Feature Story

Looking Back to the Future

Mike Pflaum, chief park ranger at Mount Rushmore National Monument, appears to be gazing into the future with Thomas Jefferson, whose image is carved on the monument behind Pflaum, during an inspection trip.

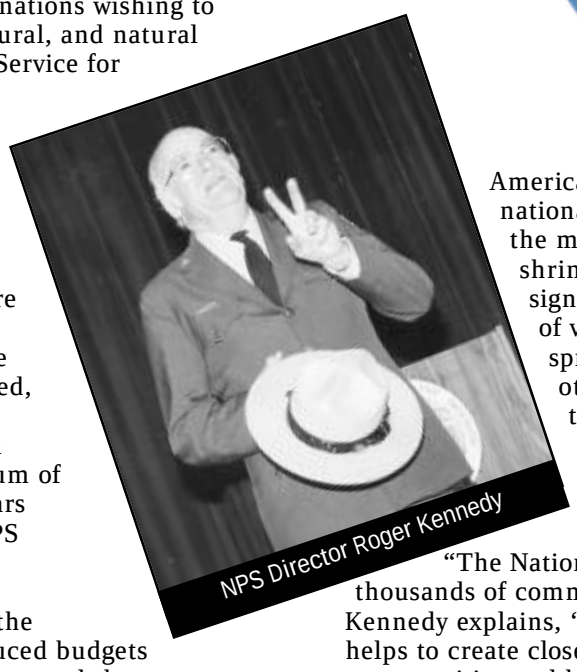
Americans are full of good ideas—or at least we like to think we are. Looking back over our history, some historians say one of the best ideas America ever had was creating the national parks.

"The wisdom of those whose foresight protected the magnificent natural landscape of Yellowstone—those who advanced the national park idea— has endured, strengthened, and evolved over the last 125 years," says **Roger G. Kennedy**, the former director of the National Park Service who four-years of service on March 28.

"Today our system of National Parks protects not only America's unparalleled scenic wonders but our remembrances of those who shaped this land. In our national parks, America preserves both where we live and who we are—and that helps shape who we will become."

This month, as the NPS and the nation celebrate the 125th anniversary of the establishment of Yellowstone as the first national park, they will see an American idea that has blossomed into 374 national parks, monuments, and historic sites, encompassing breathtaking beauty, the history of North America, and the cultural roots of its people.

This American idea also is increasingly imitated around the world, as many nations wishing to preserve their historic, cultural, and natural resources look to the Park Service for guidance and expertise.



NPS Director Roger Kennedy

And as the parks and the NPS's mandate have evolved, the demands on those entrusted with the stewardship of these resources have become more complex and the skills required of the Park Service workforce more sophisticated, says Kennedy, who was the director of the Smithsonian Institution's National Museum of American History for 14 years before he was appointed NPS director.

Indeed, in the last decade, the competing demands of reduced budgets and increased visitors have created the most turbulent period in history of the National Park Service. Yet the underfunded and sometimes understaffed national community of 20,000 dedicated NPS professionals has worked energetically and creatively to maintain the system's integrity, preserve the precious natural and cultural resources entrusted to its care, and improve the quality of visitor experiences to these hallowed, historic sites.

Americans' love affair with their national parks is expressed not only in the millions of annual visitors to these shrines but also—and perhaps more significantly—by the veritable army of volunteer workers that has sprung up to help rangers and other NPS career staffers meet the challenges. Neighboring communities also voluntarily and regularly support 'their parks' as the need arises.

"The National Park spirit thrives in thousands of communities around the country," Kennedy explains, "where the National Park Service helps to create close-to-home recreational opportunities and honor local history through programs like Rivers, Trails, and Conservation Assistance, the National Register of Historic Places, and National Historic Landmarks."

Whether its helping to clean up flood damage at Yosemite in California, removing tornado debris from Homestead National Monument in Nebraska, or supporting an inter-park project to rebuild roads at the City of Rocks National Reserve in Idaho, volunteer battalions eagerly pitch in to sustain that great American idea. American corporate sponsors have increasingly joined the effort over the past few years, from Canon U.S.A. funding natural resource restoration and preservation to Dart, Inc. coordinating a multi-million dollar project to refurbish the Washington Monument.

But in the final analysis, as **Mike Finley**, superintendent of Yellowstone, reflects, "We are able to celebrate the park's anniversary because of the vision of those who preceded us 125 years ago. We will need equal doses of their vision and wisdom to make sure that this beautiful, unusual park survives intact for future generations. How we meet the challenges of today will determine what we as a people will celebrate 125 years from now."

And though Roger Kennedy won't be in an NPS uniform, he intends to continue the struggle to preserve that quintessentially American idea. "I intend to join the fray by fighting for our parks as a private citizen," he says. "In some ways you can be feistier outside the government than you can in it."

The Volunteer Spirit

Neil Niiyama, at left, began designing and developing a 'Happy Birthday Department of the Interior' project two days before his last day as a seasonal park ranger at the USS Arizona Memorial in Honolulu, Hawaii. That was last November. He was so enthusiastic about the exhibit that he continued the work and completed it as a volunteer under the Volunter-In-Parks program. The exhibit was displayed at the Memorial from March 3-16, marking the 148 anniversary of the Department. It included a display board with photographs, posters, maps, and charts representing the nine bureaus and many offices at Interior. The display also contained a table with brochures and other Department publications for the 3,000 visitors a day that came to the Memorial. Many took information home with them. Visitors also watched videos provided by NPS, OSM and the Office of the Secretary. The exhibit was well received by both visitors and park staff and will be displayed again next year. Niiyama would like to extend his Mahalo (Hawaiian for Thank You) to the people at Interior offices that provided information, brochures, memorabilia, and posters.

The City of Rocks Model

Jim Chambers, Olympic National Park

In a remote area of southern Idaho, the City of Rocks National Reserve was suffering from an all-too-common malady these days. Miles of roads and several parking areas at the Reserve were in poor condition and deteriorating; maintaining and repairing them with very limited equipment, manpower, and funding was a major problem that endangered this valuable resource.

"The money available for the repairs and improvements wouldn't have put a dent in the work that needed to be done, if a private contractor had to be hired," said **Gary Bickford**, the chief of maintenance at Fort Vancouver National Historic Site. "The remoteness of the site and the travel time from a commercial gravel pit to the Reserve would make such a contract extremely expensive," Bickford explained. City of Rocks is managed by the Idaho Department of Parks and Recreation, which jointly funds the Reserve with the National Park Service.

An inter park solution began to take shape when the **Columbia Cascades Maintenance Advisory Committee** visited City of Rocks in the summer of 1996. The extent of the problem and the difficulty and expense of contracting out for the work led the Committee to decide that City of Rocks was a prime candidate for inter park sharing as well as an opportunity for training Reserve staff in equipment operation and gravel road construction and maintenance.

The Committee has held its quarterly meetings at different parks in the region to familiarize members with the sites and projects that parks have submitted for funding. All parks in the Columbia Cascades Cluster were contacted and participants from **Fort Vancouver, Coulee Dam National Recreation Area, Crater Lake, North Cascades, Olympic,** and **Mount Rainier National Parks** responded with personnel and-or equipment.

Yellowstone and **Grand Teton National Parks** contributed operators and dump trucks. Montana State Department of Transportation sent an excellent grader operator and the Idaho Department of Parks and Recreation responded with two operators and two dump trucks. All City of Rocks employees participated in one way or another. Twenty-three participants and ten pieces of equipment were brought in for the project.

Several additional pieces of equipment were needed to fully use the expertise of some of the volunteers. Though hauling the additional equipment from other parks was an option, the distance, time, and expensive were prohibitive. But the **Bureau of Land Management** in Burley was only 50 miles away, so the remainder of the needed equipment was rented from the agency. **Cassia County** cooperated by allowing the project to use crushed material from it's gravel pit—only a few miles from the park.

Dina Easterday, the chief of administration at Hagerman Fossil Beds in Idaho, coordinated agreements with federal, state, county, and local partners on the project and provided support for budget matters. Some participants stayed in the homes of local citizens in the towns of Almo and Yost, while others stayed in commercial lodging in Albion. Because restaurants were not available in the area, arrangements were made with local residents to provide meals to the workers. Salaries were paid by employees' home parks; overtime and holiday work was paid from project funds.

When the dust settled, 4,748 cubic yards of material had been hauled, graded, and compacted on five parking lots and three miles of park roads. Seventeen culverts were installed to correct major drainage problems in the parking lots and on the roads. The project was completed in ten consecutive working days at a cost of $58,000. It is estimated that more than $100,000 was saved by not contracting this work.

Employees of NPS and the Idaho Department of Parks and Recreation also were trained how to operate backhoes, graders, dozers, and large trucks. Lines of communication between federal, state, and local agencies were established, and many friendships were formed.

"Inter park sharing requires sacrifices on the part of individual parks to contribute to the greater good," said Bickford, who coordinated the project for the Columbia Cascades Cluster. "But the benefits of this project where tremendous, more than worth the effort. This example of inter park sharing definitely created a win-win situation. The resource at City of Rocks was protected and enhanced and participants in this project had only praise for the way it was conducted."

Jim Chambers is chief of maintenance at Olympic National Park and chairman of the Columbia Cascades Cluster Maintenance Advisory Committee.

Above, an NPS crew installs a culvert drainage pipe along a road at City of Rocks National Reserve as part of an inter park cooperative project. At left, NPS crews that worked on the City of Rocks road rebuilding project gather for a group photo. Their efforts saved $100,000 in costs for road and parking area improvements at the park in southern Idaho. NPS photos by Wallace Keck

Community Pitches in to Help 'Their Park'

The spring growth of the Nebraska prairie tallgrass (which would be four feet high by July) was underway, a sure sign that the busy summer season was about to begin. The staff at Homestead National Monument of America also had to start gearing up for the annual Homestead Days, scheduled for June 27-30, when more than 2,000 visitors were expected for the four-day special event.

Then from across the prairie came that ominous dark funnel cloud and train-like sound. The tornado hit on May 8, 1996, and by the time it finished, the monument grounds were strewn with debris—from huge tree trunks and limbs to brush, trash, and litter. The debris posed an immediate threat to the natural resources and to visitors using the monument trails.

It couldn't have hit at a worse time. The monument's permanent staff of only eight employees were faced with a huge clean-up at their busiest time of the year. Undaunted and knowing the depth and breadth of community support, they sent out appeals to volunteers through television, radio, and print media and began cleaning-up the debris.

Monument staff coordinated the activities of volunteers, secured supplies and materials, and oversaw all labor. Every volunteer received an orientation to the monument and a certificate of appreciation for their work. In a further effort to assist the monument and help local citizens, the staff worked with the Nebraska Job Service to hire five temporary employees from among workers displaced from the damaged Pamida store in the town of Beatrice. This partnership not only resulted in hundreds of hours of work for the monument, but also allowed five people who would have otherwise been unemployed to earn income.

In seven weeks the clean-up was completed. The grounds were completely cleaned and safe for the public and the monument's natural resources by June 28. Despite the inherent dangers of this material, not one volunteer or visitor suffered an injury.

Throughout the effort the monument staff continued to provide daily visitor services and planning for Homestead Days. Despite the time constraints and work demands created by the clean-up, the monument handled a 67 percent increase in visitation for the months of May and June compared to 1995, and executed a well-received Homestead Days event which had a 12 percent visitor increase over the previous year.

In recognition of their outstanding efforts, the Homestead staff has been awarded the Department of the Interior's Unit Award for Excellence of Service—the highest honor presented to work units in the Department. **David Given**, NPS's deputy field director for the Midwest, presented the award on behalf of **Secretary Babbitt**.

"The monument staff performed extraordinary work in responding to the tornado, said Homestead superintendent **Constantine J. Dillon** in receiving the award. "This award is a tribute to their many hours of effort to keep the monument open and serving the public," Dillon added.

Community volunteers help clean-up Homestead National Monument after a May 8, 1996 tornado littered the grounds with tons of dangerous debris. NPS photos by Costa Dillon

U.S. Geological Survey

Gordon P. Eaton, Director
Peter Lyttle and
Kathleen Gohn, Bureau Editors

USGS geologist Mark Reid checks a surface extensometer spanning several scarps on an active landslide above California Highway 50.

Monitoring California Landslides

In Real Time

Although the recent landslide blocking U.S. Highway 50 in northern California has been removed, other active landslides in the corridor between Placerville and South Lake Tahoe still threatened the road as of late March.

Two USGS scientists, **Mark Reid** and **Rick LaHusen**, with the assistance of Eldorado National Forest personnel, have installed measuring instruments that provide a real-time monitoring system on a large, active landslide potentially threatening Highway 50.

The newly instrumented landslide is similar to the large Mill Creek landslide that failed catastrophically on January 24, 1997, blocking Highway 50 and damming the American River. Both landslides showed numerous scarps (steep outer slopes) last spring and both moved several meters prior to the catastrophic failure of the Mill Creek landslide in January.

The Mill Creek landslide swept two vehicles into the river bed and destroyed three houses. Opening the highway required the removal of 35,000 truckloads of debris. State officials estimate that economic losses due to the highway's closure exceeded $1 million per day. The USGS hopes to detect any pre-failure movement on the instrumented landslide, as well as monitor the rainfall and groundwater conditions leading to a possible catastrophic failure.

Instrumentation on the active landslide includes two surface extensometers for measuring landslide movement, pore-water pressure sensors for monitoring groundwater conditions, sensors for monitoring ground vibrations associated with landslide movement, and a rain gage.

In many landslides, infiltrating rain or snowmelt can elevate groundwater pressures. These elevated pressures, in turn, induce downslope movement. The USGS is also assisting the California Department of Transportation with the development and installation of monitoring instruments at other landslides in the Highway 50 corridor.

Data from the USGS-monitored landslide are transmitted via radio link to a base station in Sacramento every 10 minutes and then downloaded over the Internet. A web site has been developed for near real-time viewing of the incoming data via Internet access. The site address is <http://vulcan.wr.usgs.gov/Projects/CalifLandslide/framework.html

At left, two houses destroyed by large Mill Creek landslide that also blocked California Highway 50 and temporarily dammed the American River. Below, USGS scientist Rick LaHusen tests radio telemetry at a landslide monitoring site in the California Highway 50 corridor.

25th Anniversary Marks Advances in Flood Forecasting

Since the devastating floods of 1972 that took nearly 500 lives, the human toll has declined in the United States, thanks in part to advances in science and technology as well as better partnerships among local, state, and federal agencies working together to provide advance warnings to citizens.

"We should not let our guard down," said **Robert Hirsch**, chief hydrologist of the U.S. Geological Survey. "Floods continue to cost the nation an average of $3 billion in damages and about 95 lives every year. Although the 1993 Midwest flood and the flooding this past year on the West Coast have been devastating, the tragic loss of life has been reduced.

"This can be directly attributed to early and accurate river forecasts made possible by technological advances in the USGS cooperative network of stream gages in every state," Hirsch said.

In the midst of a flood, USGS hydrologists work around the clock to collect the data that emergency managers rely on as the basis for evacuation orders and use in the development of early warning systems.

Three major floods that occurred in 1972 were:

Buffalo Creek, West Virginia, February 26. This flood was caused by the collapse of a coal-waste dam that released 132 million gallons of water into Buffalo Creek valley. The flood destroyed the town of Saunders, as well as all or part of 16 other small communities or mining camps, and resulted in 125 deaths. The Buffalo Creek area is in the southeast corner of West Virginia, about 40 miles from Charleston. The USGS prepared a detailed report on the causes and effects of the dam failure.

Hurricane Agnes, West Virginia-Pennsylvania-New York, June and July. Although Agnes was one of the weakest hurricanes in history, the rains that accompanied it caused the worst natural disaster in Pennsylvania's history. Rainfall from Agnes ravaged twelve states and set many records for high water. The Susquehanna River and tributaries along the New York-Pennsylvania border region produced the most severe flooding since 1784.

Rapid City, South Dakota, June 9. A stationary group of thunderstorms that formed over the Black Hills produced nearly 15 inches of rain in six hours near Nemo, South Dakota. More than 10 inches of rain fell in a 60-square-mile area. The resulting floods were the most severe ever recorded in South Dakota. At the end of the day, 237 people were dead, more than 3,000 injured, and total damage exceeded $160 million.

Water-Quality Data on CD-ROM

During the past 30 years, the USGS has operated two national stream water-quality networks, the Hydrologic Benchmark Network and National Stream Quality Accounting Network. Information from these networks, collected at 679 stations in the United States, is now available on a two-disc CD-ROM set.

Collectively, these data are referred to as Water-Quality Networks and provide national and regional descriptions of stream water-quality conditions and trends, while improving understanding of the effects of the natural environment and human activities on water quality.

Measurements are now available for 1962 to 1995 for the hydrologic network and for 1973 to 1995 for the stream quality network. The streamflow and water-quality data, supporting documentation, and quality-assurance information for the networks have been incorporated into the CD-ROMs in an easy-to-use format.

The retrieval tools and ancillary information on the CD-ROMs make it easier and quicker to use the data. On one disk, the data can be accessed from user-supplied software including Web browser (e.g., Mosaic, Netscape Navigator, or Microsoft Internet Explorer), spreadsheet, and word processor. A second disk—a DOS version—includes software capable of browsing text files and retrieving and printing data according to user-specified criteria. The discs (DDS-37) can be purchased for $42 by contacting: USGS, Branch of Information Services, Box 25286, Denver, Colorado 80225-0286.

USGS Deploys GPS for U.S. Antarctic Program

Gordon Shupe

For four decades, the USGS has been surveying and mapping Antarctica in support of the U. S. interagency Antarctic Program. Administered by the National Science Foundation, the program sponsors and carries out a broad range of U.S. research activities on the continent, including biology, geology, glaciology, geodesy, geophysics, and global change.

Beginning in mid-April, U.S. scientists working in West Antarctica will have the latest in Global Positioning System (GPS) technology to accurately locate samples and map their studies. The USGS will be establishing a GPS Continuously Operating Reference Station at Palmer Station, the U.S. research base on the Antarctic Peninsula.

Palmer is the last of the three permanent American bases in Antarctic to receive a Reference Station system. USGS established these operations at McMurdo and Amundsen-Scott Stations in 1991. Last but not least, the Palmer system will offer a new capability, real-time differential corrections, enabling very precise geographic positioning without lengthy post-processing of data.

In addition to assisting local surveys, the continuous GPS observations recorded by the Palmer station will contribute to a global network of Reference Station data from other permanent GPS sites, known as the International GPS Service for Geodynamics.

Data from this global network, shared via Internet, is used for global geophysical studies such as crustal motion monitoring, and determination of the global geodetic datum known as the International Terrestrial Reference Frame.

At left, USGS cartographer Chris Baumann demonstrates the latest GPS technology to Director Gordon Eaton and his staff at Station Powell on the roof of the USGS National Center. Below, Chris Baumann tests GPS equipment at Station Powell.

The Palmer GPS system recently completed testing at the Survey's Mapping Applications Center in Reston, Virginia, and is now on its long journey south to Palmer Station. Chris Baumann, a Denver-based cartographer with the USGS Rocky Mountain Mapping Center, will deploy the system at its permanent field site.

While in Reston for training, Baumann had the opportunity to demonstrate the system's surveying capabilities to USGS **Director Gordon Eaton** and members of his staff. Surveyors and non-surveyors alike were impressed by the real-time display of centimeter-level coordinates.

The desert tortoise makes its home in the Mojave, Colorado, and Sonoran deserts of the southwestern United States. In 1990, the U.S. Fish and Wildlife Service listed the desert tortoise as a threatened species because of widespread population declines and overall habitat loss, deterioration, and fragmentation.

Tortoises Go Wild

Gail Keirn

Captive desert tortoises are getting a second chance to live and reproduce in the deserts of the Southwest, thanks to a unique partnership among state and federal agencies in Nevada. As part of the Desert Tortoise Translocation and Habitat Efficacy Study, captive desert tortoises are being released starting in March onto 20,000 acres of public land south of Las Vegas, Nevada.

The translocation project provides researchers with the opportunity to further monitor and observe this threatened species. About 700 healthy tortoises from the Bureau of Land Management's Desert Tortoise Conservation Center will be released in the translocation area during the next year. Forty tortoises will be outfitted with radio transmitters in each of four seasons to assist researchers with the monitoring of their movements and ability to survive.

The area is currently underpopulated with desert tortoises and should be able to sustain the addition of several hundred individuals. Although fencing will be required as a barrier to keep tortoises away from busy roads, public access and traditional recreational use of the area will not be affected.

As part of the release effort, scientists with the USGS Midcontinent Ecological Science Center will provide research expertise, as well as assistance in monitoring the movements of translocated tortoises. The translocation project will provide researchers and land managers with techniques for improving desert tortoise translocation efforts at other underpopulated sites.

The Desert Tortoise Conservation Center, near Las Vegas, Nevada, was established in 1990 to house desert tortoises left homeless because of human development or other land uses. Biologists have used many of the Center's tortoises to conduct research on tortoise nutrition and reproduction, as well as Upper Respiratory Tract Disease which is suspected of being a major contributor to the decline of wild tortoise populations.

The translocation study is a partnership among the Aldo Leopold Wilderness Research Institute, National Park Service, Nevada Division of Wildlife, University of Nevada, U.S. Fish and Wildlife Service, and the U.S. Geological Survey.

New Evidence of Asteroid Impact

A 65 million-year old record of the asteroid impact that may have caused the extinction of the dinosaurs was recovered by an international team of scientists drilling off the coast of Florida and South Carolina on January 8 through February 4.

This core material may be the most complete deep-sea record ever recovered of the asteroid impact that ended the Cretaceous period, according to **Jean M. Self-Trail**, research scientist for the USGS. The extinction of more than 90 percent of microanimals and marine algae occurred at that time. Self-Trail was a participant aboard the Ocean Drilling Program cruise Leg 171B.

A complete record of this episode of worldwide oceanic extinction and subsequent repopulation will be invaluable in determining the long-term effect that extinction events, even minor ones, have on the Earth's ecosystem.

Self-Trail and 27 other scientists, representing eight countries, sailed aboard the JOIDES Resolution, the world's largest scientific research vessel. The objectives of the cruise included 1) obtaining a complete record of the Cretaceous/Tertiary boundary along an increasing depth transect, 2) studying the rate and mode of evolution of marine life, and 3) providing critically needed low-latitude sediments used to interpret tropical sea-surface temperature and climate cycles.

Of primary interest is the reconstruction of climatic and biological evolution prior to the asteroid impact and the evaluation of the subsequent recovery of marine life following an extinction episode. The extinction event will be documented from both deep-sea and nearshore sections.

A corehole that was recently drilled by the USGS in Cannon Park—Charleston, South Carolina—contains what appears to be a fairly continuous Cretaceous/Tertiary boundary segment which correlates to the one drilled offshore. This onshore equivalent was deposited on the continental shelf and represents the shallow end-member of the deep-sea sediments drilled by the JOIDES Resolution. Comparing this onshore material with correlative offshore sections will help to determine depth-dependent changes in floating and bottom-dwelling marine communities across the extinction boundary in a low-latitude setting.

JOIDES Resolution, the world s largest scientific research vessel.