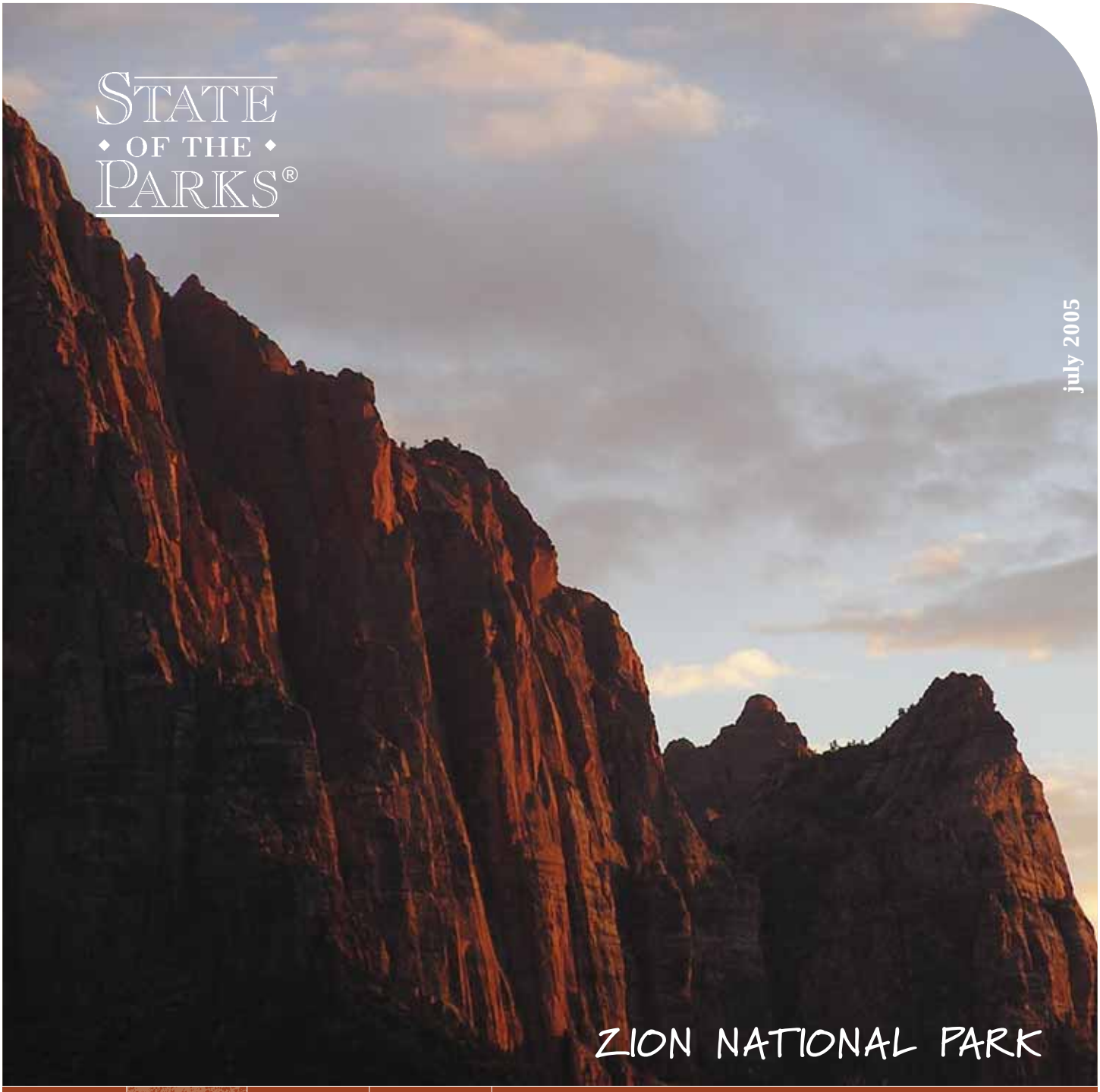


STATE OF THE PARKS®

july 2005

ZION NATIONAL PARK

A Resource Assessment

National Parks Conservation Association

STATE OF THE PARKS®

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

CONTENTS

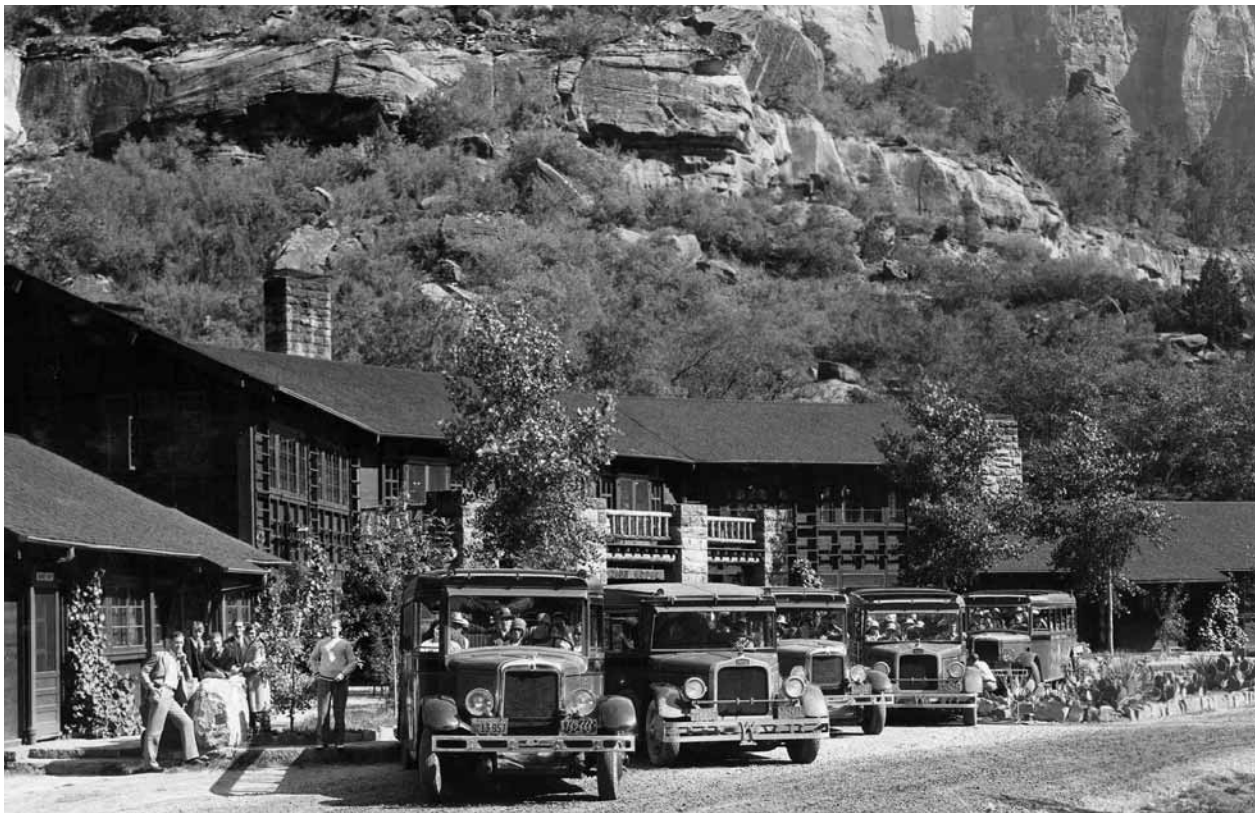
COVER PHOTO: SUSAN ELLIS

REPORT SUMMARY

BILL KNIGHT

Zion was one of the earliest additions to the National Park System. Some of these lands were first protected in 1909, when President Taft created the 15,200-acre Mukuntuweap National Monument. In 1918, the monument was expanded to 76,800 acres, and its name was changed to Zion National Monument. The area became a national park the following year, and subsequent additions have brought it to its current size of 148,031 acres.

Few visitors traveled to the park during its early years because it was difficult to access. The Utah State Road Commission and Union Pacific Railroad invested heavily in building roads and a rail line to help capitalize on the park's tourism potential. In addition to access, park visitors needed accommodations. Wylie Camp, a tent camping resort, was the first of the park's tourist facilities. The grand Zion Lodge and Cabins, designed in the "rustic"



ZION NATIONAL PARK

Park visitors on a sightseeing trip board buses in front of the Zion Lodge in 1929.

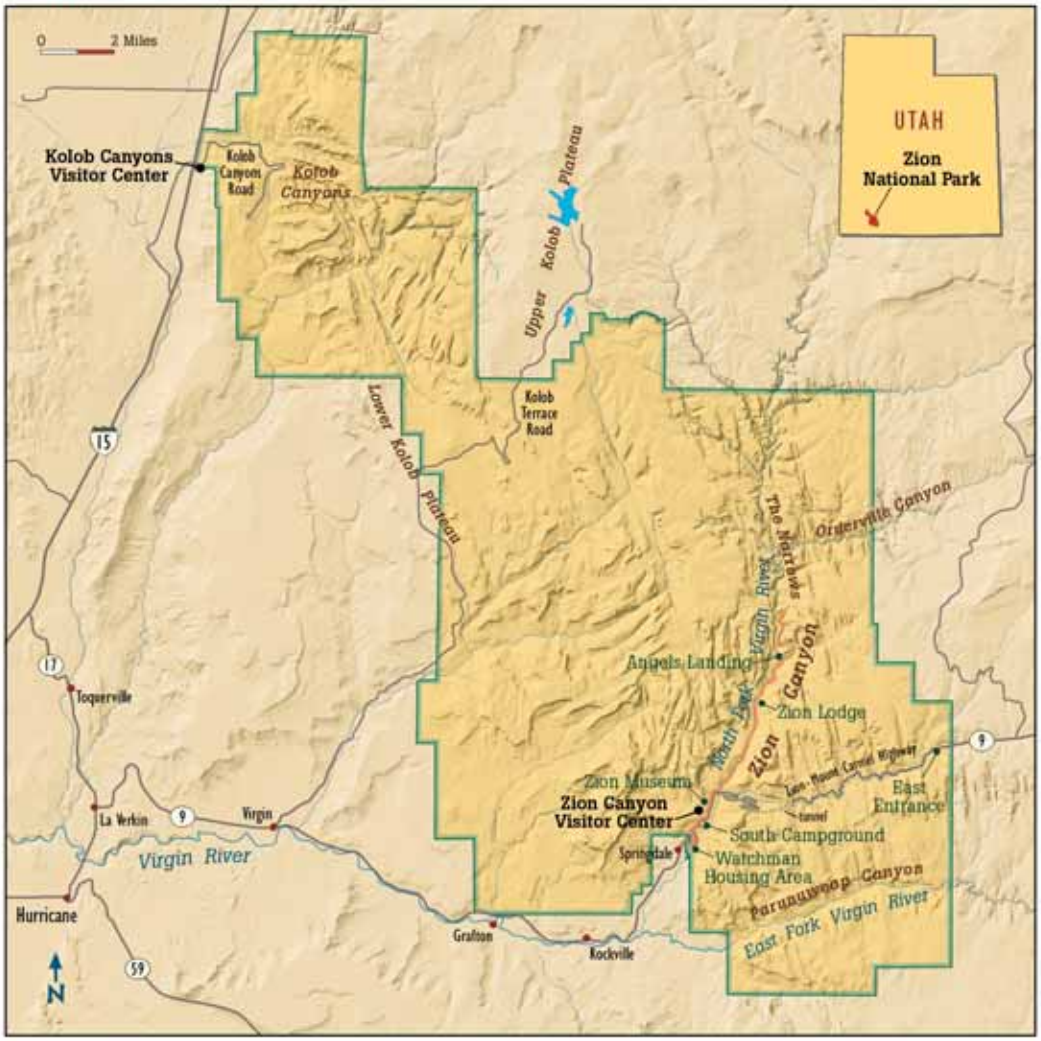
style by architect Gilbert Stanley Underwood, soon followed.

Visitor numbers increased as travel to the park became more convenient, more accommodations were available, and companies like the Utah Parks Company, a subsidiary of Union Pacific Railroad, began promoting its tours of Zion and surrounding natural wonders like Bryce Canyon and the north rim of the Grand Canyon. Today visitation exceeds 2.4 million people each year.

Zion National Park is perhaps best known for its geologic features that include deep canyons and rock towers interspersed with high plateaus and mesas. Over millennia, rivers and streams cut through the rock, forming many of these dramatic features. Most of the rivers upstream of Zion flow freely to this day, so these canyon-sculpting processes are still occurring. The park is part of a geological feature called the Grand Staircase, a series of colorful cliffs formed by sedimentary rocks that have been uplifted and are now eroding, stretching from Bryce Canyon south to the Grand Canyon.

While Zion's physical beauty is breathtaking, the park's intriguing human history should not be overlooked. Human use of Zion Canyon dates back at least 8,000 years, to people who hunted and gathered and those who later farmed the fertile land along the Virgin River. Artifacts like stone tools, baskets, and ceramics are evidence of their ways of life. Euro-Americans began settling parts of Utah in the late 18th century, and Mormon pioneers built numerous settlements in the region in the mid-19th century. Homesteads, logging operations, irrigation ditches, and other structures in the park speak to their successes and challenges. The first decades of the 20th century brought park establishment and an influx of tourists. Many of the park's roads, trails, and

Zion National Park



MATT KANIA

bridges were built during this time to provide access for these visitors.

Zion's location at the intersection of three biophysical provinces, as well as its elevation gradient from lowlands at 3,700 feet to mountains that peak at 8,726 feet, combine to create conditions ideal for a multitude of plant and animal species. The park shelters 894 species of vascular plants, 78 species of mammals, 290 species of birds, 44 species of reptiles and amphibians, and four native species of fish. Among them are top predators such as mountain lions, federally threatened species like the desert tortoise, and endemics such as the Zion snail. Park species lists will no doubt grow as non-vascular plants, invertebrates, and cryptobiotic soil crusts are further studied and inventoried.

RATINGS

Current overall conditions of Zion's known **natural resources** rated a "good" score of 82 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). Air and

RESOURCE MANAGEMENT HIGHLIGHTS

JIM NATIONS

- In an effort to minimize traffic noise, eliminate traffic congestion, reduce pollution, improve visitor experience, and reduce negative effects on park resources, Zion was one of the first units in the National Park System to implement a shuttle service. From April to October, buses transport visitors between the park and the nearby town of Springdale, and a second shuttle line takes visitors through scenic Zion Canyon. Since the system's inception, more than 11 million visitors have taken advantage of this convenience and left their cars behind.
- Zion has partnered with local water conservancy districts and the state of Utah to achieve lasting protection for the park's waters. The 1996 Zion National Park Water Rights Settlement Agreement states that "all water underlying, originating within or flowing through Zion National Park … that was unappropriated as of the dates of reservation of the lands now within the boundaries of the park… are to remain in a free flowing condition." A report produced prior to the water rights agreement noted that the Utah Division of Water Resources had identified 33 potential dam sites in the Virgin River basin upstream of the park, and had proposed a hydroelectric dam on the North Fork of the Virgin River above the park. Water developments such as these would have forever altered the character of the river basin and it natural hydrologic processes and greatly degraded one of Zion's key natural resources.
- To protect Zion's most sensitive natural areas, the park set aside nine areas covering about 9,000 acres in 2004. These Research Natural Areas include hanging gardens and relict mesa-top vegetation communities that have never been logged or grazed. To ensure the highest level of protection, limited educational trips and scientific research are the only activities allowed in these areas.
- Plans are under way for a new storage facility to house the park's museum and archival collections. The new facility will also house collections from Bryce Canyon National Park and Cedar Breaks National Monument.
- Zion has a dedicated museum curator who is committed to assisting other nearby parks with day-to-day collection management issues.

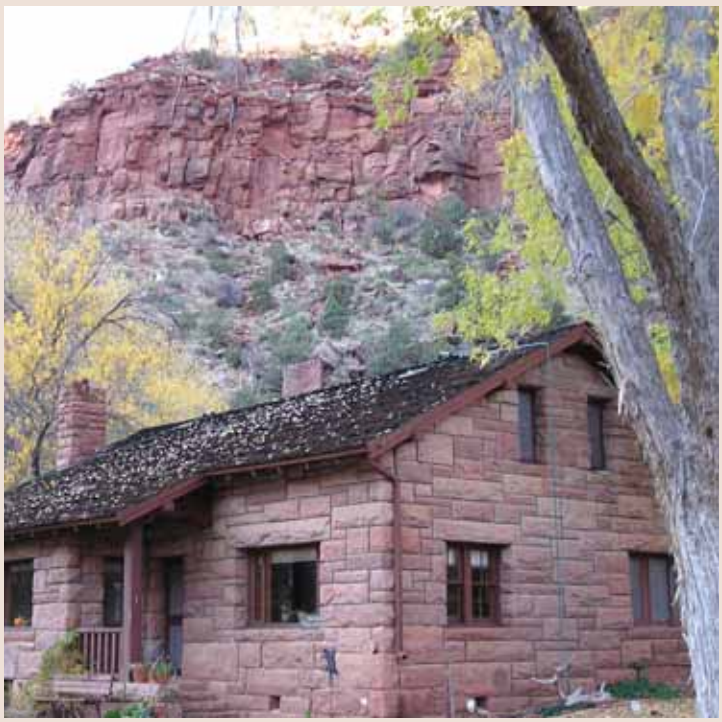
water quality are good, and many native species are thriving in the park's varied habitats. Challenges include invasive species, adjacent development, and effects on resources from increasing visitor use.

Overall conditions of the park's known **cultural resources** rated 54 out of a possible 100, indicating "poor" conditions. Two main concerns are the fact that none of Zion's cultural landscapes have been inventoried or evaluated, and the park lacks adequate funding for historic structures preservation.

Zion's overall **stewardship capacity**—the Park Service's ability to protect resources at this park—rated a "poor" score of 60 out of a possible 100. The park's operational budget is $3.5 million short of what is needed to adequately care for resources and provide visitor services. As a result of this shortfall, important resource protection projects go unfunded, and the park cannot afford to hire critical staff positions to support basic resource management functions.

Zion is in the middle of Utah's magnificent Grand Staircase, a continuum of color-coded geologic formations extending from Bryce Canyon to the Grand Canyon (shown here).

SUSAN ELLIS

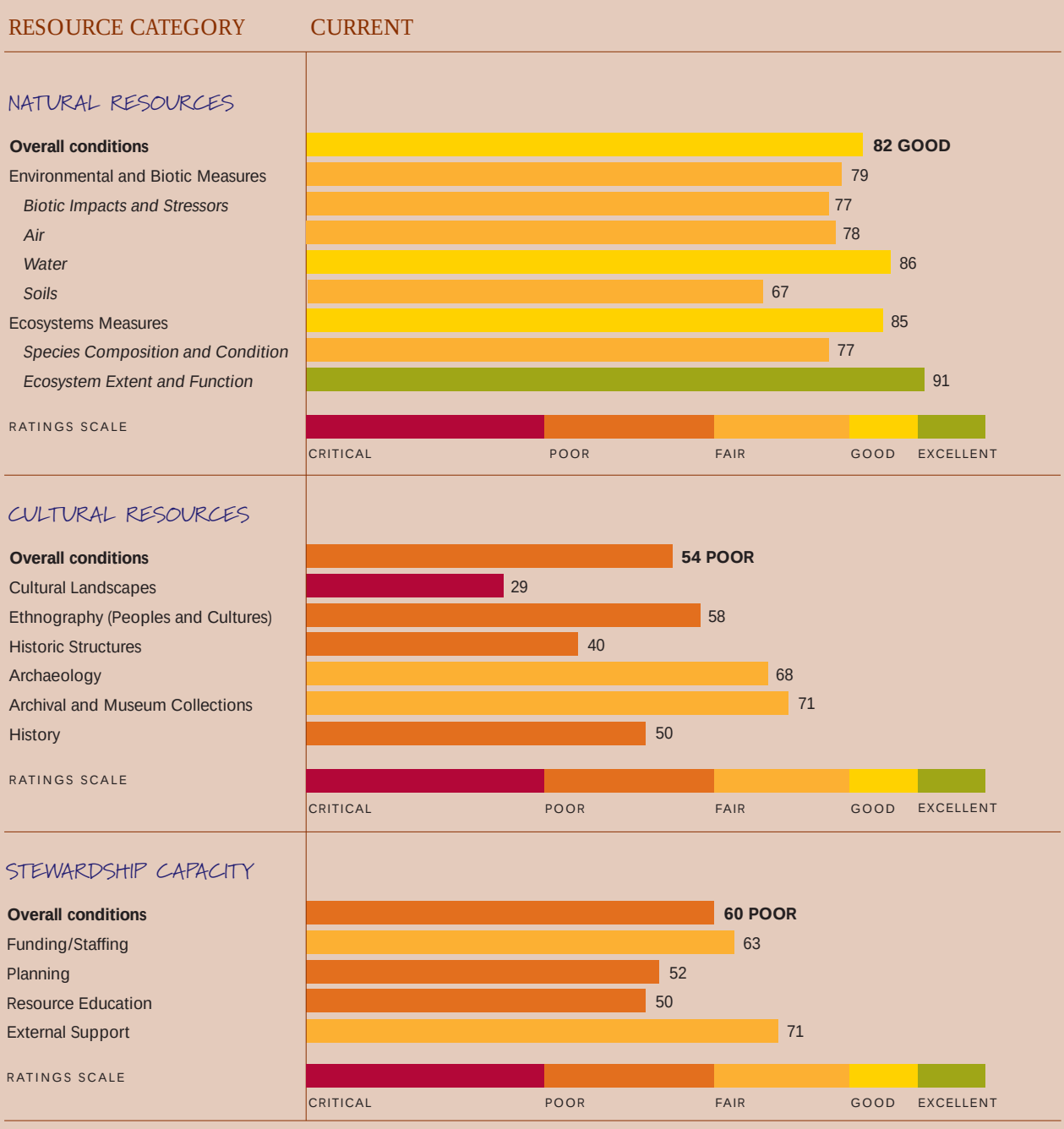


SUSAN ELLIS

ZION NATIONAL PARK AT A GLANCE

- Zion is home to deep canyons that were cut through multi-hued sedimentary rock by the erosive power of free-flowing rivers. The park is one of the few places left in the American Southwest where unfettered rivers are continuing the erosion processes that produced the spectacular landscapes preserved in the region's parks.
- A variety of park trails enables visitors of all hiking abilities to discover the hanging gardens, scenic vistas, ancient peoples' rock art, and natural arches that are all part of Zion's dramatic landscape.
- People have lived in Zion's landscape for at least 8,000 years. Rock art, prehistoric dwellings, tools and artifacts, historic homesteads, logging facilities, and irrigation ditches tell the stories of the area's previous inhabitants.
- The park lies at the intersection of three biophysical provinces: the Colorado Plateau, Mojave Desert, and Great Basin. As a result of its location and its elevation gradient, Zion is home to a great diversity of plants and animals.

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, 65 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.

KEY FINDINGS

- According to Zion's 2001 Business Plan, the park's operating budget falls short of what is needed for adequate resource protection and visitor services by $3.5 million. A lack of funding for one-time projects means that the park cannot afford to restore parts of the Virgin River and associated riparian areas or rehabilitate several structures in the park's historic districts. Staffing shortfalls that result from insufficient funding have forced Zion to cut in half the number of popular guided trail walks and ranger talks given each day. Interpretive rangers are no longer available at trailheads and the Zion Lodge, and the park must deny ranger programs to school groups.
- Increasing visitation has put dramatic pressure on some of the park's natural resources, particularly in riparian corridors and canyons: Swimming, wading, and hiking in the North Fork of the Virgin River have led to concerns about water quality and fish habitat degradation; soil erosion, vegetation trampling, and social trails are problems in many front- and backcountry areas; and recreationists' effects on sensitive species like peregrine falcons, Mexican spotted owls, and desert bighorn sheep are of concern. Park managers are charged with finding ways to balance visitor activities with resource protection.
- Management of many of the park's historic structures is split between the Park Service and Zion's concessioner, Xanterra. There is no historic structures preservation plan in place to guide management activities, nor is there an official monitoring or inspection program. Adequate funding is not available for restoring structures, and some issues like pest infestations and structural deterioration have not been addressed.
- Decades of fire suppression have created unnaturally high vegetation densities and fuel loading in some areas, and the spread of non-native grasses has made larger, high-intensity fires more likely. Zion is now completing a fire management plan that continues efforts to revert to a condition where fire plays a more natural role in the park.
- Restoration of critical resources, ecological communities, and process are needed on more than 10,000 acres of parkland, including restoration of parts of the Virgin River's floodplain flowing through Zion that have been altered by prior channelization for flood-control purposes, compromising critical riparian habitat. Currently the park has 498 acres undergoing active restoration and 1,100 acres in restoration maintenance. Invasive weed management is needed on 2,700 acres of priority habitat (out of 8,000 total), but funding allows for limited control. Restoration and weed management treatments require follow-up and maintenance over a period of three to five years to be effective and funding is often unavailable to complete these projects.
- None of the park's landscapes have been inventoried or evaluated for cultural landscape significance. Cultural landscapes and their associated features are not well interpreted for visitors, the park does not have a cultural landscape management plan, and operational park and concession staff do not have a complete understanding of cultural landscapes—what they are and why they are important. This can lead to potential degradation through inappropriate management practices.
- Residential and commercial development on lands adjacent to Zion have the potential to affect visibility and scenic views from the park, dark night skies, naturally low ambient sound levels, opportunities for solitude, composition of native plant and animal communities, wildlife habitat and migration corridors, and archaeological resources. Visibility and overall air quality at the park could also be affected if energy interests implement recent proposals to expand coal-fired power plants in central Utah and build new plants in southern Nevada. Zion staff must continue to review power plant proposals, comment on their potential impact, and negotiate mitigation on those that are likely to affect air quality in the park.

THE ZION ASSESSMENT

SUSAN ELLIS

NATURAL RESOURCES—INCREASED MONITORING, CONTINUED RESEARCH, AND ADDITIONAL STAFF NEEDED

The assessment rated the overall condition of **natural resources** at Zion National Park a score of 82 out of 100, which ranks park resources in "good" condition. Clean, free-flowing rivers support native fish species, and several federally listed animal species appear to have stable populations within the park. Challenges include historic land use effects that made the park more vulnerable to invasive species like cheatgrass, which now dominate some systems; residential and commercial development on private land adjacent to the park, which could result in effects on resources; and increasing visitor use, which affects water quality, native vegetation, and

sensitive wildlife species. Incomplete inventory and monitoring of several rare, sensitive, threatened, or endangered species may place these species in jeopardy, as park management is unable to account for their status in terms of population trends and their ability to sustain themselves.

PARK WATERS AND RIPARIAN AREAS—CLEAN, FREE-FLOWING WATERS SUSTAIN NATIVE FISH AND WILDLIFE

The Virgin River and its tributaries flow relatively freely through Zion, providing water and critical habitat for riparian plant communities and dependent wildlife, as well as recreational opportunities for park visitors. This river system is special in that, as a result of being free of large dams and diversions upstream of the park, it continues to contribute to major canyon formation on the Colorado Plateau. Natural flow regimes also help sustain four native fish species: Virgin spinedace (*Lepidomeda mollispinis*), flannelmouth sucker (*Catostomus latipinnis*), desert sucker (*Catostomus clarki*), and speckled dace (*Rhinichthys osculus*). Although 13 nonnative fish species are also found in the park, the number of natives is far greater than the number of non-natives. The Virgin spindace is a species of concern, and it is managed under a conservation agreement among local, state, and federal agencies in the area, in lieu of listing it as a federally threatened species. The federally endangered woundfin (*Plagopterus argentissimum*) and Virgin River chub (*Gila seminude*) are found downstream of Zion.

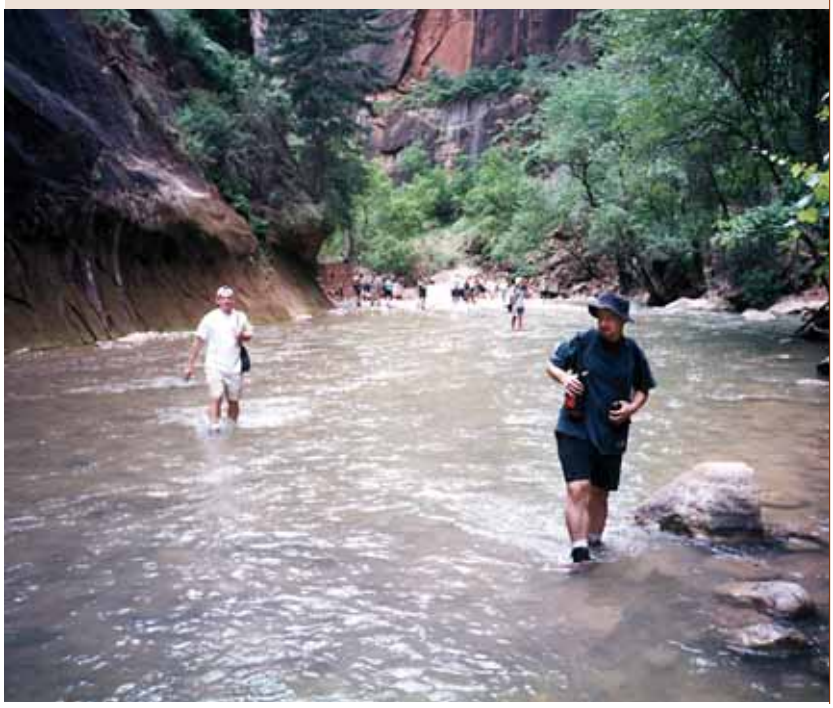
Riparian areas are the lifeblood of Zion. Wildlife ranging from mule deer to mountain lions to belted kingfishers all rely on the park's rivers and streams for sustenance. According to the Utah Division of Wildlife Resources, riparian areas that make up just 1 or 2 percent of the landscape actually support 75 to 80 percent of the region's wildlife. Grazing, agriculture, and invasive species have degraded other riparian areas in the region, making the rela-

BURGEONING VISITOR USE AFFECTS RESOURCE CONDITIONS

More and more people are visiting Zion to enjoy both the park's frontcountry and its backcountry resources. Visitation more than doubled between 1982 and 2002, from 1.25 million to 2.59 million. Backcountry use has risen even more quickly: from 7,807 people camping in the backcountry in 1986 to 21,002 in 1999. With these substantial increases come concerns about effects on park resources, particularly because most visitor use is concentrated in the park's fragile riparian areas and canyons.

In the North Fork of the Virgin River, swimming, wading, and hiking have led to concerns about water quality (including sedimentation, turbidity, and spread of human waste), soil erosion, and effects on sensitive fish species. Canyoneering can also adversely affect park resources, disturbing sensitive species (e.g., peregrine falcons, spotted owls, and desert bighorn sheep), trampling vegetation, and forming social trails, which can become gullies in highly erosive soils on steep slopes.

The park's General Management Plan lists several visitor management recommendations intended to help minimize damage to resources. They include increased visitor education programs, erosion control measures and barriers, and some visitor use restrictions to reduce impacts on wildlife during sensitive times and minimize water pollution, but staffing and funding are inadequate to implement most of these management actions.



ROBERT WRIGHT

SUSAN ELLIS

The Virgin River provides water and critical habitat for riparian plant communities and dependent wildlife, as well as recreational opportunities for park visitors.

tively intact systems in the park even more critical for conservation.

The use of channelization for flood prevention that occurred during the 1930s along four miles of river has had serious effects on the Virgin River's riparian zone. Regular flooding and channel migration—necessary phenomena that help regenerate riparian flora—have been curtailed, disrupting reproductive cycles of native riparian plant species and resulting in an overstory of mature trees with non-native grasses beneath. The trees are dead or dying and have no means to reproduce and replace themselves. Non-native species find it easier to invade these compromised systems, further degrading them. In addition, channelization has entrenched the river, decreasing the width of its water table, further exacerbating impacts to riparian vegetation communities. Restoring the river's floodplain is part of the park's long-term plan, but funding is currently unavailable.

Little water quality monitoring is done within the park, but water quality is believed to be good in most streams and springs. There are no known major degradations at present, although park specialists acknowledge that much of the focus on water has been on quantity, not quality.

Potential threats to water resources of the park originate from both inside and outside its boundaries. A complicating factor for park managers is the fact that the surface watershed and groundwater basin are mostly privately owned. Residential development is occurring in some locations upstream of the park, and the long-term potential for more extensive development is great.

Human waste disposal from backcountry visitor use along the North Fork of the Virgin River (Zion Narrows), Orderville Canyon, North Creek, and Pine Creek is a major concern with regards to water pollution and human health. Two large leach fields for the comfort stations (frontcountry visitor use) are also of some concern because any discharge or leaching from their floodplain locations could contaminate the river. Because all watersheds outside the park are extensively grazed, increased nutrient input, fecal contamination, and sediment loading are also of some concern and suggest the need for frequent and sustained monitoring.

Park staff have identified four priority sites where they would like to monitor nutrients, trace elements, macroinvertebrates, microbes, total dissolved solids, suspended solids, and turbidity. This monitoring is especially impor-

tant for two reasons: (1) visitor effects on water resources are largely unknown at this time, and visitor use is heavily concentrated in riparian areas, and (2) potential coal-bed methane production outside Zion could affect water quality in the future. Three unsuccessful exploratory wells have been drilled for coal-bed methane so far; if new wells are located and begin to produce methane, water quality in the park will be threatened by discharged wastewaters that could be transported to the Virgin River.

The Utah Division of Water Quality monitors two sites near the park, and the Park Service will add three more in 2006, but additional sites are needed to achieve comprehensive water quality monitoring.

NATIVE VEGETATION—INVASIVE SPECIES AND HISTORIC FIRE SUPPRESSION AFFECT PLANT COMMUNITIES

Elevation and moisture gradients help dictate vegetation communities in Zion. The park's lowest elevations are dominated by shrubs like blackbrush (*Coleogyne ramosissima*) and four-wing saltbrush (*Atriplex canascens*), and the soil is covered by biological soil crusts composed of fungus, lichens, cyanobacteria, green algae, mosses, and liverworts. Pinyon-juniper woodlands interspersed with sand and big sagebrush (*Artemisia filifolia* and *A. tridentate*), rabbitbrush (*Ericameria nauseosa*), and pockets of grasses such as mutton grass (*Poa fenleriana*) and Indian ricegrass (*Achnatherum hymenoides*) are common at slightly higher elevations. Then come ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudostuga menziesii*), greenleaf manzanita (*Arctostaphylus patula*), and dwarf mountain mahogany (*Cercocarpus intricatus*). Finally, forests at the park's highest elevations contain ponderosa pine, white fir (*Abies concolor*), and quaking aspen (*Populus tremuloides*).

Like most parts of the western United States, Zion is also home to many non-native plants—more than 100 species in all. The park has identified 16 invasive species of concern, the most problematic being tamarisk (*Tamarix spp.*), Russian olive (*Elaeagnus angustifolia*), Scotch thistle (*Onopordum acanthium*), bull thistle (*Cirsium vulgare*), white top (*Cardaria draba*), ripgut brome (*Bromus diandrus*), red brome (*Bromus rubens*), and cheatgrass (*Bromus tectorum*).

Tamarisk and Russian olive have invaded riparian areas throughout the West, crowding out native vegetation and clogging waterways. Through intensive eradication efforts over the past two decades, Zion staff have dramatically reduced these species to a manageable level that can be treated annually.

Controlling brome species is a much more difficult matter. Cheatgrass covers an estimated 98 million acres throughout North America. It

ADJACENT DEVELOPMENT AND OVERFLIGHTS THREATEN PARK

Zion is located relatively close to a major metropolitan area (Las Vegas) that offers easy air transportation from cities across the country, and it is within a long weekend drive of the huge population of southern California. This proximity means that along with high levels of visitation, second home development in the region is an issue facing the park, particularly because more than 40 percent of the park's boundary adjoins private land.

Scenic views from the park, dark night skies, low ambient sound levels, opportunities for solitude, composition of native plant and animal communities, and wildlife habitat and migration corridors could be affected by adjacent development.

Airport expansions in communities near the park also threaten to disrupt resources. Larger airports are able to accommodate more flights and larger aircraft, resulting in increased noise from commercial and scenic overflights. Initial planning that includes development of an Air Tour Management Plan would help the park minimize disruption from overflights.

To protect park resources, staff must be diligent in maintaining awareness and involvement in local and regional development issues, including airport expansion, petroleum exploration and extraction, land-use planning and zoning, water rights, and other local planning and decision-making.

replaces native species, alters nutrient dynamics, and increases fire frequency and intensity. There is currently no feasible method for eradicating this invader. Cheatgrass and ripgut brome cover nearly 8,000 acres in the park, and red brome is becoming a concern in park desert shrublands.

Decades of fire suppression, which began about 150 years ago with the arrival of Euro-American settlers, have created unnaturally high vegetation densities and fuel loadings in some areas that historically burned with frequent, low-intensity fires prior to settlement. This has altered native vegetation communities, and the concentration of both live vegetation and dead fuels means that fires now have the potential to burn hotter and over greater areas than ever before. In addition, the presence of some non-native species has drastically altered fire regimes by increasing fuel loads in areas that historically did not burn because of sparse plant cover (discontinuous fuels) and are not ecologically adapted to fire, putting native plant species at risk from high-intensity fires.

Zion is now completing a fire management plan that continues efforts to return to a condition where fire plays a more natural role in the park. Although fires will still be monitored and some will be controlled—particularly those close to buildings and other development—others will be allowed to burn in order to enhance native vegetation communities and safeguard wildlife habitat. But the ability of the park to allow for the natural role of fire is tempered by the need to first re-establish natural fire regimes through fuels management, vegetation restoration, and non-native plant control over extensive areas of the park.

SPECIAL SPECIES—FROM OWLS TO SNAILS, ZION PROVIDES IDEAL HABITAT

As a function of its location, elevation gradient, and available water, Zion provides critically important habitat for a variety of species. Narrow slot canyons associated with the Virgin River and its tributaries provide excellent habitat for Mexican spotted owls; the park regulates visitor use of some canyons during the owl nesting season to minimize disturbances. Zion is home to the largest population of Virgin spinedace and the best habitat for these fish, which enjoy the virtually unaltered flows of the Virgin River and its tributaries. Downstream of the park, water quality and flow are both significantly reduced by agricultural and domestic uses. Zion provides the highest level of protection to the endangered Shivwits milkvetch, and the endemic Zion snail makes its home exclusively in the park's hanging gardens.

Zion's small population of threatened desert tortoises (about 20-30 animals) is located at the edge of the species' range, making it a source of genetic diversity important for the long-term survival of the tortoise. Because the tortoise population is close to the park boundary and adjacent municipal development, wildlife managers are concerned about the harmful effects that people and pet dogs could have on the tortoises. The shells of juvenile tortoises are soft and easily punctured by dogs' teeth. The park conducts periodic tortoise surveys; the most recent in 2002 explored new

ENDANGERED SPECIES:

Shivwits milkvetch (*Astragalus ampullarioides*)
Southwest willow flycatcher (*Empidonax traillii extimus*)

THREATENED SPECIES:

Mexican spotted owl (*Strix occidentalis lucida*)
Desert tortoise (*Gopherus agassizii*)

SPECIES OF CONCERN:

Zion snail (endemic, *Physa zionis*)
Virgin spinedace (*Lepidomeda mollispinis mollispinus*)
Peregrine falcon (*Falco peregrinus*)
Northern leopard frog (*Rana pipiens*)

ways to estimate population size with a greater degree of certainty.

Mountain lions and black bears also inhabit the park, but population numbers and dynamics are unknown because there are no funds to study these large mammals.

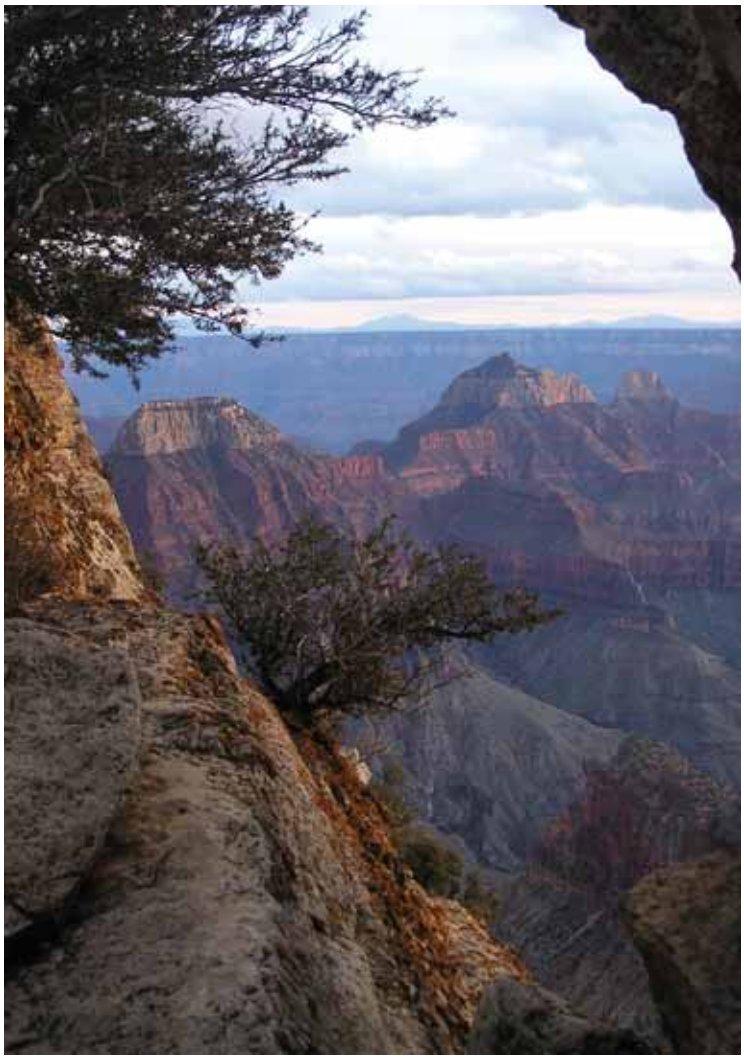
AIR QUALITY—MONITORING PROGRAMS WILL HELP PARK IDENTIFY TRENDS

Air quality at Zion is generally good, particularly when compared with western parks like Sequoia & Kings Canyon or Yosemite, but regional haze and ozone are still of concern. Major degradation has not occurred, but pollution from regional coal-fired power plants and development in southern California; the San Joaquin Valley; Las Vegas; and St. George, Utah, could lead to air quality issues in the future. Complete data on these pollution sources do not exist, and most information is based largely on studies related to the Grand Canyon and other parks.

The Interagency Monitoring of Protected Visual Environments (IMPROVE) program installed an air quality monitoring station in Zion in 2000 to measure visibility impairment. Because the site is still collecting baseline data, no trend analysis is yet available. Visibility at the park could be affected if recent proposals to expand coal-fired power plants in central Utah and build new plants in southern Nevada are implemented. Under Clean Air Act regulations, the Park Service is responsible for reviewing proposals for plants within 64 miles of Zion and addressing resolution of potential impacts. But a weakness in the Prevention of Significant Deterioration regulations allows consideration of potential effects only on a plant-by-plant basis, rather than cumulatively. In addition, plants located farther away have the potential to affect Zion's air quality, but the Park Service has no regulatory role regarding these proposals.

The park began monitoring ozone in 2004, in response to possible evidence of ozone damage to oakbrush sumac (*Rhus trilobata*). Initial monitoring has shown ozone levels to be below the threshold of concern for human health, though this threshold is higher than ozone levels that can cause damage to plants or other sensitive species. While ozone damage to vegetation has not been established, preliminary evidence suggests this situation bears watching.

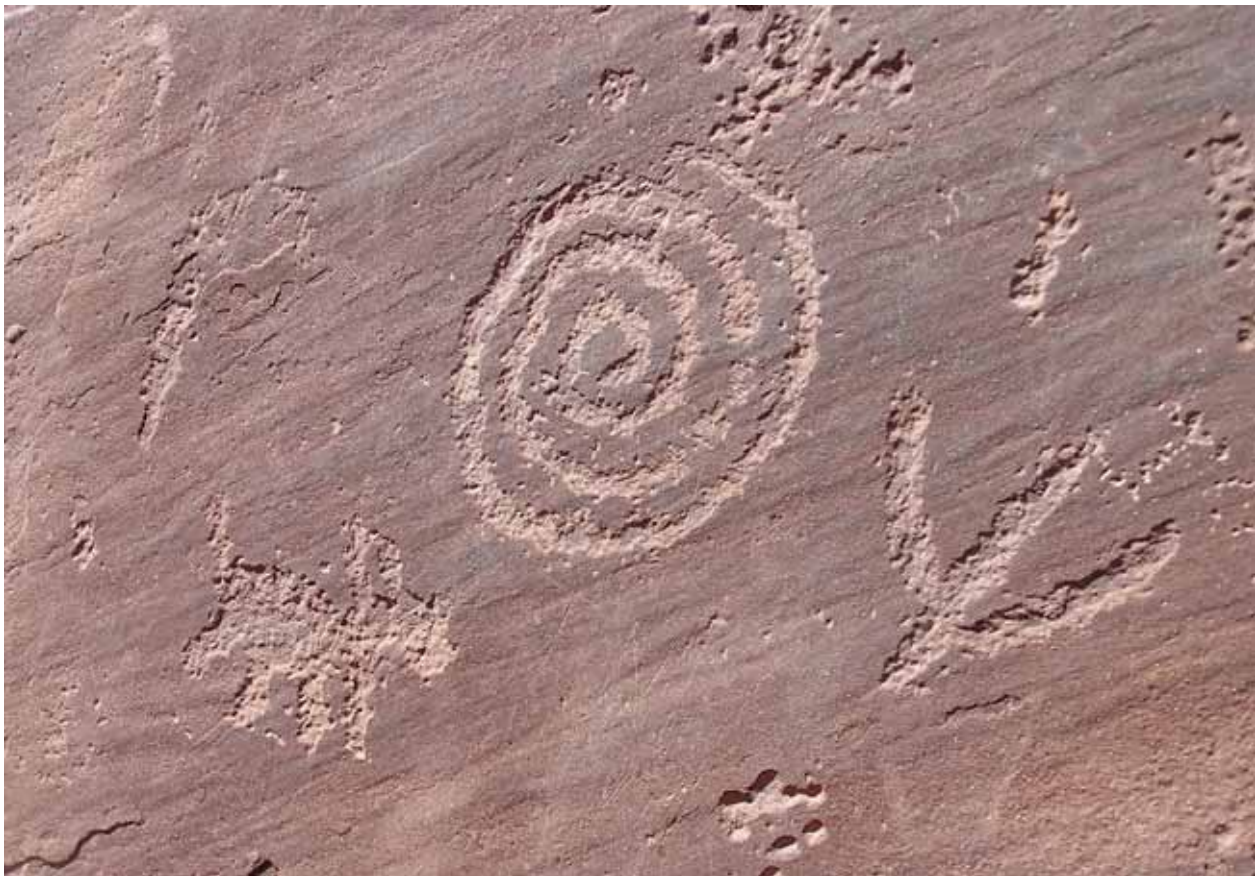
No wet or dry nutrient deposition is monitored in Zion, though the park is planning to determine if such monitoring is necessary. Computer modeling suggests that the park could be affected by nitrogen emissions from Las Vegas and St. George.



SUSAN ELLIS

Zion has good air quality but pollution from regional power plants and development could lead to future issues having an impact not only on Zion but other parks in the region, including neighboring Bryce Canyon and Grand Canyon (shown here) national parks.

SUSAN ELLIS



Petroglyphs give important insight into the lives of people who lived in the region long ago. Vandalism to two of the park's rock art sites means that the services of a professional conservator are needed to address the damage.

CULTURAL RESOURCES—STEWARDSHIP NEEDS EXCEED BUDGET

Zion scored an overall 54 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). Challenges include budget shortfalls that prevent the park from conducting important cultural resources research and protection projects.

ARCHIVE AND MUSEUM COLLECTIONS—NEW STORAGE FACILITY UNDER WAY

Zion's museum collection and archive contain stone tools and artifacts used by prehistoric Ancestral Puebloan and Southern Paiute Indians, traditional American Indian clothing, household items from early American pioneers, an extensive collection of historic black and white photographs, and interpretive items like tinted glass lantern slides that were shown to visitors by some of the park's first employees. The Zion Human History Museum incorporates examples of these and other items into displays that teach visitors about the people who lived and worked in the area—from American Indians to Mormon settlers to Civilian Conservation Corps workers who built many of the park's roads and trails.

Plans for a new facility to house these priceless artifacts are under way, and the space should be ready in 2008. It will provide appropriate storage and curation workspace, and will replace the existing space that is filled to capacity and lacks space for curators to work. Currently, some items are stored on the floor because cabinets are full, and research requests are discouraged because of a lack of workspace. The new facility will store the collections of Zion, Bryce Canyon National Park, and Cedar Breaks National Monument.

Zion is fortunate to have a full-time museum curator and a technician, as well as access to a regional archivist and curator. As a result, the park's collections are well managed and meet most Park Service management criteria. One shortfall is the high number of uncatalogued museum and archival items, but with the help of trained volunteers, the park is working to remedy this problem.

Ethnography—Strong Relationships Benefit Park and Regional Tribes

Before Zion National Park was created, various groups of people lived on the land that would eventually become part of the park. Zion staff strive to ensure that management of the park respects the relationships between the land and the groups of people traditionally associated with the area. Although the park has not formally identified these groups, nine American Indian groups claim association with Zion:

- Hopi Tribe of Arizona;
- Kaibab Band of Paiute Indians of the Kaibab Indian Reservation, Arizona;
- Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony, Nevada;
- Moapa Band of Paiute Indians of the Moapa River Indian Reservation, Nevada;
- Paiute Indian Tribe of Utah (Cedar City, Indian Peak, Kanosh, Koosharem, and Shivwits Bands);
- Ute Indian Tribe of the Uintah and Ouray Reservation, Utah;
- Zuni Tribe of the Zuni Reservation, New Mexico;
- White Mesa Ute of Blanding, Utah; and
- San Juan Southern Paiute Tribe of Tuba City, Arizona.

Zion's assistant chief resource manager, who has been at the park for 21 years, has worked to forge strong relationships with these tribes.

JIM NATIONS

Displays in the Zion Human History Museum teach visitors about the people who inhabited the region before the park was established.

The Walter's Wiggles trail, completed in 1926, takes visitors towards Angels Landing by way of a series of 18 steep, hairpin switchbacks.

SUSAN ELLIS

As a result of the mutual trust he has built, the park has been able to work in concert with affiliated groups to achieve management success. For example, the assistant chief resource manager was able to formalize an agreement with the Southern Paiute that allows them to collect plant materials in the park for traditional, ceremonial, or religious purposes. In another display of cooperation and trust, tribes supported the park's decision to make Petroglyph Canyon, a culturally sensitive area, accessible to the public and groups of tribal students who visit the canyon as part of their curriculum.

The park's interpretive staff also works closely with tribes and other affiliated groups to create museum displays, ranger presentations, and other educational tools that convey a culturally inclusive message to visitors. Exhibits in the museum are highlighted with text developed in concert with affiliated tribes; a recent Civilian Conservation Corps reunion enhanced interpretation and displays; and former park rangers and naturalists have contributed greatly through literature and public presentations.

Though maintaining good relationships with associated peoples is a high priority at Zion, the park does not have a formal ethnography program or any plans to guide ethnographic management. In addition, there have not been extensive efforts to develop ties with the descendants of early Mormon settlers. The park would benefit from the service of a cultural anthropologist whose time could be shared among southern Utah parks.

ARCHAEOLOGY—TRYING TO MANAGE THE UNKNOWN

Much can be learned from the park's prehistoric and historic sites. Clues to the lives of the area's previous inhabitants are uncovered through the study of rock art; prehistoric dwellings; park infrastructure like trails, roads, and bridges; and rustic structures built by the Park Service and park concessioners.

Zion's premier prehistoric archaeological sites are largely in the Parunuweap Canyon Archaeological District, which contains rock art depicting astronomical indicators and local fauna as well as two multi-roomed dwellings that illustrate Ancestral Puebloan architectural methods. Many of the archaeological sites in the canyon have intact prehistoric deposits.

The park's historic sites help visitors understand how the area's first Euro-American settlers survived in this difficult terrain. Flanigan Ditch, built by Mormon pioneer Thomas E. Flanigan in 1880, helped settlers capture irrigation water from the North Fork of the Virgin River. The Cable Mountain Draw Works—originally built in 1901 by Flanigan's sons, David and William—was an ingenious system built to move lumber from the forests of Zion Canyon's east rim down to the floor of the canyon where it was used as building material. The draw system saved many days of rough wagon travel, and today it provides information about the area's early logging history.

Early 20th-century building techniques are represented by some of the first park roads, trails, and bridges. Walter's Wiggles is one of the park's great construction feats. Completed in 1926, it is a trail composed of 18 steep, hairpin switchbacks that take hikers part of the way to Angels Landing, which rises some 1,500 feet above Zion Canyon's floor. Reaching the summit requires treading on narrow, sloping rock paths bordered by severe vertical drops.

With increasing visitation in the backcountry and development encroaching on the east, west,

ZION/MOUNT CARMEL ROAD AND TUNNEL

The Zion/Mount Carmel Road is perhaps one of the most well-known and well-traveled routes in the park. This 11-mile segment of highway runs up from Zion Canyon and over Pine Creek Bridge, through a series of six switchbacks to provide manageable grades, intoxicating vistas, and minimal landscape intrusion. The road rises some 800 feet in less than four miles. It features a 5,613-foot long tunnel that was drilled through solid sandstone. Construction began in 1927 on opposite ends, and through careful calculations, the two sides met up almost perfectly in 1930 for a total cost of $1.9 million. The tunnel is the longest in the National Park System, and though it is 20 feet wide throughout, it is too narrow for many recreational vehicles and trailers; visitors driving oversized vehicles must arrange for an escort through the tunnel.

SUSAN ELLIS

The Zion/Mount Carmel Road features a 5,613-foot long tunnel that was drilled through solid sandstone.

STRUCTURES HARMONIZE WITH NATURE

Creating structures that harmonized with their surroundings and took into consideration cultural associations was an integral goal of the National Park Service's landscape planning process. Rustic-style architecture is the term used to describe structures designed and built with these sensibilities in mind. At Zion National Park, the Park Service used many techniques to achieve harmony with the local setting. Indigenous building materials, directed blastings, tunnels, switchbacks, and asymmetrical structures built in the rustic style were preferred over more "convenient" or "efficient" designs.

Zion still contains many examples of structures that blend with their natural surroundings. The Pine Creek Bridge, completed in 1930, has escaped alteration and withstood periodic flooding from the river and creek without significant damage. Reynolds-Ely Construction Company of Springville, Utah, built this perfect example of early Park Service skill and attention to detail under the direction of Park Service Associate Landscape Engineer Thomas C. Vint. The bridge's multicolored sandstone arch is 60 feet long and 23 feet high, with a massive central keystone. It is most spectacular in the waning hours of the day, when the setting sun captures its brilliant colors. The contractor supposedly stockpiled rock that represented every color of stone in the park, and Vint then fashioned a model out of bars of soap, laboring over the perfect design.

SUSAN ELLIS

The multi-colored stone used to build the Pine Creek Bridge captures all the colors of the natural surroundings.

and southern boundaries of the park, archaeological sites are in ever more danger of destruction from foot traffic, increased erosion, artifact displacement, and on-site camping.

Graffiti is also a problem at Zion. Two rock art sites were vandalized in 2004. Some of the damage could be completely removed without any effect on the rock art; the rest is deeply incised, but could be ground away without touching the rock art itself. The services of a professional rock art conservator are needed to adequately address the graffiti and prevent further damage from occurring during the removal process.

A major gap in archaeological knowledge exists at Zion; at present, only 13 percent of the park has been intensively surveyed. Additional resources likely exist, but they cannot be protected until staff know what they are and where they are located. Park staff estimate that there are between 1,860 and 2,516 "unknown" sites in Zion. The conditions of some of Zion's known archaeological sites have not been assessed in nearly 20 years and desperately need to be revisited to determine changes in condition, site stability, and needs treatment.

An additional staff archaeologist could conduct surveys and assessments, address site protection and encroachment issues, and provide additional assistance with vandalism cases and prevention within the park, but Zion's cultural resources staff currently consists of only a permanent supervisory archaeologist, curator, and museum technician.

CULTURAL LANDSCAPES—DEEPER UNDERSTANDING OF LANDSCAPES WOULD INFORM RESOURCE PROTECTION AND INTERPRETATION

Cultural landscapes tell the stories of how humans have interacted with the natural world. People have traversed, explored, and made homes on the land that is now Zion National Park for at least 8,000 years. In that time, they learned to use the available resources, and they

adapted the resources to fit their needs. Their natural surroundings shaped their culture, and often they reshaped their surroundings.

The park's natural features—from steep-walled, narrow canyons to multi-hued sandstone cliffs—impress today's visitors with their magnificence and sometimes threaten to overshadow the park's cultural resources. But the landscape is more fully enjoyed when its natural features are appreciated in the context of the people who made their homes there.

Zion offers a great opportunity to teach visitors about how previous inhabitants lived on and worked with the land. But none of the park's landscapes have been inventoried or evaluated, landscapes are not well-interpreted for visitors, the park does not have a cultural landscape management plan, and staff do not have complete understanding of cultural landscapes—what they are and why they are important. As a result, protection of these landscapes is a challenge.

A cultural landscape inventory of Zion Canyon is currently under way to document and evaluate its history, significance, and condition. This report will also teach park staff about the importance of this landscape, enabling them to better protect it. Similar studies of the park's other cultural landscapes would go far in expanding staff knowledge and preservation efforts.

Zion Lodge, part of the Zion Canyon landscape, presents management challenges. In the past, the grounds surrounding the lodge have included everything from extensive bluegrass lawns to desert vegetation to bare ground. The park would like to maintain the scenic tree canopy that currently surrounds the lodge while reducing the amount of water needed to irrigate the landscape, both for water conservation reasons and because too much irrigation water can have adverse impacts on some historic structures. A researcher from the University of Nevada, Las Vegas, is studying the landscapes around the lodge, and this work should significantly add to park staff's understanding of these areas.

Visitors to Zion also have the opportunity to learn about park resources from shuttle bus drivers and concessioner employees. A cultural resources training program for these public hosts would teach them more about the park's rock art, premier archaeological sites, cultural landscapes, and other resources, enabling them to more effectively teach visitors about the park.

Although a regional historic landscape architect is available to assist the park from time to time, no full-time employees are able to manage cultural landscapes and educate other staff and visitors about their significance.

HISTORY—ZION IS RIPE WITH RESEARCH OPPORTUNITIES

Extensive opportunities for historical research exist at Zion. Historical research could be used to inform interpretive programs and give visitors a more complete understanding of the park's history. The park's archaeologist has developed a list of available projects for prospective researchers and made this list available to faculty and graduate students at several universities. However, the park currently does not have a staff person to manage relationships between the park and student researchers and outside contractors.

Themes needing further exploration include histories of the logging industry and Cable Mountain Draw Works, Mormon pioneer settlement, the Southern Paiute, National Park Service architecture, Civilian Conservation Corps operations, and the park's relationships with the Union Pacific Railroad and Utah Parks Company.

HISTORIC STRUCTURES—ADDITIONAL INTERPRETATION AND FUNDING NEEDED

Zion National Park's story unfolds through the study of its historic structures. Homesteads, logging mills, and irrigation works built by Mormon pioneers tell of the ways early settlers

learned to thrive in the region. The Zion Lodge and Western Cabins speak to the allure the park's magnificent surroundings held for early visitors. Numerous bridges and trails crafted by the National Park Service and the Civilian Conservation Corps made the park even more accessible to these visitors. The park's visitor center illustrates the goal of expanding park infrastructure that was fueled by the Mission 66-era of the Park Service.

Nearly 150 years of history are embodied in the park's structures, making them perfect educational tools for teaching visitors about Zion's history. The Zion Human History Museum features exhibits about historic structures from time to time, and there are a few interpretive wayside displays throughout the park that discuss aspects of some of Zion's historic structures, but many other opportunities to interpret historic structures are missed, largely because of a lack of funding for staff and exhibits.

The park's List of Classified Structures has 91 entries, though most of these structures have not been assessed since 1987 and some are not listed at all. Most of the park's historic structures are still used, either as staff office space or visitor facilities.

Zion does not have a historic structure preservation plan to guide management activities, which are split between the park and its concessioner, Xanterra. A concessions management specialist works closely with Xanterra to ensure that federal rehabilitation, restoration, and reconstruction requirements are met, but all park structures should be more closely managed so that any alterations that detract from their historic character are avoided. Although no official monitoring or inspection program guides management of Zion's historic structures, each year Xanterra inspects the 40 historic cabins under their management, providing maintenance when needed. But neither Zion nor Xanterra have maintenance personnel trained in historic preservation.

Ten percent of all gross revenue generated by the park's concessioners is allocated to a special account, and some is used for rehabilitating and restoring historic structures. Since 1995, $5 million has been used to restore the park's historic cabins, fund a historic photo-collection project, and renovate the historic men's dormitory. Funds for historic structures research are more difficult to obtain. In 2004, the park requested money to complete a historic structure report for the Zion Inn-Nature Center, but funding was denied.

Cabins built by pioneers remain as testaments to their persevering spirit.

SUSAN ELLIS

STEWARDSHIP CAPACITY—FUNDING SHORTFALLS AFFECT PROJECTS AND VISITOR PROGRAMS

Overall, the park's stewardship capacity rated a "poor" score of 60 out of 100. The rating was calculated by averaging the four component scores of stewardship capacity, then weighting the funding and staffing component at 40 percent of the overall score to reflect its importance.

FUNDING AND STAFFING—UNDERSTAFFED AND UNDERFUNDED

The most significant factor affecting a park's ability to protect and steward its resources is the funding a park receives from Congress and other sources. In 2005, Zion National Park received about $6 million from Congress; only about $854,200 is directed specifically to resource management functions.

The park's business plan, written in 2001, states that the operating budget falls short of what is needed for adequate resource protection and visitor services by $3.5 million. Further, it notes that nearly one-third of this shortfall is needed for resource preservation. Park resources suffer in the face of such budget shortfalls.

Zion also faces critical shortages of staff and resource expertise. The park lacks a base-funded hydrologist, geologist, non-native plant field leader, horticulturist, aquatic biologist, and biological technicians for vegetation and wildlife. The hydrologist, non-native plant field leader, and horticulturist positions are especially critical given the importance of water issues facing this park and the park's ambitious non-native plant management and native plant restoration program. The park's cultural resource program lacks an archaeological technician and preservation expertise. A data management specialist and geographic information systems (GIS) technicians are badly needed to support the park-wide GIS program in documenting and analyzing resource conditions.

Project Description	Funding Required
Restoration of the Virgin River in Zion Canyon	$4,220,000
Restore habitat most impacted by increasing visitor use	$299,300
Repair and restore threatened cultural resources	$299,000
Evaluate prescribed fire impacts to bird communities	$61,500
Inventory aquatic invertebrates and impacts due to human access for proposed river restoration efforts	$34,900
Initiate educational campaign to reduce resource threats	$234,000
Study cougar activities near areas used by visitors	$93,500
Repair/Replace boundary fences to protect critical resources	$240,500
Support park recycling and waste-reduction program	$74,800
Rehabilitate four buildings in the Birch Creek Historic District	$134,000
Total Unfunded "Top Ten" Priorities	**$5,691,500**

Table 1. Critical Unfunded Projects at Zion National Park

The park also is in need of funding for one-time projects. As park budgets fail to keep pace with inflation and mandatory staff pay raises, project funding deteriorates. Table 1 lists ten projects in need of funding, in no particular order.

PLANNING—PROGRESS MADE AS FUNDING ALLOWS

In a large park such as Zion, a collection of planning documents for specific resource areas is needed to strategically guide management activities and decisions. Zion has many documents that address wildlife, historic structures, and other issues, but most or all of these plans need to be updated and others, such as a park administrative history, are missing altogether.

Zion's general management plan (GMP), a broad plan that guides long-term decision-making, was finalized in 2001 and is very relevant today. A fire management plan that is nearly complete will help the park restore damage caused by decades of fire suppression. To address concerns about noise from air traf-

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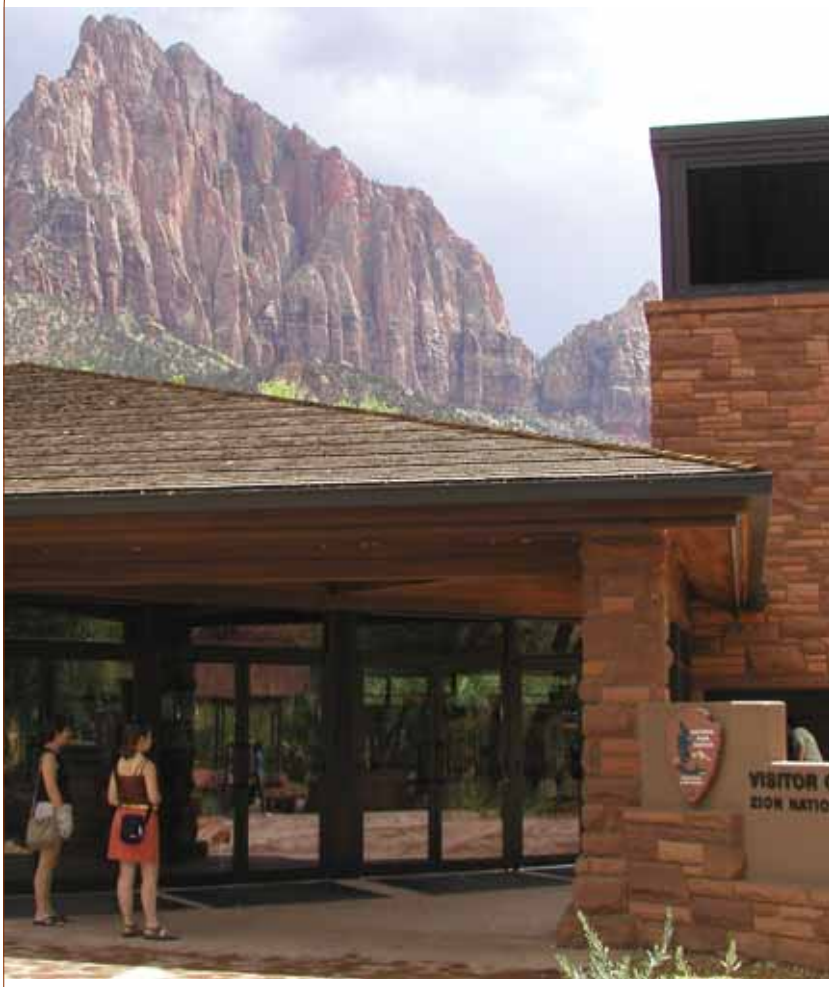

In 2004, nearly 2.7 million people visited Zion. Additional staff members are needed to provide for such high visitor numbers.

fic, potential low-level air tours, and noise from activities within the park, staff are working to produce a soundscape management plan in 2006. If successful, Zion will be one of the first parks to produce such a plan. A wilderness management plan and a plan to manage invasive, non-native plants should be completed in 2007.

Plans for inventory and monitoring of natural resources, archeological resources, collections, and land protection are still needed.

RESOURCE EDUCATION—MORE STAFF NEEDED TO SERVE VISITORS

Educating visitors about Zion's significant resources and human history helps to instill an appreciation and understanding of the park and its importance to American heritage. Providing high-quality information is also critical to long-term public support for resource protection. Park staff educate visitors through personal contacts and interpretive programs as well as exhibits, brochures, films, and school materials.

The park's interpretive staff includes eight full-time staff, ten seasonal members, and one volunteer from the Student Conservation Association. Two permanent positions are currently vacant. In 2004, nearly 2.7 million people visited Zion. The park's interpretive staff was unable to personally reach many of these visitors except through brief exchanges of general information. Additional staff members are needed to provide for such high visitor numbers. During busy months, visitors must often wait in long lines at visitor centers to talk to rangers, and interpretive programs have been reduced because of staffing shortages. The number of guided trail walks and ranger talks given each day has been cut in half, and interpretive rangers are no longer stationed at trailheads or the lodge. Rangers are also absent from the park's shuttle buses, where most visitors spend a significant amount of time. In addition, the park often must deny ranger programs to schools and other groups because of staff shortages.

In 2004, the operating budget for interpretation was nearly $738,000, about 12 percent of the total park budget. This division has requested a $500,000 base budget increase to support eight additional staff members. Funding is also needed to replace outdated wayside exhibits and an introductory park film that is shown in the visitor center.

EXTERNAL SUPPORT—VOLUNTEERS AND PARK PARTNERS PROVIDE NEEDED SUPPORT

Zion National Park staff alone cannot fully achieve park resource protection without help from others. Volunteers, partnerships, park

support groups, and Congress can make an enormous difference toward safeguarding park resources.

In 2004, 165 volunteers contributed 8,255 hours to various resource projects, a contribution valued at more than $115,000. Particularly noteworthy is the work volunteers accomplish in the native plant restoration program. For example, volunteers assist in controlling non-native plants, grow native plants in the park's native plant nursery, and establish them in degraded areas throughout the park. Zion wishes to continue this program, but recruiting and managing volunteers requires a great deal of coordination—work that is currently being accomplished through unreliable special project funds.

The park has also forged partnerships that are making significant contributions to resource stewardship. The Zion Natural History Association operates bookstores in the park's visitor centers and museum, and contributes thousands of dollars to the park, while the Zion Canyon Field Institute conducted an archeological survey, recorded rock art, and helped with a mountain lion workshop in 2004. The Utah Division of Wildlife Resources has been surveying the park's population of Virgin River spinedace for the past ten years. Partners-in-Parks, a non-profit organization with the mission of placing volunteers in national parks, has secured funding to add greater capacity to the park's innovative native plant restoration program. The creation of a dedicated "friends" group that could provide volunteer and financial support would further benefit Zion.

The park enjoys excellent relations with its gateway community—Springdale, Utah. NPCA awarded its first Park Achievement award in 2001 to the mayor, town council, businesses, and citizens of Springdale for their implementation of the new Zion National Park shuttle bus transportation system, serving the park and town.

WHAT YOU CAN DO TO HELP:

- **Support or become a member of groups helping to protect the park:** Zion 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 Zion National Park, contact the park at 435-772-3256.
- **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.

ZION NATIONAL PARK

In 2004, 165 volunteers contributed 8,255 hours to various resource projects, a contribution valued at more than $115,000.

APPENDIX: METHODOLOGY

To determine the condition of known natural and cultural resources at Bryce Canyon National Park, Zion 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 and Zion 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.

BILL KNIGHT

ACKNOWLEDGMENTS

For more information about the
State of the Parks® Program
and this and other program reports, contact:

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Editors: Linda Rancourt and Scott Kirkwood
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Other reports available:
Adams National Historical Park (MA)
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Fort Laramie National Historic Site (WY)
Fort Necessity National Battlefield (PA)
Frederick Douglass National Historic Site (DC)
Great Smoky Mountains National Park (TN/NC)
Hopewell Furnace National Historic Site (PA)
Joshua Tree National Park (CA)
Little Bighorn Battlefield National Monument (MT)
Mojave National Preserve (CA)
Olympic National Park (WA)
Point Reyes National Seashore (CA)
Rocky Mountain National Park (CO)
Shenandoah National Park (VA)
Saint-Gaudens National Historic Site (NH)
Waterton-Glacier International Peace Park (MT-Alberta)

NPCA thanks the staff at Zion 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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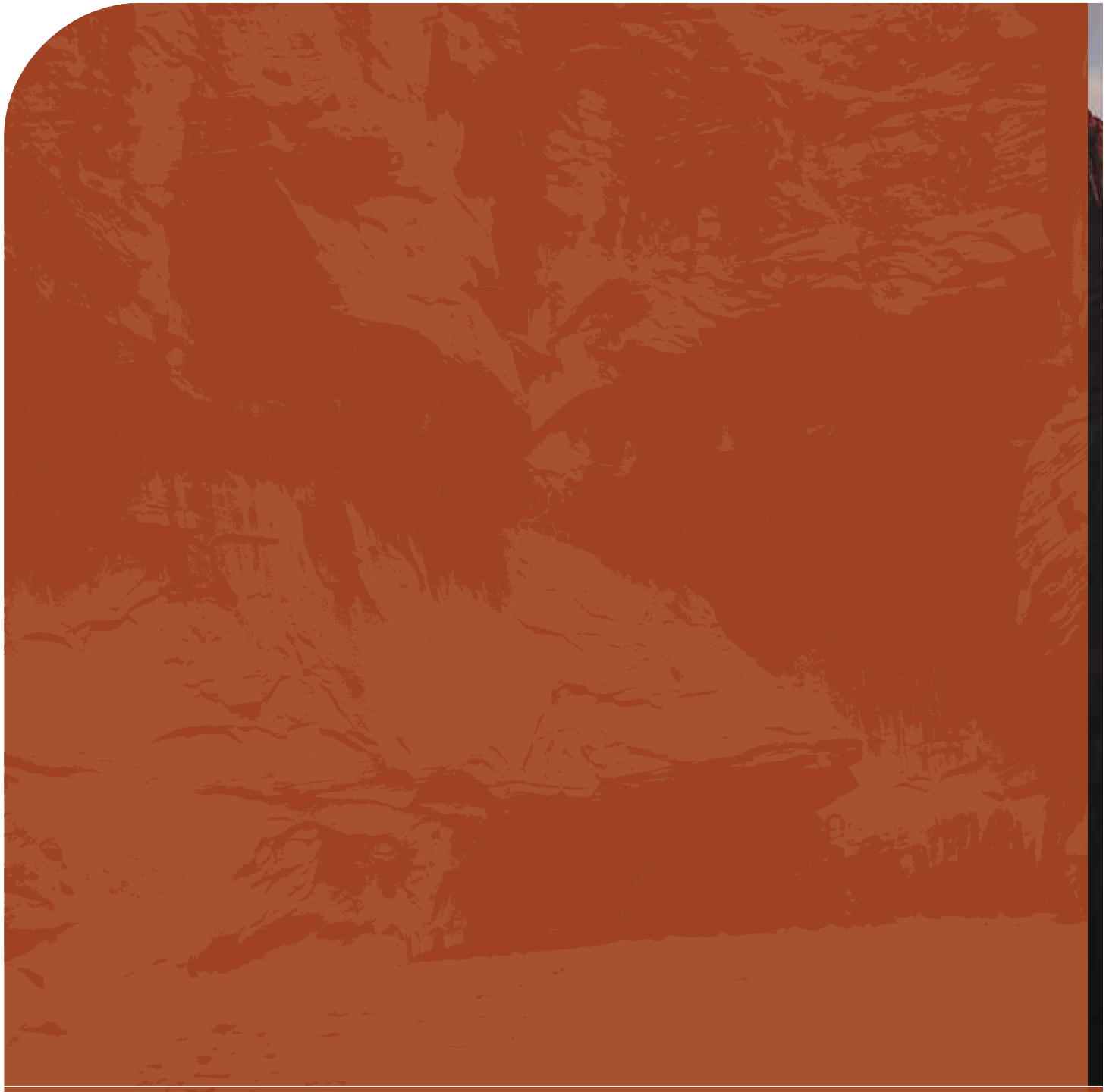
Please visit www.npca.org/stateoftheparks/ to view these reports and to learn more about the State of the Parks® Program.



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