

STATE
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PARKS®

june 2005

BRYCE CANYON NATIONAL PARK

A Resource Assessment

National Parks Conservation Association



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STATE OF THE PARKS® Program

More than a century ago, Congress established Yellowstone as the world's first national park. That single act was the beginning of a remarkable and ongoing effort to protect this nation's natural, historical, and cultural heritage.

Today, Americans are learning that national park designation alone cannot provide full resource protection. Many parks are compromised by development of adjacent lands, air and water pollution, invasive plants and animals, and rapid increases in motorized recreation. Park officials often lack adequate information on the status of and trends in conditions of critical resources. Only 10 percent of the National Park Service's (NPS) budget is earmarked for natural resources management, and less than 6 percent is targeted for cultural resources management. In most years, only about 7 percent of permanent park employees work in jobs directly related to park resource preservation. One consequence of the funding challenges: two-thirds of historic structures across the National Park System are in serious need of repair and maintenance.

The National Parks Conservation Association initiated the State of the Parks® program in 2000 to assess the condition of natural and cultural resources in the parks, and determine how well equipped the National Park Service is to protect the parks—its stewardship capacity. The goal is to provide information that will help policy-makers, the public, and the National Park Service improve conditions in national parks, celebrate successes as models for other parks, and ensure a lasting legacy for future generations.

For more information about the methodology and research used in preparing this report and to learn more about the State of the Parks® program, visit www.npca.org/stateoftheparks or contact: NPCA, State of the Parks® Program, 230 Cherry Street, Ste. 100, Fort Collins, CO 80521; Phone: 970.493.2545; E-mail: stateoftheparks@npca.org.

Since 1919, the National Parks Conservation Association has been the leading voice of the American people in the fight to safeguard our National Park System. NPCA and its 300,000 members and hundreds of partners work together to protect the park system and preserve our nation's natural, historical, and cultural heritage for generations to come.

* Nearly 300,000 members

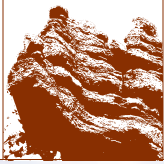
* 8 regional offices

* 35,000 activists



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REPORT SUMMARY



In 1876, upon observing Bryce Canyon's extraordinary geologic and aesthetic qualities, U.S. Deputy Surveyor T. C. Bailey wrote:

There are thousands of red, white, purple, and vermilion colored rocks, of all sizes... spires and steeples, niches and recesses, presenting the wildest and most wonderful scene that the eye of man ever beheld, in fact, it is one of the wonders of the world.

Today's visitors agree with Bailey and use words like "awesome" and "incredible" to describe the landscape. At 35,835 acres, Bryce Canyon National Park encompasses geological features that are unique in the world. Indeed, the park was created as a national monument in 1923 to recognize and preserve the incredible geological features at the top of Utah's Grand Staircase, a series of topographic benches and cliffs that rise in elevation from the Grand Canyon in the south and extend north

Bryce Canyon is composed of a series of 14 amphitheaters located along the rim of the Paunsaugunt Plateau. The colorful sedimentary rock of the park has been shaped by wind and water erosion into an assortment of fins, windows, hoodoos, and spires.



SUSAN ELLIS

Brochures, complete with full-color pictures and descriptions of the parks' main attractions, enticed tourists to visit Bryce Canyon, Zion, Cedar Breaks, and the Grand Canyon.

through Zion National Park to Bryce Canyon. The area gained increased protection in 1928 when it was designated as a national park.

Once railroads were built in the region, Bryce Canyon gained exposure and popularity as a tourist destination. Union Pacific Railroad offered a rail and motor "Grand Loop Tour" that took visitors to Bryce Canyon, Zion National Park, Cedar Breaks National Monument, and the north rim of the Grand Canyon. The Bryce Canyon Lodge was built in 1924 to serve the influx of tourists. The Zion/Mount Carmel Road and Tunnel, completed in 1930, connected Bryce Canyon, Zion, Cedar Breaks, and the north rim of the Grand Canyon to a major highway. This effectively tied all the parks together, and opened up opportunities for more tourists to visit the parks.

Wind and water erosion have shaped the park's multi-hued sedimentary rock into a magnificent dreamscape of spires, fins, windows, and hoodoos. The name Bryce Canyon is actually a misnomer; instead of true canyons, the park is composed of a series of 14 amphitheatres located along the rim of the Paunsaugunt Plateau.

The park's shape is also unusual, extending about 24 miles from northeast to southwest, but never more than one to six miles wide. With a road spanning nearly its entire length, the result is a primarily front-country park that allows visitors easy and close access to the incredible rock formations. Nearly 1.5 million people visited the park in 2004, with visitation heavily concentrated along the road and the 252-acre developed area that includes the campgrounds, lodge, cabins, and visitor center. To minimize traffic conges-

tion and protect air quality and other resources, the park offers a shuttle system; during the busy summer months, visitors are encouraged to leave their cars outside the park and use this free service.

Visitors to Bryce Canyon can explore a variety of vegetation communities—from pinyon-juniper and ponderosa pine forests to sagebrush meadows—that are only lightly affected by the non-native species that have infiltrated many national parks in the western United States. Clear air and unobstructed scenic vistas stretch to the horizon, and Bryce Canyon has some of the darkest night skies in the entire contiguous United States. Paleontological resources are significant and valuable, though they have not yet been systematically identified and studied.

Bryce Canyon is home to an estimated 522 plant species, 59 mammal species, and 130 bird species. While systematic studies of reptiles and amphibians have not been done, park staff believe there are 11 reptile species and four amphibian species in Bryce Canyon.

The park also contains evidence of thousands of years of human history. Prehistoric and historic artifacts in the park's museum collection provide valuable links to the people who lived in the region, as do many historic structures, cultural landscapes, and archaeological sites.

RATINGS

Current overall conditions of Bryce Canyon's known **natural resources** rated a "good" score of 81 out of 100. Ratings were assigned through an evaluation of park research and monitoring data using NPCA's State of the Parks comprehensive assessment methodology (see Appendix). Non-native species are not widespread, and air quality is generally excellent. Vegetation changes that are a result of historic fire suppression threaten the integrity of some of Bryce Canyon's natural systems, while air quality, scenic vistas, and dark night skies could be affected by any new regional power plants, oil and gas production, or coal extraction on adjacent lands.

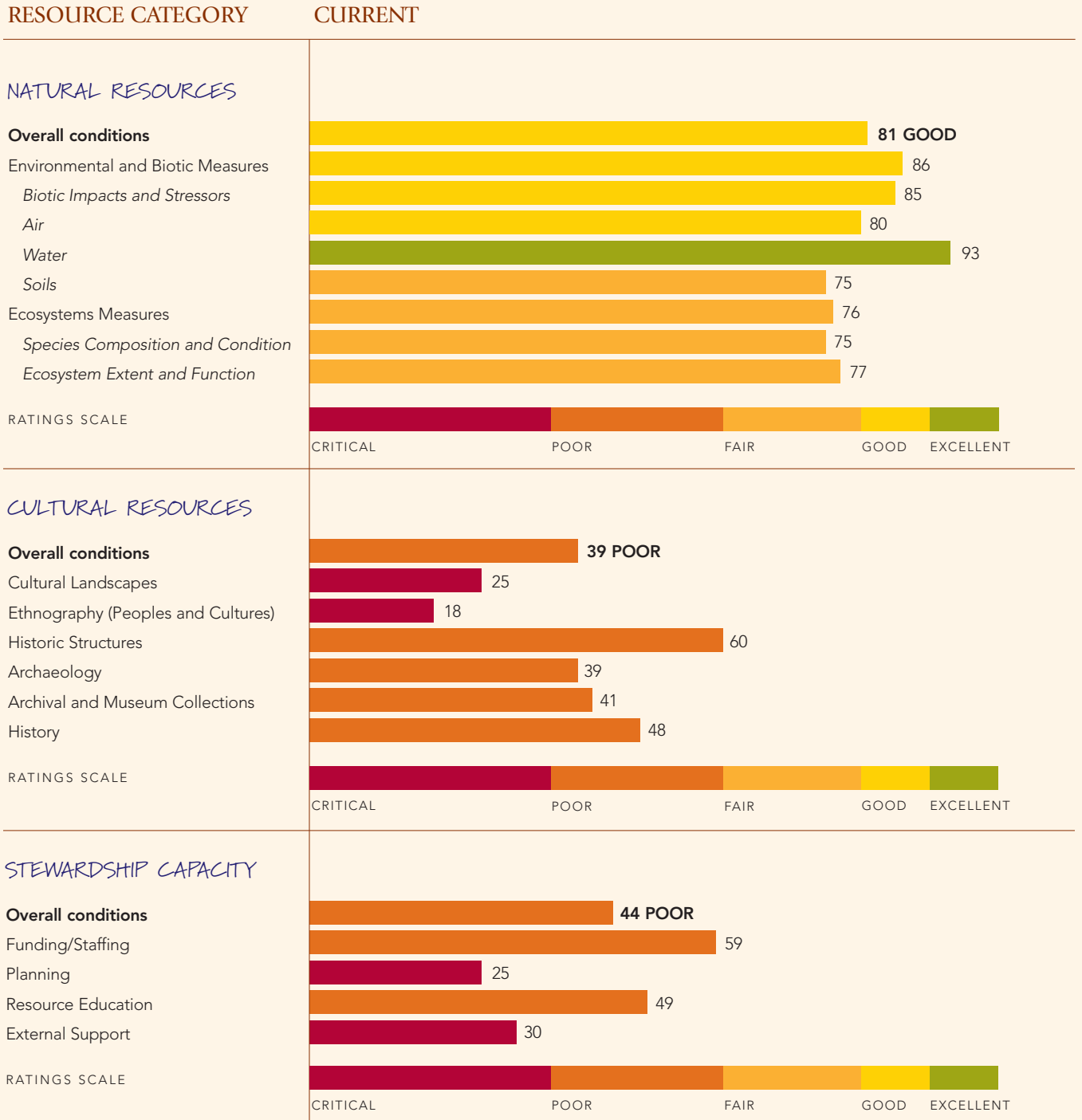
Overall conditions of the park's known **cultural resources** rated 39 out of a possible 100, indicating "poor" conditions. As a result of funding shortfalls,

BRYCE CANYON NATIONAL PARK AT A GLANCE



- Rustic-style architecture, which was designed in harmony with natural surroundings and incorporated local materials like logs and stone, was popular during the early years of the Park Service. The historic Bryce Canyon Lodge, built in the 1920s and restored in the late 1980s, exemplifies the rustic style.
- Bryce Canyon National Park was created to preserve a geologically unique landscape of spires, windows, fins, and hoodoos formed from colorful sedimentary rock shaped by wind and water. These features contribute to the park's scientific interest and importance as identified in its enabling legislation.
- Visitation to the park increased once it was connected to other regional destinations by railroad and highway. Today, visitation approaches 1.5 million annually.
- The park's clear, dry air and high elevation allow visitors to gaze upon scenic vistas that stretch up to 200 miles into southern Utah and northern Arizona. Bryce Canyon also has some of the darkest night skies in the contiguous United States.

Note: When interpreting the scores for natural resource conditions, recognize that critical information upon which the ratings are based is not always available. In this assessment, 72 percent of the information requirements associated with the methods were met, which limits data interpretation to some extent.



The findings in this report do not necessarily reflect past or current park management. Many factors that affect resource conditions are a result of both human and natural influences over long periods of time, in many cases before a park was established. The intent of the State of the Parks® program is to document the present status of park resources and determine which actions can be taken to protect them into the future.

Bryce Canyon does not have a cultural resources manager or other staff devoted to the full-time protection of the park's archive and museum collection, historic structures, archaeological sites, cultural landscapes, and other cultural resources.

Bryce Canyon's overall **stewardship capacity**—the Park Service's ability to protect resources at this park—rated a "poor" score of 44 out of a possible 100. The park's annual operating budget of \$2.67 million is estimated to be about \$1.8 million short of what is needed to adequately protect resources and provide necessary visitor services. Additional staff are needed to tend to cultural and natural resource management, interpretation, trail maintenance, and law enforcement.



BRYCE CANYON NATIONAL PARK

Bryce Canyon's geologically unique landscape contributes to the park's scientific interest and importance as identified in its enabling legislation.

KEY FINDINGS

- Funding and staffing shortfalls hamper cultural resource protection. Bryce Canyon's cultural resources are at risk because the park does not have a cultural resources manager or other staff devoted to their full-time care. For example, the park does not have the staff needed to develop an ethnography program and build relationships with associated groups of people. Budget constraints threaten to reduce the amount of preservation work that park staff can perform on historic structures in the future. The park has already been forced to reassign its preservation crew to routine maintenance operations such as custodial work.
- Historic fire suppression has altered some of the park's vegetation, resulting in unnaturally dense growth and high fuel loads in some areas. Prescribed burns, which the park has been conducting since the 1990s, are needed to restore balance. Vegetation is also vulnerable to livestock that trespass onto parkland from adjacent land where grazing is allowed. Livestock are especially destructive in riparian areas, and they have damaged vegetation along Sheep Creek, East Creek, Riggs Springs, and Yellow Creek.
- Bryce Canyon's air quality is generally considered to be excellent, but proposed regional power plants, coal extraction, and potential oil and gas production on adjacent land could detrimentally affect air quality in the future.
- Bryce Canyon's irreplaceable museum collections are at risk because of inadequate storage facilities and pests. Gaps in the walls of one storage area have allowed rodents to enter and chew up historic furnishings, and there is a potential for overhead water pipes to break in another storage area and damage other collection items.
- Bryce Canyon National Park's 2004 annual operating budget of \$2.67 million is estimated to be about \$1.8 million short of what is needed to adequately protect resources and provide necessary visitor services. At current funding levels, the park cannot afford to fill critical staff positions, including a cultural resources manager, geologist, biological technicians, additional law enforcement rangers, trail crew, custodians, and interpreters. In addition, there are no funds to complete a number of resource management plans.

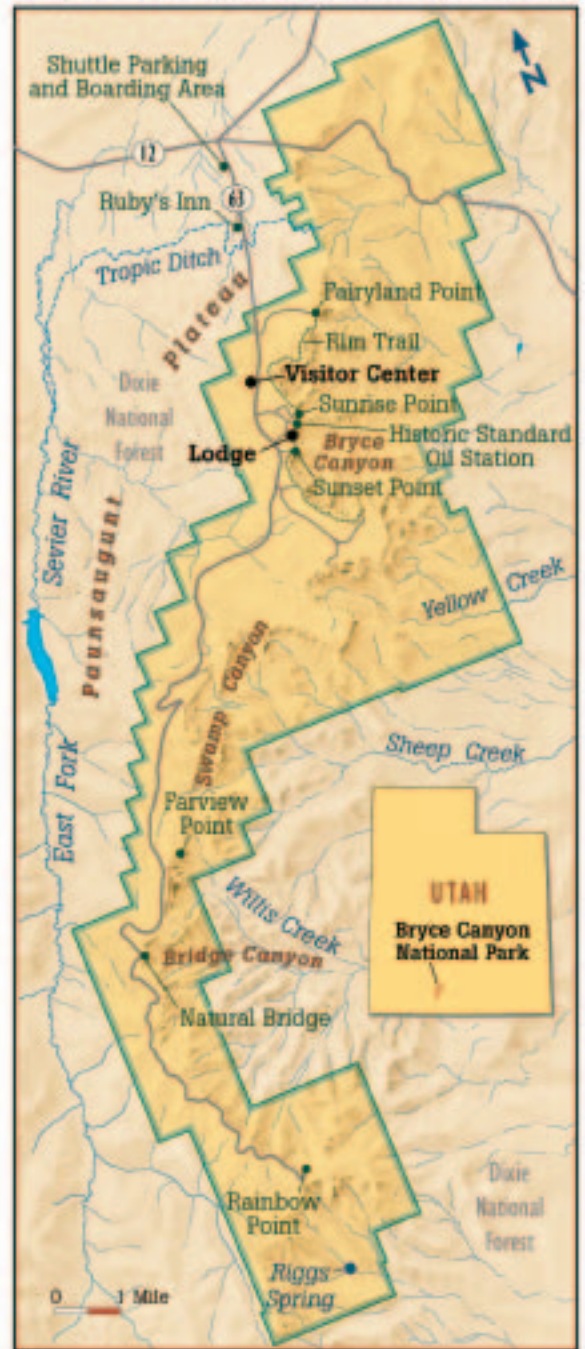
RESOURCE MANAGEMENT HIGHLIGHTS



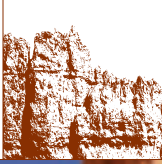
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- As a result of a successful reintroduction program, the park is home to a sustainable population of Utah prairie dogs, a species listed as threatened under the Endangered Species Act. In the early 1990s, prairie dogs from the park were used to establish another colony on the Awapa Plateau.
- Bryce Canyon staff have forged relationships with resource managers of adjacent public lands to promote unified landscape-management strategies and practices that benefit park resources. For example, the park is working with the Forest Service to implement a cooperative fire management program.
- Bryce Canyon’s historic preservation crew maintains the park’s collection of rustic-style buildings and trails, which together comprise an outstanding example of early national park development and landscape architecture theory.

Bryce Canyon National Park



MATT KANIA



THE BRYCE CANYON ASSESSMENT



NATURAL RESOURCES— PROTECTING RESOURCES IS A GROWING CHALLENGE

The assessment rated the overall condition of natural resources at Bryce Canyon National Park a score of 81 out of 100, which ranks the park in “good” condition. The park enjoys clear air and unpolluted water, and it provides habitat for many native plants and animals. Challenges include

changes in plant communities that are a result of historic fire suppression, increased proliferation of non-native plants, and resource damage from trespassing livestock.

PLANT COMMUNITIES—SHAPED BY ELEVATION

The vegetation communities of Bryce Canyon National Park are defined primarily by elevation, as parklands range from 8,000 feet to 9,100 feet.



BRYCE CANYON NATIONAL PARK

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At high elevations in the southern part of the park are forests of white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), blue spruce (*Picea pungens*), and quaking aspen (*Populus tremuloides*). Common understory plants include Oregon grape (*Mahonia repens*), greenleaf manzanita (*Arctostaphylos patula*), and common juniper (*Juniperus communis*). This is a fairly intact system, although fire suppression has prevented aspen from regenerating at natural rates, and park scientists believe that forest composition is likely changing. Also of note, spruce beetles are found both inside and outside the park. They have caused significant mortality beyond its borders, and are now becoming evident inside the park as well.

The ponderosa pine community (*Pinus ponderosa*) is found in the northern part of the park at elevations between 7,000 and 8,500 feet. This forest contains a variety of shrubs, including black sage (*Artemisia nova*), bitter brush (*Purshia tridentata*), and greenleaf manzanita. There is some encroachment of fir into this system as a result of fire suppression.

A dozen or more high plateau sagebrush meadows occur within the ponderosa forest and are dominated by black sage. These open meadows have a mix of shrubs, perennial grasses, sedges, and rushes. Fire suppression has led to sagebrush that



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The park's plant control team uses a combination of chemical and mechanical/physical treatments to control and eradicate problem species like tamarisk.



are older and larger than those in meadows subjected to natural fire regimes.

Meadows containing numerous species like Thurber's fescue (*Festuca thurberi*), spargrass (*Stipa comata*), and Indian ricegrass (*Stipa hymenoides*) are interspersed with forested areas at higher elevations and are more extensive at lower elevations. The federally threatened Utah prairie dog (*Cynomys parvidens*) has been reestablished in some of the meadows, and its reintegration into these communities is an important management issue for the park.

Below the plateau rim on the east side of the park are open forests of two-needle pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*). These woodlands have a wide variety of deciduous and evergreen shrubs and tend to have a sparse understory of grass and forbs. Today the

pinyon-juniper forests are unnaturally dense due to lack of fire, and they are mixed with mountain mahogany (*Cercocarpus* sp.) and Gambel oak (*Quercus gambelii*).

The breaks communities of Bryce Canyon occur along the cliffs and badlands of the park. The breaks make up the region for which the park is known—the hoodoos and other geologic formations just below the plateau rim. Vegetation in this area tends to be sparse but unique, containing the majority of the rare plants found within the park. The breaks are characterized by widely scattered trees, including bristlecone pine (*Pinus longaeva*), ponderosa pine, and limber pine (*Pinus flexilis*). The breaks also contain a perennial forb component of soil and substrate-adapted endemics.

Yellow-white catseye is one of the 23 sensitive plant species found in the breaks area of Bryce Canyon.



BRYCE CANYON NATIONAL PARK

Although grazing has not been permitted in Bryce Canyon since 1956, the park still struggles with livestock that trespass onto parkland from adjacent land where grazing is allowed.

NON-NATIVE SPECIES—PARK SERVICE HAS INVASIVES UNDER CONTROL

Largely as a result of hard work by Bryce Canyon's staff, the park has fewer non-native species, fewer noxious weeds, and a smaller percentage of land area impacted by weeds than many other national parks in the western United States. The most recent survey of non-native plants, conducted in summer 2004, covered 4,052 acres and found that only 1.34 percent of the surveyed land was infested with weeds.

Sixty-seven species of non-native plants have been identified in the park, but none of them are very widespread. Most non-native species occur in disturbed areas along U.S. Highway 12; along the park road; in drainages; and in or near buildings, trails, parking lots, and campgrounds. Surveys and treatment of invasive species are focused in these areas.

The park has an active non-native plant-control program that has been in place since 1993, although it is solely dependent on project funds. Park staff conduct regular inventories to locate and target areas of invasive spread, and then the plant-control team uses a combination of chemical and mechanical/physical treatments to control and eradicate problem species. Key species that have been treated in Bryce Canyon include tamarisk (*Tamarix spp.*), Russian olive (*Elaeagnus angustifolia*), knapweed (*Centaurea spp.*), Russian thistle (*Salsola iberica*), bull thistle (*Cirsium*

vulgare), and Canada thistle (*Cirsium arvense*). In 2002, the park treated 33 Russian olive trees and more than 4,600 tamarisk with Garlon4 (an herbicide) and the cut-stump treatment (cutting the stump as near to the ground as possible).

SENSITIVE SPECIES AND FEDERALLY LISTED SPECIES—PARK PROVIDES HABITAT FOR MANY

Plants are the most numerous of Bryce Canyon's sensitive species. Yellow-white catseye (*Cryptantha ochroleuca*), Cedar Breaks biscuitroot (*Cymopterus minimus*), Abajo daisy (*Erigeron abajoensis*), and Cedar Breaks goldenbush (*Haplopappus zionis*) are just a few of the 23 sensitive plant species found in the breaks area of the park, which is also the most highly visited area of Bryce Canyon. Several of these species have been monitored, and they seem little affected by visitor use. Continued monitoring would help the park identify any future concerns.

The Utah prairie dog is the only federally listed species known to breed in Bryce Canyon. Previous eradication efforts, habitat effects from livestock grazing, disease, and loss of habitat due to development and other human activities decimated the species and caused it to be federally listed as endangered in 1973.



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Silene petersonii is only one of Bryce Canyon's sensitive plants.

The Utah prairie dog was extirpated from the park in the 1950s, but was reestablished from 1974 through 1986. In 1984, the species was downlisted to threatened status. In 1995, an outbreak of sylvatic plague reduced the population in the park by 60 percent. Today the park's main population of Utah prairie dogs, called the mixing circle colony, averages about 150 animals.

The continued presence of prairie dogs in Bryce Canyon is a success for the park. However, populations are still low, and additional reintroductions to other protected areas are needed to further bolster the species. Park managers would also like to implement a prairie dog management plan, based on the recovery plan developed by the U.S. Fish and Wildlife Service, to manage Bryce Canyon's population.

Other federally listed or species of special concern that have been sighted in or around Bryce Canyon include the southwestern willow flycatcher (*Empidonax traillii extimus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), bald eagle (*Haliaeetus leucocephalus*), California condor (*Gymnogyps californianus*), and northern goshawk (*Accipiter gentilis*).

LAND USE HISTORY—PREVIOUS GRAZING, LOGGING, AND FIRE SUPPRESSION STILL AFFECT PARK

Before the creation of Bryce Canyon National Park, early settlers living in the region used available resources to survive. They raised livestock, harvested timber, and constructed irrigation ditches. Evidence of these activities is still found in the park today.

Beginning around 1870, Mormon ranchers grazed cattle and livestock in the Bryce Canyon region. Intense grazing led to a large decline in forage abundance. Although grazing has not been permitted in Bryce Canyon since 1956, the park still struggles with livestock that trespass onto parkland from adjacent land where grazing is allowed. The animals are especially destructive in riparian areas; vegetation damage has been documented along Sheep Creek, East Creek, Riggs Springs, and Yellow Creek.

To keep livestock out, most of the park's 65-mile



boundary is fenced. Sierra Club volunteers have helped Bryce Canyon's maintenance staff to build and maintain the fence. In spite of these efforts, livestock still make their way into the park. During a 2004 boundary survey, staff found that part of the fence near Yellow Creek had been cut to allow livestock to enter the park. Staff are seeking funds to maintain the boundary fence.

In addition to raising livestock, early settlers also harvested timber. Two sawmills had operated in the northeastern area of what is now the park.

The largest historical effect on present day parklands, however, may have come from decades of fire suppression. Prior to Mormon settlement of the area, ponderosa pine forests in what is now parkland experienced fires about every 3.3 years. Higher elevation mixed conifer forests experienced fires every 7.5 years. Fire suppression throughout much of the 20th century has resulted in high fuel loads. Some areas now have 1,000 trees per acre compared to historic levels of 25 to 50 trees per acre, making unnaturally high-intensity fires much more likely.

In response to this threat, the park began conducting prescribed burns in the 1990s, and completed a comprehensive fire management plan in spring 2005. With the new plan, fire policy continues to evolve toward allowing more fires to burn naturally outside of suppression zones near structures. Park staff are

Decades of fire suppression have altered vegetation communities in parts of the park. Staff conduct prescribed burns in an effort to restore a more natural fire regime.

PARK'S DARK NIGHT SKIES AND NATURAL SOUNDSCAPES THREATENED

Bryce Canyon's soundscape is affected by noise from helicopters and fixed wing aircraft used for sightseeing, as well as commercial jets. Bryce Canyon needs an Air Tour Management Plan from the Federal Aviation Agency to help govern what kinds and how many overflights will be allowed.



JIM NATIONS

Clear air combined with the park's high elevation and distance from major light sources make for spectacular stargazing at Bryce Canyon. As many as 7,500 stars are visible to the naked eye, as are views of the Milky Way and distant Andromeda Galaxy. Of the 44 parks where light has been measured, Bryce Canyon is among the five darkest.

The dark skies are threatened by light pollution from both near and more distant sources. A single new light source nearby could negatively affect dark night skies, and park managers have limited ability and authority to control new light sources outside of the park. In addition, recent data have shown that night skies are being invaded by light pollution from as far away as Las Vegas.

The Park Service's Night Sky Coordinator, who is currently stationed at Bryce Canyon, is working with local communities to raise awareness of night sky concerns, which have been largely overlooked until recent years. Service-wide, the Park Service Night Sky Team is working with many parks to increase awareness of night sky concerns

and provide parks with resources and data to address the problem of proliferating light sources both within and outside park boundaries.

Bryce Canyon has a natural soundscape that is degraded mainly by aircraft overflights. A 1995 study showed that aircraft could be heard at Fairyland Overlook, a popular tourist spot, 29 percent of the time, and that aircraft could be heard throughout the park 19 percent of the time. Noise comes from helicopters and fixed-wing aircraft used for sightseeing, as well as commercial jets.

Park managers believe that noise from overflights affects visitor experience and could also affect wildlife. They are collecting sound data and developing a sound management plan that quantifies the effects of noise levels in the park.

Park managers are concerned about airport construction and expansion in nearby towns that could lead to increased overflights. Bryce Canyon needs an Air Tour Management Plan from the Federal Aviation Agency to help govern what kinds and how many overflights will be allowed.



BRYCE CANYON NATIONAL PARK

Bryce Canyon's excellent air quality allows visitors to gaze upon scenic vistas that extend as far as 200 miles.

also working with the Dixie National Forest on an interagency fire management plan to guide fire management activities across the landscape.

AIR QUALITY—CLEAR, DRY AIR MAKES FOR MAGNIFICENT VIEWS

Bryce Canyon's arid climate and mostly unpolluted air make it possible for visitors to gaze upon scenic vistas extending as far as 200 miles into southern Utah and northern Arizona.

The Park Service has been monitoring several parameters of air quality in Bryce Canyon since 1984. Levels of haziness and wet deposition of sulfate are much better than average when compared to other monitored parks throughout the country, while wet deposition of nitrate is about average. The park does not monitor dry sulfate deposition, nitrate deposition, or ozone, though possible ozone damage has been reported to some sensitive plant species.

Air quality in the park is generally considered to be excellent, and park managers do not believe it has

been significantly degraded by pollution. However, there are threats on the horizon. Several power plants have been proposed for the region around Bryce Canyon, and there are concerns that permitting processes do not take into account the cumulative effects of multiple emissions sources on the air quality in the park. While no single power plant may be clearly responsible for significantly degrading visibility, the combined emissions from several plants will likely affect air quality.

Possible coal, oil, and gas leasing on federal, state, and private lands to the north and northwest could also affect the park's air quality in the future.

WATER QUALITY—LITTLE DATA AVAILABLE

Bryce Canyon has limited riparian and wetland areas, although three perennial streams run through the park: Yellow Creek, Willis Creek, and Sheep Creek. Other streams are ephemeral or intermittent. Water quality is not monitored extensively in Bryce Canyon



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The Tropic Ditch, built in the 1890s to transport water from the East Fork of the Sevier River to the town of Tropic, is the only year-round water supply that originates from outside the park.

at this time, but park staff hope to implement monitoring in the near future as part of the Park Service's Vital Signs program.

Despite the lack of monitoring, there are few concerns about water quality because nearly all water sources originate within the park. The single exception to this is water flowing through the Tropic Ditch, which was built in the 1890s to transport water from the East Fork of the Sevier River to the town of Tropic. This ditch runs through the northern part of the park and is the only year-round water supply that originates from outside the park. One concern about the ditch is that it provides a pathway for weeds to enter the park.

Although there is no ongoing monitoring at this time, the National Park Service Water Resources

Division published a baseline water quality analysis for Bryce Canyon in 1999. The report concluded, "without adequate data it is difficult to make definitive statements regarding water quality... however, from the limited available data, water quality has generally been good." There have been no subsequent survey reports, and no indication that water quality has been significantly degraded since the report was published.

Future threats to water quality include pollution that could occur as a result of potential coal-bed methane production south and east of the park.

CULTURAL RESOURCES— STAFFING SHORTAGE PLACES RESOURCES AT RISK

Bryce Canyon scored an overall 39 out of 100 for cultural resource conditions, including archaeology, cultural landscapes, history, historic structures, archive and museum collections, and ethnography (peoples and cultures). This score indicates that the park's cultural resources are in "poor" condition. The scores for cultural resources are based on the results of indicator questions that reflect the National Park Service's own Cultural Resource Management Guideline and other policies related to cultural and historical resources (see Appendix). A primary factor contributing to Bryce Canyon's score is the park's staff shortage.

ARCHIVE AND MUSEUM COLLECTIONS—LACK OF STAFF, PEST INFESTATIONS, AND INADEQUATE STORAGE FACILITIES THREATEN COLLECTIONS

Bryce Canyon's archive and museum collections include papers and artifacts such as administrative documents pertaining to the park's development; menus from the historic Bryce Canyon Lodge; American Indian artifacts; furnishings from the park's first concessionaire; historic photographs; and geological, entomological, and animal specimens. Together, there are more than 40,000 items that tell of the park's history.

Caring for these important collections is a challenge because the park does not have a cultural resources manager or any other staff devoted to cultural resources protection. Instead, one of the park's interpreters spends about 5 percent of her time caring for the collections.

Storage is also an issue at Bryce Canyon. Items are currently stored in a garage and a remodeled basement. The garage does not have environmental controls, and large gaps between the walls and ceiling allow rodents to enter. As a result, rodents are free to nest in, leave droppings on, and chew up historic curtains, bedding, wooden furniture, and other objects. In addition, some prehistoric and historic items are



located in an unsecured area, next to and under contemporary maintenance equipment. Conditions in the remodeled basement are much better, but moths were recently discovered and leaking pipes have damaged some archival documents.

Based on a Park Service-wide decision to consolidate museum collections, Bryce Canyon may eventually house its collections at Zion National Park's new storage facility. However, Zion's facility will not be completed until 2008. Until then, staff at Bryce Canyon must protect the park's collections and prevent further damage. The park received project funds in 2005 to reconcile and catalog collection items and to photograph all collections. Ridding the collections of pests is also an important step, but it is costly. Updating the storage shed to make it fireproof and rodent-proof would cost about \$100,000.

Funding constraints currently make it impossible for Bryce Canyon staff to give cultural resources the care they deserve. One of the park's highest funding priorities is support for a cultural resources manager, but funds have not yet been granted for this position. In the continued absence of adequate funding and staffing levels, the park's cultural resources will be maintained at a limited level.

Early photos of park staff are found within Bryce Canyon's archive and museum collection.

ETHNOGRAPHY (PEOPLES AND CULTURES)—ASSOCIATED GROUPS MERIT FURTHER RECOGNITION AND STUDY

Before Bryce Canyon became a national park, various groups of people lived in the region and used its resources. National Park Service policy requires that parks recognize and respect these groups of people who have traditional associations with parklands. But Bryce Canyon does not have an ethnography program, and traditionally associated groups have not been systematically and formally identified.

The problem is a lack of funding that forces Bryce Canyon to rely on Zion National Park's tribal liaison to maintain relationships with associated groups. The park also has access to a cultural anthropologist from the Park Service Intermountain Regional Office, but

has not been able to take advantage of this resource because of a lack of staff.

An Ethnographic Overview and Assessment would help Bryce Canyon staff understand the ethnographic resources that exist at the park, and it would also help staff determine what type of ethnography program the park needs to comply with Park Service standards. The information gained would help the park's superintendent determine whether Bryce Canyon needs a full-time cultural anthropologist or if an anthropologist shared among southern Utah parks would be sufficient to meet Park Service stewardship standards. The park has developed a proposal to seek funds to complete such an ethnographic study.

Ethnographic activities at Bryce Canyon were given a boost when the park hired a new Chief of Interpretation after a vacancy of four years. Having a person in this position has allowed the park to incorporate a growing number of historically affiliated groups into interpretive programs and submit a project proposal to continue the collection of oral histories related to the park.

HISTORY—RESEARCH STALLED

Although Bryce Canyon does not have a staff historian or cultural resources manager, the park has a fair amount of historical documentation. Foremost is a 1985 Historic Resource Study that covers multiple facets of Bryce Canyon's history. Other documents include a Historic Structures Report on the Bryce Canyon Lodge and Historic District and the Rim Road Cultural Landscape Inventory. In 1993, a park volunteer drafted an administrative history of the park, but this work has not been reviewed or approved. The park is seeking funds to complete this administrative history.

Current and future park funding priorities include only limited historical research. If Bryce Canyon is to maintain and improve upon its tradition of documented research, the park needs a cultural resources manager to advocate for historic and cultural resources.

Bryce Canyon's archive and museum collection contain more than 40,000 items relating to the park's history, including American Indian artifacts.

SUSAN ELLIS





HISTORIC STRUCTURES—PLANNING AND PROTECTION NEEDED

Historic structures at Bryce Canyon include the Bryce Canyon Lodge and 15 deluxe cabins, a Standard Oil service station, several comfort stations, former Park Service housing, numerous trails, and the Tropic Ditch, among others. A 1994 evaluation found that ten structural groups were eligible for listing in the National Register of Historic Places.

The Bryce Canyon Lodge and Deluxe Cabins together comprise a National Historic Landmark, meaning they are significant to the country at the highest possible level. Built during the mid-1920s, the lodge and cabin complex exemplifies the park's architectural and cultural style, which was a collaborative effort of the National Park Service, the

Union Pacific Railroad, and the Utah Parks Company. The park invested \$5 million to restore the lodge in 1988-1989, and then completed a Historic Structures Report ten years later. Today the lodge and accompanying deluxe cabins are true showpieces, and were recently featured in a public television series on park lodges. The Bryce Canyon Lodge is the only remaining original lodge on the Grand Loop Tour, which includes Bryce Canyon, Zion, and the Grand Canyon.

Bryce Canyon is fortunate to have a core group of employees who care for the wide array of historic structures owned and managed by the National Park Service and its concessionaires. Members of the historic preservation crew maintain some of the finest historic structures in the National Park System, assist

Bryce Canyon's Deluxe Cabins, built in the mid-1920s, exemplify the park's architectural style. They were recently featured, along with the Bryce Canyon Lodge, in a public television series on park lodges.



Carvings in the bark of aspen trees are evidence of the people who inhabited the region before it became a national park.

neighboring parks with historic preservation needs, and teach classes at nearby Snow College. Bryce Canyon's historic structures, and those in nearby parks, would benefit if members of the preservation crew received technical preservation training from the Park Service's preservation training program. This training would help round out the team's talents to include technical knowledge from a historic preservation perspective.

Bryce Canyon staff face a preservation dilemma. Throughout the Park Service, money for projects is much easier to obtain than money for planning, monitoring, and research. Consequently, work recently completed on the park's historic headquarters was conducted without information from a Historic Structures Report. The park has excellent photos, as well as the Bryce Canyon Lodge and Historic District Historic Structures Report to consult, but similar documentation for the headquarters would better ensure that the historic integrity of the building is not affected.

Though historic structures are important elements of the park and its history, base funding continues to diminish as deferred maintenance costs continue to rise. As of November 2004, the park reported more than \$2 million in deferred maintenance projects. Funding shortfalls threaten to reduce the amount of preservation work that park staff can do on historic structures in the future. In the past, the park used cyclic maintenance funds to finance preservation projects, but no cyclic maintenance funds were available in 2005, and none will likely be available in the near future. Budget constraints have forced the park to reassign the preservation crew to routine maintenance operations such as custodial work.

In addition to funding shortfalls, one of the largest threats to the park's historic structures is fire. Located in the heavily timbered Paunsaugunt Plateau, fire is an ever-present danger for the park's historic structures and other cultural resources. Some fire-suppression systems are inadequate, and with recent outsourcing and staff reductions, fewer people are available to be part of the local fire brigade. In the winter, there is often nobody to drive the fire engine. Bryce Canyon is

much too remote to be able to count on fire fighters from outside the park; the nearest alternative fire station is more than 20 minutes away. The park has submitted a funding proposal to install fire-protection systems including sprinklers in the historic structures that do not currently have this protection in place.

ARCHAEOLOGY—STAFF AND SURVEYS NEEDED

People who lived in the Bryce Canyon region hundreds and even thousands of years ago left behind evidence of their lives in the form of lithic scatters, prehistoric ceramics, ponderosa pine trees that were stripped of their bark, and aspens with carvings and inscriptions. There are approximately 237 known archaeological sites in Bryce Canyon National Park, although only about one-third of the park has been surveyed. More than half of the sites are listed in “good” condition, 67 sites are listed in “fair” condition, 18 are listed in “poor” condition, and 31 are listed in “unknown” condition.

Archaeological surveys have been focused in areas above the Paunsaugunt Plateau rim. The lack of a survey or monitoring program below the rim leaves unknown archaeological sites at risk. Sites may be damaged by visitor activities and by maintenance that occurs when trails are damaged by wind and water erosion. These natural erosional processes shaped Bryce Canyon’s spectacular geological features, and they continue to do so—the plateau rim erodes at a rate of one to four feet every 100 years. Through the process of keeping the trails clean and level, excess debris is swept into the canyon below. This action thwarts the erosional processes that make Bryce Canyon unique and could be destroying unknown archaeological sites. Fires and road construction also have the potential to damage archaeological resources. The park is seeking funds to complete an archaeological survey below the rim, but this project is very costly and is unlikely to be funded.

Bryce Canyon does not have any permanent archaeology staff, though Zion National Park’s archaeologist helps the park with compliance projects as time permits. The park also has access to Park Service regional archaeologists. However, because of

1940S SERVICE STATION TEACHES VISITORS ABOUT PARK’S TRANSPORTATION HISTORY

From prehistoric Paiute trails to 19th-century pioneer wagon routes, from elite Union Pacific Railroad tours to contemporary highway travel, transportation is a theme that lies at the heart of Bryce Canyon’s history. To help teach visitors about the historic importance of transportation, the park plans to rehabilitate and interpret the circa-1947 Standard Oil service station that is located on the main road.

The Standard Oil station was one of three built in southern Utah parks in the late 1940s. The building is indicative of the transformations of American culture that followed post-World War II economic growth and widespread use of the automobile. With increased wealth and leisure time, the construction of interstate and local highways, and the convenience of personal automobiles, Americans were on the road visiting the nation’s spectacular parks.

The Standard Oil station was built with local materials, and it has been altered very little since its construction. It once featured a vintage automobile, and now features old-style gas pumps that were donated to the park by Chevron in 1996. Two wayside displays teach visitors about the station’s history. The park plans to expand interpretation of the site to include a self-guided tour that engages visitors in the park’s transportation history, while preserving the structure for future generations. The park has begun conducting a Historic Structures Report to help determine future use and provide guidance on maintenance. This report is scheduled to be completed by December 2005.



JIM NATIONS

This Standard Oil service station, one of three built in Utah in the late 1940s, features gas pumps that were donated to the park by Chevron.

Paths formed by visitors who stray from the park's established trails are called social trails. They lead to soil erosion and trampling of plants, and they can cause damage to the park's cultural landscapes.



BRYCE CANYON NATIONAL PARK

the limited number of staff at Bryce Canyon to protect and survey for archaeological resources on a full-time basis, these resources are vulnerable.

CULTURAL LANDSCAPES—STUDIES NEEDED TO EVALUATE THREATS

Bryce Canyon's premier landscapes include Civilian Conservation Corps districts, Mission 66 historic housing, tourism and transportation routes, the historic Bryce Canyon Lodge and Deluxe Cabins, the Rim Road, the maze of trails into the canyon, and campgrounds. There may also be others that have not been identified. The following four cultural landscapes have been identified for further work at Bryce Canyon: the Bryce Canyon Lodge and Deluxe Cabins; the Bryce Canyon Scenic Trails Historic District; the former Bryce Inn (today's Camper Store); and the Park Service Housing (historic area). These landscapes were carefully designed according to early Park Service standards that focused on aesthetic value and harmony with the natural landscape.

Because Bryce Canyon lacks a cultural resources manager to care for cultural resources and teach other staff and visitors about their value, some of the

park's cultural landscapes are poorly understood and neglected. Several of the park's cultural landscapes have been altered because staff did not realize their importance. For example, the Rim Road was evaluated as eligible for the National Register of Historic Places in 1987, but after construction projects in the 1990s, a reevaluation found it was no longer eligible. Without a cultural resources manager to guide in the research, planning, and stewardship of the park's cultural landscapes, as mandated by Park Service standards, additional damage to these landscapes will likely occur.

All of Bryce Canyon National Park's cultural landscapes are considered threatened. Fire (both prescribed and wild) and fuels reduction, increased road and foot traffic, and social trails are just a few of the dangers jeopardizing them. A cultural landscape inventory of all of the park's landscapes is needed to evaluate which threats are most imminent. A cultural landscape report should follow for each pertinent landscape—the park has already submitted project proposals to complete some of these reports.

STEWARDSHIP CAPACITY—FUNDING NEEDED FOR STAFF INCREASES AND RESOURCE PROJECTS

Overall, Bryce Canyon’s stewardship capacity rated a “poor” score of 44 out of 100. The rating was calculated by averaging the four components scored as part of stewardship capacity, then weighting the funding and staffing component at 40 percent of the overall score to reflect its importance.

FUNDING AND STAFFING—SHORTFALLS COMPROMISE RESOURCE PROTECTION AND VISITOR EXPERIENCE

The most significant factor affecting a park’s ability to protect its resources is the funding it receives from Congress. In 2004, Bryce Canyon National Park had an annual operating budget of \$2.67 million. This budget is about \$1.8 million short of what is needed to adequately protect resources and provide the necessary visitor services.

The current funding supports the equivalent of 36 permanent full-time staff. The park also employs 21 seasonal employees, some of whom are funded for specific, temporary projects. Bryce Canyon needs additional staff, specifically trail workers, biological technicians, custodians, law enforcement rangers, interpreters, a geologist, and a cultural resources manager. The park’s concession specialist position has recently been lost and has not been refilled due to funding constraints.

Bryce Canyon currently has four permanent law enforcement rangers, one term ranger (on for two years), and four seasonal rangers. The seasonal and term rangers are paid out of project or soft funds, which are not dependable from year to year. At current staffing levels these rangers must focus on the immediate needs of visitors. Most of their time is spent on search-and-rescue calls, medical calls, traffic patrols, and structural fires. As a result, they are able only to provide minimal proactive protection to park resources.

Important resource protection projects in need of funding include rehabilitation and repair work for the Navajo Loop, Sunset Overlook, Rim and

Bristlecone trails, as well as the North and South Sunset campgrounds.

PLANNING—SOME PLANS NEEDED

Planning is an essential element of resource protection and is generally dictated by available funding. The general management plan (GMP) is one of the most important plans as it guides long-term decision making for the park and provides a foundation for other plans that may be needed. At Bryce Canyon, as in many parks, the GMP is nearly 20 years old and thus is only occasionally consulted to direct management decisions.

The park’s other management plans are generally under ten years old and are relevant for guiding resource decisions. These include plans for fire management (2005), inventory and monitoring (2004), archaeology (2003), and interpretation (2002). To further assist resource stewardship, it would be helpful if the park developed plans to guide management of collections, land protection, ethnographic resources, vegetation and non-native plants, native animals, visitor use, and wilderness, as funds are available.

Table 1. Critical Unfunded Projects at Bryce Canyon National Park

Project Description	Funding Required
Correct safety issues at Visitor Center and Administration Building	\$265,289
Rehabilitate trails at Sunset Overlook	\$406,085
Develop a management and conservation plan for Utah prairie dogs	\$50,000
Study the ways that noise in the park affects visitors’ experience	\$66,750
Maintain Queens Garden Trail	\$44,000
Protect historic structures from fire	\$189,126
Survey paleontological resources in the park	\$89,359
Rehabilitate the Peek-a-Boo Trail and repair recent storm damage	\$353,073
Purchase new search-and-rescue vehicle and equipment	\$82,000
Repair and rehabilitate the Rim Trail between Sunset and Sunrise Points	\$452,518
Total Unfunded “Top Ten” Priorities	\$1,998,200



BRYCE CANYON NATIONAL PARK

The park offers a variety of ranger programs throughout the year that teach visitors about Bryce Canyon's special resources. However, the number of programs offered could decline in the future because of budget constraints.

NEW INSTITUTE EXPANDS LEARNING OPPORTUNITIES

In 2004, Bryce Canyon celebrated the inaugural year of a new educational institute that provides local students, residents, and visitors with opportunities to explore the scientific wonders of the park. The High Plateaus Institute is the product of a partnership with the Bryce Canyon Natural History Association, Dixie National Forest, and Grand Staircase-Escalante National Monument, and has received support from the local business community; school officials; universities; and city, county, state, and federal governments.

The High Plateaus Institute serves many purposes. The institute was created to provide students with the opportunity to learn about science through experiences at the park and throughout the high plateau region of southern Utah, encourage researchers to pursue projects and expand resource knowledge through work in the park, and enhance tourism and local economic growth. The institute is based at the Bryce Canyon headquarters.

The Bryce Canyon Natural History Association and its partners provide financial support for the High Plateaus Institute. To learn more about opportunities at the institute, call 435.834.4412.

RESOURCE EDUCATION—PROGRAMS TEACH VISITORS ABOUT PARK'S SIGNIFICANCE

Park resources need to be valued to ensure their preservation. Education thus plays a critical role in resource stewardship by conveying to the public an understanding of the park's importance to American heritage and an appreciation of the resources found there.

The park offers a variety of ranger programs throughout the year that teach visitors about Bryce Canyon's special resources. Full-moon hikes and star parties capitalize on Bryce Canyon's dark night skies, while geology programs teach about the park's magnificent natural surroundings, and evening programs recount compelling aspects of the region's history. In 2004, park staff provided nearly 800 interpretive programs to 30,000 visitors, while nearly 305,000 visitors interacted with park staff at the Bryce Canyon Visitor Center. More than 100 programs were presented to students in local schools.

The number of interpretive programs, visitor center contacts, and school programs could decline in the future because budget constraints have forced the park to rely on soft funding for some positions that were previously base-funded. In 2004, Bryce Canyon had five base-funded interpretive rangers, while in 2005 the park can only afford two. At least three seasonal interpreters and one permanent position are needed for the park to meet the demand for interpretive services.

Resource education at Bryce Canyon would benefit from development of a Long-Range Comprehensive Interpretive Plan that supports resource management goals. Additional training for interpretive staff and staff from other park divisions would ensure that up-to-date information about current park resource research is available to visitors.

EXTERNAL SUPPORT—ADDITIONAL SUPPORT WOULD BENEFIT PARK

The National Park Service cannot fully achieve resource protection at Bryce Canyon without some help. Volunteers, partnerships, support groups, and Congress make enormous contributions to this ongoing



Volunteers provide critical support to the park. They serve as campground hosts, provide park information to visitors, conduct weekly summer astronomy programs, and work on trails and various resource management and maintenance projects.

ing work. In a relatively isolated park like Bryce Canyon, recruiting volunteers and developing partnerships is a challenge. The park's modest numbers in these areas reflect that difficulty.

In 2004, 119 volunteers contributed nearly 15,600 hours to the park. The number of volunteers has increased by 36 individuals and more than 1,000 hours since 2000, an encouraging trend for the park. Volunteers serve as campground hosts, conduct weekly summer astronomy programs, and work on trails and various resource management and maintenance projects.

The Bryce Canyon Natural History Association operates a bookstore in the park's visitor center, and recently contributed more than \$100,000 to the park from book sales. This funding supports the park's Junior Ranger program, a full-time environmental educator who presents programs to local schools, assistance at the visitor center, and the park's newspaper. Also, in a partnership unique in the National Park Service, two companies that offer visitor lodging in and near the park—Xanterra Parks and Resorts and

Ruby's Inn—offer their guests the option to donate \$1 per night per room to a special fund for the park. In 2004, these donations totaled \$50,000, which was used to fund interpretive programs and trail maintenance work.

Bryce Canyon would gain additional benefits from the formation of a "friends" group that could provide volunteer and financial support.

WHAT YOU CAN DO TO HELP:

- **Support or become a member of groups helping to protect the park:** Bryce Canyon Natural History Association, NPCA (www.npca.org/support_npca/), and other regional organizations.
- **Volunteer in the parks.** Many parks are looking for dedicated people who can lend a helping hand. To learn about opportunities at Bryce Canyon National Park, contact the park at 435.834.5322.
- **Become an NPCA activist and learn about legislative initiatives affecting parks.** When you join our activist network, you will receive *Park Lines*, a biweekly electronic newsletter with the latest park news and ways you can help. Join by visiting www.npca.org/takeaction.



APPENDIX: METHODOLOGY

To determine the condition of known natural and cultural resources at Bryce Canyon National Park and other national parks, the National Parks Conservation Association developed a resource assessment and ratings process. It examines current resource conditions, evaluates the park staff's capacity to fully care for the resources, and forecasts likely conditions over the next ten years. The assessment methodology can be found online at NPCA's State of the Parks® Web site (www.npca.org/stateoftheparks/).

Researchers gather available information from a variety of research, monitoring, and background sources in a number of critical categories. The natural resources rating reflects assessment of more than 120 discrete elements associated with environmental quality, biotic health, and ecosystem integrity. Environmental quality and biotic health measures address air, water, soils, and climatic change conditions as well as their influences and human-related influences on plants and animals. Ecosystems Measures address the extent, species composition, and interrelationships of organisms with each other and the physical environment for indicator, representative, or all terrestrial and freshwater communities.

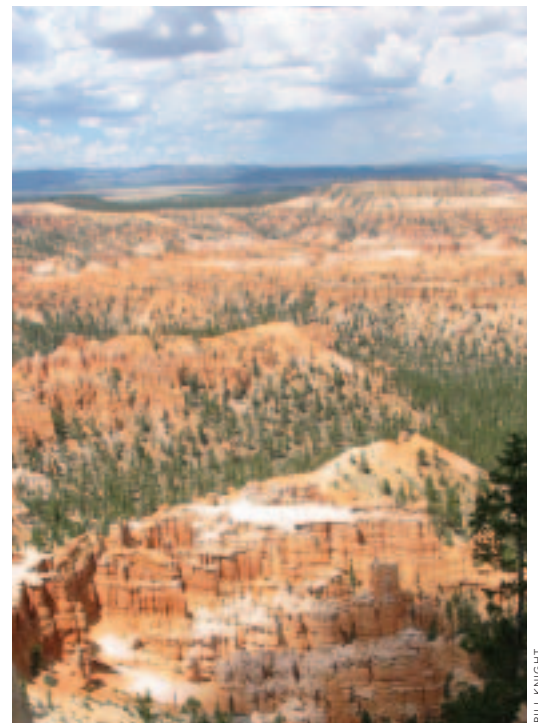
The scores for cultural resources are determined based on the results of indicator questions that reflect the National Park Service's own Cultural Resource Management Guideline and other Park Service resource management policies.

Stewardship capacity refers to the Park Service's ability to protect park resources. Information is collected and circulated to park staff and peer reviewers for analysis. An overall average based on a 100-point scale is used to determine the ratings based on

numerous benchmarks. An overall score is obtained by weighting the funding and staffing component at 40 percent, recognizing its critical importance, and the remaining three elements at 20 percent each.

For this report, researchers collected data and prepared a paper that summarized the results. The draft underwent peer review and was also reviewed by staff at Bryce Canyon National Park.

NPCA's State of the Parks program represents the first time that such assessments have been undertaken for units of the National Park System. Comments on the program's methods are welcome.



ACKNOWLEDGMENTS

For more information about the
State of the Parks® Program

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view these reports and to learn more about the
State of the Parks® Program.

NPCA thanks the staff at Bryce Canyon National Park who reviewed the factual accuracy of information used in this report. We also thank peer reviewers for their valuable comments and suggestions.

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