

# National parks

July/August 88

Guide to Park Beaches  
Mystery of Lechuguilla Cave  
Chestnut: Rebirth of a Species

Jody Powell  
On the Fight  
For Manassas



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# Commentary

## Whittling Away

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One of the great National Park Service directors was Newton Drury. Back in the late 1940s, Drury saw a number of forces chipping at the very character of the national parks. He said, "If we are going to succeed in preserving the greatness of the national parks, they must be held inviolate. . . . If we are going to whittle away at them we should recognize, at the very beginning, that such whittlings are cumulative and the end result will be mediocrity."

The battle over development encroaching upon historic Manassas National Battlefield is just one example of this whittling. This issue of the magazine contains a detailed article describing the specifics of this particular disaster—that is, losing an evocative historic scene to a shopping mall. Needless to say, however, there was more to Drury's concern than just a single instance of encroachment, as much as we may deplore that one.

Drury knew that whittling involves lots of little pieces cut from here and there throughout the park system that, when weighed together, can account for serious changes. We have been whittling away at Everglades and Big Cypress by pumping out precious water.

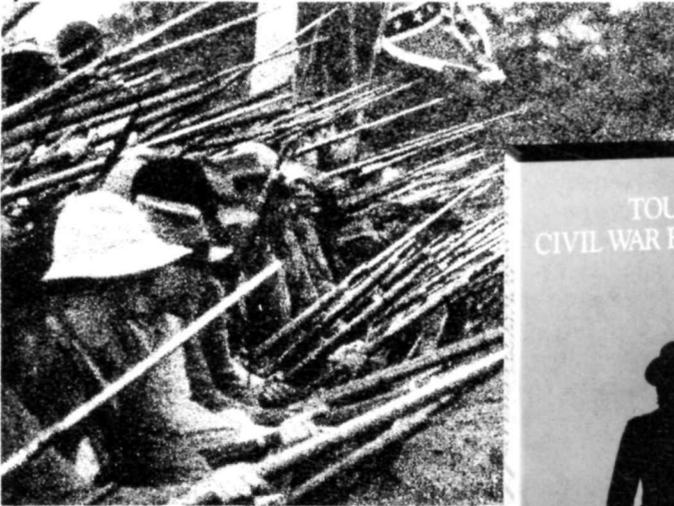
We are whittling away at the silence of the parks by allowing indiscriminate low-level plane and helicopter flights. We are also whittling by reducing and overusing other public lands that are part of the total environment, lands necessary for grizzly and elk habitat at Yellowstone, for instance.

Parks are damaged even by the presence of too many people. The parks can handle only a given number of visitors; the cumulative impact of too many people affects wildlife, soils, even the enjoyment of visitors themselves. Parks are not boundless any more than is a theater or an amusement park.

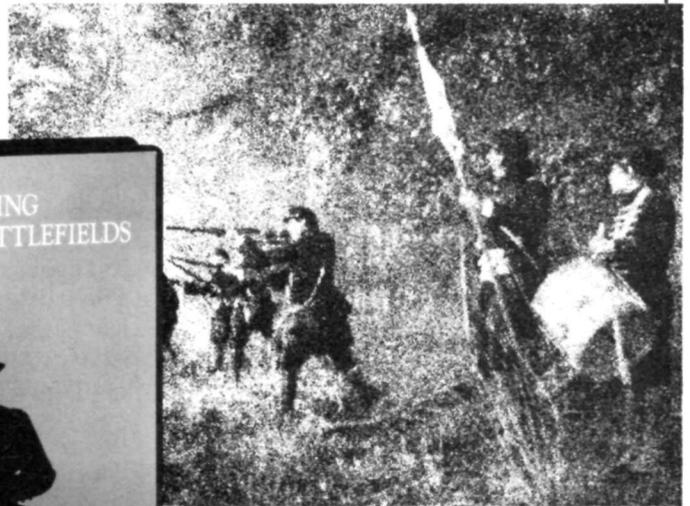
We are trying to solve these problems in a number of ways. NPCA has suggestions and proposals for including new areas, expanding existing parks, reducing visitor impacts, and much more.

Given enough time, humans can adapt to almost any condition. And, unlike other animals, if we cannot adapt naturally, we will create the technology to adapt artificially—sometimes in ways detrimental to the environment around us. Rather than disturbing the environment, we should use our creative abilities to start whittling away at our abuses of the environment. We should reorder our energies from destruction to construction—adding to the park system, creating more ecologically sensitive boundaries. Can we turn the whittling around from negative to positive? I think so. And this will be the hallmark of our generation.

## Award-winning video remembers the Blue and the Gray



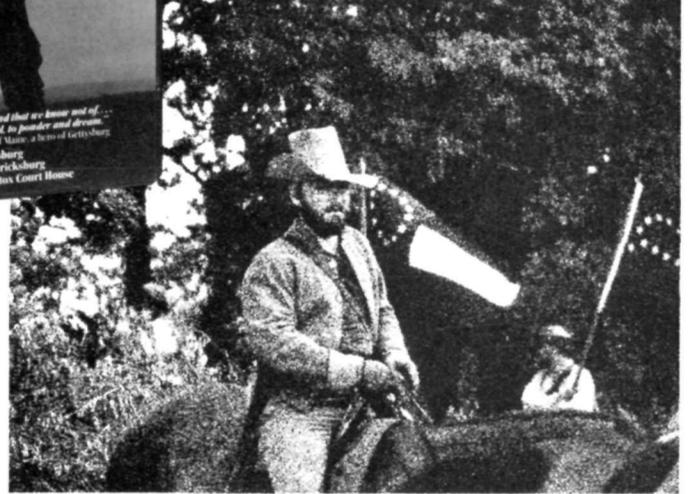
Manassas (Bull Run)



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# Feedback

We're interested in what you have to say. Write NPCA Feedback, 1015 Thirty-first St., NW, Washington, D.C. 20007. (Letters may be edited for space considerations.)

## Earsores, Eyesores

In your report about Grand Canyon overflights [March/April], you mention curtailing military overflights. I visited Grand Canyon in August 1986 and backpacked across it in 1987. I found that much more annoying than overflights by sightseeing aircraft were the sonic booms created by military aircraft. I was startled by their loud echoing in the canyon. It's a shame that such magnificent tranquility must be pierced by such an "earsore."

Bob Brown  
Louisville, Kentucky

I would like to suggest an article on Padre Island National Seashore. My

wife and I feel it is being covered with garbage that comes from as far away as the Cayman Islands. I know because last November I found a note in a bottle that was released by the Tortuga Rum Company, Cayman Airways, and Sunset House Hotel as a promotion scheme ("Win a free trip and a case of rum. . ."). It is necessary to wear shoes at all times to avoid glass and sharp plastics. The most popular beach areas are cleaned, but the 60 miles accessible only with four-wheel drive is the most garbage-strewn I have ever seen.

Dean Kellogg  
San Antonio, Texas

## Bring Back Trains

I want to praise you for your article on the *Empire Builder* and Glacier National Park [Jan/Feb]. The only reservation I have is the title, "Sentimental Journey." When there is no more oil, there will be nothing sentimental about train travel.

You write that "some managers foresee a time when all private vehi-

cles must be banned from parks." This is another reason why I wish your organization could take steps to help bring back train service to national parks.

The return of the *North Coast Hiawatha* would mean a stop in Livingston, Montana, where a bus could take people to Yellowstone. There should be summer and fall train service from Salt Lake City to Yellowstone. If the track is gone, it can be relaid. And, there should be rail service from Phoenix to the Grand Canyon.

Samuel Stokes, Jr.  
Alstead, New Hampshire

## A Bite Is a Bite

The article about Lyme disease [May/June] left me wondering: How long a tick bite does it take to become infected with the disease?

Denis Riordan, Jr.  
Bell, Florida

As soon as an infected tick pierces the skin, the possibility of contracting Lyme disease exists. —the Editors

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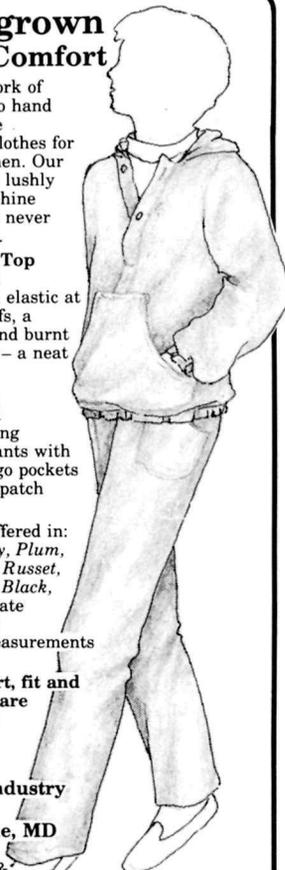
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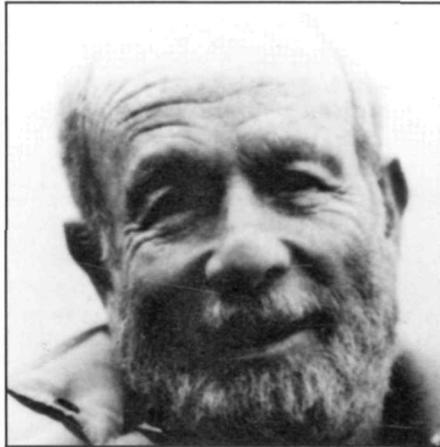
## Marjory Stoneman Douglas Award

The Marjory Stoneman Douglas Award is presented by the National Parks and Conservation Association and the Bon Ami Co. to recognize an individual for an outstanding effort that results in protection of a unit or a proposed unit of the National Park System. The award is named in honor of Marjory Stoneman Douglas for her many years of dedication to preserving the fragile ecosystem of the Florida Everglades.



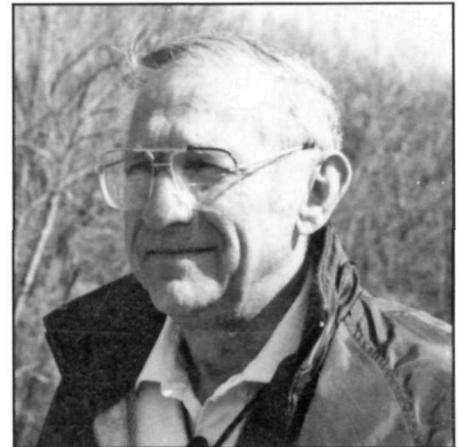
### 1986 RECIPIENT

**MICHAEL FROME.** Mr. Frome, a writer and an environmental scholar, has been a persistent advocate for our national parks and other public lands. Mr. Frome is the author of "The Promised Land" and is currently working on a book about the National Park System.



### 1987 RECIPIENT

**DR. EDGAR WAYBURN.** For forty years, Dr. Wayburn has been a leading environmentalist. He was the principal conservation architect for the establishment of Redwood National Park and Golden Gate National Recreation Area, and for the 1980 Alaska National Interest Lands Conservation Act.



### 1988 RECIPIENT

**ROBERT CAHN.** A Pulitzer-Prize winner for his Christian Science Monitor series on the state of the national parks, Mr. Cahn has also served on seminal environmental councils and, through numerous books and articles, furthered the cause of conservation.

The Faultless Starch/Bon Ami Co. wishes to congratulate the recipient of this award and thank them for the excellent contribution they have made to the protection of our environment.

The Bon Ami Co. has actively supported the efforts of organizations such as National Parks and Conservation Association for over 100 years and will continue to work toward the goal of preserving our natural resources for future generations.



# NPCA Report

## House Bill Helps Free Park Service From Politics

Action to make the National Park Service independent of political interference recently took a step forward. On May 10, Congressman Bruce Vento (D-Minn.), chairman of the House Subcommittee on National Parks and Public Lands, held a hearing on H.R. 3964, which would establish a National Park System review board. The bill would also set a five-year term for the National Park Service director, who would be appointed by the president and confirmed by the Senate.

Although NPCA advocates going further by making the NPS an independent agency—and has made independent status a key recommendation of its National Park System Plan—the association did strongly endorse the bill.

NPCA President Paul Pritchard, testifying at the hearing, said, "We believe that H.R. 3964 would be recognized as the most important piece of legislation dealing with the organization and future direction of the

National Park Service since its inception in 1916."

Park advocates and NPS employees fear that the NPS has become too politicized. In recent years, political appointees within the Interior Department have ridden roughshod over NPS traditions of professionalism and preservation. Conservationists believe that the administration has leaned more toward use than preservation, even though resource preservation is the central mission of the NPS.

Vento opened the hearing with a strong statement about political meddling with the NPS. He described specific situations dating back to the 1970s.

- Political appointees have replaced professionals, including a former deputy director of the National Park Service.
- The performance ratings of NPS professionals were changed for political reasons.
- The Interior secretary attacked personnel at the Grand Canyon over an aircraft management plan. The secretary called them an embarrassment to the NPS even though they were fulfilling their mandate to protect park resources.

• Over the objection of park professionals, the assistant secretary of Interior ordered the NPS to permit seismic testing in the Big Cypress National Preserve by Shell Western, Inc., without requiring an environmental impact statement.

Chairman Vento believes that H.R. 3964 would protect the NPS from such political domination. Hope of a bipartisan effort for this bill dimmed, however, when some committee Republicans took issue with Vento's statement.

The administration, as expected, opposed the bill. Director William Penn Mott, Jr., accompanied by Assistant Secretary for Fish, Wildlife and Parks William Horn, headed the list of witnesses. Mott stated that "The proposed independent review board and the lack of secretarial authority over the National Park Service would be totally unworkable."

Remaining witnesses provided a reunion of sorts in the committee hearing room. John Seiberling, retired congressman and former chairman of the subcommittee, testified on behalf of the National Trust for Historic Preservation. Seiberling supported the intent of the bill if not all the particulars.

## Interior Sued to Halt Big Cypress Seismic Tests

On April 22, NPCA and other conservation groups filed a lawsuit against the Interior Department seeking to nullify Interior's approval of an oil and gas exploration project within Big Cypress National Preserve. The project was initiated by Shell Western Energy and Petroleum, Inc., in April.

Faced with the suit, Interior rescinded its approval and withdrew the environmental assessment (EA), the "finding of no significant impact" (FONSI), which was based on the EA, and the actual exploration permit. As a result, on May 6, the National Park Service directed Shell Western to cease immediately all operations within Big Cypress authorized under the National Park Service permit. Conservationists see this as an important initial victory in the suit.

The plaintiffs in the case—NPCA and seven other conservation groups—have accused Interior of failing to comply with the provisions of the National Environmental Protection Act. The act requires that a comprehensive environmental impact statement (EIS) be prepared for projects that may significantly affect the natural environment.

Interior's approval of Shell Western's plan was based solely on an inadequate EA, the plaintiffs claim. Therefore, the plaintiffs have asked that the court nullify Interior's approval until thorough research, as required by law, is completed.

The plaintiffs also argue that other federal laws were violated by Interior's approval of the project, including Big Cypress' enabling legislation, the National Park Service Organic Act, and NPS regulations governing oil and gas operations.

In addition, Shell Western has not

proven its right to conduct seismic tests for oil and gas potential within the preserve. While it claims to have permission from owners of the subsurface mineral rights, the company has no lease or legal claim to those rights. Interior approved the project based on a loosely defined relationship between Shell Western and owners of the subsurface rights.

Although NPS officials were reluctant to approve the project without a full EIS, they were ordered by Assistant Secretary for Fish, Wildlife, and Parks William Horn to issue a statement that no significant damage to the preserve would result from the seismic tests.

The question now is whether the Interior Department will decide to prepare a full EIS. Conservation groups will not let the case drop until they are satisfied that all possible environmental effects have been carefully researched.

Robin Winks, NPCA trustee, former chairman of the National Park System Advisory Board, and a professor of history at Yale University, counseled that the NPS must be free to fulfill its mission. "Just as no university worth that name would permit political interference lest the educational function be contaminated by momentary passions of political strife," said Winks, "so, too, must the National Park System be above politics to the degree that this is possible."

Nathaniel Reed, former Interior assistant secretary during the Nixon and Ford administrations, expressed his frustration with political interference and bad management at the Department of Interior.

George Hartzog, replaced as NPS director by Nixon political appointee Ron Walker, spoke about "incursions during the last 15 years" that "have undermined . . . the Service" and "have created a management house divided against itself—pitting career bureaucrat against political bureaucrat."

An overwhelming majority of witnesses agreed that the NPS has become too politicized and that action is necessary now.

## Notices

- As of July 1, 1988, NPCA is increasing its dues for the first time in 2.5 years, from \$22 to \$25 for associate members. Multiyear memberships are available at a \$15 savings—just \$60 for three years.

- For exciting and informative books, guides, and videos on national parks, see the catalogue in the May/June issue of *National Parks*.

The following corrections should be made when ordering video tapes: *Touring America's National Parks*; VHS, P111; Beta, P112. *Touring Civil War Battlefields*; VHS, P113, Beta P114. *Wild Alaska*; VHS, P115, Beta, P116. For more information, contact NPCA Center for Park Education, 1015 Thirty-first St., NW, Washington, D.C. 20007.

- Enjoy this issue of *National Parks Lite*, the 32-page summer edition. We'll be back to the usual 48 pages come fall.



Wolves chase moose at Isle Royale; Rolf Peterson

## Isle Royale Wolf Decline Alarms Park Researchers

The National Park Service has decided to begin an in-depth investigation into the causes behind the alarming decline of the wolf population on Isle Royale National Park. Beginning this spring, scientists will trap up to six of the dozen remaining animals in order to take blood samples and fit them with radio collars for future monitoring.

The decision to handle the wolves breaks with the 30-year policy of hands-off observation. This three-decade study, the longest running in the NPS, was designed to preserve the wilderness quality of the wolves' environment.

Superintendent Thomas Hobbs called the new approach essential to determining whether a disease new to the island is the cause of the decline, as is suspected.

The wolf population on Isle Royale, an island wilderness in Lake Superior, has fluctuated greatly since

1959, when scientists first began monitoring the predators. Wolf numbers had ranged from a high of 50 in 1980 to a low of 14 in 1982, until this year's record low of 12. The average is in the 20s.

The project's chief researcher, Dr. Rolf Peterson of Michigan Technological University, has cited three possible causes for the sharp decrease in the wolf population:

- the current scarcity of very old and very young moose on the island, the segments of the herd most vulnerable to wolf predation;
- infiltration of new disease;
- the lack of new genetic stock on Isle Royale during the 40 years that the current population has inhabited the island.

Further action depends upon information gained from trapping and sampling. Researchers plan to monitor collared wolves this summer and beyond, and the NPS says that follow-up blood sampling may be necessary next year.

## NPCA Commission Examines Park Science

The recently established Commission on Research and Resource Management Policy met for the first time this past April in Washington, D.C. The prestigious 17-member panel, chaired by Dr. John Gordon, dean of the Yale School of Forestry, will spend a year assessing the current role of science in the national parks and developing long-term resource policy recommendations.

The group convened on April 18 at the Hotel Washington to the opening addresses of Dr. Gordon, NPCA President Paul C. Pritchard, NPS Deputy Director Denis Galvin, and *Country Journal* Editor Paul Schullery. Over the next two days, the commission discussed general objectives, organized subcommittees, and scheduled future meetings.

NPCA established the commission in accordance with recommen-

dations from its National Park System Plan. The commission comes in response to a recognized need for a reassessment of current NPS resource management policies.

In his welcoming remarks, NPCA President Paul C. Pritchard said, "The conclusions of our National Park System Plan clearly show the urgent need for a greater emphasis on scientific management of the National Park System. But this commission is unique; it will deliberate independently of NPCA and the National Park Service and is encouraged to reach its own conclusions."

Chief among the commission's tasks will be the overhaul of a 1963 wildlife management report that has guided NPS management philosophy for more than 20 years.

The commission is composed of scientists and policy experts who have distinguished themselves in a wide range of fields pertinent to both natural and cultural resource

management, including wildlife ecology, wildland management, anthropology, and history.

Both the NPS and NPCA will provide liaison staff to aid the panel.

Paul Schullery, who is on NPCA's council of advisors, acknowledged the challenge faced by the commission: "The basin of Yellowstone Lake is tilting; in a few years the nesting islands of white pelicans may be submerged, drowning one of the great nesting sites in North America. Should we be hauling gravel out there, or celebrating the imponderable power of natural processes? I know there are a thousand questions like this, and I envy your getting to ask them and consider them."

The commission urges input from the public. Those interested should write to the Commission on Research and Resource Management Policy, c/o NPCA, 1015 Thirty-first St., NW, Washington, D.C. 20007.

## Farm Pivotal in Spy Case Designated as Landmark

Secretary of Interior Donald Hodel declared the Maryland farm of Whittaker Chambers, chief witness in the Alger Hiss case, a national historic landmark on May 17. Hodel made the decision over the objections of the National Park System Advisory Board and NPCA.

Hodel, who personally initiated landmark designation for the site, called Chambers, "an historical figure of transcendent importance in the nation's history."

In meetings last April, the 11-member advisory board unanimously rejected the proposed designation, citing the NPS guideline of requiring a 50-year lapse between significant events and conferral of landmark status.

The 390-acre Pipe Creek farm in Carroll County, Maryland, is the first landmark of the 170 created during Hodel's tenure that he has personally requested. It appears to be the only site designated over the unanimous objections of the National Park System Advisory Board.

Immediately following the designation, Interior furnished a list of 11

other historic landmarks—there are 1,828 nationwide—that were designated in less than the customary 50 years. The secretary also cited the conclusions of a review committee, composed of cultural resource specialists from outside the NPS, that backed the landmark designation.

The Chambers-Hiss case attracted national attention in 1948 when Chambers, a disaffected communist, denounced prominent State Department official Alger Hiss as a Soviet spy before the House Un-American Activities Committee. This dramatic case catapulted then-obscure committee member Representative Richard M. Nixon (R-Calif.) to national prominence.

Hiss, considered by many a pillar of the New Deal liberal establishment, denied the allegations before the committee, but was eventually convicted of perjury when Chambers produced the "pumpkin papers," classified documents linking Hiss to Soviet agents. Chambers had hidden the documents in a hollowed-out pumpkin on the grounds of his farm.

The Chambers-Hiss trial polarized the nation along ideological lines

and set the stage for the anti-communist mood of the McCarthy era.

Chambers' best-selling book, *Witness*, published shortly after the trial, influenced members of the conservative movement of the time, Richard Nixon and Ronald Reagan among them. President Reagan awarded Chambers a posthumous Medal of Freedom in 1984.

Dan Jordan, who heads the advisory board, commented that he thought there might be other sites more appropriate "in terms of Whittaker Chambers and the whole controversy he represented."

In written testimony before the advisory board, NPCA questioned Whittaker Chambers' national significance as an American historical figure, and as a political thinker, and protested the breach of normal procedure in the site's designation.

Bruce Craig, NPCA's cultural resources coordinator, said, "This proposal politicizes the National Landmark Program. Granted, Chambers was a pivotal figure in the Chambers-Hiss trial. But it is the case, not Whittaker Chambers, the man, nor his farm, that is nationally significant."

# News Update

## Preserving Tuskegee.

NPCA supports a bill in Congress that would help maintain the historic scene of the Tuskegee Institute, a national historic site since 1974, by restricting development around the original structures. The buildings include The Oaks (the home of Booker T. Washington, who founded the institute) and the Carver Museum (George Washington Carver's laboratory). H.R. 3869, sponsored by Congressman Bill Nichols (D-Ala.), would give a third historic building, the Grey Columns mansion, to the university to serve as the university president's home in exchange for necessary administrative and visitor facilities connected with maintaining the historic site.

“National Rally '88.” The Land Trust Exchange is sponsoring the third national conference of local and regional land conservation organizations on September 25-28 in Estes Park, Colorado. Workshops, field trips, and exhibits are planned—all geared toward improving the flow of information between groups working to preserve community land resources. For information contact Land Trust Exchange, 1017 Duke St., Alexandria, VA 22314; (703) 683-7778.

**Taos Pueblo.** The NPS has nominated the Taos Pueblo in New Mexico to the list of World Heritage Sites. If approved, the pueblo will be the 18th U.S. site, and the 16th national park area, on the list. (Parks already listed include Grand Canyon, Everglades, Independence Hall, and the Statue of Liberty.) The Taos Pueblo—still active today—has been the center of Pueblo Indian culture since the 17th century.

●  
**Chlorofluorocarbon-free Yosemite.** The Yosemite Park and Curry Company has decided to discontinue the use of polystyrene foam products at park concessions. This foam contains chlorofluorocarbons (CFCs) that are destroying the earth's ozone layer—a situation that can only be resolved by a worldwide ban on the use of CFCs. This small yet significant action, begun in a national park, is a fine starting point.

●  
**Clean Air Progress.** With air pollution and acid rain threatening the health of millions of Americans and hundreds of natural areas, Congress intends to pass amendments to the Clean Air Act by September 1, 1988. The Clean Air Standards Attainment Act of 1987 (S. 1984) would do that, but it has been stalled in the Senate. Congress needs prodding: Write to your senators and ask them to cosponsor and support S. 1984. Address letters to U.S. Senate, Washington, D.C. 20510.

## Plan for New LWCF Guarantees Parkland Fund

On May 17 and 19 the House held hearings on the American Heritage Trust Act (H.R. 4127), a bill to convert the Land and Water Conservation Fund (LWCF) into a true trust fund for the acquisition of parkland. This legislation also calls for similar changes in the Historic Preservation Fund. The bill was introduced to the House by Representative Morris Udall (D-Ariz.).

The subcommittee, chaired by Representative Bruce Vento (D-Minn.), heard testimony from Senator John Chafee (R-R.I.), sponsor of an identical bill in the Senate; governors Ted Schwinden of Montana and Michael Castle of Delaware; officials from the departments of Agriculture and Interior; state and local legislators, administrators, and planners; and historic preservation and conservation groups, including NPCA.

In opening remarks, Vento, one of 138 cosponsors of the bill, stated his frustrations with the present fund: “We've been able to put money into

the LWCF, but we haven't been able to get the money back out.”

In theory, the LWCF is an abundant source of monies (each year the fund receives some \$900 million, generated primarily by oil and gas leasing on the outer continental shelf). But the actual dollar amount available is first recommended by the administration and then appropriated by Congress.

For Fiscal Year 1987, for example, the administration requested a mere \$20 million. Congress appropriated \$193 million—still far short of the \$900 million available annually.

The American Heritage Trust Act, if passed, would provide a stable source of funds not requiring additional appropriation each year. The bill would add yearly oil and gas leasing proceeds to the already accumulated \$5.9 billion. (The \$5.9 billion is the sum of monies authorized but not appropriated each year since the LWCF was created.) With these funds, H.R. 4127 would establish a large principal to be invested in public-debt securities. The yearly interest would fund the LWCF.

The May subcommittee hearings were in large part devoted to demonstrating the need for more public open space, which a stable LWCF would help secure. Although administration officials downplayed the need for more public land, the President's Commission on Americans Outdoors last year acknowledged that need and recommended a more stable LWCF for land acquisition. Other witnesses testified that preservation of open space and historic resources is a pressing need.

NPCA strongly supports the passage of H.R. 4127. Association President Paul C. Pritchard, in testimony before the subcommittee, stated, “While accomplishing great things, the Land and Water Conservation Fund has clearly not lived up to its potential.

“Much remains to be done and the future budget climate is, at best, uncertain. NPCA believes that modifications to the Fund, as called for in H.R. 4127, are necessary to better enable it to withstand the whims of administrations and to meet future outdoor recreation needs.”

# Battling Over Manassas

## The outcome will decide the fate of America's historical parks

by Jody Powell

If you stand at Manassas Battlefield today, where the dusty, rumpled soldier sat on his horse a century and a quarter past, you can almost see it as it was.

Within shouting distance, at the base of the gently rising hill, the Union Army trudges along the Warrenton Pike toward Washington. In the woods beyond are massed the hard-marching infantry of Robert E. Lee's I Corps.

The lone horseman in the slouch cap is the Confederate commander, General Thomas J. Jackson. A year earlier, on another hill less than three miles east, he had won the name "Stonewall." Now, he turns and gallops back to his assembled commanders. In a soft voice, as if he were conversing with a friend, Jackson says, "Bring up your men, gentlemen."

It is August 28, 1862, and the battle of Second Manassas has begun. For three days, 125,000 Americans will tear at one another. Ammunition expended, they will fight on with rocks and knives. In all, 25,000 will die.

The sense of history on that little hill on the Brawner Farm is palpable. Just across the pike rises Stuart's Hill where Lee sent General James Longstreet and the II Corps crashing into the unsuspecting left flank of the Union Army. But for a gallant

twilight stand on the hill where Jackson had earned his name 13 months before, that attack might well have destroyed that army and the nation.

Today you can still see it, feel it: that blood-soaked, valor-hallowed piece of Virginia countryside where the entire Union tottered on the brink of destruction.

The landscape has not changed. In rare and mystical moments, you can relive the battle scene. But not for long.

This January, the Virginia development firm Hazel-Peterson, in conjunction with the Edward J. DeBartolo Corporation, announced plans to construct a huge regional mall that will level Stuart's Hill. The mall's office buildings and retail outlets will dominate the view from Brawner's Farm as an obscene mon-

NPCA and the National Trust for Historic Preservation have formed the National Heritage Coalition to save Manassas and to seek legislation that will better protect all historic park areas. If you would like to help protect the Manassas Battlefield, please send contributions to Save the Battlefield Coalition, P.O. Box 110, Catharpin, VA 22018.

ument to the desecration of a nation's history.

The two-lane pike where a green Union brigade wheeled to repulse Jackson's surprise assault will become a four-lane thoroughfare packed with the cars of shoppers and commuters. Traffic jams will stretch for miles through the battlefields of both First and Second Manassas.

Lee's headquarters will become a parking lot. The hospitals where his men suffered and died in agony, where some are almost certainly buried, will make way for designer jeans and VCRs.

Hazel-Peterson's announcement signaled the latest in a series of battles to protect Manassas from development. Marriott Corporation tried unsuccessfully to get permits for a theme park on the same piece of property in the 1970s. Hazel-Peterson acquired the parcel in 1986 from Marriott.

After heated debate with local citizens and National Park Service officials, Hazel-Peterson agreed to a compromise proposal that allowed construction of "high quality, campus-like office developments" subject to a number of restrictions informally worked out with NPS. Those who cared about the battlefield were not happy, but it seemed to be the best deal at the time.

Then, in January, Hazel-Peterson tossed the compromise aside and announced plans for a 1.2 million-square-foot shopping mall. The Prince William County board of supervisors loosely interpreted local zoning ordinances to accommodate the switch. The Park Service summed up the situation well: approving this mall would be "like booking a roller derby in the Sistine Chapel."

The battle has commenced and, as usual, the odds and the money are on the side of the developers. But there is hope. Annie Snyder, a hard-headed retired Marine officer and veteran of previous fights to protect Manassas, has organized the Save the Battlefield Coalition.

With a zeal that belies her 66 years and uncertain health, she has brought together friends and neighbors to pursue every legal option available, from the courthouse to the Capitol. A Washington, D.C., law firm and a public relations agency have both donated their help.

In addition, a broad-based national coalition involving veterans' organizations, historical and natural preservationists, Civil War enthusiasts, and others of like mind is being formed to support the local coalition, which is desperately short of funds.

This emerging national coalition is predicated on the belief that what is at stake here goes well beyond Manassas. Throughout the land, Civil War and Revolutionary War battle-

fields—as well as many other units of the National Park System—are threatened.

The attitude that open space is just land waiting to be developed has prevailed in this country. High-rise condominiums, television and radio towers, housing subdivisions—and shopping malls—are springing up in every available

Protecting sites significant to our history has a personal meaning for this writer. Nine members of my family fought under Jackson at Second Manassas.

They also fought at Gettysburg, at Sharpsburg, and at Chickamauga—other pieces of hallowed ground, which are national battlefields now threatened with similar desecration.

In a major way, however, the personal connection is beside the point. The ancestors of the vast majority of present-day Americans had yet to reach these shores when the cannons first roared in Charleston Harbor, signaling the start of the Civil War. Yet, the national heritage embodied in these imperiled bits of land is in every respect as much theirs as it is mine.

We all share equally in the glory and the horror. As Robert E. Lee said in his farewell to his troops, we share in the "unsurpassed courage and fortitude" that shaped us as a people and a nation. Just as surely, the fight to protect that heritage summons all.

*Jody Powell is currently president of Ogilvy & Mather Public Affairs, a public relations firm in Washington, D.C., which is involved in pro bono work for the battlefield coalition. He served as press secretary to Jimmy Carter from 1970 to 1981, through Carter's years as Georgia governor to president. Powell has lectured extensively, was news analyst for ABC News, and was a columnist for the L.A. Times.*



Illustration by Richard Thompson

**Lee's headquarters will become a parking lot. The hospitals where his men suffered, where some are most certainly buried, will make way for designer jeans and VCRs.**

square mile. What is the purpose of preserving a historical scene if the area is then intruded upon by adjacent development?

As a country, we simply have not yet been willing to make an investment in our national heritage that is sufficient to guarantee its preservation. And, many of those who speak frequently and fervently of our nation's past glories seem largely uninterested in lifting a finger to protect any of them.

# The Blighted Chestnut

New  
research  
races with  
time to  
recover a  
great  
American  
tree

by Stephen Nash

**A**t the turn of the century it would have been easy to take the massive straight trunks and abundant crowns of American chestnut trees for granted. The equivalent of nine million solid acres of chestnuts dominated the forests of the Appalachian region alone. Petrified groves on Specimen Ridge at Yellowstone National Park date back to the Eocene epoch, 50 million years ago.

Then, in 1904, at the New York Zoological Society's park in the Bronx, forester W.H. Merkel noticed that the tops of some of the park's chestnut trees were dying—an unfamiliar fungus had ruptured their bark.



Largest remaining American chestnut in Wisconsin; Philip Rutter

That was the first recorded sighting of *Endothia parasitica* in North America. Scientists later speculated that the fungus, common on Chinese and Japanese chestnuts, had entered through the Port of New York on nursery stock.

During the next 50 years the orange-colored blight spread like silent, lethal fire through the entire natural range of the American chestnut, from Maine to Alabama. The fungus can be spread by wind, rain, and perhaps by birds and insects; and it infects the chestnut through any small bark injury.

Of an estimated 3.5 billion mature trees almost none were spared. Only a few hundred seed-producing trees are left in the chestnut's natural range. Though the mature trees were killed by the blight, saplings still spring from the root systems of long-dead chestnuts. Those regenerative powers are vigorous: 15,000 to 20,000 sprouts per acre in some places.

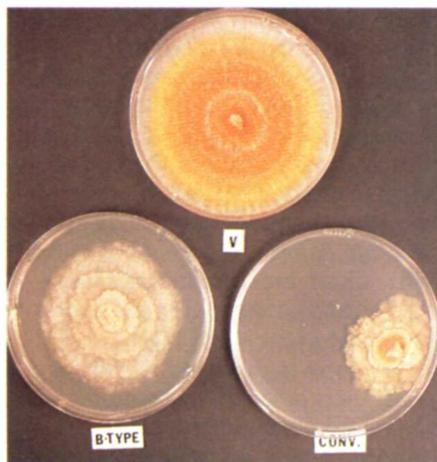
The saplings, however, exist in a biological limbo. After they have lived a decade or so, the fungus finds the young trees and kills them. Strands of fungus grow in mats, called mycelial fans, under the bark, cracking it open. When the widening wounds, or cankers, girdle the trunk, nutrient flow is choked off and the tree succumbs.

Efforts to stop the blight have been futile. Now, however, some remnant sprouts at Great Smoky



The Art Journal, D. Appleton & Company

V is virus; B-type is hypovirulent (hv); Conv. shows v being converted by hv.



William MacDonald

The "Nutting Party" appeared in the January 1878 *Art Journal*. The slate etching depicts Fairmount Park in Philadelphia at a time when chestnuts were abundant.

Mountains National Park and an experimental planting at the National Colonial Farm at Accokeek, Maryland, are providing raw material for two of several research efforts dedicated to returning chestnuts to the forests. The work is part of a renaissance of scientific interest in the all-but-extinct tree.

In the past, research has been stalled by unanticipated roadblocks. But new hypotheses, new laboratory methods, and new discoveries are providing fresh momentum.

Scientific interest divides broadly into two approaches. The goal of one

strategy is to cripple *Endothia* with a competing strain of fungus—called "hypovirulent"—that is far less harmful to the tree. The other approach seeks to incorporate the blight resistance of oriental chestnuts into the American species through crossbreeding.

Research is eminently practical as well as ecologically desirable. For the ecology and economy of the eastern United States, the loss of the chestnut was colossal.

The fast-growing, straight-grained wood was used for telephone poles, bridge timbers, packing



Kent and Donna Dannen

A still-healthy chestnut dominates Arbor Lodge State Park, Nebraska. Arbor Lodge was once the estate of J. Sterling Morton, founder of Arbor Day.

crates, railroad ties, and general construction.

The tree was essential to mountain families as a building material and a cash crop. Wild razorback hogs foraged on chestnuts; and people, of course, dined on both.

"It didn't cost a cent to raise chestnuts or hogs in those days," mountain-dweller Johnnie Shifflett recalled in an oral history recorded in the Shenandoah National Park area. "It was a very inexpensive way to farm. The people had money and had meat on the table, too."

Carloads of chestnuts were harvested and shipped to the lowlands, especially during the Christmas season. (Most of those offered in stores today are imported from Italy, and a fraction come from the Orient.)

Chestnut bark and heartwood were used in tanning, and spring shoots were gathered for winter cattle feed. Mountain homes were built with chestnut logs and topped with chestnut shingles. Rot- and insect-resistant split-rail chestnut fences still line roads in the Appalachian highlands.

Animals—from bears to white-

footed mice, deer, wild turkeys, woodpeckers, raccoons and jays, squirrels and foxes—were sustained by protein-rich chestnuts. Wildlife population counts were rare then, so we have no firm basis for comparison. We do know that the oaks and hickories that often replaced the chestnut produce only a fraction of its annual crop of nuts. That animal life has diminished proportionately is almost beyond question.

John McCaully, born in the Cades Cove section of the Smokies before the turn of the century, said, "There was worlds of chestnuts, I'm telling you. The whole earth was just black with them."

The 800-square-mile forest that is now the national park was 40 percent chestnut trees then. A ranger's survey found that 85 percent of those trees were dead or dying by 1938.

**D**eep in the Smokies 50 years later, a half-dozen seasonal National Park Service employees scrambled along brushy ridges, cutting foot-long scion twigs [botanical stock usually used in the upper por-

tion of a graft] from a few of the rare remaining chestnut trees. They were inaugurating a grafting and breeding project designed by University of Tennessee forest genetics professor Scott Schlarbaum.

The older trees were stunted snags covered with fungus cankers, barely alive. But they had met the project's first criterion by surviving long enough—perhaps 10 or 12 years—to bear flowers.

"The scion still thinks it's that old, even after it has been grafted," Schlarbaum told the collecting crew.

Grafted onto understock from both Chinese chestnuts and healthy American chestnuts, the scions should flower quickly and cut several years off his experiment's breeding timetable.

"Time," Schlarbaum notes, "is the big stumbling block in breeding experiments."

The park represents a genetic "pocket of diversity" in the region, he explained. Each scion's parent tree had been chosen for its location at a different altitude and subclimate. That diversity will ensure a more heterogeneous, broadly adapted breeding population.

Once they flower, the scions will be fertilized with pollen from blight-resistant Chinese chestnut trees. The resulting crop of Sino-American nuts can be cultivated for another round of cross-pollination, the second cycle of a five-generation breeding plan.

Oriental chestnuts have been raised as orchard trees for perhaps 2,000 years. They are much smaller and less hardy than *Castanea dentata*, the American species, but they are resistant to chestnut blight.

Crossbreeding the two varieties was one of the earliest tactics of American scientists in the 1920s and '30s as they cast about for ways to salvage the devastated chestnut forests. But the progeny of one Chinese and one American parent was a tree with a half-measure of desirable American traits and not enough resistance to withstand blight.

The next logical step to improve resistance, it seemed, was to cross the new hybrid with a Chinese parent once again. It worked: the prog-



Great Smoky Mountains National Park

Encased in burrs, the nuts of the chestnut tree were a staple in the diets of bears and other mammals in Great Smoky Mountains National Park. Park staff say the less dependable crops of acorns and other nuts may have reduced park wildlife.

eny resisted blight. But the desirable characteristics of the American type—the 80-foot-high, five-foot-thick, straight-grained trunk that yielded great quantities of lumber, the wide crown of the tree with its prodigious harvest of nuts—had been almost completely bred out. After all, this “grandchild” chestnut tree was 75 percent Chinese.

**I**n the words of American Chestnut Foundation President Philip Rutter, by the early 1960s nearly all such research had been abandoned “amid entrenched pessimism.” New attempts awaited Rutter’s exchange of ideas with renowned agricultural geneticist Charles Burnham, a professor emeritus of plant genetics from the University of Minnesota.

“We needed to understand where the wrong turn was made, and that insight came from Dr. Burnham,” Rutter says.

Burnham’s hypothesis, which Schlarbaum and Rutter are both pursuing in cooperative breeding programs, says that the original attempts to blend Chinese and American chestnut trees together like ge-

netic marble cake were mistaken. Resistance to blight is genetically simple, according to the hypothesis. It depends on a very few genes, maybe just two. The goal is to transfer only those genes that determine blight resistance from one chestnut species to the other.

A simplified version of the hypothesis says that the genes necessary for blight resistance, paired in the Chinese trees, become separated in the first-generation hybrids. Further, the hypothesis postulates that these genes can be recombined in American trees after several generations of selective breeding.

Instead of crossing a Chinese-American hybrid with another Chinese tree to enhance resistance, the hypothesis points breeders in the other direction—crossing the hybrid with another pure American tree.

Most of this third generation of trees, genetically 75 percent American, will have no resistance to blight. In accordance with genetic principles, however, a few individuals will have picked up one gene for resistance.

Again, these trees are backcrossed

to a pure American chestnut—in successive generations—until scientists are sure the hybrids have inherited all of the American characteristics. The final progeny are crossed among themselves.

If the hypothesis is right, the odds will have granted to a few of this last generation a full complement of resistance genes, passed down by patient selection from the original Chinese forebear.

Rutter’s foundation is now working with a small but growing contingent of third-generation, three-quarters-American chestnuts. “My guess,” he says, “is that we’ll know in a couple of years whether they are carrying partial resistance.”

Breeders usually have to wait several years for their greenhouse chestnut trees to flower. Another three to five years must pass before seedlings are old enough to be screened for blight resistance, using one of several techniques, such as introducing blight cells to a “broth” of chestnut tissue in the laboratory.

One of Rutter’s more optimistic projections has the blight-resistant American chestnut seed arriving in

about the year 2000. An array of current research projects at several universities offers the hope that even that schedule can be speeded up considerably.

For example, scientists have developed a new technique for screening year-old seedlings for resistance. There has also been steady progress in the ability to clone chestnut tissue. Cloning, however, is only useful for producing backup "carbon copies" of individual trees.

These clones can be used for screening and for insurance against accidental loss of years of work invested in a single hybrid. A forest of clones, genetically identical, would not have the biological diversity necessary for the health of the species.

**T**he long history of frustrated scientific efforts to outflank *Endothia* makes even the strongest chestnut partisan cautious, however. Early attempts to cut out the cankers and patch the holes with cement proved futile. Dirt poultices helped to heal blight cankers, but then more cankers reappeared to overwhelm the trees.

In 1966, NPCA published an appeal to its members to send nuts from still-standing chestnuts, thinking that surviving trees might be somewhat resistant. The resultant planting, on Sugar Loaf Mountain in Maryland, succumbed to the blight, and second-generation sprouts have shown no discernible resistance.

In 1979, French agronomist Jean Grente told a *Smithsonian* writer of the results of his efforts: "The American chestnut blight is vanquished. Yes, that's so."

It wasn't so, but his enthusiasm was well founded, if premature. He was working with an enfeebled strain of the blight fungus that had been found on chestnut trees in Italy. This variety still caused cankers, but the cankers were superficial, allowing the tree's natural defenses to prevail.

Best of all, whatever was weakening *Endothia* on the Italian chestnuts behaved like a virus, spreading from tree to tree. This hypovirulence ("lesser virulence") allowed the

tree's natural defenses to take hold and heal the edges of the cankers as a sort of pox on the blight. A similar kind of hypovirulence was discovered on chestnut trees in Michigan.

These discoveries were startlingly like a Robert Frost poem, "Evil Tendencies Cancel," penned in 1930. In it, the chestnut "... keeps smoldering at the roots/ And sending up new shoots/ Till another parasite/ Shall come to end the blight."

What worked in Italy and in Michigan, however, did not help in the Appalachians, the American chestnut's natural range. So far, inoculations of hypovirulent strains will heal the canker, but they do not immunize the tree, and they do not spread reliably to other trees.

"I think the problem was that we were out looking for short-term results," says West Virginia University plant pathologist Dr. William MacDonald. "When we first started working with this—it's been almost ten years now—everyone thought, 'Boy, here we've got the ultimate control for chestnut blight.'"

Since the discovery of hypovirulent fungi, numerous strains have been found on chestnut sprouts in Virginia, West Virginia, and Maryland. Only a few, however, make *Endothia* properly sick. MacDonald and others are now trying to isolate these strains and encourage them to disseminate.

"Most biologists appreciate that there's nothing simple in nature," MacDonald says. "We know it works—it's working in some places now, naturally—but it's a matter of figuring out how it works and why, and then seeing if we can't get it to work here."

**O**ne theory is that it will take several years and a sufficiently large group of trees for the hypovirulence to begin to spread. That could be exactly what has occurred at the National Colonial Farm in Maryland.

"We do know that some of our

*Endothia parasitica*—chestnut blight—grows in mats under the bark, erupting in the cankers seen at right, which cut off a tree's nutrient flow.



Stephen Nash

trees are doing very well," Dr. David Percy says. "They are healing over. They are not dying." Percy supervises research at the preserve, which is run by a private foundation with financial help from the National Park Service.

Percy recalls that chestnut seeds collected along the Blue Ridge Parkway in the mid-1960s were exposed to 2,000 roentgens of gamma rays at Argonne National Laboratory in Illinois. Researchers hoped that a mutation resulting in blight resistance would occur. Similar experiments with corn had proved useful.

These seeds were planted at the farm. But, as the years passed, there was no evidence that irradiation had helped.

"Then, serendipity struck," Percy says. During an annual inspection of the 660 first- and second-generation chestnuts in 1982, "we noticed that a number of infected trees were not dying. The blight tended to heal over."

Naturally occurring hypovirulent *Endothia* has been found on those trees; and MacDonald, among others, is examining the fungus to see if its vitality and ability to spread can be explained, and duplicated.

Dr. Jack Elliston, a plant pathologist at the Connecticut Agricultural Experiment Station in New Haven, has been seeing a similar turn of events. He mixed ten different hypovirulent fungus strains in a blender ten years ago and then applied the applesauce-like result to the cankers on some young chestnut trees.

The cankers did subside. So many new cankers continued to erupt, however, that the treatment had to be abandoned as futile.

Recently, however, the existing cankers have been healing on Elliston's trees. New cankers on the surviving trees are more and more often superficial, giving the tree something like a mild cold instead of polio, he says.

Although the trees are heavily blighted, their trunks are up to ten inches in diameter, and they are producing nuts. As in Maryland, no one can yet explain why the hypovirulence spread.

**W**ith new avenues open to them, chestnut researchers count a major "missing link" as common to all their efforts: money.

Scott Schlarbaum's four-year pilot project is unfunded past its first year. Most of Elliston's time is claimed by raspberry improvement work, which has support from growers. In contrast, chestnut research has failed to attract much help from the forest products industry, though one estimate puts the 1909 chestnut timber harvest at \$20 million—about \$240 million today.

"Basically, some people say we're trying to resurrect a dinosaur," MacDonald says. So funding from that quarter has been severely limited.

His interest is undiminished. "We've had several very successful field tests," MacDonald says.

Rutter, a catalyst for chestnut research, says, "I have two personalities. One is the scientist, and one is the man. The scientist requires constant skepticism, but it's hard for a human to live with that." He is confident that he will live to see a blight-resistant American chestnut. His human side puts the odds at 100 percent; the scientist says 80 percent.

"What keeps me going," Elliston says, "is the tree itself. As long as it keeps going, I'll keep going. And it just keeps on sprouting."

*Stephen Nash, coordinator of the journalism program at the University of Richmond in Virginia, has worked as a reporter for the Oakland Tribune and other newspapers.*

For more information, write the American Chestnut Foundation, c/o Dept. of Plant Pathology, University of Minnesota, St. Paul, MN 55108.

New York State proposes to establish a national chestnut research center, affiliated with the state university system and the American Chestnut Foundation. To support this proposal, write Assemblyman Francis J. Pordum, 146th Assembly District, Rm. 652, Legislative Office Bldg., Albany, NY 12248.

# Mystery of the Breathing Cavern

Tipped off by strange air currents, cavers discover the depths of Lechuguilla Cave

text and photographs  
by Laurence Parent



**C**AVERS HAVE KNOWN about Lechuguilla Cave, with its 90-foot-deep entrance pit, since the late 1800s, when the Carlsbad area in New Mexico was settled. Early in this century, when bat guano was used as fertilizer, guano deposits at the bottom of the pit had attracted miners to the cave and at least one filed a guano-mining claim.

Once farmers began to use chemical fertilizers on their crops, however, the deep hole was deserted. Most cavers also ignored this outpost of Carlsbad Caverns National Park; that is, until recently.

Big Bend National Park Ranger Charlie Peterson, a former cave specialist at Carlsbad Caverns National Park, was one of the few people who visited Lechuguilla Cave several times during the early 1970s.

"Lechuguilla was a small backwater cave of little interest," he says, "except that the wind blew through cracks and holes in the rubble at the bottom of the pit.

"Park rangers and other cave researchers knew that there had to be more cave, so we dug some; but we never found the right place to dig."

The wind in the cave interested cavers because it changed with the barometric pressure—frequently shifting directions, sometimes blowing in, sometimes out. The quantity of air movement indicated a large cave, somewhere.

Over the years, other cavers were lured by the wind and tried their hand at digging. Serious excavation, however, began in 1984. This time, as digging progressed, the wind strengthened.

"It was miserable work," says Rick Bridges, one of the leaders of the Lechuguilla Cave Project. "The wind howled up through the rubble, blasting us with dirt and sand. We wore goggles and dust masks, but it didn't make much difference. We ate dirt; we breathed dirt; we could hardly see. The dirt mixed with sweat; soon we were caked in mud."

Finally, in May 1986, the cavers broke into a new passage. On the day of the breakthrough, according to Bridges, the cave was "sucking like an enormous Electrolux vacuum cleaner."

Rex Wahl descends into the 150-foot-deep Boulder Falls pit at Lechuguilla Cave.

Rocks and dirt thrown at the holes in the bottom of the dig were rapidly sucked out of sight. Below the newly dug entrance, the wind led downward through a crawlway into a 50- by 60-foot room. A passage at one end—into which wind was blowing like a large air conditioner—disappeared into blackness. Entrance winds were recorded at more than 40 mph, the limit of the measuring equipment.

Lechuguilla Cave was no longer small.

EXCITED CAVERS ARRIVED from all over the country, and, with each expedition, new discoveries created more excitement. It took two years for Rex Wahl, a biologist with the Texas Parks and Wildlife Department, to get an opportunity to see Lechuguilla. "We blew an engine driving to Carlsbad on my first trip. To keep from missing the expedition, we caught a bus back to Austin, got another car, and finally arrived at 4 a.m.," he says.

"If I had been sensible, I would have gone to bed then, but by midmorning I was rappelling down into the entrance. Any skepticism I had about exaggerated accounts of the cave vanished in the roaring winds of the entrance."

"You survey until you drop," says Bridges. Most of the explorers survey as they go, taking measurements of distance and elevation for maps and sketching details.

In *Rocky Mountain Caving*, a cavers' journal, Donald Davis described the exploration of the Western Borehole, a large passage many hours from the entrance. His team mapped 1,500 feet of passage 50- to 150-foot wide and 40- to 50-foot high—before they became too tired to go on. Their work will be added to a composite map that is being created, step-by-step, by each survey party.

"Small side leads [unexplored passages off the main corridors]—up to 20-foot high by 10 wide—were left unexplored," says Davis. "We supposed that sooner or later this grand boulevard would have to change. It did change, by becoming even larger.



Lechuguilla survey member Mike Roberts explores the Apricot Draperies.

"[The corridor] terminated by climbing 200 feet up a breakdown mountain [a heap of rubble] into the largest room found so far in Lechuguilla. Exhausted, we gave up surveying." The chamber, measuring 300 by 600 feet, merely adds another superlative dimension to Lechuguilla Cave.

After surveying, "You spend the next eight hours dragging yourself out," says Bridges. "It's not for Sunday cavers. Trips have lasted as long as 36 hours. Even fit, competent cavers need one to two days to recover."

It takes eight hours just to get to the end of one of the three main passages; another eight or ten hours to get back. Some cavers are able to nap, but for others—even with good equipment—the cold seeps into the bones and makes sleep impossible.

"Will power alone pushed me beyond normal physical endurance in Lechuguilla," says Wahl. "Long, but worthwhile marches separate the highly decorated areas. At Lake Labarge, we popped out of a passage high up the wall of the chamber.

Further progress required a delicate traverse on a crumbly gypsum ledge, with the floor invisible, 40 feet below.

"The safety rope disappeared around a blind corner, tied—we were assured—into a very weak anchor. At the lake, we waded through the shallows, admiring the fragile rimstone dams. Below the lake, water coated a long expanse of rippling butterscotch-colored flowstone. High above, our lights barely illuminated the ceiling, full of massive unexplored holes disappearing into darkness."

FIVE EXPEDITIONS LATER, it was determined that the mapped length of the cave measures 16.09 miles, second in the park to Carlsbad Cavern's 21 miles. Its depth, 1415 feet, surpasses Carlsbad and makes Lechuguilla the second deepest U.S. cave, after Columbine Crawl in Wyoming, which is 1550 feet.

Traditional theory says that Lechuguilla, Carlsbad, and other caves in the Guadalupe Mountains were formed by the action of car-



Section of Lechuguilla Cave; Copyright 1988, Lechuguilla Cave Project



**Top: computerized survey map. Above: gypsum flowers along Yellowbrick Road.**

bonic acid on limestone. Falling rain and snow absorb carbon dioxide from the atmosphere, forming weak carbonic acid. Rainwater, as it seeps down through the joints and fissures of the earth, slowly dissolves the rock, forming caves.

The theory, however, does not account for the large quantities of gypsum found in some Guadalupe caves. Geologist Carol Hill's theory, presented in her new *Geology of Carlsbad Cavern*, proposes that the limestone was dissolved by sulfuric acid derived from hydrogen sulfide that seeped out of local oil and gas fields. These reactions would produce gypsum and other sulphate products.

White gypsum flowers are common in Lechuguilla. Although Carlsbad has great quantities of multicolored calcite dripstone, which forms stalactites and stalagmites, in Lechuguilla dripstone formations are rare. This lack may be caused by the cave's lower evaporation rates—a result of its small entrance. A scarcity of dripstone makes gypsum formations important.

In Lechuguilla's 325-foot by 100-foot Glacier Bay Room, blocks of gypsum lie like calving icebergs below the face of the Glacier, a massive white bed of gypsum. Rare hydromagnesite balloons grow from the ceiling of the 200-foot-long Windy City passage. These white, inch-sized bubbles are found only in four other caves in the world.

Beyond Lake Labarge, clusters of gypsum flowers curl outward from the walls with delicate twists and turns. In the Chandelier Ballroom, sparkling crystalline gypsum grows down from the ceiling like tree roots. The gnarled, white 15-foot lengths are the largest ever found.

EVEN WITH THE CAVE'S unique formations, the National Park Service plans no interpretation or development for Lechuguilla. No roads approach the entrance, which lies in a wilderness area near the park's northern boundary. As the extent of the discovery becomes known, pressure will probably rise to commercialize Lechuguilla Cave by adding trails, lights, and elevators.

Agriculture, oil and gas, and potash mining—all depressed—provide the basis of the local economy. Carlsbad Caverns draws more than 750,000 tourists per year. Local chambers of commerce may see another developed cave as a way to bring in more tourist dollars.

"For their protection, we hope to have Lechuguilla and some other park caves designated as the world's first cave wildernesses," says Ron Kerbo, the current park cave specialist. "Wilderness is not a mechanism to close the caves. We provide several levels of use, from paved trails and trails for handicapped people in Carlsbad Cavern to [allowing] permits for wild cave access."

With Lechuguilla, the NPS "wants to provide capable visitors with some of the thrill of the discoverers when they enter a cave," according to Kerbo.

For the first time the park has cooperated with independent cavers to develop a two-year management plan for a park cave. The cave will be managed so that independent cavers will be able to explore this rugged and wild cave—compared to the easy trips available in Carlsbad.

Even without the wilderness designation, Lechuguilla would be difficult to develop. It is so large. Unlike Carlsbad, the majority of the cave has bare walls. The areas with heavy concentrations of spectacular formations are widely scattered throughout the cave's miles of passages. Extreme depth, multiple levels, and many pits compound the difficulty of building trails.

With the park's blessing, cavers—in their endless quest for virgin passage—will explore Lechuguilla Cave further. Exploring cavers have already been surprised by what they have found there—who knows what's left. Lechuguilla could be, after all, the last of our unexplored wilderness.

"If Lechuguilla surpasses Carlsbad Cavern," jokes one caver, "maybe we'll have to rename the park."

*Laurence Parent is a writer and photographer who specializes in caving and outdoor stories. His longest trip into Lechuguilla took him 36 hours.*



Point Reyes National Seashore at sunset; Frank S. Balthis

# Day at the Beach

## A tube of sunscreen, a picnic lunch and thou

by Connie Toops

**O**ur coastal parks have a special lure—their moods vary from the placid flow of the tide through a salt marsh to storm waves pounding on a barrier beach. At noon, the air may be crisp, with views extending to the distant blue horizon. Hours later, a shroud of fog may reduce

your focus to dew-covered details along a favorite trail.

Cape Hatteras is the oldest national seashore. It was established in 1937, when most coastal seashores were accessible only to those who could afford to charter a boat or maintain a summer home on a re-

mote island. By 1960, however, causeways and bridges provided easy access to most coastal areas by an increasing number of visitors. In response to plans for commercial development of many barrier islands, the nine other national seashores mentioned below were added

to the National Park System between 1961 and 1975.

Summer vacation at a seashore provides a full complement of activities: swimming, boating, fishing, camping, hiking, and interpretive programs. Beaches can be crowded, especially on holiday weekends, so you should reserve campsites or lodging ahead of time.

Spring and fall are less hectic, and many interpretive activities continue on weekends. Winter is a time of solitude, when yours may be the only footprints on the beach.

Trips to the shore can be particularly rewarding in the off-season, but be prepared for harsh, quickly changing weather and some closed facilities.

Your explorations will be amply rewarded. Brilliantly colored shells litter the beach. Gulls, terns, and other seabirds soar over the water, and you may even catch a glimpse of a whale or dolphin at sea.

#### **CAPE COD SOUTH WELLFLEET, MA 02663 (617) 349-3785**

Cape Cod represents our seafaring history. It was here, in 1620, that the Pilgrims made landfall. Later, whalers and fishermen used the cape's safe harbors as their home ports. Five operating lighthouses and a restored lifesaving station remind visitors of the treacherous storms and tricky currents associated with life on this sandy spit.

No camping is allowed within the national seashore, but campgrounds are located in nearby towns and at Nickerson State Park. There are nine excellent self-guided hiking trails, plus several bicycle and horse trails, that provide access to various sections of the island.

Beaches from Nauset to Truro are marked by steep, wave-swept cliffs of glacially deposited sand and pebbles. The wind periodically rearranges the rolling dunes of the Provincelands.

You will find interior areas that are dappled with a variety of freshwater ponds, maple and cedar swamps, cranberry bogs, and forests ranging from scrubby pines to dense hardwoods.



#### **FIRE ISLAND 120 LAUREL STREET PATCHOGUE, NY 11772 (516) 289-4810**

Although Fire Island lies within 40 miles of Manhattan's skyscrapers, the seashore includes a 1,400-acre wilderness area. Amazing as it may seem, hikers there see buck white-tailed deer polishing their antlers on gnarled shadbush trees and red foxes peering at them through the dune grasses. In spring and fall, Great South Bay teems with migrating geese and ducks.

Ferries from Long Island serve various marinas in the park from May through November. Sailor's Haven and Watch Hill, the main visitor facilities, offer beaches with lifeguards, picnic areas, nature trails, and public docks. Reservations are required for the small campground at Watch Hill.

Visitors may drive to Robert Moses State Park on the west side of the park or to Smith Point County Park on the east and hike into the national seashore.

#### **ASSATEAGUE ISLAND ROUTE 2, BOX 294 BERLIN, MD 21811 (301) 641-1443**

Wild ponies are the most famous residents of Assateague Island. Legends claim horses swam ashore from a wrecked Spanish galleon in the 16th century. Years later, pioneer farmers allowed livestock to roam on

the island. Some of their horses were never recaptured, creating today's herd.

The ponies graze on marsh grasses and escape the summer's insects by swimming in the surf. Each year, ponies are rounded up and a few are sold at a local auction for the benefit of the Chincoteague Volunteer Fire Department.

Northern access to Assateague Island is by causeway from Berlin, Maryland. This northern section of the national seashore offers primitive campsites, clamming and crabbing areas, good birding, and canoeing campsites.

The southern tip of the island is reached from Chincoteague, Virginia. Before entering the seashore, visitors pass through a national wildlife refuge—an excellent place to see a variety of wading birds and waterfowl.

#### **CAPE HATTERAS ROUTE 1, BOX 675 MANTEO, NC 27954 (919) 473-2111**

More than the other seashores, Cape Hatteras belongs to the wind and the waves. The Outer Banks stretch some 150 miles along the North Carolina coast. At the farthest point, they lie 30 miles east of the mainland. A 40-minute free ferry ride takes you between Hatteras and Ocracoke islands and a two-and-a-half-hour toll ferry takes you from Ocracoke to the mainland.



Crabbing at Davis Bayou, Gulf Islands National Seashore, Connie Toops

Two ocean currents collide at Diamond Shoals, the "Graveyard of the Atlantic." Historically, this site has been a sailor's nightmare—submerged sand bars washed by turbulent waves. The 200-foot Cape Hatteras Lighthouse, tallest in the United States, warns ships as far as 20 miles at sea.

Bodie Island was originally called "Body's" Island, a name derived from the grisly toll of dead seamen who washed ashore. Remnants of shipwrecks still linger on the beaches.

Each summer at Rodanthe, park interpreters reenact the techniques of the skilled lifesavers who rescued wrecked sailors at the turn of the century.

The waters are rich with sea life, drawing both sport fishermen and fish-eating birds such as pelicans, herons, and ospreys. In the cooler months, numerous ducks, snow geese, Canada geese, and tundra swans gather on the Outer Banks. The beaches, especially near Cape Point, are an excellent place to look for shells.

**CAPE LOOKOUT**  
**P.O. BOX 690**  
**BEAUFORT, NC 28516**  
**(919) 728-2121**

The banks, or islands, of Cape Lookout extend southward from Ocracoke Inlet, at the southern end of Cape Hatteras NS, to Beaufort at the northern end. The islands lie low and narrow along the Atlantic shore. Salt marshes border Core Sound, which separates the islands from the mainland. Pelicans, gulls, terns, and shorebirds are abundant in the coastal waters.

Portsmouth, at the northern tip of the park, was once a flourishing center for fishing and coastal trade. The old town is quiet now, save for curious summer tourists. Cape Lookout Lighthouse sends its guiding beacon from the southern tip of Core Banks. The lighthouse is a popular island destination.

All access from the mainland is by toll ferry or private boat. There are no maintained roads or campgrounds, but day hikers and backpackers are welcome to roam the sandy beaches. Be sure to bring adequate food, water, and sun protection, as no supplies are available on the island.

**CUMBERLAND ISLAND**  
**P.O. BOX 806**  
**SAINT MARYS, GA 31558**  
**(912) 882-4337**

Cumberland Island is wide, with high dunes. The interior of the island hosts a lush growth of live oak trees. Beneath their contorted canopy is a dense thicket of saw palmettos. Deer, raccoons, squirrels, and wild turkeys roam the forests. Alligators lurk in the scattered ponds and winding sloughs. Water-loving birds are abundant.

As long as 4,000 years ago, Native Americans visited the island for shellfish and game. Cotton planters built huge mansions during the 18th and 19th centuries. Many signs of their occupation remain on the island today.

Access to and from Cumberland Island is by ferry or private boat. Call the park for reservations. Day visitors may enjoy the beach, hike through the forest, and explore the

ruins of Dungeness Mansion. Campers should prepare for the mile walk from the ferry landing to the 16-site developed campground. Backcountry camping is also permitted. No food or supplies are sold on Cumberland Island.

**CANAVERAL**  
P.O. BOX 6447  
TITUSVILLE, FL 32782-6447  
(305) 867-0634

At this national seashore you can see the space shuttle and a great egret in the same field of view. Canaveral National Seashore includes more than 57,000 acres adjacent to Kennedy Space Center. And, along with Merritt Island Refuge, the park provides wetland habitat for a wealth of wildlife.

On summer nights, sea turtles come ashore to nest along the 26 miles of Atlantic Beach. Manatees cruise the waterways of Mosquito Lagoon, and pelicans nest on Bird Island. Ducks, numbering in the tens of thousands, winter here. The park's forests are transition zones between temperate and subtropical plant species.

The seashore is open for day use only, with highway access to beaches at both ends of the park. Private campgrounds are available nearby.

**GULF ISLANDS**  
1801 GULF BREEZE PARKWAY  
GULF BREEZE, FL 32561  
(904) 932-6316 (In Florida)

**3500 PARK ROAD**  
OCEAN SPRINGS, MS 39564  
(601) 875-0823 (In Mississippi)

Visiting Gulf Islands can vary from touring a Civil War fort, to strolling in the nation's oldest forest preserve, to hiking a deserted section of wilderness beach. The seashore spans 150 miles along the Gulf Coast—from Pensacola, Florida, to Biloxi, Mississippi.

All units in the Florida district are accessible by car. Naval Live Oaks is a maritime forest, set aside in 1828 for specialized oak timbers used in wooden sailing ships. Fort Barrancas guards the entrance to Pensacola Bay, recalling the Civil War struggle



Seashells at Cape Point, Cape Hatteras National Seashore; Connie Toops

for control of the harbor. Santa Rosa Island hosts a progression of forts and gun batteries dating from the 1830s through World War II. It is also the site of a campground, trails, and swimming beaches.

In the Mississippi section, you can drive to Davis Bayou campground and trails. The offshore islands—Ship, Horn, and Petit Bois—are only accessible by boat. Tour boats serve Ship Island daily in the summer and on weekends in spring and fall. Ship's Civil War fort and beaches are the main attractions. Horn and

Petit Bois are wilderness areas. On some days, ospreys, pelicans, and gulls are more numerous there than human visitors.

**PADRE ISLAND**  
9405 S. PADRE ISLAND DRIVE  
CORPUS CHRISTI, TX 78418  
(512) 937-2621

Padre is the nation's longest barrier island, stretching 113 miles along the Texas Gulf coast. About 70 percent of the island lies within the national seashore. Padre receives half the annual rainfall of the eastern seashores. As a result, grasses and sedges, rather than broadleaved plants, dominate. About 350 species of birds have been recorded here.

A causeway reaches the northern end of the seashore. Facilities include a 140-site campground, beach, and nature trail. Fishing is usually good on both sides of the island and shelling is especially productive at Big and Little Shell beaches.

**POINT REYES**  
POINT REYES, CA 94956  
(415) 663-8522

The craggy cliffs of Point Reyes provide a dramatic background for waves crashing onto the low, narrow beaches. The geology of the park, which lies along the earthquake-prone San Andreas Fault, has been violently active at times.

From the headlands above the Point Reyes Lighthouse, visitors can scan the Pacific for migrating whales or gaze at sea lions on the rocky shoreline. Tule elk roam the area around Tomales Point. Shorebirds gather in the estuaries.

Visitors in recreational vehicles must camp outside the park, but backpackers may use four small, hike-in campgrounds. High tides and undertows make swimming too hazardous along the northwest coast. Drakes and Limantour beaches, however, are safe places to swim and wade.

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*Connie Toops is the author of The Story Behind the Scenery: National Seashores. She and her husband Pat, a park ranger, lived on Horn Island at Gulf Islands National Seashore for three and a half years.*



Sunset above Heyburn Mountain, Sawtooth Range, Idaho; Jeff Gnass

was proposed in 1941, was never taken seriously.

Each of us is entitled to an opinion about what is worth preserving for future generations. For some, it might be the contents of grandma's attic, for others the Peg Leg Mine. Over the years, citizens, politicians, and the National Park Service itself have advanced dozens of park proposals and defended the integrity of the park system by refusing hundreds more that were not considered to be nationally significant.

System expansion fires the imagination, jangles cash registers, produces the grandest, the cloudiest, and the most mercenary of visions.

For example, in 1923, a young National Parks Association (now NPCA) faced off against Secretary of the Interior Albert Fall and his proposal for an "All-Year National Park." The park would have included separate units in New Mexico; and, because of the southwestern climate, it would have remained open all year.

Farming, grazing, mining, hunting, irrigation, and water-power production would have been permitted; and only a few of the selected areas were of national significance.

(White Sands and others of these significant areas were later included in the NPS.)

Within that same decade, the 40-year struggle to establish Great Smoky Mountains National Park came to a head. Park advocates urged that the spectacular eastern hardwood forests be set aside even though Congress resisted. Some legislators railed that the federal government should pay "not one cent for scenery," especially not to protect eastern landscapes that no one would bother to visit.

Sixty years later, the "All-Year Park" is a dusty memory while Great Smoky Mountains is the most visited national park in the system, with more than ten million visitors annually.

The National Park System will never be "complete." The nation needs new park units simply to keep pace with our history and with ever-increasing numbers of visitors.

The pervasiveness of human

# New Parks: New Promise

## NPCA's Park Plan

*In this issue, we highlight Volume 8 of NPCA's National Park System Plan. In upcoming issues we will explore each volume of this seminal work.*

"I FOUND IN THIS CAVE, described on the map attached, pure gold nuggets. There is a river running through the cave about five to six feet deep. . . .

You will find sacks full of nuggets sunk in the water . . . millions there waiting to be claimed. I think it is the long-lost Peg Leg Mine."

The treasure of the Sierra Madre? A shady scheme to bilk unsuspecting investors? No, just another letter suggesting a new unit of the National Park System. The idea, which

development and the fragility of many natural resources also argue for protecting ecosystems that are not currently represented in the system. Provided we adhere to high standards of selection, expansion of the system is beneficial and wise.

**NPCA'S CONCERN FOR** the future expansion of the system resulted in a new-areas volume of the association's recently released National Park System Plan. This was fueled by the reality that within the last eight years, only four units have been added to the park system (Great Basin National Park, El Malpais National Monument, and Harry S Truman and Jimmy Carter national historic sites).

It is widely acknowledged by experts that the National Park System lacks representation of a broad spectrum of natural ecosystems and historic themes. For instance, the biological richness of prairie and marsh has been neglected because of emphasis on the snow-capped mountain ramparts of the West and similar dramatic landscapes.

NPCA's National Park System Plan includes a university study of how well the National Park System represents the broad spectrum of the nation's ecological communities. In the study, University of Colorado scientist D. Wilson Crumpacker estimates that as many as 42 percent of the nation's ecosystems are not represented in the system. These ecosystems include coastal marshes, northern hardwood forests, tropical areas, and grasslands.

On the cultural side, parks protecting frontier forts and Civil War battlefields abound. But America's industrial, literary, and artistic traditions have been almost wholly overlooked.

NPCA's list of 86 potential park areas was compiled using past National Park Service studies, the registries of national natural and historic landmarks, and recommendations from conservationists and historic preservationists across the nation.

Nominations were filtered through National Park Service criteria used to determine national sig-



Wilson Peak and Sunshine Mountain, San Juan Mountains, Colorado; George H.H. Huey

nificance. For instance, a natural site is nationally significant if it is an outstanding example of a geologic landform or biotic area, or harbors a concentrated population of rare plants or animals.

A cultural resource of national significance may be associated with a historically important event or person, or may contain archeological sites deemed to be of major scientific importance.

Several of the areas included in NPCA's list are currently national natural and historical landmarks that NPCA suggests be designated instead as National Park System units to help fill thematic gaps in the system. (National natural and historic landmarks are designations under the Department of the Interior, but they are designations only. Landmarks are not guaranteed federal protection or long-term financial assistance.)

For example, the addition of the Thomas Cole House in Catskill, New York, would preserve the ori-

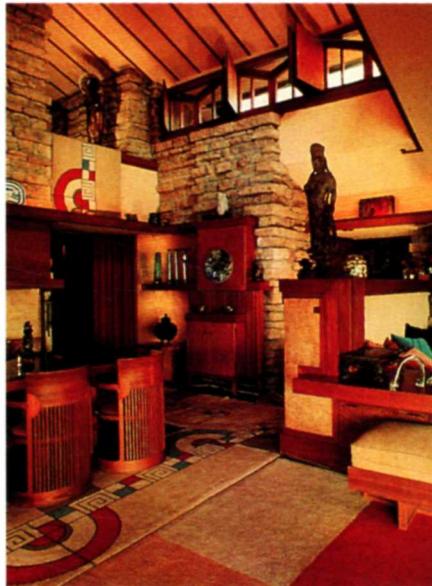
gins of the Hudson River school of landscape painting, which produced painters such as Albert Bierstadt, Frederick Church, and Cole himself. Their works had a profound effect on the national park movement that led to the establishment of the first park, Yellowstone, in 1872.

The Red Cloud, Nebraska, home of Willa Cather would recognize this female novelist of the early 1900s, whose "voice of the prairie" captured the spirit of midwestern America.

Our wild lands are shrinking, and some of the roadless domains west of the 100th meridian could provide the cores of what may be the last generation of great natural national parks. Spectacular wilderness areas such as the San Rafael and Escalante canyon systems of Utah, which are also laced with important Anasazi archeological sites, lack protection. In Georgia, NPCA sees the need to preserve the Amicalola, one of the last 160 free-flowing, undeveloped rivers in the country.

In the Florida Keys and elsewhere, efforts are needed to establish a network of marine parks. While the U.S. National Park System is a model for other countries in most respects, we have not kept pace with global progress in the protection of fragile marine ecosystems.

In the Northeast, where public lands are lacking, as many as ten million acres of forest lands currently owned by timber companies may be sold before the turn of the century. This will be our one opportunity to save large portions of these northern forests before they are bought up—and subdivided—by developers.



The Frank Lloyd Wright Foundation; Anthony Pottman

Already a national historic landmark, Taliesin, in Wisconsin, is the birthplace of Frank Lloyd Wright. This 600-acre farm, built in 1911, is a showplace for his interior designs.

Our success in designating new parklands faces considerable obstacles: special interests who oppose parklands, competing claims, and expense, among them. Yet Americans have had to fight for all of our great parks.

We must have the resolve and the foresight to save our heritage, or allow it to vanish beneath the developer's blade.

—David Simon

## Candidates for the Park System

**ALABAMA:** *Mobile-Tensaw Bottomlands*, 50,000-acre swamp.

**ALASKA:** *Arctic Wildlife Refuge; Attu Island*, westernmost point in USA; *Mt. Edgecumbe*.

**ARIZONA:** *Sonoran Desert/Pinacate*, wildlife refuge combined with Organ Pipe Cactus National Monument; *Yuma Crossing*, along Colorado River Banks.

**CALIFORNIA:** *Big Sur*, composed of four state parks; *Walt Disney Home*, Burbank; *Mojave Desert*, composed of existing national monuments; *Richard Nixon home*, Yorba Linda; *Sharktooth Hill*, inland sea; *Tule Lake*, World War II Japanese-American internment site; *Kings Range/Mendocino; Nipomo Dunes; Smith River*.

**COLORADO:** *Anasazi Sites*, in Montezuma Valley; *Lindenmeier Site*, paleolithic dig; *Purgatoire River; San Juan Mountains*, 500,000 acres.

**CONNECTICUT:** *Connecticut River*, 20,000 acres at mouth; *Mark Twain Home*, Hartford.

**DELAWARE:** *Chesapeake Bay*, sites to be selected.

**FLORIDA:** *Cape Canaveral Launch Site; Florida Keys*, marine sanctuaries.

**GEORGIA:** *Amicalola River*, watershed near Atlanta; *Lower Altamaha River*.

**HAWAII:** *Kauai Island*, sites on central, northern coast.

**IDAHO:** *City of Rocks*, Oregon Trail way station; *Hagerman Fossil Beds; Owyhee Canyonlands; Sawtooth Mountains*.

**ILLINOIS:** *Cahokia Mounds*, Indian burial grounds; *John Deere Home*, Grand Detour.

**IOWA:** *Loess Hills*, 10,000 acres.

**KANSAS:** *Great Plains*, several sites.

**LOUISIANA:** *Atchafalaya Basin; Poverty Point*, Indian mounds.

**MAINE:** *Bold Coast*, Cobscook Bay; *Machias River*, river corridor.

**MARYLAND:** *Blackwater River*, 13,000 acres on Delmarva Peninsula; *Chesapeake Bay*, sites to be selected; *Principle Iron Works*, Elkton.

**MICHIGAN:** *Michigan Peninsula*, near Calumet; *Two-Hearted River*, 35 miles of river.

**MINNESOTA:** *Mississippi River*, 25 miles south of St. Paul.

**MISSOURI:** *Anheuser Busch Brewery*, St. Louis; *Mississippi River*, northern Missouri.

**NEBRASKA:** *Fort Robinson*, near Crawford; *Loess Hills*, abuts Iowa site; *Sandhills*, 10,000 acres; *Willa Cather Home*, Red Cloud.

**NEVADA:** *Blackrock Desert*, 700,000 acres; *Lake Tahoe; Owyhee Canyonlands; Ruby Mountains*, 150,000 acres near Ely.

**NEW HAMPSHIRE:** *Connecticut River*, headwaters.

**NEW JERSEY:** *Walt Whitman House*, Camden.

**NEW MEXICO:** *Fulsom and Gray Ranch/Casas Grandes Sites*, archeological digs; *Trinity Test Site*, first nuclear detonation; *Albuquerque's West Mesa*, Indian rock art; *Zuni-Cibola complex*, ruins; *Jemez Mountains*.

**NEW YORK:** *Montauk*, recreation sites; *Thomas Cole House*, Catskills.

**NORTH CAROLINA:** *Black River; Currituck Banks*.

**NORTH DAKOTA:** *Great Plains*, several sites.

**OKLAHOMA:** *Tallgrass Prairie*, 70,000 acres.

**OREGON:** *Hells Canyon, Snake River; Oregon Coast*, series of parks; *Owyhee Canyonlands; Siskiyou*, 500,000 acres.

**PENNSYLVANIA:** *Bushy Run Battlefield; USS Olympia*, Spanish-American War ship.

**RHODE ISLAND:** *Rhode Island Battlefield*, near Portsmouth where Revolutionary War black soldiers distinguished themselves.

**SOUTH DAKOTA:** *Great Plains*, several sites; *Wounded Knee*, 50 acres, 1890 Indian massacre.

**TEXAS:** *Caddo Culture Sites*, prehistoric burial grounds.

**UTAH:** *Escalante Canyons*, extension of Glen Canyon National Recreation Area; *San Rafael Swell*, geologic formations.

**VERMONT:** *Connecticut River*, 70 miles; *Robert Frost Farm*, Ripton.

**VIRGINIA:** *Chesapeake Bay*, sites to be selected; *John Marshall Home*, Richmond.

**WEST VIRGINIA:** *Gauley River*, 25 miles of whitewater.

**WISCONSIN:** *Aldo Leopold Homestead*, Baraboo; *Taliesin*, Frank Lloyd Wright studio at Spring Green.

**WYOMING:** *Great Plains; South Pass; Sweetwater Basin*.

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