alternative on park trail operations would be beneficial, long-term, and of minor intensity. As in alternative A, park rangers would continue to patrol the trail on a limited basis as law enforcement priorities and needs allow. Any additional law enforcement needs on the trail would go unmet. Given existing and projected staffing levels, impacts of these responsibilities would be adverse, long-term, and minor.	Impacts would be the same as B. In addition, park staff would need to devote more time to implementing the use-specific recreation schedule. More ranger patrol would be needed to enforce the schedule, and park staff would spend more time informing visitors of the restrictions. Given the current and projected staffing levels, these impacts of these responsibilities would be adverse, long-term, and moderate.

Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative A would provide for continued visitor and resource management of the trail to accommodate hiking and equestrian use. Under this alternative, park resources would continue to be protected while providing opportunities for the public to see and learn about some of the natural and cultural resources found in this section of the park. This alternative, therefore, strives to and meets policies 1-6 to varying degrees. However, this alternative does not fully meet policies 3 and 5.

Alternative B is the environmentally preferred alternative. Alternative B strives to and meets policies 1 – 6 to the extent of Alternative A, and would more fully meet policy 3 by attaining a more diverse range of visitor enjoyment without risk of public health or safety. It would more fully meet policy 5 by providing a wider variety of ways for the visiting public to experience the resource.

Alternative C strives to and meets policies 1 – 6, however, given current and projected staffing levels, it would fall short in meeting policies 2 and 3 because of the increased staff workload required to implement it.

ENVIRONMENTAL CONSEQUENCES

Methodology for Assessing Impacts

Potential impacts are described in terms of type (are the effects beneficial or adverse?), context (are the effects site-specific, local, or even regional?), duration (are the effects short-term, lasting less than one year, or long-term, lasting more than one year?), and intensity (are the effects negligible, minor, moderate, or major). Because definitions of intensity (negligible, minor, moderate, or major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this environmental assessment/assessment of effect.

In addition, National Park Service's *Management Policies, 2001* (2000) require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made in the *Environmental Consequences* section for each impact topic.

Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 *et seq*.), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all of the alternatives.

Cumulative impacts were determined by combining the impacts of Alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at the park.

Rapid Urbanization of the Greater Tucson Metropolitan Area
The greater Tucson metropolitan area has a population of approximately 885,000 and is projected to be at 1,000,000 by the year 2009 (Tucson Planning Department, 2001). The metro area occupies the 30 miles that separate both districts of the park and has largely restricted natural open spaces to those near or surrounding both districts. Urban and suburban development will continue to bring a greater number of residents closer to park boundaries. These developments adjacent to the park will, in turn, put more stress on park resources, such as wildlife that migrate across park boundaries or vegetation communities that may be impacted by escaped ornamental plants. As the population of Tucson continues to grow and open spaces continue to diminish, the park will likely experience more visitation and crowding in developed areas as well as on trails.

Major Trail Repair within the Park
The park has a small trail maintenance staff that plans and executes trail reconstruction projects each year. Funding for projects is sought from a variety of sources and fluctuates from year to year. On average, about ½ mile of trail tread is reconstructed every year and about 6 miles of trails receive light maintenance such as trimming brush and installing simple water bars. Most of this work is done within 5 miles of the section of the Cactus Forest Trail being considered in this analysis.

Improvements to the Broadway Trailhead
The park has plans to construct improvements, including dedicated parking, at the Broadway Trailhead within the next few years. Although environmental analysis on this project has not been completed, it is anticipated that about 3 acres will be disturbed for these improvements. This project will be located 1½ to 2 miles from the section of the Cactus Forest Trail being considered in this analysis. Improvements are expected to result in a greater number of hikers and equestrians in the area.

Impacts to Cultural Resources and §106 of the National Historic Preservation Act: In this environmental assessment/assessment of effect, impacts to historic structures are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). These impact analyses are intended, however, to comply with the requirements of both NEPA and §106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing §106 of the NHPA (36 CFR Part 800, *Protection of Historic Properties*), impacts to archeological resources and the cultural landscape were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations a determination of either *adverse effect* or *no adverse effect* must also be made for affected, National Register eligible cultural resources.

An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register, e.g. diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by Alternative B or C that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.
CEQ regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by §106 is similarly reduced. Although adverse effects under §106 may be mitigated, the effect remains adverse.

A §106 summary is included in the impact analysis sections for archeological resources and the historic structures under the action alternatives. The §106 Summary is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

Soils

Methodology and Intensity Thresholds
Analyses of the potential intensity of impacts to soils were derived from the available soils information (NRCS) and park staff's past observations of the effects on soils from both visitor use and construction activities. The thresholds of change for the intensity of impacts to soils are defined as follows:

Negligible: the impact is at the lowest levels of detection and causes very little or no physical disturbance /removal, compaction, unnatural erosion, when compared with current conditions.

Minor: the impact is slight but detectable in some areas, with few perceptible effects of physical disturbance/removal, compaction, or unnatural erosion of soils.

Moderate: the impact is readily apparent in some areas and has measurable effects of physical disturbance/removal, compaction, or unnatural erosion of soils.

Major: the impact is readily apparent in several areas and has severe effects of physical disturbance/removal, compaction, or unnatural erosion of soils.

Impairment: a major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified

in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impacts of Alternative A on Soils

Impact Analysis
Hiking and equestrian activity on the trail would continue to loosen and erode soils within the trail prism. Some sections of trail would continue to experience greater degrees of impacts depending on soil composition, slope, trail design, climate, and existing trail conditions. In areas of unstable soils and steeper grades, soils would be carried to lower elevations by wind, storm events, and continued trail use. Impacts on soils in these sections of trail are adverse, long-term and of minor intensity. Routine NPS trail repair and maintenance would occur as funding and prioritized needs allowed, however, given the estimated 150 miles of trails within the Rincon Mountain District, many other trails in the park would also require additional staff attention, and adverse impacts associated with trail loss may likely continue. Some long-term soil loss could be avoided through proper trail repair and maintenance. However, improper drainage and water bar placement may only worsen soil impacts by concentrating stormwater in areas where loose soils may be carried away. Additionally, it is assumed that mountain bike organizations would no longer volunteer to repair and maintain the trail. Impacts from improper trail repair along with the lack of volunteer maintenance, would be adverse, localized to widespread, long-term and of moderate intensity.

Cumulative Impacts
The Rincon District of the park has approximately 150 miles of trails open to hiking and equestrian use. Past and present visitor use has contributed to gradual erosion and loss of soils from these trails. The NPS would continue to perform trail repair and mitigation according to prioritized need. However, given the existing staffing level available to perform needed trail work, soils would continue to be adversely impacted by increasing visitor use at a faster rate than can be mitigated for. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative would contribute a negligible amount of soil loss to the cumulative scenario.

Conclusion
Hiking and equestrian activity on the trail would continue to loosen and erode soils within the trail prism. Some sections of trail would continue to experience greater degrees of impacts depending on soil and trail characteristics. Impacts on soils in these sections of trail are adverse, long-term and of minor intensity. Areas of improper trail repair have intensified soil loss. Improper trail repair, along with the lack of volunteer maintenance, would result in greater degrees of soil loss from the trail. Impacts would be adverse, local to widespread, long-term and of moderate intensity. Given the existing staffing level available to perform needed trail work, soils would continue to be adversely impacted by increasing visitor use at a faster rate than can be mitigated for. When combined with other past, present, and foreseeable future actions that would result in impacts to soils, this alternative would contribute a negligible amount of soil loss to the cumulative scenario. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill

specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative B on Soils

Impact Analysis

Reinstating mountain bike use would result in an overall increase in visitation on the trail. This type of use would also impact soils differently than hiking and equestrian use. Resource conditions have been recorded and monitored on the Cactus Forest Trail in the past 10 years. Some monitoring points show that soil erosion and loss has been exacerbated by the "cupping" of the cross-section of trail that is caused by repeated use in the center of the trail. Water is funneled down the center of the trail and does not dissipate outside of the trail prism. Although linear tracks associated with mountain bike use could be seen within the center of the trail, impacts on soils from hiking and equestrian use were also apparent on these slopes. Field surveys and observations by NPS staff indicated that horses as well as hikers tend to loosen and kick soils outside the center track. At times, multiple uses occurring on the trail have resulted in beneficial impacts by redistributing soils across the trail. Soils may be distributed from the center of the trail to the sides by cyclists and hikers, and then loosened and redistributed into the center of the trail by horses and hikers. As in Alternative A, the level of impact at various sections of the trail depends on factors such as soil composition, slope, trail design, climate and existing trail conditions, however, additional soil loss would likely occur from the added visitation that permitted mountain biking would bring. The resulting impact to soils would be adverse, short- to long-term, localized to widespread, and of moderate intensity.

Park staff would continue to maintain the trail depending on available staffing and funding levels. Trail maintenance may also be performed through volunteers and would help to offset trail maintenance deficiencies due to NPS funding and staffing shortfalls. Overall, volunteer trail maintenance would result in short-term, beneficial impacts of minor intensity. However, improper water bar and drainage placement could divert water and sediment to other areas causing further erosion off trail. The impacts of improper trail repair would be adverse, short-term, localized, and of negligible to moderate intensity. Proper trail repair and maintenance would help to mitigate additional soil loss that would occur through added use and may help prevent short- to long-term soil loss. Impacts would be beneficial, localized to widespread, and of minor intensity. With proper trail repair and maintenance, the overall effect of added visitation on soils would be adverse, long-term, and of minor intensity.

Cumulative Impacts

Cumulative impacts would be similar to Alternative A.

Conclusion

Impacts to soils would be greater under this alternative due to the additional visitation that mountain biking would bring. The added use would result in adverse, short- to long-term, localized to widespread impacts of moderate intensity. Added soil loss could be mitigated for through proper and regular trail repair and maintenance. Mitigation would help prevent short- and long-term soil loss and result in beneficial impacts of minor intensity. With proper trail repair and maintenance, the overall effect of added visitation on soils would be adverse,

long-term, and of minor intensity. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative C on Soils

Impact Analysis
Permitting mountain bike and equestrian use on different days would result in soil impacts that are similar to Alternative B. However, if use-specific recreation days result in more crowded conditions at times, soil erosion may occur if visitors need to pass others, stop suddenly, or move aside to yield the trail to others. As a result, soil erosion and loss may be more apparent in some areas than in alternative B. As in alternative B, the park would seek volunteer assistance to help offset trail impacts. Given these factors, the overall level of impact would be expected to be similar to Alternative B.

Cumulative Impacts
Cumulative impacts would be the same as Alternative A.

Conclusion
Use-specific recreation days could result in more recreationists using the trail on certain days and could result in crowded trail conditions. Additional soil erosion may occur from the types of actions visitors would take to pass or yield to others. As a result, soil erosion may be more apparent in some areas. Regardless, continued trail repair and maintenance would help to offset additional impacts, and the overall level of impact would be expected to be similar to Alternative B. Cumulative impacts would be similar to Alternative A. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Vegetation

Methodology and Intensity Thresholds
All available information on known vegetation in the park was compiled. Where possible, information from field studies of vegetation and observations of exotic species were compared with the immediate area at and surrounding the existing trail. Predictions about short- and long-term site impacts were based on previous studies of visitor impacts to vegetation and previous monitoring data from the Cactus Forest Trail.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: an action that could result in a change to a population or individuals of a species or a resource, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: an action that could result in a change to a population or individuals of a species or a resource. The change would be small and localized and of little consequence.

Moderate: an action that would result in some change to a population or individuals of a species or resource. The change would be measurable and of consequence to the species or resource but more localized.

Major: an action that would have a noticeable change to a population or individuals of a species or resource. The change would be measurable and result in a severely adverse or major beneficial impact, and possible permanent consequence, upon the species or resource.

Impairment: a major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impacts of Alternative A on Vegetation

Impact Analysis

The elimination of mountain bikes on the Cactus Forest Trail would continue to result in less overall use on the trail. Decreased visitation on the trail would result in less trampling of small trailside shrubs and trees, which usually occurs when visitors step off of the trail to yield the right-of-way to others. Less use on the trail would result in less soil erosion and disturbance, and would indirectly benefit vegetation. Overall, adverse impacts to vegetation would continue to occur from visitor use, and would be localized, short-term, and negligible to minor in intensity.

Some vegetation would continue to be lost as a result of ongoing trail use. Hikers and equestrians may move aside or yield to another trail user, inadvertently trampling vegetation and/or loosening the soil. Impacts would be adverse, long-term and of negligible to minor intensity. Vegetation may also be indirectly impacted by soil erosion. As more soils are disturbed within and outside of the trail prism, erosion from storm events may harm smaller shrubs and trees by removing stabilizing soils and exposing roots. Trail crews would continue to maintain the trail by stabilizing soils and planting native species in key locations.

Exotic species such as buffel grass and fountain grass seed could continue to be inadvertently transported in and spread along the trail through horses and hikers. The level of impact would depend on the amount of use the trail receives and on how much imported seed successfully establishes along the trail. Impacts would be adverse, and of negligible to minor intensity.

Cumulative Impacts

Desert vegetation has been and will continue to be lost to rapid urbanization in the Tucson basin. Increased urbanization also brings with it the emergence of exotic vegetation on public lands. Recreational use on trails and other areas within the park continue to have

adverse, incremental impacts to vegetation as well. Impacts associated with the current and future recreational use of the Cactus Forest Trail is expected to contribute to a negligible amount of vegetation loss when considered with other past, present, and reasonably foreseeable future actions.

Conclusion

The elimination of mountain bikes on the Cactus Forest Trail would continue to result in less overall use on the trail. Overall, adverse impacts to vegetation would continue to occur from visitor use, and would be localized, short-term, and negligible to minor in intensity. Impacts associated with the current and future recreational use of the Cactus Forest Trail is expected to contribute to a negligible amount of vegetation loss when considered with other past, present, and reasonably foreseeable future actions. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative B on Vegetation

Impact Analysis

Impacts to vegetation would be similar to Alternative A, however, mountain bike use would contribute to a greater amount of disturbance to vegetation. Past monitoring data indicates that the additional use on the trail has resulted in greater impacts to trailside vegetation. These findings also indicate that bicyclists are more likely to trample small trailside plants than other user groups (Weesner 2002). Vegetation loss and trail widening occurs when riders dismount from their bikes onto the side of the trail to yield to another trail user or to push their bike uphill. Added use on the trail would cause more visitors to step off trail to yield to another visitor. Vegetation that is affected is typically located in steeper slopes or where the trail curves and is lost through repeated trampling. Impacts from the added use would be adverse, short- to long-term, and of minor intensity. Trail repair and rehabilitation may offset some of the impacts associated with trailside vegetation loss. Trailside revegetation efforts could help to restore the natural scene, as well as contribute to a more defined trail path with greater soil stability. Trail revegetation efforts would result in long-term, beneficial impacts of minor intensity.

Cumulative Impacts

Cumulative impacts would be the same as Alternative A.

Conclusion

Adverse, short- to long-term minor impacts to vegetation would occur from the additional volume of use on the trail as well as the type of recreation. Overall, impacts would be adverse, localized, short- to long-term in duration, and of minor intensity. As with alternative A, impacts associated with the current and future recreational use of the Cactus Forest Trail is expected to contribute to a negligible amount of vegetation loss when considered with other past, present, and reasonably foreseeable future actions. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general

management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative C on Vegetation

Impact Analysis
Permitting mountain bike and equestrian use on different days would result in impacts that are similar to Alternative B. However, if use-specific recreation days result in more crowded conditions at times, vegetation loss through trampling and soil erosion could intensify if visitors need to pass others, stop suddenly, or move aside to yield the trail to others. As a result, vegetation loss may be more apparent in some areas than in alternative B. As in alternative B, the park would seek volunteer assistance to help offset trail impacts. Given these factors, the overall level of impact would be expected to be similar to Alternative B.

Cumulative Impacts
Cumulative impacts would be the same as Alternative A.

Conclusion
Use-specific recreation days may result in more crowded trail conditions on some days. Additional vegetation trampling and loss may occur from the types of actions visitors would take to pass or yield to others. As a result, damage and loss of vegetation may be more apparent in some areas. Regardless, continued trail repair and maintenance would help to offset additional impacts, and the overall level of impact would be expected to be similar to Alternative B. Cumulative impacts would be similar to Alternative A. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Wildlife, Including Threatened, Endangered, Candidate Species and Species of Special Concern

Methodology and Intensity Thresholds
All available information on known wildlife, including Threatened, Endangered, Candidate Species and Species of Special Concern was compiled. Where possible, map locations of sensitive resources were compared with the trail location. Predictions about short- and long-term site impacts were based on existing trail monitoring data from Saguaro National Park. A Biological Evaluation of Threatened, Endangered, Candidate Species and Species of Special Concern can be found in Appendix B.

The thresholds of change for the intensity of an impact are defined as follows:

Negligible: an action that could result in a change to a population or individuals of a species or a resource, but the change would be so small that it would not be of any measurable or perceptible consequence.

Minor: an action that could result in a change to a population or individuals of a species or a resource. The change would be small and localized and of little consequence.

Moderate: an action that would result in some change to a population or individuals of a species or resource. The change would be measurable and of consequence to the species or resource but more localized.

Major: an action that would have a noticeable change to a population or individuals of a species or resource. The change would be measurable and result in a severely adverse or major beneficial impact, and possible permanent consequence, upon the species or resource.

Impairment: A major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impacts of Alternative A on Wildlife including Threatened, Endangered, Candidate Species and Species of Special Concern

Impact Analysis

Many wildlife species such as smaller vertebrates and invertebrates have either somewhat adapted to the occasional presence of visitors, or avoid the trail when hikers and equestrians are present. Other larger vertebrates such as javelina, bobcat, gray fox and mule deer may avoid the loop road and the trail during daytime hours. As a result, some individual wildlife species may be displaced from their habitat at certain times, but would be expected to return to the immediate area after perceived threats are no longer present. Overall, impacts would be adverse, localized, short-term, and negligible to minor in intensity.

Cumulative Impacts

Past, present, and future urban and suburban development will continue to impact wildlife and its habitat. The increasing presence of humans within open space areas will continue to displace wildlife from their habitat. Other actions, such as improvements to the Broadway Trailhead, and other trail repair and rehabilitation in the park is expected to have short-term, negligible incremental effects on wildlife. When combined with these actions occurring in and near the park, the amount of anticipated use on the Cactus Forest trail would likely contribute a negligible amount of short-term, adverse impacts to wildlife.

Conclusion

Some individual wildlife species may be displaced from their habitat at certain times, but would be expected to return to the immediate area after perceived threats are no longer present. Overall, impacts would be adverse, localized, short-term, and negligible to minor in intensity. When combined with other past, present, and foreseeable future actions, this alternative would likely contribute a negligible amount of short-term, adverse impacts to wildlife. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or

proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative B on Wildlife including Threatened, Endangered, Candidate Species and Species of Special Concern

Impact Analysis

As in alternative A, wildlife would be frightened or displaced by the presence of visitors. However, given the higher speeds that mountain bicycles may reach and/or maintain on some sections of the trail, there may be a greater tendency for cyclists to encounter and frighten wildlife. There may also be a greater tendency for mountain bikers to run over smaller vertebrates such as snakes on the trail. These factors, along with an anticipated increase in the amount of use on the trail, are expected to result in more individual wildlife species being frightened and displaced from the immediate area. Overall, the impacts of this alternative on wildlife would be adverse, short-term, localized, and of minor intensity.

Cumulative Impacts

Cumulative impacts would be the same as Alternative A.

Conclusion

On average, mountain bicyclists travel at greater speeds than hikers and equestrians and could adversely impact wildlife near the trail by frightening them. It is assumed that the type and additional amount of visitor use on the trail would have greater adverse impacts to wildlife than Alternative A, and those impacts would be adverse, short-term, localized, and of minor to moderate intensity. Suburban development outside the park, along with increasing visitation within the park and other public lands, will continue to incrementally impact wildlife and their habitat. Given the cumulative impacts of this scenario, it is anticipated that this alternative would contribute a negligible amount of short-term, adverse impacts to wildlife. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative C on Wildlife including Threatened, Endangered, Candidate Species and Species of Special Concern

Impact Analysis

Permitting mountain bike and equestrian use on separate days could result in different types of impacts on wildlife. If one recreational use proves to be more popular than another, the trail may receive fluctuating amounts of visitor use depending on what designated user day it is. More human activity at shorter intervals would increase the chances of frightening and displacing wildlife. As discussed in alternative B, mountain bikes travel at higher overall speeds than hikers and equestrians, and may have a greater tendency to frighten and displace wildlife. Regardless, as in alternative A and B, smaller vertebrates and invertebrates

would be expected to return to the immediate area after perceived threats are no longer present. Therefore, impacts to wildlife would be expected to be different, but are characterized as adverse, localized, of short-term duration, and of minor intensity.

Cumulative Impacts
Cumulative impacts would be the same as Alternative A.

Conclusion
Varying types and amounts of recreational use on the trail would cause impacts to wildlife to vary slightly from Alternatives A and B. Wildlife would continue to react to the presence of humans; however, the type of use on the trail along with the frequency of occurrence may result in greater impacts at different times or on different days. Similar to alternatives A and B, wildlife would be expected to return to the immediate area when perceived threats are no longer present. Overall, impacts would be adverse, short-term, localized, and of minor intensity. Cumulative impacts would be the same as alternative A. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Archeological Resources and Historic Structures

Methodology and Intensity Thresholds
In order for an archeological resource or an historic structure to be eligible for the National Register of Historic Places it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history.

An archeological resource or historic building or structure must also possess integrity of location, design, setting, materials, workmanship, feeling, association (*National Register Bulletins: Guidelines for Evaluating and Registering Archeological Properties; How to Apply the National Register Criteria for Evaluation*).

For purposes of analyzing potential impacts to archeological resources and historic structures/buildings, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: Impact is at the lowest levels of detection - barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources or historic structures. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse impact - disturbance of a site(s) results in little, if any, loss of significance or integrity and the National Register eligibility of the site(s) is

unaffected. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – maintenance and preservation of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse impact - disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – stabilization of a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major: Adverse impact – disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – active intervention to preserve a site(s). For purposes of Section 106, the determination of effect would be *no adverse effect*.

Impairment: A major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impacts of Alternative A on Archeological Resources and Historic Structures

Impact Analysis
An NPS cultural resources survey crew studied the potential impact of trails on archeological resources and historic structures (Simpson and Wells 1983). The study concluded that the existing condition of the well-defined, marked trail has served to direct visitor use (hiking, equestrian, and bicycle) and has helped to prevent cross-country hiking and riding.

As a result, the current percentage of the Rincon Mountain Foothills Archeological District's surface disturbed by trails was calculated. For the sites along the Cactus Forest Trail the study calculated percent of surface disturbance ranging from only 0.01% to 0.07% (Simpson and Wells 1983:123-146). With the exception of the lime kilns, which are interpreted to the public, the cultural resources located along the Cactus Forest Trail are low visibility sites that blend in with the natural environment and do not attract the attention of visitors.

Hiking and equestrian use on the trail would continue to have negligible impacts to archeological resources and historic structures near the trail. Long-term trail maintenance and site monitoring should continue to help prevent site disturbance.

Cumulative Impacts:

As the population of the Tucson basin increases, it is assumed that there will be more recreationists using public lands. Increasing visitation to these lands could result in a greater occurrence of cultural sites being damaged. Past damage has been recorded at one of the historic Lime Kilns along the Cactus Forest Trail, although it is unknown if the damage is human-caused. Visitors may also inadvertently disturb unidentified archeological sites near the trail and in other areas of the park. Other cumulative impacts include the gradual deterioration of historic fabric, terrain or setting. The cumulative impact of Alternative A, when combined with other past, present, and foreseeable future actions, would be negligible.

Conclusion:

Hiking and equestrian use would continue to have negligible impacts to archeological resources and historic structures. Regional population pressures and increasing visitation in public lands would increase the chance of the discovery and damage of cultural sites. The cumulative effect of this alternative, when combined with other past, present, and foreseeable future actions, is expected to be adverse, long-term, and negligible. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative B on Archeological Resources and Historic Structures

Impact Analysis

Reinstating bicycle use on the Cactus Forest Trail would not have any additional impacts on archeological resources or historic structures. As with any increase in visitation, however, there is a greater possibility that cultural resources could be discovered and/or damaged. It is anticipated that visitors would remain on the trail, therefore, impacts to archeological resources and historic structures would be similar to Alternative A.

Cumulative Impacts

Cumulative impacts would be the similar to Alternative A.

Conclusion

Although any increase in visitation could result in cultural resources being discovered and or damaged, no additional impacts to cultural resources are anticipated. Cumulative impacts would be similar to Alternative A. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative C on Archeological Resources and Historic Structures

Impact Analysis
Impacts to archeological resources and historic structures would be the same as Alternative B.

Cumulative Impacts
Cumulative impacts would be similar to Alternative A

Conclusion
There would be no additional impacts to archeological sites and historic structures if mountain bike and equestrian use occur on separate days. As with alternative B, it is anticipated that the actions in this alternative would contribute a negligible amount of impact to the overall cumulative effect on archeological resources and historic structures in the park and on surrounding public lands.

Section 106 Summary:
After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of Alternative C would have *no adverse effect* on the National Register of Historic Places listed archeological resources and historic structures within the Rincon Mountain Foothills Archeological District.

Visitor Use, Understanding, and Appreciation

Methodology and Intensity Thresholds
Trail monitoring data and personal observation records of visitation patterns prior to the trail being closed to mountain bike use were used to estimate the effects of the alternative actions on visitors. The impact on the ability of the visitor to experience a full range of park resources was analyzed by examining resources mentioned in the park significance statement. The thresholds of change for the intensity of an impact are defined as follows:

Negligible: The impact is barely detectable, and/or will affect few visitors.

Minor: The impact is slight but detectable, and/or will affect some visitors.

Moderate: The impact is readily apparent and/or will affect many visitors.

Major: The impact is severely adverse or exceptionally beneficial and/or will affect the majority of visitors.

Impacts of Alternative A on Visitor Use, Understanding, and Appreciation

Impact Analysis
Under this alternative, hikers and equestrians would continue to have opportunities to experience the Cactus Forest Trail by foot or horseback and the potential for user conflicts

with mountain bikers would not exist. Hikers and equestrians would still be required to share the trail and hikers would continue to be required to yield to equestrians. The ability to share the trail with one less user group may be seen by hikers and equestrians as beneficial. Given the number of other trails within the park that are closed to mountain bikes and therefore free of this type of potential user conflict, the impact to hikers and equestrians would be localized and of negligible to minor intensity.

Opportunities for mountain bikers to learn about and appreciate the park's resources through an off-road riding experience would not exist within the park. All cyclists would be restricted to the paved Cactus Forest Drive loop road within the park and mountain bicyclists would need to seek off-road riding outside of the park. Impacts to mountain bicyclists would vary. For example, first time park visitors or families seeking an easy, off-road ride within the park would have no other opportunity for such an experience elsewhere in the park. Impacts to these visitors would be adverse, long-term and may be negligible to moderate in intensity. Local mountain bikers that know the area may be less inconvenienced if they know there are no opportunities in the park, and more likely to ride trails outside of the park. The level of inconvenience to local mountain bikers would depend on the individual and the desired experience. Regardless, impacts to local mountain bikers would be adverse and long-term.

Cumulative Impacts
As the population in the Tucson basin increases, demand for accessible recreation areas will also increase, bringing with it a greater potential for crowding and visitor use conflicts on the Tucson area trails. The cumulative impact on all user groups would vary and would depend on whether Tucson area trails and access points grow in number, remain at their current quantity and quality, or become inaccessible to recreationists. Given the current number and length of accessible trails in the park and the adjacent Coronado National Forest, the incremental impact of Alternative A would have negligible impacts on all recreationists.

Conclusion
Under this alternative, hikers and equestrians would continue to have opportunities to experience the Cactus Forest Trail by foot or horseback and the potential for user conflicts with mountain bikers would not exist. Opportunities for mountain bicycles to seek an off-road riding experience within the park would not exist. Impacts to mountain bicyclist would vary but would be adverse, long-term, and negligible to moderate in intensity. As the population in the Tucson basin increases, demand for accessible recreation areas will also increase, bringing with it a greater potential for crowding and visitor use conflicts on the Tucson area trails. Overall, Alternative A would have negligible cumulative impacts on all recreationists. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

<u>Impacts of Alternative B on Visitor Use, Understanding, and Appreciation</u>

Impact Analysis
Overall visitor use on the inner-loop segment of the Cactus Forest Trail would likely increase if mountain biking was reinstated as a permitted use. Bicyclists would view the opportunity for

an off-road experience in the park as beneficial and long-term. However, some hikers and equestrians would feel as though their ability to experience park resources along the trail is diminished if they see mountain bike use as incompatible with their desired experience. Some hikers and equestrians may choose to use the trail less or avoid the trail completely. Impacts to these recreationists would be adverse and long-term, however, the multi-use orientation of the trail would be likely have no more than minor impacts on a hiker or equestrian's ability to experience the park. This determination is based on the number and variety of trails in the Cactus Forest area that are open to hiking and equestrian use only. To help prevent potential user conflicts between user groups, bicyclists would be required to practice proper trail etiquette and yield the trail to hikers and equestrians. Impacts all user groups as well as an individuals ability to experience park resources and values could be viewed as beneficial or adverse, depending on the user and their willingness to share the trail.

The opportunities for various user groups to understand and appreciate the significance of Saguaro National Park while using the trail is unknown. The visitor's understanding and appreciation of park resources could be influenced by a number of factors, including desired experience, condition of the trail, opportunities to learn about the resource, the visitor's speed of travel on the trail, and visitor use crowding and conflicts.

Cumulative Impacts

The cumulative impact of this alternative would be the same as those described in Alternative A.

Conclusion

Overall visitation on the inner-loop of the Cactus Forest Trail would likely increase under this alternative. Bicyclists would view the opportunity to ride the trail as a long-term, benefit. Some hikers and equestrians may choose to use the trail less or avoid it if they view added cycling use as incompatible with their desired experience. Impact to hikers and equestrians would be adverse, long-term, and of minor intensity. Impacts all user groups as well as an individuals ability to experience park resources and values could be viewed as beneficial or adverse, depending on the user and their willingness to share the trail. Cumulative impacts would be similar to Alternative A. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Impacts of Alternative C on Visitor Use, Understanding, and Appreciation

Impact Analysis

Managing the trail by use-specific days could have a variety of impacts on the visitor's opportunity to experience, understand, and appreciate the trail. Under this alternative, mountain bicyclists and equestrians would have opportunities to understand and appreciate park resources along the trail without the potential for visitor use conflicts between the two groups. Although hikers would be permitted to share the trail every day of the week, they would be able to choose a day that might result in less opportunities for recreational use conflicts and greater opportunities for an enhanced visitor experience. Some individuals

would view use-specific days as a long-term, beneficial impact on their ability to experience the trail.

Other visitors may feel as though their freedom to experience the trail would be constrained by scheduled use-specific days, while others may be inconvenienced if their desired mode of travel would not be permitted the day of their visit. If one type of recreational activity proves to be a popular park experience and is only allowed on a specific day, it could lead to overcrowded trail conditions. These recreationists may feel displaced and, depending on the user group, may choose another trail or be forced to find a similar experience outside of the park. Impacts would be adverse, short- to long-term, and of negligible to moderate intensity depending on the individual. Overall, more focused management of the trail could offer both beneficial and adverse opportunities to all recreation groups.

Cumulative Impacts
The cumulative effect of this alternative would be similar to those of Alternative A.

Conclusion
There would be less potential for conflicts between user groups if the trail is managed by use-specific recreation days. Some visitors may feel that the absence of user conflicts would allow them more opportunities for an enhanced experience on the trail and would consider it a long-term benefit. Some visitors may feel constrained by scheduled use-specific days, or inconvenienced by not being able to use the trail on certain day. Overall, more focused management of the trail could offer both beneficial and adverse opportunities to all recreation groups. Because there would be no adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Saguaro National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's resources or values.

Visitor Safety

Methodology and Intensity Thresholds
Past incident records on the Cactus Forest Trail was used to estimate the effects of the actions in the alternatives. Any past major incident or an incident that resulted in personal injury or property was recorded and investigated as part of the Cactus Forest Trail monitoring plan. The thresholds of change for the intensity of an impact are defined as follows:

Negligible: The impact to visitor safety would not be measurable or perceptible.

Minor: The impact to visitor safety would be measurable or perceptible, but it might be realized through a minor increase in the potential for visitor use conflicts and would be limited to a relatively small number of visitors relative to other areas of the park.

Moderate: The impact to visitor safety would be sufficient to cause a change in accident rates on the trail or create the potential for additional visitor use conflicts in multiple areas along the trail.

Major: The impact to visitor safety would be substantial. Visitor use conflicts and accident rates in areas usually limited to low accident potential are expected to substantially increase in the short and long term.

Impacts of Alternative A on Visitor Safety

Impact Analysis
There have been no incident reports of unsafe conditions on the Cactus Forest Trail since mountain biking was prohibited in 2002. Rangers would continue to respond to more common visitor safety incidents that occur on other backcountry trails, such as heart attacks, heat stroke, insect bites, and unfriendly encounters with native cacti. Overall, a negligible amount of visitor safety issues would be expected from continued hiker and equestrian use.

Cumulative Impacts
The potential for accident and injury to visitors would be expected to increase with increasing visitation. Overall, this alternative, when combined with other past, present, and foreseeable future risks to visitor safety within the park, would result in a negligible amount of cumulative impacts.

Conclusion
Overall, under this alternative, a negligible amount of visitor safety issues would be expected from continued hiker and equestrian use. Overall, this alternative, when combined with other past, present, and foreseeable future risks to visitor safety within the park, would result in a negligible amount of cumulative impacts.

Impacts of Alternative B on Visitor Safety

Impact Analysis
There would be a greater potential for visitor accidents under this alternative, when compared to Alternative A. Mountain bicycles travel at higher speeds than hikers and equestrians, and could inadvertently collide with other recreationists, regardless of their mode of travel. Horses may be suddenly frightened by cyclists approaching toward them or behind them on the trail and their response may result in a number of unsafe situations. Given the past record of incidents on this trail, however, reinstating mountain bike use would not be considered an unsafe use if recreationists continued to abide by the required trail etiquette rules of the trail. Overall, impacts to visitor safety would be adverse, long-term, localized to widespread, and of negligible to minor intensity.

Cumulative Impacts
A majority of incident reports at the park occur along the Cactus Forest Loop Drive. Although the number of visitor accidents that have occurred on this and other backcountry trails is low, park trails and roads will likely continue to become more crowded and may result in higher number of visitor accidents. Given the past record of incidents on this section of trail, the adverse, long-term, minor impacts associated with this alternative is expected to contribute a

minor amount of impacts when viewed in conjunction with adverse impacts of other past, present, and reasonably foreseeable actions related to visitor safety.

Conclusion
There may be a greater potential for collisions and unsafe situations in this alternative if different recreational uses occur on the trail at the same time. Given the past record of incidents on this trail, however, the risk of unsafe situations could be reduced if recreationists share the trail responsibly and abide by required trail etiquette rules. Overall, impacts to visitor safety would be adverse, long-term, localized to widespread, and of negligible to minor intensity. Impacts associated with this alternative are expected to contribute a minor amount, when viewed in conjunction with adverse impacts of other past, present, and reasonably foreseeable actions related to visitor safety.

Impacts of Alternative C on Visitor Safety

Impact Analysis
There may be less potential for accidents to occur between different recreation groups in this alternative. Cyclists would be required to use the trail on different days then equestrians, therefore, the potential for bicycles to frighten horses on the trail would not exist. Cyclists would also be sharing the trail with other cyclists traveling at similar speeds. The potential for accidents could vary depending on such factors as the ability of the rider and the number of other cyclists and hikers on the trail. Past incident reports, however, do not indicate that safety was an issue between bicyclists and other trail users. Overall, visitor safety risks would be higher in this alternative than Alternative A, but likely less than Alternative B. Impacts would be localized, long-term, and of negligible to minor intensity.

Cumulative Impacts
Cumulative impacts would be similar to Alternative A.

Conclusion
There may be less of an overall potential for accidents to occur between different recreation groups in this alternative. Overall, visitor safety risks would be higher in this Alternative than Alternative A, but likely less than Alternative B. Impacts would be localized, long-term, and of negligible to minor intensity. Cumulative Impacts would be similar to Alternative A.

Park Operations

Methodology and Intensity Thresholds
Park Operations, for the purpose of this analysis, refers to the current staff available to adequately protect and preserve vital park resources and provide for an effective visitor experience. The discussion of impacts to park operations focuses on (1) law enforcement and any other staff available to ensure visitor and employee safety on the Cactus Forest trail, and (2) the ability of the trail crew to protect and preserve resources given current funding and staffing levels. Park staff knowledge was used to evaluate the impacts of each alternative and is based on the current description of park operations presented in the Purpose and Need section of this document. Definitions for levels of impacts to Park Operations are as follows:

Negligible: Park operations would not be affected or the effect would be at or below the lower levels of detection, and would not have an appreciable effect on park operations.

Minor: The effect would be detectable, but would be of a magnitude that would not have an appreciable adverse or beneficial effect on park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and successful.

Moderate: The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.

Major: The effects would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff, the public and be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed, could be expensive, and their success could not be guaranteed.

Impacts of Alternative A on Park Operations

Impact Analysis
NPS trail crews would continue to repair park trails as funding and staffing levels permit. Park trails would continue to be assessed and ranked in order of priority, and trail crews would repair and maintain trails in accordance with the prioritized schedule. Given the amount of resource damage that is commonly present as well as would be anticipated on the trail, the impact on park operations staff time resulting from the attention to this trail would continue to be negligible. Given the limited existing and projected staffing levels, park rangers would continue to patrol the trail on a very limited basis.

Cumulative Impacts
NPS trail crews oversee the repair and maintenance of approximately 150 miles of trails in the park. Given the length of the trail system and the amount of resource damage present on various trails in the park, this alternative would have negligible impacts on park operations workload.

Conclusion
Given the amount of resource damage that is commonly present as well as would be anticipated on the trail, the added increase to trail crew workloads would be negligible. Repair and maintenance of the trail would contribute a negligible amount of time to the overall park operations workload.

Impacts of Alternative B on Park Operations

Impact Analysis
Additional repair and maintenance would be required on the trail to address resource impacts resulting from anticipated use increases, however, added resource impacts would not

be expected to require substantial increases in staff time. One to two park staff would be required to spend approximately one day training volunteers to perform trail repair and maintenance. Once trained, volunteer assistance on the Cactus Forest Trail would allow park staff to focus efforts on other trails in need of repair. Overall, the impact of this alternative on park trail operations would be beneficial, long-term, and of minor intensity.

As in alternative A, park rangers would continue to patrol the trail on a limited basis as law enforcement priorities and needs allow. Any additional law enforcement needs on the trail would go unmet. Given existing and projected staffing levels, impacts of these responsibilities would be adverse, long-term, and minor.

Cumulative Impacts
Cumulative impacts would be similar to Alternative A.

Conclusion
Any additional trail repair, maintenance, and volunteer training needs resulting from this alternative would be offset by volunteer work. Overall, the impact of this alternative on park trail operations would be beneficial, long-term, and of minor intensity. Park rangers would continue to patrol the trail on a limited basis as law enforcement priorities and needs allow. Any additional law enforcement needs on the trail would go unmet.

Impacts of Alternative C on Park Operations

Impact Analysis
Impacts would be the same as B. In addition, park staff would need to devote more time to implementing the use-specific recreation schedule. More ranger patrol would be needed to enforce the schedule, and park staff would spend more time informing visitors of the restrictions. Given the current and projected staffing levels, these impacts of these responsibilities would be adverse, long-term, and moderate.

Cumulative Impacts
Cumulative impacts would be similar to Alternative A.

Conclusion
As with Alternative B, any additional trail repair, maintenance, and volunteer training needs resulting from this alternative would be offset by volunteer work. Due to limited staffing levels, any additional law enforcement needs on the trail would go unmet. Given the current and projected staffing levels, these impacts of these responsibilities would be adverse, long-term, and moderate.

CONSULTATION AND COORDINATION

List of Agencies and Organizations
Agencies and Organizations contacted for information; or that assisted in identifying important issues, developing alternatives, or analyzing impacts; or that will review and comment upon the environmental assessment/assessment of effect include:

Advisory Council on Historic Preservation
Arizona State Historic Preservation Officer
Natural Resources Conservation Service, Tucson Field Office, Arizona
U.S. Department of the Interior – Fish and Wildlife Service
State of Arizona Game and Fish Department
Affiliated Indian Tribes
- Ak Chin Indian Community
- The Hopi Tribe
- Mohave-Apache Community
- Tohono O'Odham Nation
- Zuni Pueblo

Preparer
Laurie Domler, NEPA/106 Specialist, National Park Service - Intermountain Support Office, Denver, Colorado.

Consultants
Saguaro National Park
Jim Bellamy, Acting Superintendent, (June 2001 – June 2002)
Sarah Craighead, Superintendent
Tom Danton, Chief of Interpretation
Carin Harvey, Backcountry Ranger
Mark Holden, Biologist
Robert Marek, Trails Foreman
Meg Weesner, Chief, Science and Resource Management
Susan Wells, Archeologist, Western Archeology and Conservation Center

List of Recipients*

Federal Agencies
Advisory Council on Historic Preservation
Natural Resources Conservation Service, Tucson Field Office, Arizona
U.S. Department of the Interior – Fish and Wildlife Service

State Agencies
Arizona State Historic Preservation Officer
State of Arizona Game and Fish Department

Affiliated Indian Tribes
Ak Chin Indian Community

The Hopi Tribe
Mohave-Apache Community
Tohono O'Odham Nation
Zuni Pueblo

Other Agencies and Organizations
Arizona Trail Association
International Mountain Bicycling Association (IMBA)
National Parks and Conservation Association (NPCA)
Pima Trails Association (PTA)
Public Employees for Environmental Responsibility (PEER)
Sonoran Desert Mountain Bicyclists

*A complete mailing list on file at Saguaro National Park

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Appendix A – Results of Monitoring Impacts on the Cactus Forest Trail, Saguaro National Park

Ten Years of Monitoring Impacts on the Cactus Forest Trail at Saguaro National Park

Margaret W. Weesner

Background

In June, 1991, following extensive public involvement for the Cactus Forest Trail Management Plan, Saguaro National Park opened a 2 ½-mile section of the Cactus Forest Trail to mountain bicycles for a one-year trial period. Park managers established criteria for evaluating the success of the trial, including monthly monitoring of impacts on the trail. Park staff established a system for evaluating impacts based on repeat photography, numerical ratings, and detailed notes on trail conditions at the photopoints.

Once the trial period was over, park staff continued monitoring impacts, using the same methodology approximately every 6 months.

Methods

Sixteen photopoints were selected, representing sections of trail where trail damage was (1) unlikely to occur, (2) likely to occur, or (3) already present. Repeat photographs were taken on each monitoring trip and an assessment of change was made as follows:

3 **Severe change or deterioration in resource conditions** that can only be ameliorated through direct management actions; e.g., a bicycle runs over native shrubs along the edge of the trail, creating a denuded area that requires revegetation.

2 **Moderate change in resource conditions** (i.e., impacts ten to be more enduring and do not disappear on their own); an example would be a prominent gulley created at the edge of a waterbar.

1 **Slight change in resource conditions** (i.e., a discernable, yet minor change in trial conditions, typically short-lived in nature); examples of such include a lone set of bike tracks straying off trail around a curve.

0 **No discernable change in resource conditions** beyond what normally could be expected from recreational use (i.e., tracks are to be expected to some degree); examples of impacts that would be noted under this category include horse/bike tracks encrusted in a formerly muddy section of trail.

-1 **Noticeable improvement in trail conditions**, typically the result of management actions (e.g., trail maintenance) and/or extended periods of dry weather (e.g., as the weather became drier during late spring, many encrusted tracks were obliterated over time).

Narrative descriptions of impacts were also recorded.

Monitoring data was collected regularly from June 1992 through June 1996. Lack of staff prevented data from being collected in 1997 and 1998. However, additional monitoring trips

have been made in March 1999, and every six months from September 2000 through March 2002.

Results and Discussion

Graphs show cumulative impacts for each photopoint. Increasing steps illustrate increasing impacts. Decreasing steps indicate improvements. Little change was observed in areas where managers predicted damage was unlikely to occur. Some of these areas improved over time as volunteer trail maintenance crews revegetated wide and braided areas. Areas where managers predicted damage would be likely saw the most severe negative impacts. The areas where managers observed damage already present showed less severe further degradation, which may have been because the volunteer trail maintainers worked on those sections more regularly than other sections.

[I have copies of previous data shown in graphs (which are being mailed to you because I don't have the digital versions), and Alix Rogstad and I are continuing to work on reproducing these graphs with additional data from the last three years.]

Conclusions

- Mountain bikes create different types of impacts than hikers or horses. The relative severity of impact depends on soils, slope, trail design, and climate.
- Linear ruts left by wheels tend to accelerate water running downslope, and water bars are more difficult to maintain.
- Bicycles are more likely to "trample" small trailside plants than other users.
- Most improvements resulted from continued volunteer maintenance by mountain bike clubs.
- Volunteers with limited tools and training can help maintain a trail and slow deterioration at little cost to the park.
- Although similar impact monitoring has not been conducted on other trails in the park, park staff and frequent trail users have noted that impacts have occurred on many park trails during the past ten years. There is no evidence that trail impacts are any greater or less on this trail, the only one used by mountain bikes, than on other trails in the park.

Recommendations

This section of the Cactus Forest Trail is particularly well-adapted to use by mountain bikes. The north and south sections of the trail are both on former dirt roadbeds. The central section of the trail has rolling hills, with a few steep grades, but the soils are more stable here than in many other sections of the Cactus Forest area. In some places, soil has eroded to bedrock, but once bedrock has been reached, further deepening of erosion gullies is unlikely.

The trail monitoring programs on the Cactus Forest Trail should be continued, and trail monitoring should be expanded to include other trails so that comparisons can be made.

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Appendix B – Biological Evaluation of Threatened, Endangered, Candidate Species and Species of Special Concern

Federally Listed Species

According to the October 2001 USFWS list of listed, proposed and candidate species for Pima County, there are 20 federally listed species of special status in Pima County. This list includes two species (Mexican gray wolf and ocelot) that have likely been extirpated in Arizona, or whose presence in Arizona is considered unlikely, unconfirmed or hypothetical. Included on this list are also 12 species known to occur in Pima County but that do not range into, or are not typically found in habitats that occur on, or adjacent to, the Rincon Mountain District (RMD) of Saguaro National Park (Huachuca water umbel, Kearney's blue star, Nichol's Turk's head cactus, Pima pineapple cactus, Sonoran pronghorn, desert pupfish, loach minnow, spikedace, bald eagle, brown pelican, masked bobwhite, and southwestern willow flycatcher). For this reason the proposed action was determined to have no effect on those species, and species accounts are not provided in this document. Of the remaining species, four are listed as threatened or endangered (Mexican spotted owl, cactus ferruginous pygmy-owl, lesser long-nosed bat, and Gila topminnow) and are known to occur in the RMD. In addition, the American peregrine falcon, also known to occur in the Rincons, has recently been delisted; and the Chiricahua leopard frog and the Gooddings onion, are proposed for listing and conservation agreements, respectively. Thus, below are full species accounts and effects determinations for the seven federally listed species (Mexican spotted owl, cactus ferruginous pygmy-owl, lesser long-nosed bat, Gila topminnow), delisted species (American peregrine falcon), and species proposed for listing (Chiricahua leopard frog, Goodding Onion) that are known to or might occur in the RMD.

<u>Species Accounts</u>

Goodding Onion (*Allium gooddingii*)

The Goodding onion is a perennial member of the family Liliaceae. It has several broad, flat leaves that form a rosette-like cluster at the base of the flowering stalk. The flowering stalk is taller than the leaves, and bears numerous bright fuchsia-colored flowers (USFWS 1992). Goodding onion generally occurs in mature mixed conifer (Douglas/white fir) and subalpine-conifer (spruce-fir) forests along north trending perennial, intermittent and ephemeral drainages (USFWS 1992). In Arizona, the species is known only from the Santa Catalina and White Mountains at elevations from 7,000' to 9,400' (USFWS 1992), and the USFWS and the U.S. Forest Service have a conservation agreement to protect this species.

Despite general botanical surveys of the area (Bowers and McLaughlin 1987), and intensive fire effects vegetation plot work (Schon pers. com.), Goodding onion has not been recorded in the Rincon Mountains.

Impact Analysis and Determination:

This species has not been recorded from the Rincon Mountains; furthermore, Goodding onion generally occurs in mixed-conifer and spruce-fir forests, and the project area is Sonoran

desertscrub. Therefore, we determine that the proposed action will have *no effect* on the Goodding onion or its habitat, regardless of the alternative chosen.

Gila topminnow *(Poeciliopsis occidentalis occidentalis)*

The endangered Gila topminnow is a small live-bearing minnow in the family Poeciliidae. This fish historically occupied larger streams and rivers throughout the Gila River Basin where they were found in the shallow margins of main river channels or backwaters, since they prefer quiet, warm waters with slow currents and abundant aquatic vegetation. In the past hundred years, human changes to the environment, particularly dams; the dewatering of cienegas, swamps, springs and streams; and introductions of exotic, predatory fish and other aquatic fauna, have reduced the distribution of Gila topminnow to a few (about 10) disjunct remnant populations (Weedman and Young 1997).

The Gila topminnow is considered extirpated in the Park (Weedman and Young 1995). However, the one site at which they were known to occur in the past through an undocumented stocking is recommended for potential "additional management action or restocking" (correspondence from U.S. F&WS, Arizona Ecological Services Field Office dated August 7, 1997). This site is a series of pools in a drainage on the north slope of the Tanque Verde Ridge in the Rincon Mountain District of the Park. These pools dry out/silt in intermittently, though generally not all of them at the same time. Thus, a population might be conceivably be maintained in the upper portion of this drainage. Although it is in the same watershed as the project area, the Cactus Forest Trail is below and some two miles southwest of the site for potential reintroduction of the Gila topminnow.

Impact Analysis and Determination: The Cactus Forest Trail is in the same watershed as a drainage that could potentially be used to restock Gila topminnow. However, the Cactus Forest Trail is well below and disjunct from that drainage, and activities on the Cactus Forest Trail would have no impact on that drainage or affect its potential to reintroduce this fish. Therefore, we determine that regardless of the alternative chosen, the proposed action will have *no effect* on the Gila topminnow or its potential habitat.

Chiricahua leopard frog (*Rana chiricahuensis*)

Chiricahua leopard frogs are proposed for listing under the Endangered Species Act. They are medium-sized spotted frogs distinguished from other leopard frog species by the contrasting pattern (cream colored tubercles on a dark background) on the rear of the thigh, and dorsolateral folds that are interrupted and deflected medially. These frogs are also unique in their tendency to call from out of the water. Within Arizona, this species is found sympatrically with the lowland leopard frog (*R. yavapaiensis*) in perennial waters (including streams, rivers, ponds and stock tanks), with *R. chiricahuensis* trending at elevations of about 3,000'-8,000' and *R. yavapaiensis* trending at elevations of 2,000'-4,000'.

Chiricahua leopard frogs have not been recorded in Saguaro National Park; however, as part of lowland leopard frog surveys conducted in July 1996, park staff surveyed for this species in Chimenea Canyon (at its headwaters in Manning Camp, and from 5,000'-5,400') and upper Madrona Canyon (from about 6,800' - 7,500'). Although lowland leopard frogs have been documented below 4,500' in many drainages in the Rincon Mountains, we have not located any Chiricahua leopard frogs.

Impact Analysis and Determination: Despite extensive surveys throughout the Rincons Mountains by Saguaro and other NPS biological staff, Chiricahua leopard frogs have never been recorded in Saguaro National Park. Furthermore, the proposed action will not affect potential habitat for this frog, which requires surface water above 3,000' elevation.

Therefore, we determine that regardless of the alternative chosen, the proposed action will have *no effect* on the Chiricahua leopard frog or its habitat.

Lesser long-nosed bat (Leptonycteris curasoae yerbabuenae)
The lesser long-nosed bat is a nectar feeding bat that migrates between its wintering grounds in the drier parts of Mexico, and its breeding/summering grounds in northern Mexico, including Baja California, and southern Arizona and New Mexico in the United States (USFWS 1995a). Lesser long-nosed bat migrations coincide with the availability of the pollen and fruit of columnar cactus (cardon and saguaros) and the nectar and pollen of blooming agaves. In its summer range the species usually forms large maternity colonies of females where they give birth to their young; these maternity roosts are typically in caves or abandoned mines. These roosts are found in "lower elevations near concentrations of flowering columnar cacti" (USFWS 1995a). The bat was listed by the USFWS as federally endangered, primarily due to loss of roosting habitat and vulnerability to disturbance of maternity colonies and other roosting sites (Shull 1988).

Bat surveys in Saguaro National Park have confirmed a small colony of lesser long-nosed bats in the Rincon Mountain District (RMD) of the Park, and we presume this species is foraging in the dense saguaro stands of the RMD early in the summer, and perhaps using agave flowers (Agave palmeri) found at higher elevations in this district (3,000' - 7,000'; Bowers and McLaughlin 1987) later in the year. The Cactus Forest Trail is located over a mile from the known bat roost, and neither the trail, nor any of the activities proposed to occur on it, would be expected to disturb bats (which forage after dark), or saguaros or agaves.

Impact Analysis and Determination: During the summer, lesser long-nosed bats are known to roost in the Rincon Mountain District of Saguaro National Park, and they likely forage in the dense stands of saguaros and scattered agave found in and around the Park. However, none of the alternatives proposed in this EA would be expected to directly or indirectly impact any lesser long-nosed bat roosts or their foraging habitat. Therefore, we determine that the proposed action will have no effect on lesser long-nosed bats or their habitat.

Cactus ferruginous pygmy-owl *(Glaucidium brasilianum cactorum)*
The cactus ferruginous pygmy owl (cfpo) is a small (about 6.5" long), long-tailed, earless owl federally listed as endangered due to a dramatic decline in its abundance and distribution in the U.S. in the last 50 years (Abbate et al. 1996). Loss of habitat is suspected as the major cause of its decreased numbers (USFWS 1993). The cfpo is the northernmost subspecies of the wide ranging, but tropically based, ferruginous pygmy owl (Phillips et al. 1964). Although historic accounts associated this subspecies with riparian woodlands and mesquite bosques in Arizona (Phillips et al. 1964, USFWS 1993), recent sightings of cfpos in the state have generally been in the Arizona upland subdivision of the Sonoran desertscrub and in the paloverde cacti mixed scrub series (Abbate et al. 1996). Both districts of Saguaro National Park contain potential habitat for cfpo - virtually all of the TMD, and the RMD below 4,000' (some 40,000 acres total).

Unconfirmed records from the past twenty years indicate that these owls inhabit(ed) both districts of Saguaro National Park. From 1994 to the present, Park staff, AGFD biologists, private contractors and volunteers have surveyed for cfpo within and nearby the Park. These surveys (about 250 in the RMD and 250 in the TMD) have been about equally divided between inventory efforts and clearance surveys. All of these surveys followed protocols specified by AGFD and the USF&WS at the time. To date there has been only one confirmed

cfpo detection in the Park resulting from these surveys; it occurred in the fall of 1995 in the Rincon Mountain District. In addition, two possible detections have occurred in the last two years, one of which was within one half mile of the Cactus Forest Trail (it was also very near a reliable past detection recorded in the 1980s).

Impact Analysis and Determination: Cactus ferruginous pygmy-owls have not been confirmed to occur in the Park since 1995; however, they probably inhabit, and may breed, in the lower (<4,000') elevations of the Rincon Mountain District of the Park. Within the last twenty years, two possible detections of this species occurred within a half mile of the Cactus Forest Trail. Based on descriptions of recently occupied territories, it does not appear that human presence, particularly established presence, is a deterrent to owl occupancy of a site (Abbatte 1996). The Cactus Forest Trail (which has been in place for well over twenty years), including the hiking and horsebackriding proposed for it in Alternative A in this EA, would be expected to have negligible impacts on local cactus ferruginous pygmy-owls. Impacts to their habitat and prey (i.e., trees large enough to contain cavities and insects and small vertebrates) would also be negligible. It is conceivable that the bicycle use proposed in Alternatives B and C, could pose slightly more of a threat to pygmy-owls. Cactus ferruginous pygmy-owls are intense and aggressive predators, that apparently become oblivious to danger while in pursuit of prey. This is demonstrated by documented mortality of telemetered birds which died as a result of flying into wires or other objects (S. Richardson pers. com.). Fast moving bicycles, with their hard frames and spokes, might pose a slightly higher collision risk (potentially minor impacts) for cfpos than hikers or horses. Therefore, we determine that the range of proposed actions *may affect but are not likely to adversely affect* cactus ferruginous pygmy-owls or their habitat, with Alternative A having slightly less potential to impact cfpos than Alternatives B and C.

American peregrine falcon (*Falco peregrinus anatum*)
This impressive bird was delisted from Endangered status by the USFWS in August 1999; however, their numbers are still to be monitored through 2004 to ensure their recovery. This large, striking falcon is primarily a hunter of small to medium-sized birds often associated with water (e.g. waterfowl, shorebirds, swallows, etc.). Along with a proximity to water, the most important habitat characteristic needed by this species is the presence of tall cliffs (typically over 150' but sometimes as low as 60'). Within this habitat, peregrines nest on ledges, potholes or in small caves that are relatively inaccessible to mammalian predators and that also provide protection from weather extremes.

Within Saguaro National Park, peregrines are known to nest at four locations in the Rincon Mountains, all of which are within 6,000'-8,000' elevation. During the breeding season (approximately May through June) peregrine falcons in southern Arizona are found fairly exclusively at these higher elevations. However, in the winter, these falcons are occasionally seen in the lower elevations of the Park, including the vicinity of the Cactus Forest Trail. Since their occurrence there is intermittent and during the non-breeding season, human activity on the Cactus Forest Trail, whether it is hiking, riding or biking, would be expected to have negligible to minor impacts peregrine falcons. Nor would the trail or human activities on it be expected to affect peregrine habitat or the abundance or distribution of their prey. (It should be noted that peregrine falcons are regularly seen perched on utility poles near major thoroughfares and/or flying over the northeastern part Tucson throughout the winter.)

Impact Analysis and Determination: American peregrine falcons are known to occur in the RMD, and may forage and perch around the project area in the non-breeding season.

Peregrines may be affected by and try to avoid human activities on the Cactus Forest Trail; however, hiking, riding or biking on an established trail would be expected to have negligible to minor impacts on these birds, particularly during the non-breeding season. In the future, as urbanization and development continue to occur in the Tucson Basin and around the Park, open spaces, such as the Park may become more important wintering areas for this species. In this case, given the landscape scale relevant to peregrine falcons, the increasing presence of developments and humans in the Park may have minor impacts on this species locally. Therefore, we determine that regardless of the alternative chosen, this *action may affect, but is not likely to adversely affect* peregrine falcons or their habitat.

Mexican spotted owl (*Strix occidentalis lucida*)
The Mexican spotted owl is one of three spotted owl subspecies, and is listed as Threatened by both the USF&WS (1995b) and the AGFD (2002). Spotted owls are large (relative to other North American owls), dark-eyed owls that lack ear tufts; and they are generally brown with heavy white to beige spotting. The Mexican subspecies is disjunctly distributed from southern Mexico, northward into southern Utah and central Colorado (USFWS 1995b). Mexican spotted owls occupy a variety of habitat types ranging from dense mixed conifer forests to steep-walled, rocky canyons (USFWS 1995b). In southern Arizona they typically occur in mixed-conifer, Madrean pine-oak and Arizona cypress forests, encinal oak woodlands, and riparian forests (USFWS 1995b). Nest sites are generally located in closed-canopy forests or steep-walled canyons. Occupied forest habitats generally contain mature old-growth stands and uneven-aged stands that are vertically complex with dense canopies (USFWS 1995b). Little published data exists concerning foraging habitat for Mexican spotted owls; however, it appears that foraging habitats generally have big logs, dense canopies, and large, densely distributed trees and snags (USFWS 1995b).

Mexican spotted owl surveys in Saguaro National Park have documented five territories within the Park, with all nest sites occurring around 8,000' elevation. These territories are consistently occupied every year, though sometimes only by one bird or a non-breeding pair. Protected Activity Centers (PACs) with core areas around the nest sites have been established for each of these territories. Radio-telemetry studies following resident birds throughout the summers of 1996-7 have shown that MSOs in the Rincons rarely forage below 7,000' during the breeding season (approximately March through September). MSO movements or activity from October through February are unknown, though based on the literature (USFWS 1995b), we suspect that resident birds may move downslope, and juveniles may disperse to other mountain ranges.

In February 2001, the USFWS designated much of the Rincon Mountain District of Saguaro National Park critical habitat for the MSO. The MSO critical habitat boundary lies approximately one mile east of the Cactus Forest Trail. Also, according to this ruling, "critical habitat is limited to areas within the mapped boundaries that meet the definition of protected and restricted habitat in the Recovery Plan."

Impact Analysis and Determination: Four MSO PACs lie within the RMD above 7,000' elevation. Designated critical habitat for the Mexican spotted owl does not include the Cactus Forest Trail, nor is the project area suitable habitat for MSOs. Therefore, we determine that regardless of the alternative chosen, the proposed action will have *no effect* on Mexican spotted owls or their (designated critical) habitat.

State and County Listed Species

In addition to federally listed species, there are some 18 other animal species potentially found in or adjacent to the project area that have special status with the state of Arizona (AGFD 2002) or Pima County (SDCP 2001). These are the Mexican long-tongued bat, cave myotis, pocketed free-tailed bat, California leaf-nosed bat, pale Townsend's big-eared bat, Merriam's mouse, yellow-billed cuckoo, rufous-winged sparrow, Abert's towhee, Bell's vireo, giant spotted whiptail, Sonoran desert tortoise, lowland leopard frog, Tucson shovel-nosed snake, ground snake, and talus snail spp. Potential impacts and cumulative effects to these species from the different alternatives are covered in the previous wildlife section (pages 33-36). In general, potential impacts to these species from any human activity on the Cactus Forest Trail would be expected to be adverse, localized, short-term and negligible to minor. Alternative A, would be expected to have the least impacts to wildlife, since it would probably result in the least use of the trail, and minimize the potential for collisions with or "running over" wildlife.

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Appendix C - Scoping Correspondence

United States Department of the Interior

NATIONAL PARK SERVICE
Saguaro National Park
3693 S. Old Spanish Trail
Tucson, Arizona 85730

IN REPLY REFER TO:

August 9, 2002

Dear Interested Party:

Saguaro National Park is proposing to evaluate the environmental and social impacts of reinstating mountain bike use on a portion of the Cactus Forest Trail in the Rincon Mountain District. The 2.5-mile section of the Cactus Forest Trail under study is located within the Cactus Forest Loop Drive in Saguaro East (see enclosed map).

Prior to 1991, the trail had been open to hikers and equestrians only. In the late 1980s, the National Park Service (NPS) developed a trails management plan for the Cactus Forest area. During this process, members of the local community expressed their desire for a mountain bike trail in the park. The NPS studied the appropriateness of mountain biking and, after evaluating comments received from the public, decided to allow mountain bike use on a 2.5-mile portion of the Cactus Forest Trail for a one-year trial period. During the trial period, the NPS monitored the trail for resource damage and kept a record of accidents, visitor use conflicts, and safety concerns. The decision to continue mountain biking was made at the end of the trial period after careful consideration revealed that there were no significant resource, safety, or social impacts. The NPS has continued monitoring resource impacts on the trail approximately every six months.

In April 2002, the park closed the trail to mountain biking in response to a claim by an organization of environmental professionals that mountain bike use was not properly authorized in 1991. The organization cited the Code of Federal Regulations for the National Park Service regarding bicycles (36 CFR 4.30). The regulation provides that, *"Routes may only be designated for bicycle use based on a written determination that such use is consistent with the protection of a park area's natural, scenic and aesthetic values, safety considerations and management objectives and will not disturb wildlife or park resources. Except for routes designated in developed areas and special use zones, routes designated for bicycle use shall be promulgated as special regulations."*

The National Park Service at Saguaro National Park is preparing an environmental assessment to consider the impacts of reopening the Cactus Forest Trail to mountain biking in accordance with 36 CFR 4.30. If such use is found to be consistent with protecting park resources and values and providing an educational and safe park experience, then a special regulation will be promulgated that will again allow mountain bike use on the Cactus Forest Trail.

I would like to hear your ideas, thoughts and concerns regarding mountain bike use on the Cactus Forest Trail. The park staff welcomes your input and encourages your participation in developing alternatives that will address management issues. In addition to the factors

presented in 36 CFR 4.30, other issues identified to date include potential impacts to soils, vegetation, wildlife including threatened and endangered species, cultural resources, public health and safety, and visitor use, understanding and appreciation.

Please submit your comments to the park by September 9, 2002 to:

Sarah Craighead, Superintendent
Saguaro National Park
3693 S Old Spanish Trail
Tucson, Arizona 85730

Or by email to: SAGU_Information@nps.gov

Please note that the names and addresses of people who submit comments become part of the public record. If you want us to withhold your address, you must state this prominently at the beginning of your comments. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection if asked for in their entirety.

Thank-you for your continued interest in Saguaro National Park.

Sincerely,

Sarah Craighead
Superintendent

United States Department of the Interior

NATIONAL PARK SERVICE
Saguaro National Park
3693 S. Old Spanish Trail
Tucson, Arizona 85730

IN REPLY REFER TO:

July 12, 2002

[Name and Address]

Subject: Saguaro National Park – Cactus Forest Trail

Dear []:

Saguaro National Park proposes to study the environmental and social impacts of reopening a portion of the Cactus Forest trail to mountain biking. The National Park Service is committed to eliciting comments about the proposal from both the general public and park affiliated populations, such as American Indian tribes that may have unique interests in and concerns about Saguaro National Park. I have enclosed a map of the trail for your Tribal Council's review and comment. Please forward all comments by August 12, 2002 to:

Sarah Craighead, Superintendent
Saguaro National Park
3693 S. Old Spanish Trail
Tucson, AZ 85730

As planning proceeds we will be updating you with additional information, including the environmental assessment. If you should have any questions about the project or the environmental assessment, please do not hesitate to contact either Meg Weesner, Chief of Resources and Science, Saguaro National Park at (520) 733-5170, or Laurie Domler, NEPA/106 Specialist at the Intermountain Regional office at (303) 969-2036.

Sincerely,

Sarah Craighead
Superintendent

Enclosure

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.