



# NationalParks

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THE MAGAZINE OF THE NATIONAL PARKS CONSERVATION ASSOCIATION

*DEATH VALLEY  
IN WINTER*

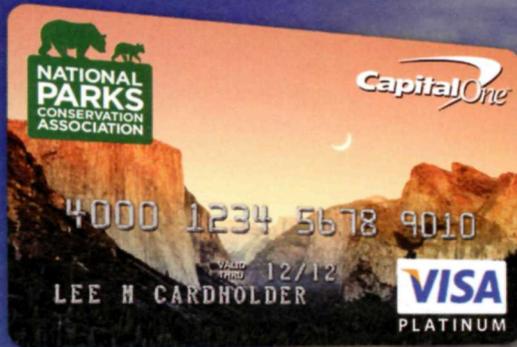
*HOW TO  
BUILD A TRAIL*

*CIVIL WAR  
BATTLEFIELDS IN  
A NEW LIGHT*

## WHAT IS A **PRONGHORN** WORTH?

A closer look at the value of species

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# NationalParks

SPRING 2013 / Vol. 87 No. 2

COVER IMAGE:

## PRONGHORN ANTELOPE

in eastern Montana.

© DONALD M. JONES/MINDEN PICTURES

# 30

**PRONGHORN ANTELOPE**  
moving along the horizon as storm  
clouds gather.

© JIM BRANDENBURG/MINDEN PICTURES

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How did Yellowstone's pronghorn evolve to become the animals they are today? And why does it matter?

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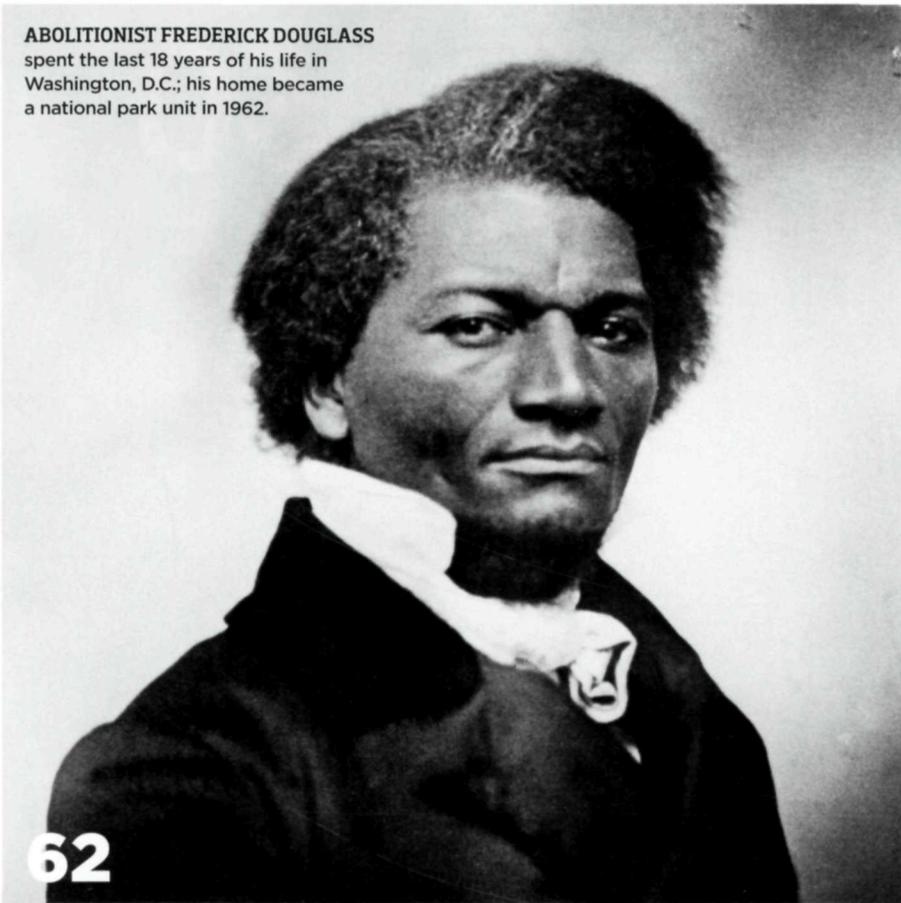
#### **Dog Years**

A long-time Park Service employee details the backbreaking work—and the immeasurable reward—of carving the trails that most of us take for granted.

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### ON THE WEB

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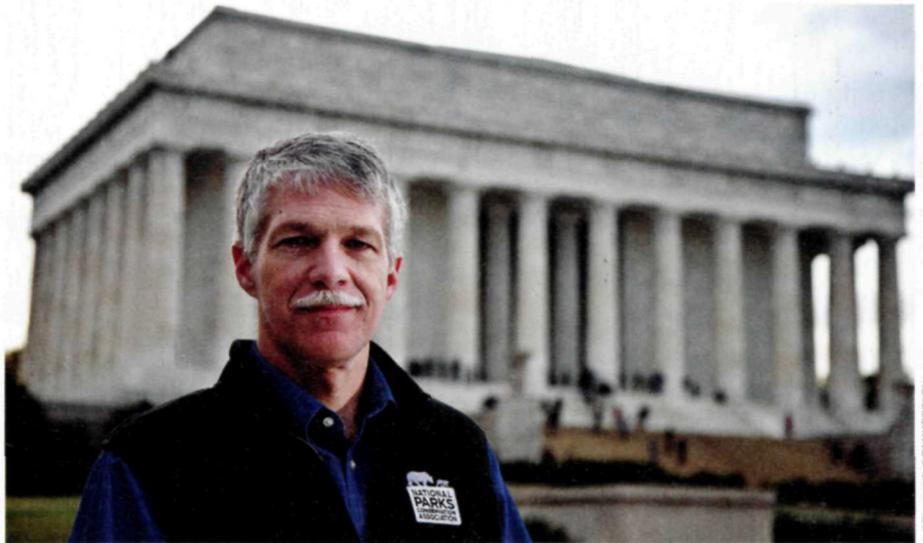
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# A Change of Plans

**This time of year**, I usually begin planning a family vacation to a national park or monument. Over the years, those trips have provided us with some of our most memorable experiences, whether it was hiking in Shenandoah, sleeping beneath the stars in the Grand Canyon, or “surfing” the sands at White Sand Dunes, we have spent a lot of meaningful, regenerative time in our national parks.

This year, I am afraid my family and yours may have to adjust our plans, especially if Congress cannot come to an agreement about federal budget cuts. Whether Congress enacts across-the-board budget cuts or fails to come up with a clear path forward to deal with the national debt, the national parks will suffer some closures, elimination of seasonal staff, and extended furloughs for permanent employees.

If cuts go into effect, five campground at Great Smokies would be closed, and visitor centers at Cape Cod and Grand Teton will be shuttered. Snow-packed roads in Yosemite and Glacier would go unplowed well into the Spring. All of these cuts would add up to millions in lost revenue for the businesses and communities that depend on park tourism. Our national parks—and the American people—deserve better.

At a time when more than 95 percent of Americans support the federal government’s protection of the parks—and 9 out of 10 voters want to see no further cuts to national park funding—the failure to reach a deficit-reduction agreement is jeopardizing our heritage and throwing into question the planning of millions of families who expect their parks to be open this summer. Every dollar invested in the National Park Service generates about ten dollars in economic activity—yet in today’s dollars, the Park Service budget has already declined by 15 percent over the last decade.

Decision makers must act now to come up with a common-sense plan that addresses the debt in a thoughtful, holistic way. Let your elected officials know the national parks matter to you. Tell President Obama and your members of Congress that we can’t afford to shortchange our beloved parks.

Thomas C. Kiernan



## Editor's Note



MICHAEL FALCO

CIVIL WAR REENACTORS in Elizabethtown, Pennsylvania.

# A New Light

There are few words that I enjoy hearing more than “I’d never thought of it that way before.” That’s the thought that came to my mind while considering several of the stories that made their way into issue you’re now holding.

In 2006, on my first visit to Acadia, I marveled at the thousands of rocks arranged in clever staircases that led to mountaintop views throughout the park. Until that moment, I’d never stopped to think that someone had to build every inch of that trail. Someone had to plot the most logical route, find the rocks, move them, and then piece together the puzzle that allows me to put one foot in front of the other without a thought. Author Christine Byl explains all the hard work that goes into every step.

Yale professor Ed McCord writes that Yellowstone’s pronghorn are the fastest animals on the planet—able to outrun cheetahs over significant distances—and yet this blazing speed no longer serves them any compelling purpose, because there are no predators around to give them a decent chase. It’s one of the fascinating results of their unique evolutionary path, which should lead us to value the species in ways far beyond their practical value to humans.

As someone who has seen hundreds of photographs of Civil War sites, I’m generally underwhelmed at the site of statues, cannons, fences, and empty fields. But photographer Michael Falco has taken a pinhole camera to Antietam, Shiloh, Vicksburg, and other parks to conjure dreamy images that led me to see the battlefields in ways that I’d never thought of before. If one of these articles strikes the same chord in you, I hope you’ll let me know....

Scott Kirkwood  
NPMAG@NPCA.ORG

# NationalParks

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### WHO WE ARE

Established in 1919, the National Parks Conservation Association is America’s only private, nonprofit advocacy organization dedicated solely to protecting, preserving, and enhancing the U.S. National Park System.

### WHAT WE DO

NPCA protects and enhances America’s national parks for present and future generations by identifying problems and generating support to resolve them.

### EDITORIAL MISSION

National Parks magazine fosters an appreciation of the natural and historic treasures found in the parks, educates readers about the need to preserve those resources, and illustrates how member contributions drive our organization’s park-protection efforts. The magazine uses the power of imagery and language to forge a lasting bond between NPCA and its members, while inspiring new readers to join the cause. *National Parks* magazine is among a member’s chief benefits. Of the \$25 membership dues, \$6 covers a one-year subscription to the magazine.

### MAKE A DIFFERENCE

Members can help defend America’s natural and cultural heritage. Activists alert Congress and the administration to park threats; comment on park planning and adjacent land-use decisions; assist NPCA in developing partnerships; and educate the public and the media. Please sign up to receive Park Lines, our monthly e-mail newsletter. Go to [npca.org](http://npca.org) to sign up.

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## WORD ON THE STREET

Great article in the Winter issue ["Over Under"]—I especially liked the graphic of the animals that wish to cross over versus under, something I didn't know until reading the article. In 2006 I visited Glacier National Park, when I-93 was under construction and there was talk of the crossings. I'm overjoyed to read the undertaking has come to pass. No pun intended. We'll get it right if we just keep plugging away.

VICTORIA WALLICK  
Ellsworth, MI

## WHOLE FOODS

I applaud Superintendent Frank Dean's initiative to factor sustainability into park concession bids and especially in consideration of the influence children bring to bear on their parents ["The Sustainable Spread"]. If children are given healthy, whole real foods, they perform better cognitively and experience fewer negative-behavior episodes.

When children are exposed to state and national parks, it is appropriate that park concessions follow with values in sustainability, local sourcing, and food that is as unprocessed as feasible. The benefits of being out in nature, unplugged and breathing fresh air, enjoying physical activity, mental and sensory stimulation, are punctuated by nutritious, delicious food. Great fresh food makes the whole experience wholly healthy!

MARILYN DARILEK  
Spokane, WA

## SOMETHING FISHY

Amy Leinbach Marquis' "Native Waters" article brought back fond memories of my service in Cades Cove in Great Smoky Mountains National Park, Tennessee.

One summer I volunteered to stock brook trout—the project involved some strenuous hiking, but I thoroughly enjoyed doing my part for the greater good. It's encouraging to learn that the brook trout are making a comeback.

WILLIAM OBER  
Huntington, NY

## PERPETUATING THE MYTH?

National Parks' editors received an interesting letter from a quilt historian challenging students' designs depicting Hopewell Furnace ["Picture This"]. Here's the original letter, along with a response from the park superintendent:

I'm all for art in the parks but, please, can't we have work that is based on history, not myth? Quilt historians and scholars have found no evidence that quilts were used as a code for escaping slaves. The myth is said to be based on a children's story book whose author invented the tale. Unfortunately, it is a myth that grows, and people want to believe it.

BETS RAMSEY  
Nashville, TN

The article "Picture This" in the Winter



edition of *National Parks* magazine is accurate in that the Rutgers students did create "an innovative branding scheme drawn from the coded quilt patterns that safe houses posted to signal runaway slaves along the Underground Railroad." The students accepted that the codes were part of the oral heritage of the African-American community. Hopewell Furnace's Frances Delmar, chief of interpretation and education, had researched this issue and had already advised the students of the following:

"There is no existing and known documentary evidence for the use of the quilt code to guide runaway slaves along the Underground Railroad. But the tradition based on oral history remains strong in African-American communities both in the United States and Canada. What is fact and provable is that African-American quilters used their work to tell the story of the enslavement and subsequent freedom journeys of their people. It is most likely that quilts were used as way finding aids for runaway slaves; however, not with the elaborate codes sometimes claimed. However, the National Park Service respects the cultural traditions of the descendants of slaves."

The students chose the approach that might help us connect with a more diverse visitor population, because there is a great deal of interest in the Underground Railroad both locally and abroad. *National Parks'* language does not validate the quilt code story, nor does it promote myth. We appreciate hearing the comment from this reader—it provided the park with fair warning that if we accept this approach, we may land ourselves in the center of a controversy.

**EDIE SHEAN-HAMMOND**

*Superintendent*

*Hopewell Furnace National Historic Site  
Union Township & Warwick Township, PA*

**GO WEST, YOUNG MAN**

Thanks for Kate Siber's great article on the Buffalo Soldiers ("Standing Guard," Fall issue). I spent nearly 50 years as an engineer working in 71 national park units, most of them west of the Mississippi River. My first two assignments were in Yellowstone, which has always been my favorite park. How nice to read that Captain Charles Young was so dedicated to preserving it. The Park Service should be forever grateful for his stewardship. That was a great tactic, parking errant sheep herders at one corner of the park and their mob of sheep at a corner on the other end.

As you may know, the Park Service opened a museum in Gardiner, Montana, just outside Yellowstone's north entrance. I shall make certain they have a copy of your article.

**DAVID O'KANE**

*Lacey, WA*

**CORRECTIONS:**

The map showing Civil War sites on p. 40 of "The Anniversary Gift" mislabeled Virginia as "West Virginia"; West Virginia was not labeled. The Editor's Letter mistakenly referred to the author of "The Sustainable Spread" as Kate Siber; the piece was written by Kallie Markle. We regret the errors.

**Send letters to** National Parks Magazine, 777 6th Street NW, Suite 700, Washington, DC 20001-3723. **Or e-mail** npmag@npca.org. Include your name, city, and state. Published letters may be edited for length and clarity.

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## Echoes

**We don't want visitors driving in [to Dinosaur National Monument to see] the pristine Yampa River on one side of the road and drill rigs on the other.**

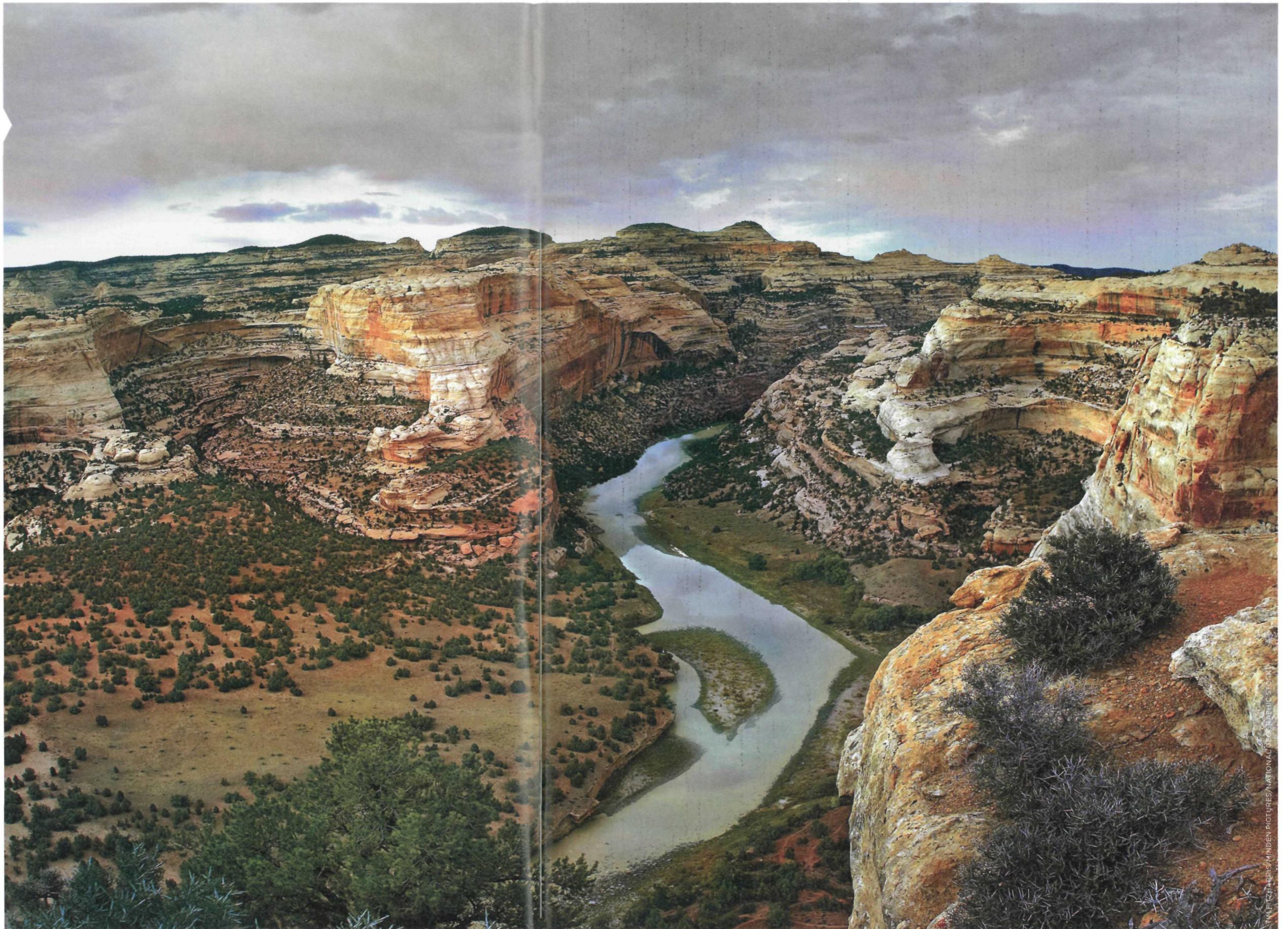
*Erika Pollard, program manager in NPCA's Southwest regional office, quoted by the Salt Lake Tribune in response to the Bureau of Land Management's proposal to lease parcels of land outside the park for oil and gas exploration. Due in large part to Park Service concerns, the BLM has temporarily removed the plots from consideration.*

**This pattern of delays is disquieting. Why does the federal government get extra time when everyone else has to do it in five years?**

*Kevin Dahl, program manager in NPCA's Arizona field office, quoted by the Arizona Republic, in response to an EPA plan that would give the federal government 10 years to install pollution controls at a coal-fired power plant near the Grand Canyon.*

**These new cuts will not mean doing more with less. Those days are long since passed. These cuts will mean doing less with less. And visitors will notice, as will the regional economy.**

*Michael Jamison, Glacier program manager for NPCA, quoted by the Missoulian in response to a leaked Park Service memo detailing the impacts of budget cuts to take effect if Congress failed to address the federal deficit by March 1.*





## Q&A

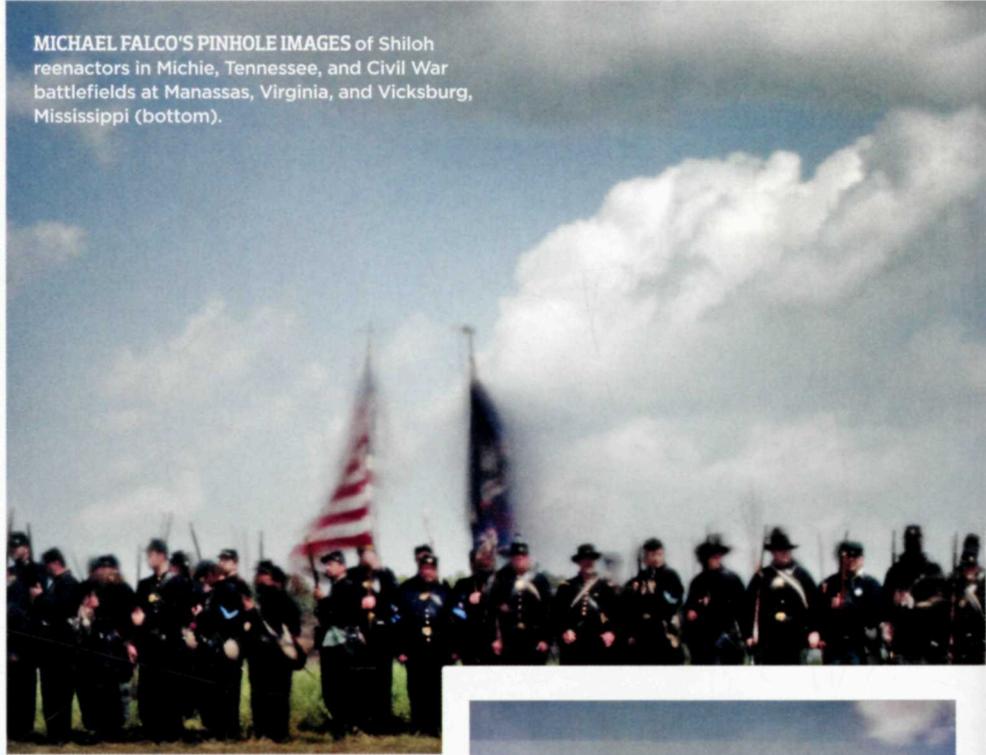
# Through the Looking Glass

Photographer Michael Falco captures dreamy Civil War landscapes using a device even older than the battles themselves: the pinhole camera.

**Q: What prompted the project?**

**A:** Before I picked up my first pinhole camera, I was averaging about 10,000 images a week as part of my normal freelance work. The volume was so intense, I thought, why not go in a completely opposite direction and start with something that would really slow me down? The pinhole camera was the answer. I visited Antietam in 2009 and took some of my first good pinhole photographs on the battlefield, and I thought, "Oh, so this is what the camera can do." I'd always been interested in the Civil War (the first two books I read as a child were

MICHAEL FALCO'S PINHOLE IMAGES of Shiloh reenactors in Michie, Tennessee, and Civil War battlefields at Manassas, Virginia, and Vicksburg, Mississippi (bottom).



biographies of Robert E. Lee and Ulysses S. Grant), so as the war's 150th anniversary approached, I thought it would be really interesting to see what the pinhole camera could do.

I went to Manassas in 2011, met some reenactors, and when I looked at the images, I thought, "Wow, maybe there's something more here." When I first started working with the camera, I tended to avoid



MICHAEL FALCO (3)



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**CONFEDERATE SOLDIERS** at the Battle of Shiloh reenactment in Michie, Tennessee (left), and Union reenactors resting during a Gaines's Mill reenactment in Elizabethtown, Pennsylvania.



portraits, because I didn't like the way the camera rendered people, but the fact that the reenactors wore uniforms completely changed the feeling of the images—it unified the figures in a way that they became anonymous, as if they represented every soldier. Images of the battlefields tend to be quiet and somber landscapes, but the reenactments really bring these places back to life.

**Q: How do pinhole cameras work?**

**A:** The pinhole camera is the most rudimentary camera you can take a picture with; there are no moving parts. There's a pinhole to let the light in and film in the back of the camera to capture the light, and the shutter is basically a flap that covers the hole. I take a reading with my light meter, which tells me [how long to leave the shutter open]—usually about one to six seconds, depending on the subject and whether it's cloudy or sunny out.

What the pinhole camera is able to do better than any other camera is capture the *feeling* of a place. People often attach their own memories and experiences to the images. The fact that the images are missing detail encourages the viewer to look more deeply, so you wind up staring at the pictures longer than you typically would.

**Q: What sort of response have you gotten from the reenactors?**

**A:** When I'm out with the pinhole camera in New York City, people stop me on the sidewalk and they'll ask, "What is that?" but on the battlefields, it's a completely different experience. I'll walk by a reenactor and he'll say, "Cool, a pinhole camera." Of course, they live in this whole world thrown back in time, so it doesn't surprise me they would know what a pinhole camera is. They also appreciate the idea of trying to re-create something [from an earlier age].

**Q: And you've actually become a reenactor as well?**

**A:** After attending my first reenactment as a spectator, I quickly realized that I couldn't get the images I wanted from behind a rope—I'd have to be on the battlefield, which meant I'd have to become a reenactor myself. So I decided to take on the guise of a 19th-century photographer. People are constantly calling me Mathew Brady, which was never my intention, but in a way, I'm trying to do what Brady

couldn't do, and that is to be on the battlefield during these events.

I've always been fascinated with the perspective of the soldiers and what they saw when they were moving through the country. Before the Civil War, people hardly ever left their own towns, but here, young men were being marched 500 miles from where they lived. I was interested in the idea that the country that these young men saw in the 1860s still exists in some ways, and you can still see it, if you look closely. For me, it's like stepping back in time. And if you know the stories behind the battles, the experience is much richer—a hill is a hill, and a fence line is a fence line, but when you know this is the site where a general stopped his troops during a pivotal battle, all of a sudden the experience becomes even more profound.

—SCOTT KIRKWOOD

*Michael Falco will continue tracing the war's history this year, visiting Chancellorsville in May, Gettysburg in July, and Chickamauga & Chattanooga in September. Follow his journey at <http://civilwar150pinholeproject.com>.*

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# Fish Out of Water

Asian carp threaten national parks along the Mississippi River.

TOP: © NERISSA MICHAELS/ILLINOIS RIVER BIOLOGICAL STATION/ASSOCIATED PRESS  
BOTTOM: ILLUSTRATION BY JOE TOMELLERI



**INVASIVE SILVER CARP** in the Illinois River jump when startled by noises like passing watercraft, and they're now threatening Mississippi River parks as well.

It's impossible to fish peacefully on the Illinois River anymore. One minute, you're floating downstream, casting your line quietly on the surface of the water. Then, without warning, dozens of fish start flying frantically through the air—40-pound torpedoes colliding with anything and anyone in their path.

It's the stuff of a 1950s horror film, but it's a reality in this waterway dominated by invasive Asian carp. As those carp push north, they're threatening every national park unit connected to the Mississippi River—and the multi-billion-dollar

ers imported silver, bighead, grass, and black carp—extremely efficient bottom feeders from Asia—to help keep catfish farms clean. Heavy rains caused flooding, and the fish escaped into nearby waterways.

In 2011, John Anfinson, chief of resource management for the Mississippi National River and Recreation Area, learned that silver carp and bighead carp were making a dramatic advance up the Mississippi River and sounded the alarm with key federal and state agencies. The species out-compete native fish for food

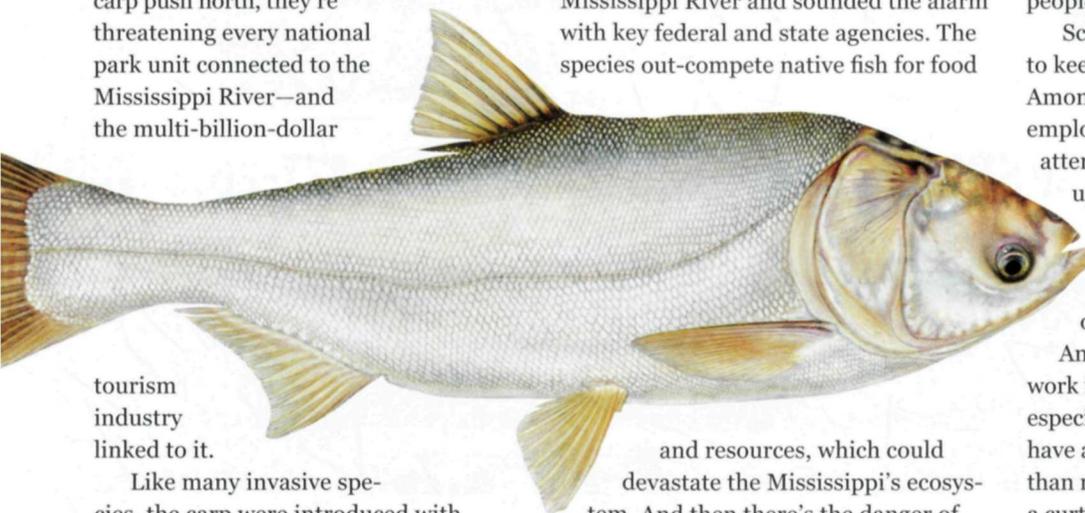
flight-or-fight response is to leap as high as 10 feet into the air (an event that's sent Illinois River boaters to the hospital with broken jaws and concussions).

"We put 11,000 middle-school students in canoes on the river last year," Anfinson says. "If silver carp start jumping out of the water and tip a canoe or hurt these kids, it could end our program. We're working so hard to get people to the river, but this would scare people away from it."

Scientists are searching for ways to keep the invasion from escalating. Among the options: deterrents that employ bubbles, sound, and light in an attempt to keep carp from swimming upstream.

"If there's a jackhammer on the sidewalk making lots of noise, you might walk to the other side of the street to avoid it,"

Anfinson says. These deterrents would work in much the same way, and could be especially effective considering Asian carp have a great sense of hearing, much better than native fish. Add flashes of light and a curtain of bubbles, and carp might just swim away. *(cont'd on page 16)*



tourism industry linked to it.

Like many invasive species, the carp were introduced with good intentions. In the 1970s, fish farm-

and resources, which could devastate the Mississippi's ecosystem. And then there's the danger of startling hundreds of silver carp, whose

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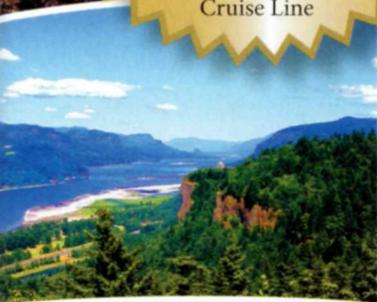
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Scientists are also working to isolate the pheromone to lure carp and create a “carpicide” to poison them—a technique that’s worked well to control invasive lamprey populations in the Great Lakes.

Asian carp are threatening every national park unit connected to the Mississippi River.

But states might be years away from successfully implementing these ideas, if the ideas even work at all. So for now, the Stop Carp Coalition—a diverse group of anglers, private property owners, and conservation groups like NPCA—is advocating for lock closures where they make the most sense, in the hope of slowing the spread of Asian carp. “It’s been a hard pill to swallow for some of our decisionmakers,” says Christine Goepfert, NPCA’s Upper Midwest program manager and the coalition’s co-leader. “Two barging companies upstream are still using these locks, so it may be more practical to help them find alternative shipping methods or subsidize the costs of relocating their businesses rather than pay for expensive and unproven deterrents.” The coalition is also working with Congress to pass legislation that would require lock closures in certain areas.

“Republicans and Democrats at all levels of government want to do something about this,” Goepfert says. “That makes me hopeful that we’ll see some much-needed action soon.”

—AMY LEINBACH MARQUIS

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RECENT EXCAVATIONS at Tule Springs have unearthed the remains of top-tier predators like the dire wolf and saber-tooth tiger.

## Wolf Hunt

Paleontologists stumble on ancient wolf remains in Tule Springs

**Saber-tooth fangs.** Demonic green eyes. Five feet tall and 600 pounds of solid muscle, lurking in the darkness before ripping apart its prey.

For centuries, folklore has painted the dire wolf as a monstrous, bigger-than-life villain. But a recent discovery in Tule Springs, Nevada—fossil-rich land that could become America's next national monument—offers new evidence that will help tell the real story of the Ice-Age canine.

On a boiling-hot day last June, Josh Bonde was conducting an ongoing excavation in the state-owned parcel of Tule Springs, north of

Las Vegas. "I came around a corner and saw a little hand bone sticking out of the side of the cliff," says the University of Nevada—Las Vegas paleontology professor. "Dire wolves are the most common carnivore in the Ice Age in all of North America, but for whatever reason, we hadn't found any evidence of them in Nevada. So I was pretty jazzed."

Fossils like these paint a picture of ancient wolves that were no taller than gray wolves, only stockier, with large heads and enormous teeth likely used to crack bone. Dire wolves appeared to be social animals, and according to some findings, might have even nursed injured pack members back to health, prolonging lives that surely would have been cut short had they been solitary creatures.

The bones also reveal a Pleistocene-Era ecosystem in balance: plentiful herds of mammoths, bison, and camels grazing on lush landscapes—and carnivores like the dire wolf to keep populations in check. (cont'd on page 20)

### MOVE OVER, ROVER

The very same month Bonde confirmed his dire wolf fossils, a team of paleontologists from California's San Bernardino County Museum announced their discovery of two front leg bones of a saber-tooth cat nearby. For nearly a decade, the team has unearthed the remains of mammoths, camels, horses, and other ancient grazers, but this was the first time they came across such a high-profile predator. "We knew it had to be there," Kathleen Springer, senior curator for the museum, told the *Las Vegas Review-Journal*. "There was all this amazing lunch everywhere."



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— Alida Struze, Ohio

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But discoveries like this could be lost if Tule Springs doesn't gain greater protection, which is why NPCA and a diverse group of advocates in the Las Vegas community have teed up legislation to designate nearly 23,000 acres as a national monument managed by the National Park Service. Even though the Bureau of Land Management recently staved off residential construction on 11,000 acres of the land, historic treasures remain vulnerable to theft, recreational off-road vehicles, and future development.

Discoveries like this could be lost if Tule Springs doesn't gain greater protection

"It would be devastating to lose even a single bone buried at Tule Springs," says Lynn Davis, senior program manager of NPCA's Nevada Field Office. "Scientists just keep churning out new and exciting findings, and those findings are driving the vision of what this new national monument can be. We expect the site will draw both international scientists and tourists looking for yet another reason to visit Las Vegas."

— AMY LEINBACH MARQUIS

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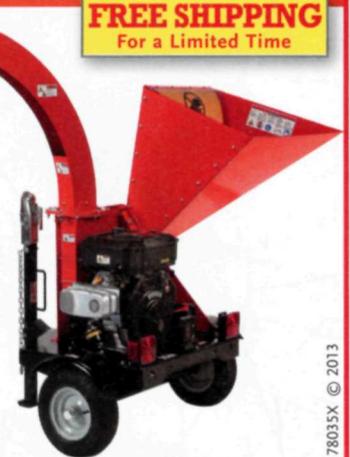
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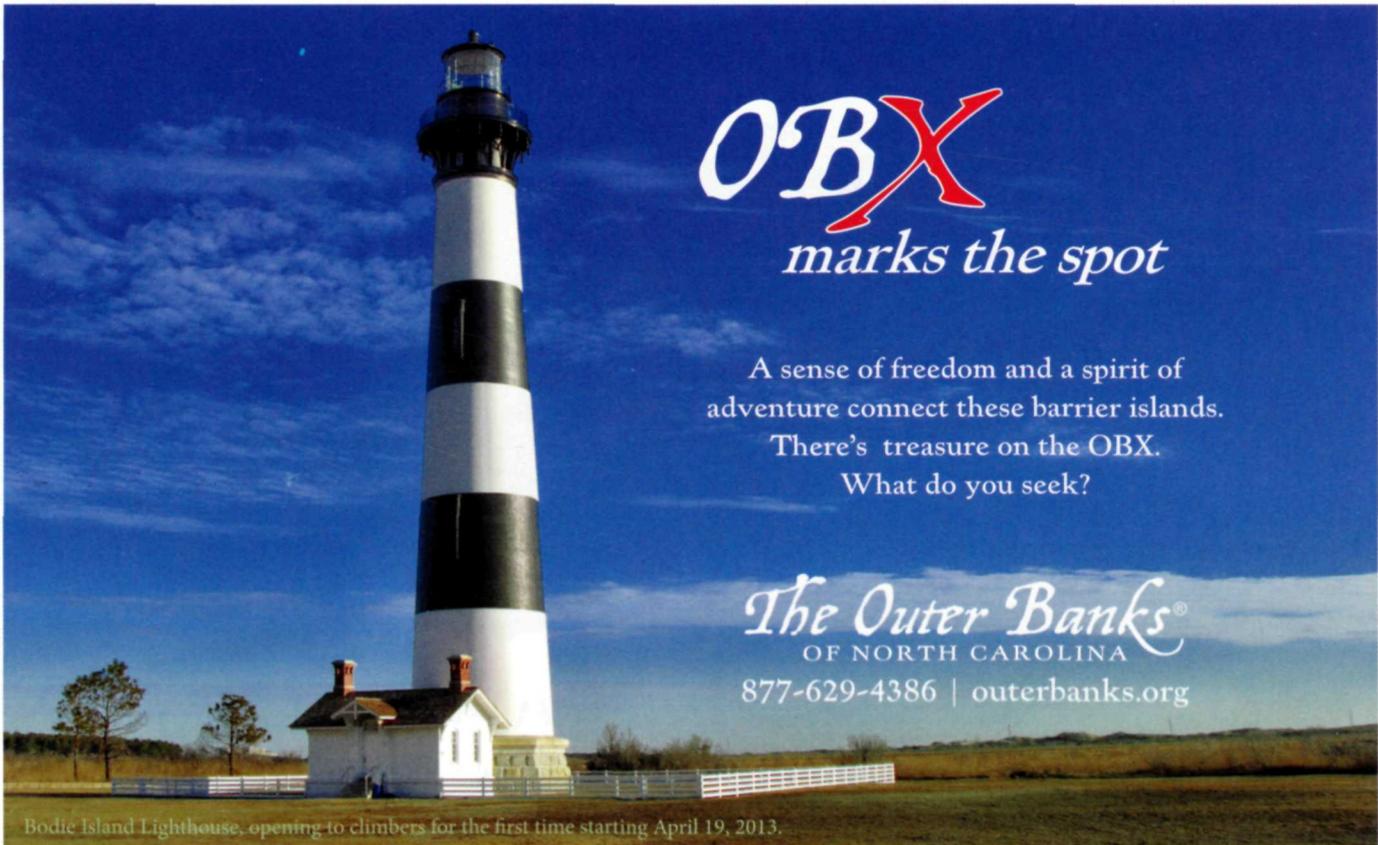
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## Getting the Lead Out

Lead bullets still threaten the California condor, an icon at Pinnacles and Grand Canyon.

**When you spot a California condor,** you don't just see it—you experience it. The whooshing sound and hair-raising blast of wind created by the bird's massive nine-foot wingspan turn a condor sighting into a lifelong memory. "I'll sometimes hear one before I see it," says Scott Scherbinski, wildlife health outreach coordinator at California's Pinnacles National Park. "Nothing makes as much noise in flight as a condor."

More people are getting the chance to witness these endangered birds firsthand, thanks to reintroduction programs in California and Arizona that have expanded condor populations from an all-time low of 22 individuals in 1982 to more than 400 birds today. "They're breeding in the wild and fledging their own young, which paints a hopeful picture," explains Scherbinski. But as condors venture farther from release sites, these scavengers encounter a lethal menace: Lead ammunition embedded in the carcasses they eat is poisoning the birds and threatening the species' recovery.

Lead weakens condors' immune systems, interferes with reproduction, and remains the species' leading cause of death. (Arizona confirmed 23 losses since 2000.) Consequently, monitoring birds' lead levels—and providing emergency treatment when they're dangerously high—is biologists' top priority, which draws attention away from other priorities.

At Pinnacles, crews use GPS transceivers to monitor 32 birds year-round, and trapping

sessions in spring and fall allow technicians to replace GPS batteries and check birds' lead levels. If blood levels measure less than 35 micrograms of lead per deciliter of blood, the condor is released. But 35–65 micrograms necessitates hustling the bird to Pinnacles' new Condor Care Unit, where it's given an injection of ethylenediaminetetraacetic acid (EDTA), which allows the bird to excrete the lead. More than 65 micrograms, and the condor is rushed 300 miles to the Los Angeles Zoo for intensive care; this summer saw six such emergency missions. "Without these efforts, condors would fall back to the days of 22-member populations," says Scherbinski.

Although lead exposure comes from a variety of sources—last year Pinnacles removed lead paint from a fire tower after workers discovered that birds were eating the flaking paint—overwhelmingly, the culprit is lead ammunition. A California law enacted in 2008 requires hunters to use bullets made from copper or steel within the state's condor range. Still, birds continue to get sick: Up to 88 percent of wild condors monitored in California show signs of lead exposure every year, and 20 percent end up undergoing treatment.

The ban on lead bullets applies only to locations known to support condor populations. But as condors expand their range beyond unleaded zones, they ingest lead fragments in gutpiles (innards left behind



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### NATURAL ATTRACTIONS

No condors have been released in any of the Southwest's national parks. But as visual scavengers, condors are attracted to any kind of human or animal excitement or "buzz" on the landscape and thus have gravitated to visitor hubs at Bryce Canyon, Glen Canyon, Zion, and the Grand Canyon, where spotting scopes on both rims afford an up-close view of these endangered birds.



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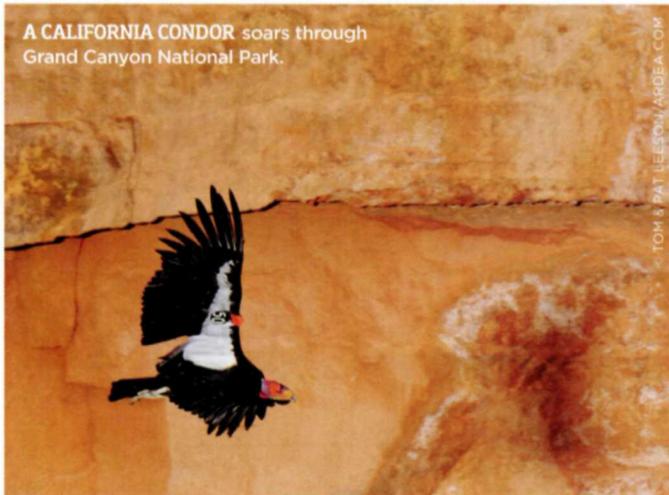
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when hunters dress their kill), in wounded prey that escaped the hunter, and in the carcasses of squirrels and pigs that are killed by property owners.

What makes the problem so pervasive is lead's tendency to fragment into hundreds of tiny pieces throughout the animal carcass. That fragmentation dissipates the bullet's energy and provides a clean kill. "But the fragments go everywhere," says John Schulz, a hunter and non-lead campaign manager for the American Bird Conservancy. "You can't remove them just by cutting around the wound channel," he explains.

Those fragments poison more than just condors. Some 500 peer-reviewed studies have detailed the negative impacts of lead ammunition on 130 wildlife species worldwide, including bald eagles, golden eagles, and turkey vultures. And disease centers across the globe have found that people who eat wild game harvested with lead bullets develop elevated lead levels themselves. Says Schulz, "People don't realize the extent of the bullet fragmentation with traditional ammunition, and until they do, condors and other birds will remain at risk."

If it affects condors like this, it must also affect my kids," he recalls. The realization prompted him to stop feeding his family with the meat he hunted—and to seek alternatives to lead ammunition. "The copper bullets I use now are even more accurate, don't fragment, and result in a cleaner, quicker kill, when the shot hits a vital area," he says. To encourage his fellow hunters to adopt the same approach, Prieto is a co-founder of Project Gulpile, which promotes lead-free options.

Hunting is a culture of tradition, and as Prieto points out, people are slow to change. The cheapest lead bullets are generally cheaper than low-end copper and alloy alternatives (but among premium ammunition, lead is actually more expensive than the alternatives). Lead is denser than copper and alloys, so hunters adapting to new ammo need to spend time at the shooting range re-adjusting their scopes, to ensure they hit their targets with the lighter bullets.

But conservation is another tradition among hunters, and educational outreach can appeal to those values, says Chris Parish, a former biologist for the Arizona Game and Fish Department, who oversees the condor reintroduction program for the

Anthony Prieto is one of the enlightened. An avid hunter of pig and black-tailed deer, Prieto started volunteering with California's condor recovery program in 1998 when he helped to trap and tag birds and test their blood levels. "I saw lead's detrimental effects firsthand, and I thought, 'Wow!

Peregrine Fund. A hunter himself, Parish hosts shooting demonstrations for hunting groups comparing the fragmentation and accuracy of lead and non-lead ammunition—and manages to convert most hunters to lead alternatives as a result.

A voluntary program initiated in 2002 by the Arizona Game and Fish Department distributes free boxes of non-lead ammunition for hunters to try, and asks hunters on the Kaibab Plateau (north of Grand Canyon National Park) to use non-lead ammunition or to pack out their gutpiles when using lead. In each of the last five years, 80 percent of the hunters got with the program, and the number topped 90 percent this year. Utah, which is starting to see condor traffic, is launching a similar program, and Canadian organizations may follow suit. In fact, Schulz sees such partnerships as the only way out of the lead problem. "We've made phenomenal progress by using a positive, respectful approach," he says. "The best way to help these birds is to get folks engaged in meaningful dialog and to keep that conversation going."

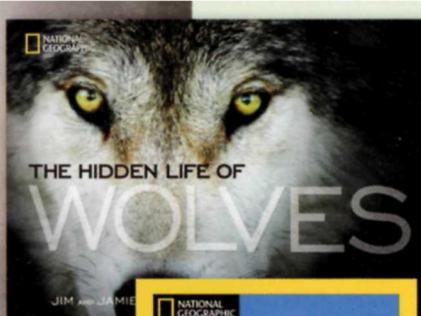
### What makes the problem so pervasive is lead's tendency to fragment into hundreds of tiny pieces.

Scherbinski believes the best agent for positive change is getting people to visit Pinnacles or Grand Canyon, where they can feel the power of glimpsing North America's largest flying land bird. "Condors aren't extinct. You don't have to go to a museum to see a stuffed specimen. You can see them live, right here," Scherbinski says. "That's more powerful than any talk about conservation."

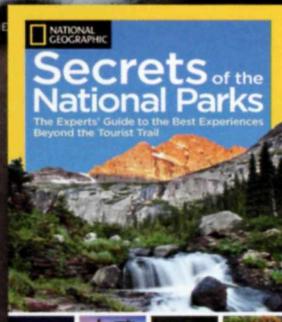
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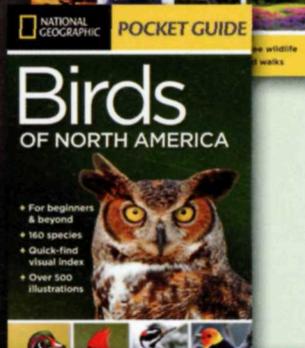
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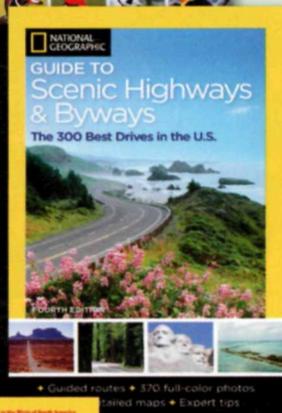
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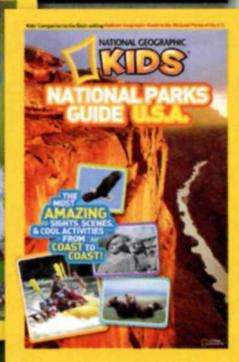
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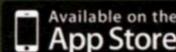


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**COOLER TEMPS FOUND AT HIGH ALTITUDES** send most reptiles scurrying, but the plateau fence lizard appears to be thriving in the Rockies.

## One of a Kind

Scientists have identified an unlikely new lizard species in Rocky Mountain National Park.

**O**N A COOL AUGUST MORNING IN COLORADO, herpetologist and National Geographic Explorer Neil Losin set out along Rocky Mountain National Park's Lumpy Ridge Trail. Pine needles crunched beneath his feet as he hiked through mountainsides of vanilla-scented ponderosa pine and boulders pieced together like a giant geological puzzle. Losin was on the hunt for something small: a lizard—the only lizard species, in fact, rumored to live in the park.

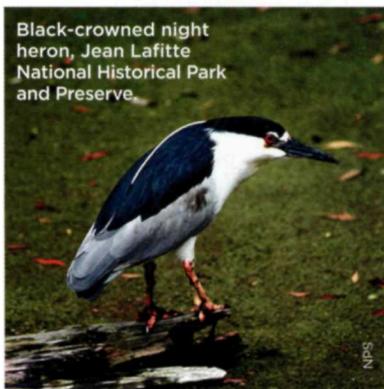
He was there as part of BioBlitz 2012, a joint effort by the National Park Service and National Geographic to unleash hundreds of park staff, scientists, students, and volunteers on a mission to survey as many species as possible in a single day. “I kind of lucked into the assignment,” says Losin. “I had just moved to Boulder a few weeks before. National Geographic knew me, and they knew I liked lizards. So they sent me out on what they probably thought was a fool’s errand.”

Armed with his camera, visitor snapshots of the suspected species, and a tiny “noose” to catch his subjects, he forged ahead under a cloudy sky that typically sends lizards into hiding. But Losin was optimistic. Years of unofficial sightings had placed the lizards in the lowest

reaches of the park, and within a half-mile of the trailhead he saw scenery that matched the visitors' photos. Losin broke from the trail and began creeping toward the rocks.

As if on cue, the sun pushed through the clouds, and Losin caught movement at the edge of his vision. A tiny lizard hatchling scurried along a log. At just an inch long, it was too small to catch, but within minutes, Losin found a larger lizard basking on a rock. He had to capture and document it for the find to be official. "I just kept thinking, 'Don't screw this up—this might be the only one you ever see,'" he says.

Stealthily, Losin lowered the nylon thread of the noose around the lizard's neck. Within moments, the tiny



Black-crowned night heron, Jean Lafitte National Historical Park and Preserve.

### BioBlitz 2013

Want to make like Darwin and join in on the discoveries? The next BioBlitz will take place this May at the Jean Lafitte National Historical Park and Preserve in New Orleans. The event is free and open to the public; registration opens this spring. Contact [bioblitz@ngs.org](mailto:bioblitz@ngs.org) to get on the e-mail list, or learn more at <http://on.natgeo.com/UEQOBN>.

"I just kept thinking, 'Don't screw this up—this might be the only one you ever see.'"

creature was perched in Losin's hand. He weighed, measured, and photographed the lizard, then returned it to its sunny spot. A shock of blue across its neck hinted that the reptile might be a subspecies of fence lizard. Later, to be sure, Losin contacted Adam Leaché, curator of herpetology at the University of Washington. It turns out the lizard Losin documented had recently been reclassified as its own species: a plateau fence lizard.

The discovery answered questions that had nagged the Park Service since 2007, when a local rock climber named Kurt Johnson spotted the reptile and sent snapshots to park staff. Johnson's find delighted officials, especially Jeff Connor, a natural resource specialist with the park. "I always tell visitors, keep your eyes open," he says. "If you see something unusual out there, don't hesitate to tell us about it. The fascinating thing about Rocky Mountain National Park is that nothing is set. Things are changing all the time."

But a demanding schedule kept Connor from acting on those sightings until last August's BioBlitz. Losin's arrival offered the perfect opportunity to get the discovery in the record books.

By the end of the BioBlitz, participants had identified 489 species, including 289 species of plants, 89 bird species, 72 different types of insect, and 12 mammals. But the lizard was an especially intriguing find—only one other reptile, the western garter snake,

is known to exist in the park. Based on their understanding of reptiles, researchers believe altitude might be to blame for the lizard scarcity. Rocky Mountain bottoms out at a breath-stopping 7,800 feet, and its peaks rise to almost twice that height. Its sub-zero winters can spell certain death for reptiles, which can't regulate their internal thermostat when temperatures drop, so researchers are still scratching their heads over why this lizard survives where others do not. Losin thinks they might simply be better than other reptiles at burrowing down into protective shelter. Connor wonders if global warming might be the reason. For now, the mystery will remain; the park has no plans to study the lizard.

All told, Losin caught a total of four plateau fence lizards—and saw at least half a dozen others—on two trips to scout the species. His find proves that there's always something more to discover, even in a park that's visited millions of times a year.

"It's really cool to go to a place as well known and well studied as a national park and realize that we don't know everything that's there," says Losin. "We have a long way to go to understand biodiversity, even in the most iconic places in the country." **NP**

**MORGAN HEIM** is a journalist based in Boulder, Colorado. She was part of the photographic team that accompanied Neil Losin on his second outing to document the plateau fence lizard.



**THE POPULATION OF BIGHORN SHEEP** in Grand Teton is stable at roughly 125, but human disturbances and competition with mountain goats pose serious threats.

other bighorn herds. But when humans settled the valley in the early 20th century—building roads and homes, erecting fences and telephone wires, introducing domestic sheep and a plague of diseases—the Teton bighorns retreated to the rocky ledges and barren, wind-scoured ridgelines of their native mountains. By about 1950, they ceased their annual migrations and simply stayed put.

“When you look at where these sheep are living, you ask, ‘How are they surviving?’” says Aly Courtemanch, a habitat biologist for Wyoming’s Game and Fish Department, who has spent years studying the Teton herd with cooperation from the national park and the U.S. Forest Service.

Today, approximately 125 bighorn sheep live in small groups on a few snow-free windblown and sun-exposed alpine ridges. “These animals are persisting between 9,000 and 12,000 feet, in areas as big as postage stamps,” says Grand Teton’s senior wildlife biologist Steve Cain. “The nutritional opportunities there are extremely poor—many of these animals probably fast through parts of the winter.”

It’s rare enough for bighorn populations to stay in one spot year-round, but the Teton herd is unique in one other critical way. Using DNA analysis, park biologists discovered that the Teton herd is cut off from all other bighorn populations, meaning it’s genetically isolated. And that spells trouble for the long-term success of the herd.

One solution would be to introduce breeding animals from other herds. “Bringing in animals from the outside could boost genetic variation,” Courtemanch explains. “But we’d also risk introducing disease, which could be catastrophic for such a small population.” In fact, a few months

## Higher on the Mountain

A small, threatened population of bighorn sheep defies the odds in Grand Teton National Park.

**A**BOVE 10,000 FEET in Wyoming’s Grand Teton National Park, more than 700 inches of snow can fall in a single year and wind-chill on the blustery summits can dip below  $-70^{\circ}$  F. Avalanche-prone slopes plunge 6,000 vertical feet, broken by slabs of dark stone. There is virtually no vegetation or cover from storms. But here a special herd of bighorn sheep subsists year-round. Survival isn’t easy, but with increasing human threats from below—habitat encroachment, increased backcountry visitation, and severed migration corridors—the bighorn have nowhere else to go.

This was once a migratory population, summering in the mountains and wintering in the Jackson Hole Valley, where it intermingled with the area’s

ago, six members of the nearby Jackson bighorn herd died unexpectedly; each carried a bacterial pathogen linked to deadly pneumonia.

More immediate threats to the Teton bighorn herd include increasing human disturbances and competition with a growing number of mountain goats.

Bighorn sheep have excellent eyesight and hearing and will flee to avoid confrontation with humans and most other animals. In winter, they have nowhere to go but into deep snow, where they expend vital energy and expose themselves to predators like mountain lions. “With nowhere to escape and a nutritional deficit,” Cain explains, “the

“When you look at where these sheep are living, you ask, ‘How are they surviving?’”

Teton herd is extremely vulnerable to any kind of disturbance.”

Today, more people are visiting the park’s mountains in winter than ever before, including the small, snow-free areas critical to the bighorns’ survival. Backcountry skiing, snowboarding, and mountaineering are increasingly popular in the Tetons, and the conflict is simple, according to Cain, who’s an avid backcountry skier himself: Frequent contact with human visitors can literally scare bighorn sheep to death. That’s why the park closes several of the key alpine habitat areas used by wintering sheep from December to April.

Part of Courtemanch’s study focused on geographic overlap between winter park users and bighorn using GPS data from collared sheep and dozens of volunteer backcountry skiers and snowboarders in the range. What she found was encouraging: Many bighorn spend winters in the closed areas, safe from human disturbance and displacement.

Mountain goats—animals non-native to the Tetons—may be harder to manage. According to Cain, goats have been in the park since 1979, but they didn’t start reproducing regularly until 2008. Robert Garrott, a Montana State University ecology professor, is studying the dispersal and behavior of sheep and goats throughout the Greater Yellowstone Area. The potential conflict, he says, is twofold.

“Goats are more aggressive,” he explains, “so if goats want to be where bighorn sheep are, bighorn will always leave the area.” The other problem is competition for resources. Higher elevations offer limited forage—perhaps not enough for bighorn sheep and goats, though no one knows for sure.

Grand Teton is keeping a close eye on the growing goat population and will begin forming a management plan in the next year, Cain says. Park Service policies aim to maintain native populations and natural ecosystems, so the best course of action is to prevent the goats from getting established in the first place.

Although threats facing the Teton bighorn herd are many, its population appears to be stable. Winter closures are keeping human visitors at bay, and improved tracking and increasing knowledge about the habits and behavior of the herd—gathered with help from park visitors—help protect additional habitat. The future of the Teton bighorn is tenuous but hopeful.

“This is an iconic animal and an integral part of the ecosystem,” Cain says. “It would be a tragedy if we lost bighorn sheep in the Tetons, for both aesthetic and ecological reasons. Fortunately, they seem to be defying the odds and persisting. And that’s a good thing.” **NP**

**DREW POGGE** is a writer and editor based in Bozeman, Montana. His work has appeared in *Outside*, *Mountain*, *Skiing*, and *Backcountry*.



MICHAEL S. QUINTON/NATIONAL GEOGRAPHIC STOCK

## HOW BIG ARE A BIGHORN'S HORNS?

**Both male and female** bighorn sheep grow the famously eponymous horns, which they retain throughout their lives. Rams' horns grow continuously and reach nearly a full curl at around eight years of age. Ewes' straighter horns reach full length—eight to ten inches—by their fourth year.

# the value of species

I'm one of the few people fortunate enough to spend every summer in Yellowstone National Park. Each day I get to train my binoculars on extraordinary wildlife like the pronghorn as part of a field course in geology, ecology, politics, and philosophy created by the University of Pittsburgh Honors College. For me and all visitors, our national parks and other public lands offer escapes from civilization into a more real perspective of time—places to reflect on the diversity of life and its myriad origins within an ancient ecosystem whose parts are substantially as they have been for thousands of years. They also provide chances to gain real-life insights into the challenges of managing these lands for their critical public missions.

What's so wonderful about the role national parks play in preserving the diversity of life is that in them *all* native species are protected and *all* are recognized as objects for enjoyment. The Organic Act of 1916 requires the National Park Service "to conserve the scenery and the natural and historic objects and wild life therein and to provide for the enjoyment of the same...." In the case of field courses like our Yellowstone class, nothing counts as enjoyment of wildlife more than learning about it, and unlike the *four walls of a classroom* or the confines of our homes, the way we learn in the national parks is by asking questions in the laboratory that surrounds us. Each of these innumerable inquiries leads to wonders at our door.

BY EDWARD L. MCCORD ILLUSTRATION BY AARON MCCONOMY/COLAGENE.COM

Humans have always considered plant and animal species in terms of what they contribute to our lives. But author Edward McCord believes that Yellowstone's pronghorn and, indeed, all species, have value in and of themselves.





**PRONGHORN FROM GRAND TETON NATIONAL PARK** make their fall migration through Trappers Point, near the town of Pinedale, Wyoming.

**ALTHOUGH PRONGHORNS**

may look like antelopes, the two kinds of animals are not related; the species evolved on separate continents over tens of millions of years. Antelopes are found in Africa, Europe, and Asia, but the pronghorns found in and around Yellowstone and Grand Teton (*Antilocapra americana*) are a marvel of design found on no other land mass in the world. Unlike horses, camels, and early canines that originated in the Americas and crossed the Bering Strait into Asia many thousands of years ago, pronghorns never crossed into Asia, and the present species somehow survived the Pleistocene extinction to inhabit North America today.

© JDE RIIS

Why do we see hundreds of saplings growing beneath the burned forests of lodgepole pines but not on the floors of other burned forests? Because lodgepole pines have adapted to produce “serotinous” cones that are sealed shut by resin, which melts to release the plant’s seeds only in the extreme temperatures brought about by forest fires.

Why do we see brilliant orange striations in the water along edges of many thermal springs? Because certain microorganisms have adapted to live in these high-temperature acidic environments, and these colorful rings reflect their proximity and tolerance to the extreme conditions—the closer they are, the more they can withstand.

Why do Yellowstone’s thousands of geysers and hot springs exist all together in this locale? Because they are generated by forces in the crater of one of the largest active volcanoes in the world, located at the intersection of a molten plume deep beneath the Earth’s crust and the southwesterly movement of the North American Continental Plate.

Why has the reintroduction of wolves into Yellowstone led beavers to return to the park? Because beavers

and elk compete for aspen and willows, and now that elk must constantly move to avoid those wolves, they cannot linger and browse on these tree species. That means beavers have greater access to aspen and willow branches for dams and bark for food, so their populations are making a comeback.

The Greater Yellowstone Ecosystem is where I have spent most of my time contemplating how our civilization fails in its regard for species, and it’s where I found the inspiration to write a book on the subject, *The Value of Species*. I was drawn to the topic for a simple reason. Species are vanishing from the Earth so rapidly that we cannot miss any opportunity to address the crisis. According to scientists’ best estimates, the pace of extinctions today rivals that of the fastest mass extinctions in Earth’s history.

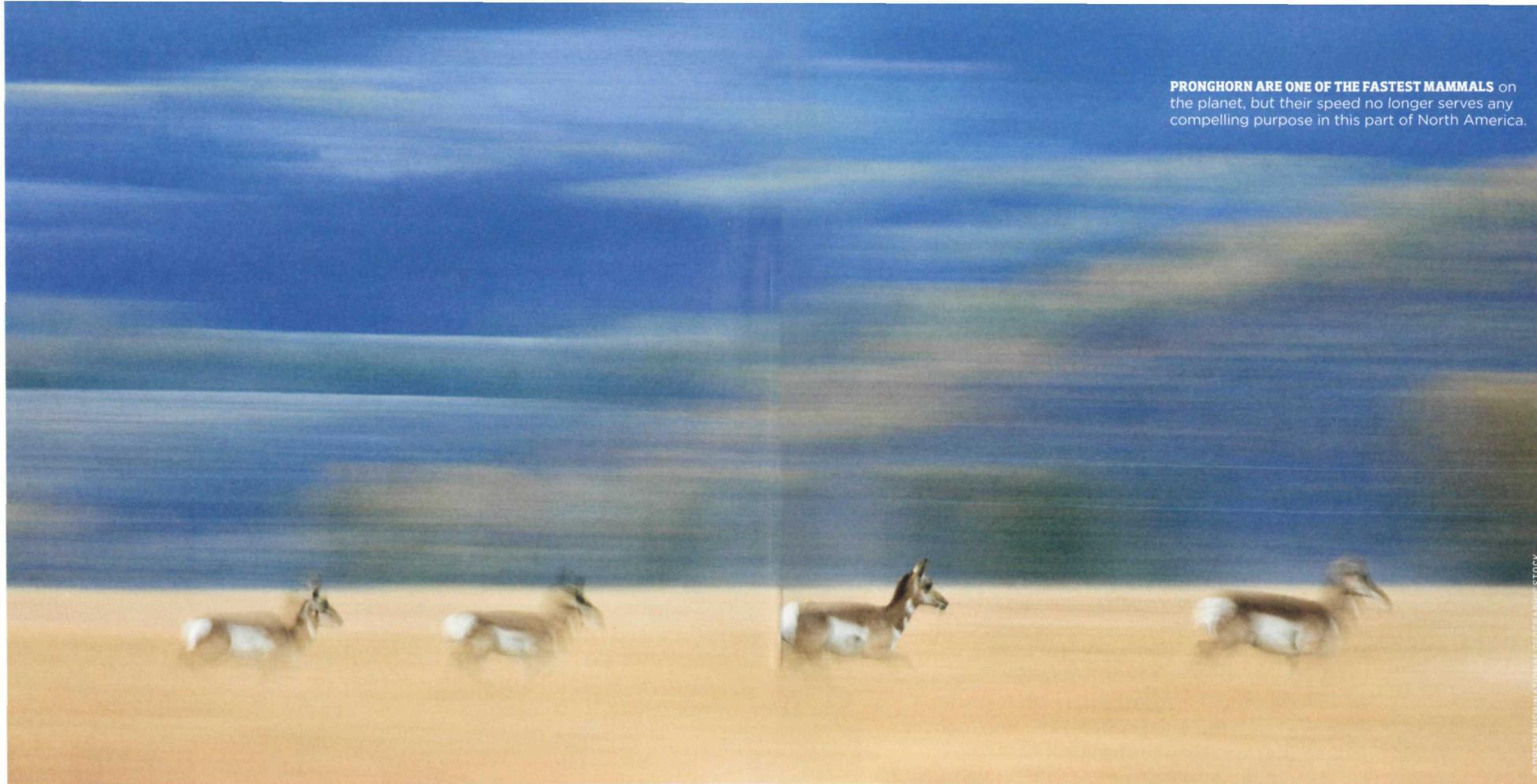
Why might we value species, I wondered, and why should we? Species provide for our physical well-being, for products in the marketplace, and so on, but these practical considerations are more about us than about a value we find in learning about species in and of themselves. Most species do not have any practical value for humans. Pronghorn (*Antilocapra americana*) offer a

wonderful illustration, for there are some creatures like this whose trajectories through time are so dramatic and emblematic of the nature of life that they awaken in us a reason to appreciate every creature on Earth.

Consider some of the values that are commonly attributed to pronghorns. Most people would say that these are elegant animals to view, paint, and photograph; that they are entertaining to hunt; and that for many palates, they are delicious to eat. Indeed, all of the economic returns that flow from admiring, hunting, and eating pronghorns encourage people to protect their populations throughout their range, and that’s surely a good thing. How nice it would be if economic returns could save all the species on Earth in danger of extinction. But most species provide no economic returns. We might well wonder if there could be a value for us in every living thing, “simply for itself,” separate from our practical needs.

What do we learn of the pronghorn itself? First off, the pronghorn is fast, very fast, perhaps the fastest long-distance runner in the world. Pronghorns can sprint at 60 miles per hour. Only African cheetahs sprint faster, but even a cheetah could not keep up with a pronghorn

“Every plant and animal alive today is the forward point in a seamless continuum of life extending back in time through most of Earth’s history. It’s hard to fathom an idea of such magnitude. But it’s true.”



PRONGHORN ARE ONE OF THE FASTEST MAMMALS on the planet, but their speed no longer serves any compelling purpose in this part of North America.

## NPCA@WORK

AS ED MCCORD NOTES, pronghorn in Yellowstone and Grand Teton don’t need to worry about natural predators like cheetahs, but there is a killer they can’t outrun: the automobile. That’s one area where NPCA is making a difference. Thanks to strong advocacy leadership from NPCA’s regional staff in Jackson, the state of Wyoming recently completed two state-of-the-art wildlife overpasses and six wildlife underpasses along Highway 191, where pronghorn and other wildlife had perished in startling numbers. The project is already a great success: Just days after completion of these passes, pronghorn began migrating safely across the highway.

And there’s another threat: the region’s miles of barbed wire and other fencing, which pronghorn can’t jump over. With support provided by Nature Valley, NPCA has worked to alter and remove fences on properties adjacent to Grand Teton and Yellowstone, so pronghorn can spend winter in places like the Dome Mountain Ranch in Paradise Valley. Thanks to state and federal agencies, landowners, volunteers, and other advocacy groups, NPCA is helping connect critical winter range for pronghorn while restoring the species’ ancient long-distance migration.

—Scott Kirkwood

over a distance, and pronghorns easily outrun all their peers in North America mile upon mile. A singular design serves this amazing speed. Pronghorns have a huge heart, trachea, and lungs; a large liver that allows them to store energy and access it quickly; special cartilage padding on their hooves; and much more—all of this quite interesting, yes? And, at last, we are talking about the pronghorn rather than ourselves!

Scientists tell us something about pronghorns that is even more astounding: their exceptional design now serves *no compelling purpose*, because no predator is around to give them a decent chase. Even the gray wolf that was introduced into Yellowstone rarely bothers to chase them. The pronghorn simply doesn’t need to be so fast.

Fired with curiosity, we press on to learn more. Why is the pronghorn so fast? Here we come to an evolutionary story about circumstances that the pronghorn, rather than being set apart, shares with all living things on Earth.

Our story rests on a simple and stirring metaphor. The “life” that all living things possess may be compared to a flame that passes from an individual to its progeny through reproduction. Any “living thing” is an instance in which a single flame of life remained aglow all through its ancestry. The pronghorns that stand

before us were preceded by their parents, those parents by their parents, and so on. There could not be a break in the line. Every forebear throughout the entire line survived to reproduce.

We have learned from the fossil record that the original ancestors of all life on Earth arose as much as 3.8 billion years ago. Consequently, every plant and animal alive today is the forward point in a seamless continuum of life extending back in time through most of Earth’s history. It’s hard to fathom an idea of such magnitude. But it’s true.

The fossil record also reveals that pronghorns shared broad open landscapes during many millions of years on this continent with several species of high-speed cats that disappeared from America in the Pleistocene extinction about 11,000 years ago. That is why the pronghorn is so fast. Within its historic populations, only the individuals that ran the fastest could survive to breed. Thus, the astounding characteristics of every pronghorn today are to be credited to its ancient enemies, just as surely as those enemies carried within them a coordinated ability for speed that we must credit to their ancient prey.

When we ask what the “pronghorn” actually is, we see that it is an artifact of Earth’s history still in play.

All life on Earth bears within its amazing form at every level of detail the working of long-ago ages. Thus, we come to appreciate the pronghorn and all living species for what they are in themselves, if we simply realize the astonishing dimensionality exclusive to each. It is this kind of insight that assets such as our national parks help us to gain if we only pause to observe and to learn.

A moment’s reflection reveals that the loss of any species on Earth is much more significant than we often realize. In each case, it is a loss of a wealth of design details through time and across space in adaptations to their environments—details that are unique and unrepeatable. Even if life is found on another planet somewhere, it will not take the forms that we find here. Countless events have determined the evolutionary paths of each form of life here on Earth. Since these detailed sequences are unique and unrepeatable, no species on Earth could have evolved anywhere else in the universe, and no species can ever occur again once it is gone.

As Thomas Lovejoy explains in the essay “Biological Diversity,” the extinction of a species is a loss to the very foundations of our learning:

*One irreplaceable value of nature is as a living library on which to build the life sciences. Each*

## COUNTLESS EVENTS

determine the evolution of every species on Earth, which means no species can ever occur again, once it is gone.



© MICHAEL DURHAM/MINDEN PICTURES

*species is a unique set of solutions to a specific set of biological problems, equivalent not to a book but to a series of volumes. If we lose a species, we lose that knowledge. Unlike information in books, once the species is gone, all the information goes with it.*

Why do we persist in trimming down this loss to mere practical terms? So many scholars, scientists, and members of the public will tell you privately that that is not the reason they care. When a child, a student, or an adult surrenders, even fleetingly, to the fascination of a living thing, there is something more important in play for our humanity than practical consequences.

E.O. Wilson put his finger on it in his book, *Naturalist*:

*Why do I tell you this little boy's story of medusas, rays, and sea monsters, nearly 60 years after the fact? Because it illustrates, I think, how a naturalist is created. A child comes to the edge of deep water with a mind prepared for wonder.*

And when scientist Cheryl Hayashi, in a vibrant TED Talk, finally distills for us her attraction to spider silk, there is something at work beyond practical applications:

*In addition to . . . applications of spider silks, personally, I find studying spider silks just fascinating in and of itself. I love when I'm in the laboratory a new spider silk sequence comes in. That's just the best. [Laughter.] It's like the spiders are sharing an ancient secret with me, and that's why I'm going to spend the rest of my life studying spider silk.*

In the final analysis, appreciating other forms of life for what they are in themselves is about appreciating honest curiosity and a sense of wonder in the face of creation. What better testimonial could we find for protecting biodiversity in the national parks? We ourselves are the subject of a breathtaking new chapter in the cosmic biography: the emergence of a life form—*Homo sapiens*—able to reflect with insight and wonder upon life itself in all its infinite dimensions. A bat will never know the astonishing thing that it is. Nor will a crow or an ant or a sloth. Humans stand alone among all living things on Earth—and perhaps in the universe—in this gift of being able to appreciate every species for its uniqueness.

Here is a case for the inherent value of living things for us when we pause to see them for the extraordinary marvels of creation that they are. It is a value that is anchored in the magnificent power of human consciousness for reflective appreciation of existence. Such a value of each and every species is measureless for us, and surely if Charles Darwin is right, it is the overriding reason that we all should care so much about their loss. As he wrote of a verdant wood in *The Voyage of the Beagle*:

*It is easy to specify the individual objects of admiration in these grand scenes; but it is not possible to give an adequate idea of the higher feelings of wonder, astonishment, and devotion, which fill and elevate the mind. NP*

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**EDWARD L. MCCORD** is director of programming and special projects at the University Honors College, University of Pittsburgh, and the director of the school's Yellowstone Field Course and the Allen L. Cook Spring Creek Preserve near Laramie, Wyoming. This essay was inspired by his book, *The Value of Species*, published by Yale University Press.

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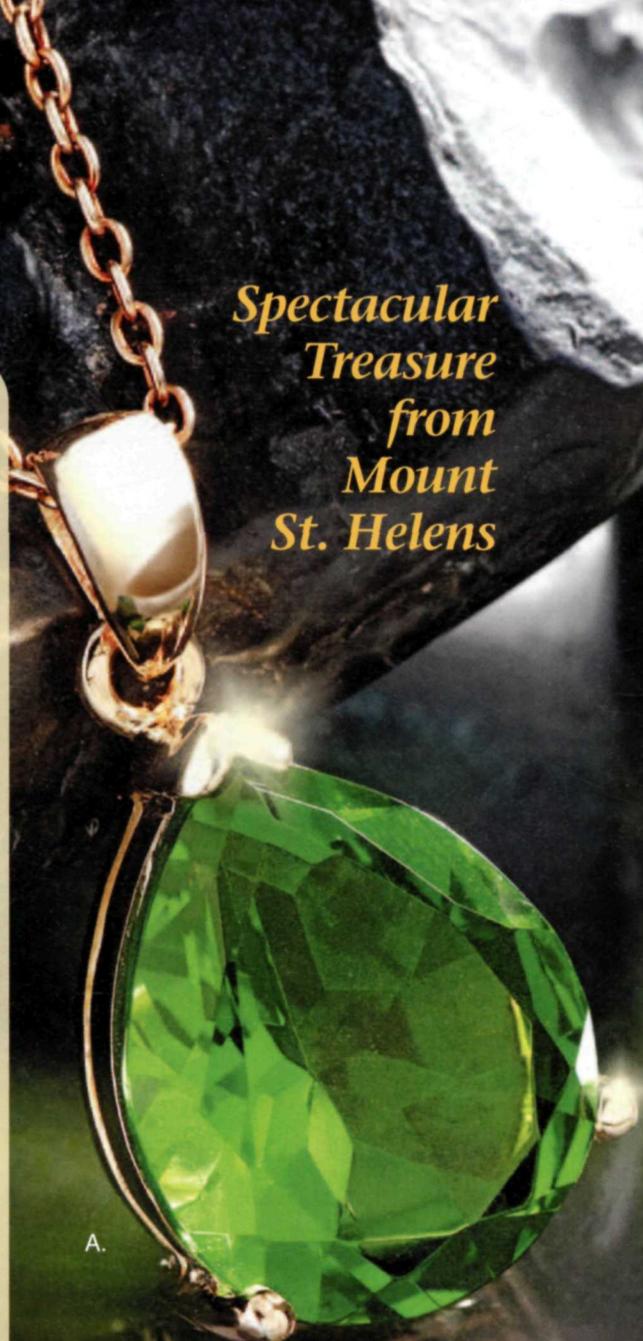
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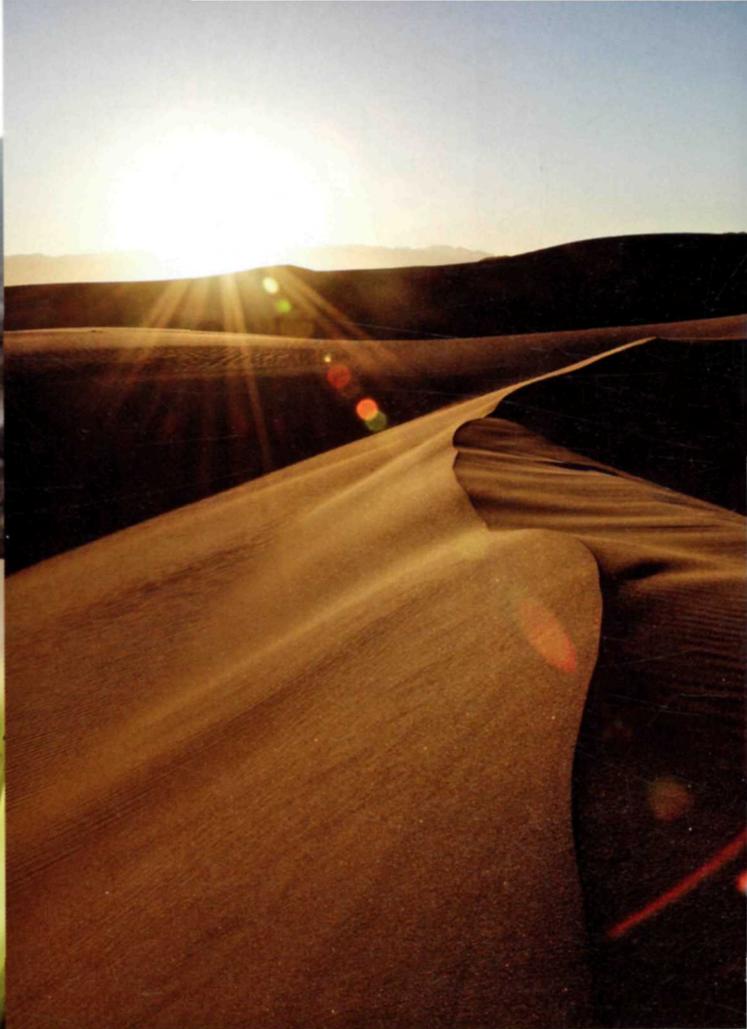


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**DEATH VALLEY** is a land of textures, from dried salt crystals found near Mustard Canyon to the leaves of the yucca plant, the sand dunes at Mesquite Flat, and the rugged mountains that frame the valley.

# SAND & CASTLES

Death Valley comes to life in the middle of a California winter.

BY SCOTT KIRKWOOD  
PHOTOGRAPHS BY DAVID ZENTZ



## It's 5:30 a.m. on the outskirts of Death Valley National Park,

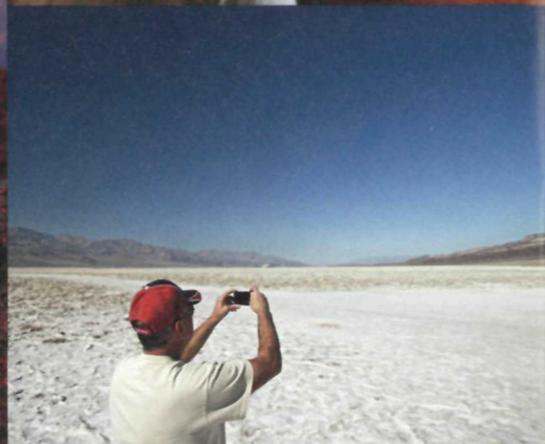
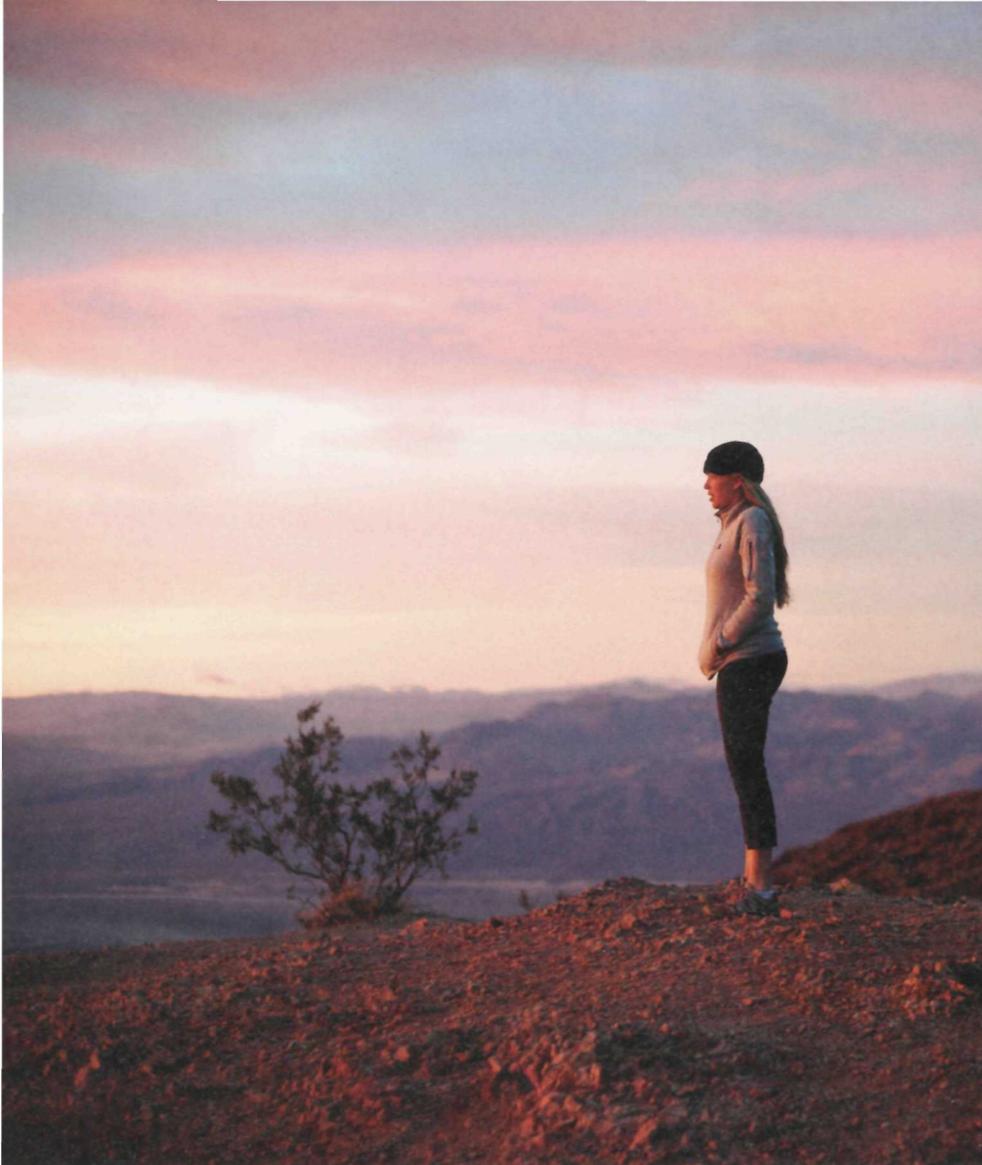
and I'm driving from my motel in the small outpost of Tecopa, bound for Badwater—the lowest, hottest point in North America. As my vehicle climbs the foothills of the Amargosa Range, I realize that the word “death” always grabbed my attention so firmly that the word “valley” never quite registered until now. As this fact sinks in, my attention is divided between the empty black ribbon of pavement winding through desert cliffs before me and the colorful sunrise behind me, prompting a check of the rear-view mirror every few seconds.

Now, before this story goes too far, let's get one thing straight: I'm not a morning person. But after flying west from Washington, D.C., my body is under the mistaken impression that it's nearly 9 a.m. And I see no reason to reset my internal clock; in early December, the sun sets at 5:00 p.m., which means I need every minute of daylight to enjoy what this place has to offer. And considering Death Valley is a staggering 3.3 million acres, it's got quite a lot to offer.

If the vastness of those 3.3 million acres is too difficult to grasp, a sign at the park border puts it in simple terms: “Visitor Center: 50 miles.” During that hour-long drive to the Furnace Creek Visitor

Center, you'll marvel at the idea that people have been in Death Valley since long before the advent of sunscreen, air conditioning, and four-wheel drive. With barren landscapes, whipping winds year-round, and summer temps that exceed 120° F during the day and drop to an equally preposterous 100° F every night, it's mind-numbing to think that tourists ever sought out this place, and even more surprising to learn that the Timbisha Shoshone Indians have lived here for hundreds of years. It's probably less surprising to learn that many early visitors to Death Valley were drawn by promises of gold, silver, lead, and copper. In the 1800s, most of the real treasure was found in the form of borax, which was and still is a key ingredient in detergent and is now used in the creation of semiconductors, telescope components, and kitchen wares like Pyrex measuring cups.

As I arrive at Badwater Basin at 9 a.m., I find a nearly empty parking lot and a few tiny figures wandering through the salt flats in the distance. I can still recall paging through a copy of the *Guinness Book of World Records* as a teenager and coming across a description of Death Valley as one of the hottest places on the Earth and the lowest point in North America. But I'd never thought to ask what accident of topography made it so special. As the wayside exhibit explains, most areas below sea level are covered in water—Badwa-



**THERE'S PLENTY TO DO** in Death Valley, from (clockwise from left) experiencing sunrise at Dante's View, learning about the legends of Scotty's Castle, photographing the lowest point in North America, or just playing on the sand dunes.

ter has earned the claim to fame because it's a low-lying area in a dry, hot desert, where rainwater doesn't stand a chance. An early surveyor mapping the region found that his mule refused to drink from a pool of water; he wrote on his map that the spring had "bad water," and the name stuck. I wander about a mile from the parking lot to find some of that picturesque cracked earth that hasn't been tread upon, snap a few photos, and hop back in the car, bound for the Furnace Creek Visitor Center, the heart of the park.

As I arrive, a ranger is just starting to give a talk called "Death Valley's NASCAR," all about the mysterious rocks on the so-called Racetrack. Rocks that generally range from five to 40 pounds appear to magically move across the landscape, as evidenced by the tracks they leave in the dried mud. The ranger explains that no one is quite sure how it happens, because the phenomenon hasn't been seen by human eyes or captured on camera. But the leading hypothesis suggests that when temperatures drop and moisture gathers on the playa (dry lakebed), ice forms on the rocks' undersides, and strong winds push them along the perfectly smooth surface. The Racetrack is a designated wilderness area, which means there are tight restrictions on the use of remote cameras and other monitoring equipment that might reveal the science behind the magic. And that's how some people like it, the ranger says. I'm a little too bashful to tell him that I'd rather know the truth. But perhaps my trip to the Racetrack, scheduled later in the week, will make me appreciate the mystery of it all.



© KAREN MINDY

## TRAVEL ESSENTIALS

Most visitors fly into Las Vegas McCarran Airport and make the 120-mile drive to Furnace Creek, at the heart of the park, or continue on another 25 miles to Stovepipe Wells, both of which offer food and lodging. (Learn about camping options at [www.nps.gov/deva/planyourvisit/camping.htm](http://www.nps.gov/deva/planyourvisit/camping.htm).) The park is busiest late December through May, when the temperatures are mildest, so book your hotel room well in advance. Death

Valley is enormous, which means you'll want to spend at least four days to do the park justice and to really feel the desert vibe. Beyond Furnace Creek, most of the park's major attractions are separated by one- to two-hour drives, and the park contains only a handful of restaurants. Your best bet is to pack some sandwiches and a few gallons of water, so you can grab lunch on the go and cover more ground. Pick up a schedule of ranger-led events at the Furnace Creek Visitor Center when you arrive; the offerings change weekly, but you can get an idea of what's in store at [www.nps.gov/](http://www.nps.gov/)

[deva/planyourvisit/tours](http://deva/planyourvisit/tours). Furnace Creek offers surprisingly good restaurants including casual dining at the Forty-Niner Cafe, where I enjoyed the wild salmon, and great pizza at the Corkscrew Saloon. If you're looking for fine dining, head to the Wrangler Steakhouse or the Inn at Furnace Creek; try breakfast or cocktails on the patio to take in the ambiance without the sticker shock. Rent a bike next to the general store, and ask about horse rides at the Furnace Creek Stables. Public laundry facilities are available, if you plan to stay a while. Cell-phone service is nonexistent

outside of the park's lodging hubs. If you plan to visit the Racetrack or Eureka Dunes, which require driving on primitive dirt roads, rent a four-wheel-drive vehicle with high clearance in Vegas, or better yet, rent a Jeep from Farabee's in Furnace Creek ([www.farabeesjeeprentals.com](http://www.farabeesjeeprentals.com)) for \$175 a day; the price includes a rescue beacon you can activate in case of emergency, and towing services, which could otherwise run as high as \$1,500 if your trip to the Racetrack doesn't go as planned.

## STORMING THE CASTLE

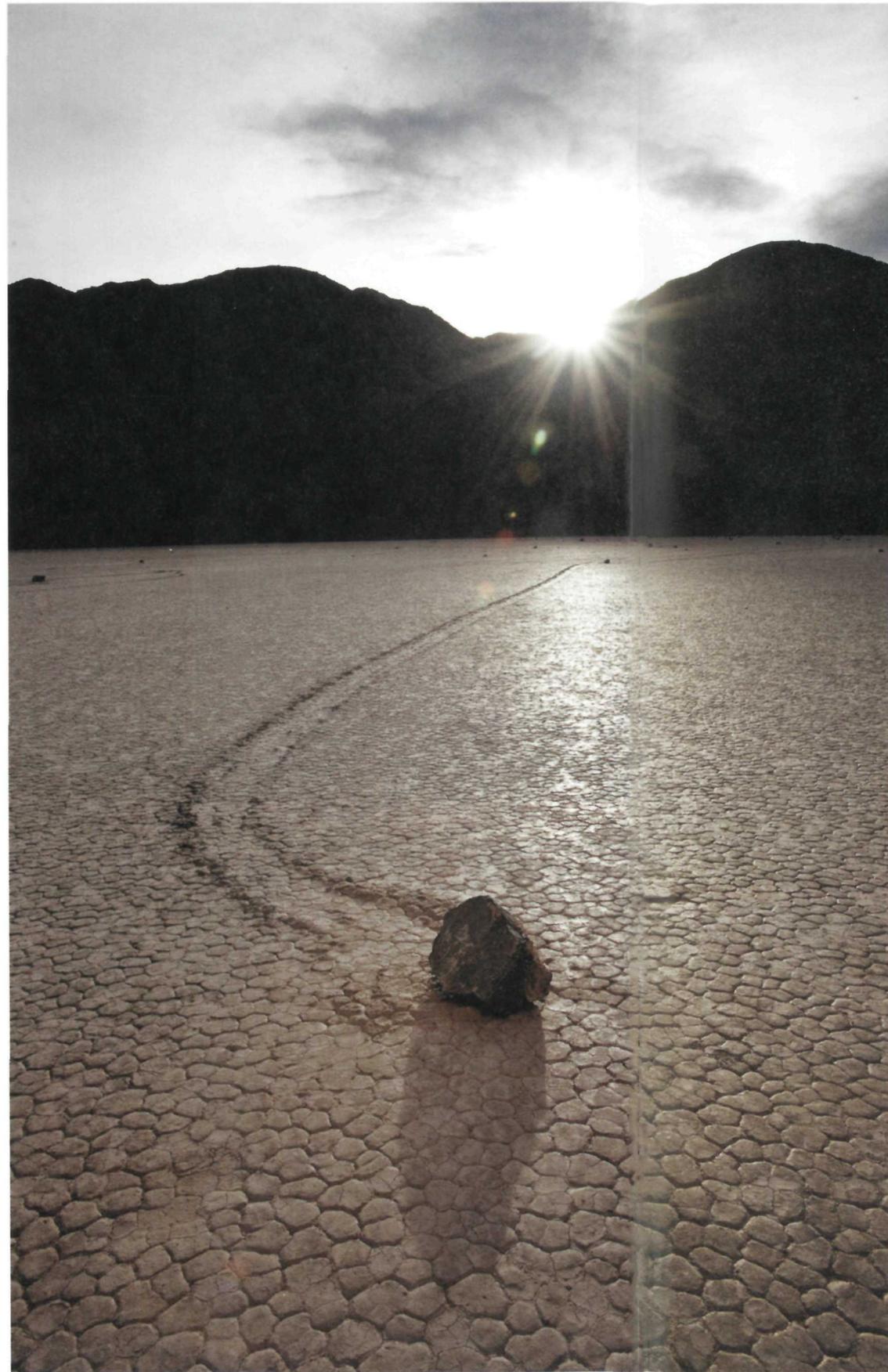
I scarf down a quick sandwich and start the one-hour drive to Scotty's Castle, in the northern portion of the park, in the hope of making the 2:00 p.m. tour. Long drives come with the territory, but the stunning scenery makes it tough to complain, and even during the busy season, you certainly won't encounter traffic jams like those in Yellowstone or Yosemite. I get to the site with plenty of time to wander through the exhibits scattered around the humble visitor center. At 2:00 a young park ranger wearing a pin-striped suit and a classic fedora starts ringing a bell, and the crowd starts to gather. The ranger's Hollywood get-up makes more sense as he leads us into a small courtyard and tells the tall tales surrounding this unlikely mansion in the middle of the desert.

A con man named Walter Scott had spent several years as a stunt rider with Buffalo Bill Cody's Wild West Show, and he never lost his penchant for performing. In the early 1900s, Scott started telling people that he'd discovered gold in Death Valley, and he just needed a few dollars to get it out of the ground. A Chicago millionaire named Albert Johnson took the bait and fronted Scotty thousands of dollars, which he proceeded to spend in exorbitant ways, making a name for himself in the hope of impressing even

more prospective funders. Most of those early investors came to their senses and realized the mine was a hoax, but Johnson held out a little longer until he, too, realized he'd been had. Surprisingly, he didn't care. Johnson was sufficiently entertained by Scotty's tales, and he found the desert air good for his mind and his body; the two became close friends. In 1922, Johnson and his wife began building a mansion in the middle of the desert, and they made Scotty their guest—the perfect entertainer to hold court with celebrities of the day, like Betty Grable, Will Rogers, and Norman Rockwell, all drawn by tales of the unlikely palace born of riches purportedly buried under the desert.

Ubehebe Crater is a short drive from Scotty's Castle, so I head there for sunset. As I get closer to the site, the colors of the earth shift suddenly from brown and gray to the dark black of cinders. A park staffer at the visitor center had told me to be careful about hiking down into the 600-foot-deep crater, because many people underestimate the challenge of climbing back up. So I couch my laziness as wisdom and decide to walk its 1.5-mile circumference instead, which takes about an hour. A few visitors arrive in the parking lot at the crater's edge, snap a few photos, and get on their way, but for the most part, I've got the entire crater to myself. Formed by explosions of steam brought about when hot magma met groundwater, the bowl of earth is pink, gold, gray, and black, and the view changes dramatically with every step, validating my decision to take the circuitous route.

It's already been a long day, but I take a look at the ranger-led programs and see that the park is offering a night hike along the Mesquite Dunes, which seems like a novel way to experience the shifting sands. Some other visitors and I arrive with a few minutes to spare, and find a park ranger talking to two young men in a Jeep, who had apparently ignored the well-advertised rules against driving on the dunes. He issues them a stern warning and mentions a hefty fine, and we realize too late that the ranger isn't leading our hike—our hike has already left. So the five of us set out with flashlights scanning the horizon yelling, "Hello! Hello!" into the darkness, until we hear a "hello" come back in our general direction. We scramble up the dunes and find the rest of the group in time to hear the ranger describe a myth about a net that was used to capture the sun, to pour its light across the galaxies, creating the Milky Way. The ranger's stories are the perfect accompaniment to a quiet evening on the dunes, although we spent a little too much time looking at the stars through her iPad app when I would have preferred looking at the ones in the sky. But it was a great way to spend an evening, nevertheless. So even if there isn't a ranger-led tour offered during your trip, and even if you can't tell the difference between the Big Dipper and the Little Dipper, grab a flashlight, a blanket, and a good friend, and spend an hour or two gazing at the night sky.



**RENT A JEEP FROM FARABEE'S** to visit the Racetrack Playa, where rocks appear to move of their own accord, or rent a bike at Furnace Creek and spend the afternoon pedaling Scotty's Castle Road.

## CLIMBING AND PEDALING

My second day in the park, I decide to dial back the mileage and stick around the Furnace Creek area. During my first visit to the park, years ago, I fell in love with Zabriskie Point, and I'm looking forward to taking in a few more sunrises this time around. Every morning, the photographers arrive at dawn, climbing out of their vehicles with tripods slung over their shoulders, headed for the main viewing platform. The pastel yellow and chocolate-brown peaks of Zabriskie Point are like marble cake batter, something born from the imagination of an upstart American artist who's clearly had enough of those stuffy European landscape painters with their chiseled granite mountains, so perfectly predictable.

Sunrise and sunset are the perfect time to visit, because light and shadow constantly change the landscape, like fingers reaching toward you, earth grasping Earth. As the sunlight obliterates shadow, visitors quickly head back to their cars and the area is nearly my own, so I walk along the ridges and experience it all up close. The dirt crumbles under my feet, like brown sugar that had been left in the cupboard a little too long. I sit for a while and eat the breakfast I've stashed in my pocket, taking in the silence and beauty of the landscape, all alone.

I make the 10-minute drive back to Furnace Creek to rent a bike from the general store for half a day, for \$34. In a few minutes I'm pedaling toward Twenty Mule Team Canyon, just beyond Zabriskie. Most people drive through the canyon on four wheels, but two are clearly superior. It's a long, gradual uphill, but when the pavement

ends, a winding dirt road takes me through a scene from Candyland: mounds of butterscotch pudding to my left, piles of cocoa and cinnamon to my right. I stop occasionally to hike to some good viewpoints, but I'm sure to get back on the bike before my aging legs stiffen up. After about an hour of wandering, I head out of the canyon and enjoy the downhill return trip, which literally requires one pedal stroke for each of the six miles back to Furnace Creek.

## THE RACETRACK

On my third day in the park, I join Mike Cipra, a Park Service employee who used to work at NPCA. Our plan is to meet at 9 a.m. to make the two-hour drive to the Racetrack, to check out those magical rocks. (Since I'm still on East Coast time, I take advantage of the "late" start to catch another sunrise in Twenty Mule Canyon.) As we drive past Ubehebe Crater and onto the 27-mile dirt road that leads to the Racetrack, we're fortunate to find a road crew just ahead of us, grading the washboard road and making it as smooth as it will ever be, which isn't saying much. I'm reminded that even though many of Death Valley's sites seem remote and primitive, the

## SIDE TRIP

**MANZANAR NATIONAL HISTORIC SITE** is well worth the two-hour drive west from Furnace Creek. Here you'll learn how 10,000 Japanese-Americans (most of them American citizens) were taken from their homes shortly after the bombing of Pearl Harbor, for fear that they would sympathize with the enemy during World War II. The camps functioned like a small town, with schools, a small newspaper, a hospital, and orchards. Its residents grew fruits and vegetables, raised

chickens, made camouflage netting for the U.S. military, and served as doctors, nurses, and firefighters; their meager wages fueled a thriving economy—Bank of America even set up a branch. Although they were imprisoned for no justifiable reason, the residents there reacted with tremendous dignity and made the most of the situation. It's a gripping story best told in the harsh landscape where it unfolded.

I spent about three

hours at the park, touring the visitor center, watching a touching interpretive film narrated by former residents of the camp, and driving the 3.2-mile auto tour of the buildings' ruins, the park cemetery, and newly rediscovered rock gardens.

**A STRING OF ORIGAMI CRANES** left as an offering for those buried at Manzanar's cemetery.

the park cemetery, and newly rediscovered rock gardens.

Only three of the site's original 800 buildings still remain, one of which is the camp's auditorium and gymnasium, where public gatherings were held. The building underwent extensive renovations and upgrades to become the park's visitor center in 2004 and now contains some of the most modern, compelling displays you'll see in any national park. The park has also re-created two of the buildings that housed residents—one to represent the sparse conditions of 1942, and another to represent conditions in 1945, when construction materials were slightly more substantial and residents had more modern conveniences, like small appliances purchased from the Sears, Roebuck catalog.

Manzanar is relatively isolated, but you can purchase food and gas in the small town of Lone Pine and learn about outdoor activities at the city's interagency visitor center staffed by the Forest Service, Bureau of Land Management, Park Service, and several California agencies.



© SCOTT KIRKWOOD



**A COYOTE SURVEYS THE LANDSCAPE** along Badwater Road, which runs north and south, parallel to the Panamint Mountains (top) and the Amargosa Range, including iconic Zabriskie Point (right).



park's size and extreme conditions mean that it takes a lot of effort to keep it in the shape it's in.

As we rise through the mountain landscape, I notice small exotic plants dotting the hillside that turn out to be Joshua trees; the low rainfall in the region prevents them from reaching the iconic shape we're used to seeing on desert landscapes. We finally arrive at the Racetrack playa, which stretches three miles long and two miles wide. We jump out of our truck and walk toward the huge wall of boulders that have coughed up smaller rocks over the course of years—dozens lie scattered at the base, most with those telltale trails behind them. It's colder here, at altitude, and the wind is gusting slightly. I snap some photos in the harsh midday sun and imagine what it would be like to spend the night at nearby Homestake Dry Camp and stand among the rocks at the magical hours of dusk and dawn.

We head back to the north end of the playa to climb on the Grandstand, a cleverly named collection of huge quartz manzanite that rises out of the ground, like a mythical city in the

deserts of the Middle East. Mike points out the Ubehebe Point trailhead, a few dozen rocks arranged in two lines, which funnel hikers toward the mountain's base. The six-mile round-trip hike gains altitude quickly, turning Mike's white pickup truck into a Matchbox vehicle in a few minutes. One very quick hour later, we're standing on the peak, looking at the Sierras to the west and the Panamint Range to the east, the cold wind whipping at us from every direction. For the first time I can see the valley that earned the park its name, and I realize how far I am from Badwater, in nearly every sense.

I love traveling alone, for the freedom and the quiet and the unique perspective it brings, especially here, in Death Valley's spare, unforgiving landscape. But there's something to be said for the company of a sleepy crowd of photographers awaiting a sunrise, a collection of strangers gathered for a moonlit hike, and a friend at your side, to share the pleasure of the view at the top of a mountain. **NP**

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**SCOTT KIRKWOOD** is the editor in chief of *National Parks* magazine.

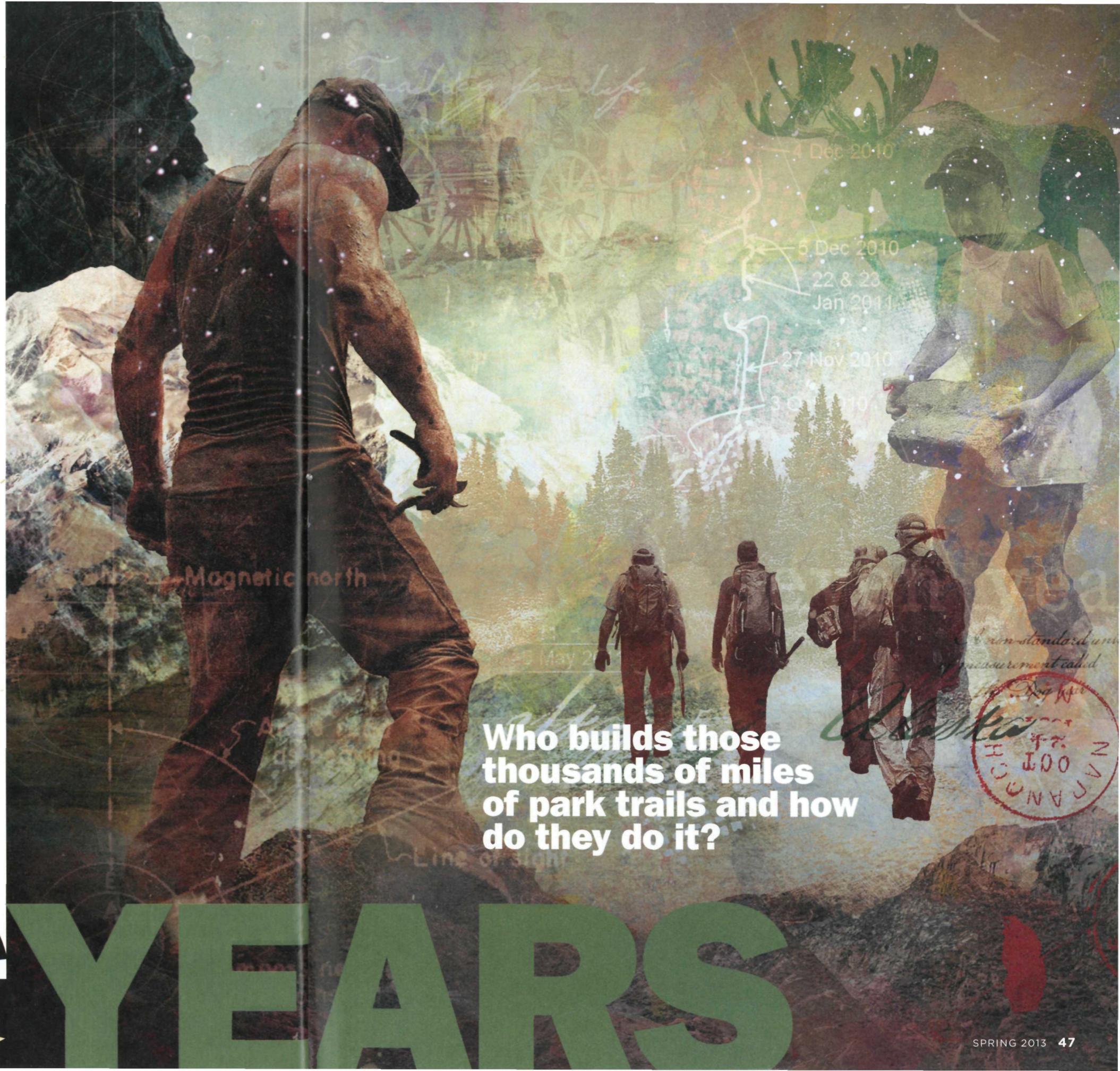


**To a hiker, a trail is a possibility. To a bear, a trail is a path of least resistance. To a child, a trail is an adventure. To a runner, a trail is a workout. To a historian, a trail is a story. And to a traildog, a trail is paycheck, commute, office, passion. A trail is the whole, entire point.**

If you've hiked in a national park, you may have seen us. We're spread along the trail working on rock steps, tools lying just out of your way. ("What's that for?" you've wondered.) We hike past you in a line, inching by politely then blazing out of sight. Or you pass us. We're hunched on rocks trailside, inhaling our lunches in a sweaty heap. Maybe you've seen us at the trailhead, climbing out of a crew cab, sleepy in the mornings, stretching or piling in at the end of the day, tossing tools into the bed with a metal clang. Sometimes we wear hard hats, but not always. We're in worn Carhartts, tattered fleece, grimy T-shirts, a uniform when it's required. Leather work boots, laces wound tight around the top. Even if you haven't seen us, we've been there. We built this turnpike, that boardwalk. We sawed out windfall that blocked the trail. We cleared drains of rocks so water could flow. So the trails will last. So you can hike. We're traildogs.

You don't become a traildog overnight. To earn the title, you have to work on a professional trail crew, and you have to work on one for a long time. Two summers between college semesters isn't enough. Four years vol-

**BY CHRISTINE BYL  
ILLUSTRATIONS BY DUNG HOANG**



**Who builds those thousands of miles of park trails and how do they do it?**

# DOG YEARS



*Mount  
 Edison*



# PULASKI

MANUFACTURERS

*Chains, Scythes, Edge Tools, Mils*

AND WOODS

*Harvest* *grain*  
 WENCE, LACINA  
 SEPTEMBER



# Park Service traildogs often return again and again to the park they fell in love with, sometimes for a lifetime.

unteering with the Student Conservation Association won't do it. Years of weeklong Sierra Club work trips—no deal. By strictest measures, to become a traildog, you have to put in seven seasons on a professional trail crew (a season is at least four months). Any less than this tenure earns you only the title “hobbyist.” Once you finish your seventh season—hang the last pulaski in the tool shed, turn in your keys to the admin ladies, give final high-fives to your crewmates, whose wrists and knees are as sore as yours and who are also thinking about ski season or a trip to Thailand or a month of late mornings reading in bed—only then do you finally “get your dog year.”

Trail work happens all over the country: city parks and nature preserves, bike paths and interpretive trails. But national parks are prime time for traildogs. It's easy to see why: The Park Service manages around 17,000 miles of trail across the country, is renowned for its trail crew lineage, and typically pays some of the highest wages one could hope to labor for in the backcountry. Seven years weeds out hobbyists, who are pulled from fieldwork by grad school

or “regular” jobs or the (wise) realization that they don't actually want to swing a tool for another season. But when we do attain our dog year, Park Service traildogs often return again and again to the park they fell in love with, sometimes for a lifetime—a seasonal career. Case in point: I spent my first six seasons in Montana's Glacier National Park, where the crew was full of “lifers,” at least six of whom have done trail work for 15 to 30 years.

I finally got my own dog year in Denali National Park, where after my formative years in Glacier—a premier hiking park whose crews cover long miles and spend 10-day hitches breaking rocks and clearing drains—it was time to try something new. Going in, I knew that Alaska was different—huge tracts of land and small visitation, trail systems much less developed than parks in the Lower 48. I knew that Denali's trails were mostly in the front-country, so the crew worked near roads. No more stints like my Glacier days, where packers brought their gear 15 miles into the backcountry on mule strings. When I met the Denali crew the first day in the shop, another difference was clear: No lifers. Many were shiny new, just out of the local high school, or up to Alaska on a lark. Some had worked trails for a year or two, but even the trails foreman, rolled over from the road crew, had worked strictly on trails for only a few seasons. His quick move into a supervisory role spoke highly of his drive and skill set, but he'd skipped the formative years hitched out in a moldy tent, working 80-hour weeks in the rain. By the strange, proud logic of the subculture, he'd never be more than hobbyist.

Aric Baldwin was all traildog, though. Leaning against the break room wall that first day, he was a new-hire, up for his first Denali season, like me. If you didn't guess

his dog status looking at him—grubby uniform shirts with the old-school cursive nametag and a beat-up backpack—you'd know after talking shop, when it became clear he'd earned nearly every trail badge (build bridge, drive loader, blast snowdrift, dig drains, load mules). An East Coast native, at 16 he'd volunteered on a trail project as a Boy Scout in New Mexico, “which got trails in my blood, as they say.” Immediately hooked on the trails vibe, Aric spent six seasons in Rocky before moving up to Denali to earn his own dog year, congruent with mine. Over that season, my husband Gabe (a traildog, too, of course) and I bonded with Aric over many things—an itch for mountain travel, a love of sled dogs, a competitive Scrabble streak—but surely a pillar of our friendship was our traildog pack status—the shared, almost pheromonal quality you can sniff out across a room: spruce pitch, moldy rubber, chainsaw gas, peanut butter, sweat. We loved our jobs and felt lucky to make a living behind the scenes in a national park, clearing blowdown and building bridges and digging knee-deep in muck.

## How you build a trail depends on the ground it's in

and who's going to use it. The first step is deciding where it goes. Often, an alignment is already on the ground, lined out by a foreman with survey tape in the trees, and the crew just has to dig. Other times, we crew leaders do the ground-pounding and map-reading, laying out the season's work, a pin-flagged line snaking ahead of the crew. When it comes to construction, site predicts tactics. A wheelchair-accessible interpretive trail on permafrost tundra is quite different from a narrow switch-backed trail to an



alpine pass. For the accessible trail, you'd use a Bobcat to remove tundra and gravel to replace it, plate compactors to harden the surface and geotextile fabric laid beneath the whole mass to prevent it from sinking into mud. Up in the alpine, you'd use hand tools to grub the trail tread into sloping ground, a rock wall here or there to hold up scree, maybe a foot-log to span a narrow creek.

Over years, traildogs learn that different tasks demand different tacks. There are varied methods of using the same tools, ways to pace yourself depending on the job at hand. How full to fill your buckets so you can haul gravel all day, how often to stretch when backing a Bobcat so your muscles don't

seize from craning your neck. Some constants persist in most any trail scenario, the tools you reach for again and again: shovel, biceps, pulaski, quads, work boots, brains, abs, chainsaw. And no matter what, you can always, always use grit, dirty jokes, a ready laugh, and a huge lunch.

After five good years building trails together in Denali, Aric, Gabe, and I moved in new directions, guided only by our minor professional addiction to trail work. Gabe and I stayed in the Denali area and started our own business doing trail design and construction across the state, a challenge we felt ready for. No more green and gray uniforms, timesheets, or crews. Now our main contact with the Park Service is at

statewide conferences or the occasional training. Aric, on the other hand, moved to Skagway, Alaska, to become the trails foreman at Klondike Gold Rush National Park.

In some ways, our trails paths could not be more different. Private sector vs. agency. Mainland Alaska vs. Southeast. Layout and design vs. historic reconstruction. We envy Aric his equipment budget, his paid sick leave, the fun of leading a crew; he envies us our flexible schedule, the diversity of our projects, the absence of federal paperwork. Yet on the ground, we share what we always have, the principles that bonded us in the first place: Work until you drop, and then a little longer. It's easier to beg forgiveness than get permis-

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sion. Keep your saw chain sharp.

In a way, it's odd that Aric migrated from Denali (third largest park in the state, no less the country) to tiny Klondike (at 12,996 acres, smaller than Manhattan), but when you consider the focus of the park, it makes sense. Klondike commemorates the eponymous Gold Rush of 1897–98, primarily through preservation of the Chilkoot Trail, named for the Tlingit tribe that pioneered this trade route. The American portion of the trail climbs 16 miles to Chilkoot Pass, where it crosses the Canadian border and descends into the Yukon. Klondike is one of the few parks in the system where a trail is the major focus—not a leg stretch off the road or a diversion from the visitor center but a destination in itself. Hiking trail as centerpiece: For a traildog, that's as good as it gets.

But the Chilkoot is not just recreation, it's history; while Aric's crew repairs damage, they're also curating an artifact. When the gold miners first "upgraded" the Chilkoot Trail to get themselves to the goldfields, efforts were slapdash, which makes sense; the word "rush" does not suggest impeccable planning. Despite the often poorly sited trail, reroutes to better ground are not an option because of the park's historical mission. Aric says, "Whenever possible we use turn-of-the-century methods to maintain the historical landscape, which in itself is a big draw to people who hike the trail." In this, the spirit of the Gold Rush remains intact; he even gives the prospectors the benefit of the doubt: "I like to think that if given more time or forethought, they would have used these

methods to create the trail in 1898." (Read: If they weren't in such a rush to get rich, they would have built great bridges, too.)

Aric is lucky. Most promotions to foreman mean that desk time supplants field work, anathema to traildogs. But Klondike's size and its small crew keep Aric's hands in the dirt. "We're backcountry-oriented, and we hike over 400 miles a season," he says. "I love being out for eight days at a time, where you really get into a groove with the trail, weather, crew."

These days, my crew is Gabe and me. (We take turns being the boss, because neither of us likes being told what to do, especially me.) We get to do a little of everything, from rock work to foot bridges to chainsaw work, but we specialize in trail prescription (what's wrong and how

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**We have hand signals for backing vehicles, cleaning up the work site, picking up the pace, and “here comes the boss.”**

to fix it) and trail design and layout (where to put it if it can't be fixed), tasks perfectly suited to a pair tromping through brush and tundra. While Aric is busy maintaining history, Gabe and I often get hired to help an agency with a trail that has been damaged beyond repair. It's incredibly satisfying to design new alignment, to find the very best solution. But though I love my job, my business, and my (part-time) boss, sometimes I miss the old days, when I'd hit the trail with five, seven, 12 other traildogs, in a line with tools over shoulder, hiking on each other's heels, no one wanting to bring up the rear (which smells like an outhouse). I miss the large-scale havoc we could wreak—the massive piles of brush, the yards of gravel, the hundreds of feet of finished trail, the epic practical jokes—and the PBRs on the porch at 5:31. I'm glad Aric is still with the Park Service, lining out his crew, measuring twice, cutting once. Keeping it in the family.

**Like all pack animals,** traildogs have elaborate ways of communicating. There are probably 20 versions of the hand-slap/fist-bump, the secret crew handshakes that can mean “hey there,” “nice work,” “move it,” or “check you later.” We have hand signals for backing vehicles, cleaning up the work site, picking up the pace, and “here comes the boss.” Stories we tell and retell, code words



only we know. We have raised eyebrows, pursed lips, finger gestures (obscene and otherwise); they communicate volumes.

With 800 miles between our best traildog pal and us, subtle physical messaging is more difficult. Still, when we talk to Aric on the phone, after updates on home, family, dogs (“Did you pour your slab? How did the garden do? Did your mom have a good visit?”), we always get around to work. Aric wants to hear how thick the brush was on that state park job, if we finished close enough to our bid to make any money. (Yes and no.) Does he dig the yellow cedar bridge stringers he ordered? (Yes.) Did they get snow at Sheep Camp? (No.) We talk shop (budgets axed, trails flooded), confirm rumors (did you hear that so-and-so quit and bought a sailboat?), and prod each other for the details of our modest successes. We wish luck with next week's

project and hope for good weather, no backaches, a day where things go smoothly. When we hang up, I can hear a fist bump in his voice.

In the end, no matter where trail work happens—Denali, Glacier, Klondike, Rocky—one constant remains: We work our asses off for something we love, and always, we laugh. We're blue-collar craftsmen, woodsy laborers, industrial athletes, as proud of our subculture as any ethnicity or sports fan. A pack, a gang, an unassailable tribe. Seven years is all it takes, and after that, maybe, a lifetime. **NP**

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**CHRISTINE BYL** returns to fieldwork this spring for her 17th season as a traildog. Her first book, *Dirt Work: An Education in the Woods*, details her experiences working on trails in Montana and Alaska and will be published by Beacon Press in April.

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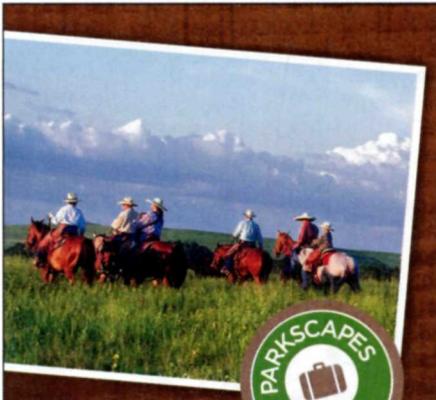
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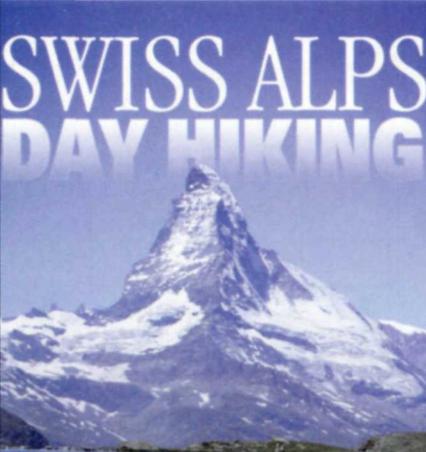


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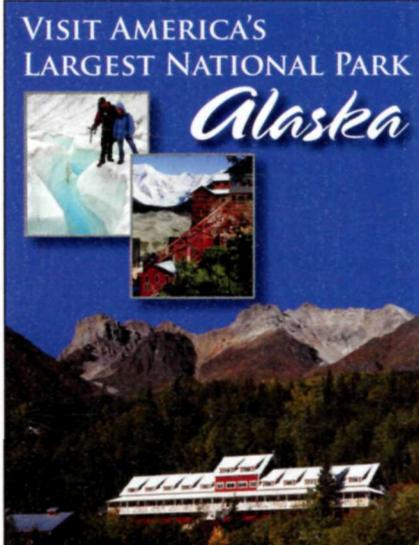
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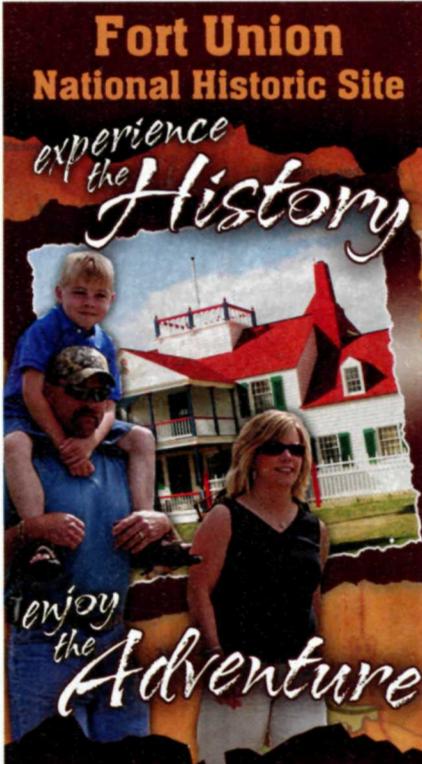
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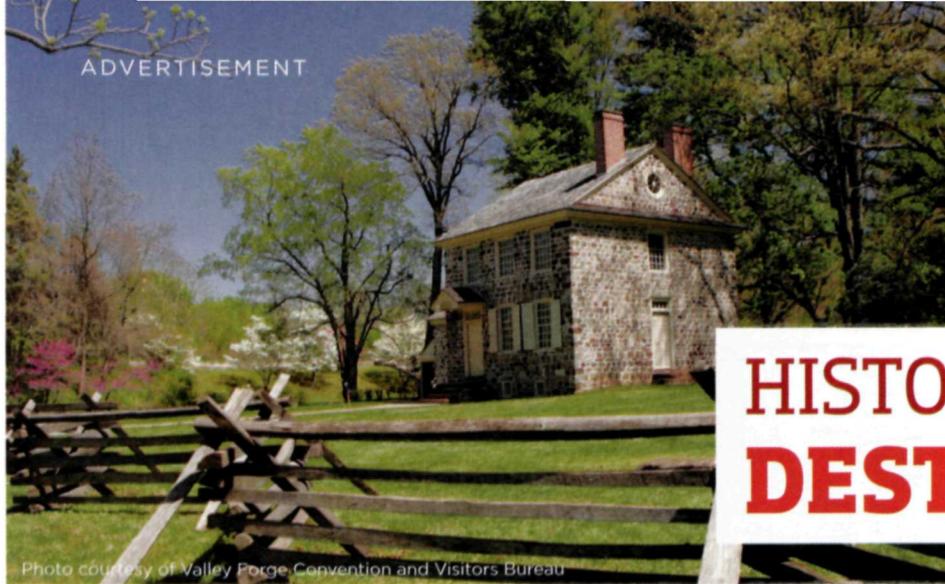


Photo courtesy of Valley Forge Convention and Visitors Bureau

## HISTORIC TRAVEL DESTINATIONS

A recreation of General Washington's headquarters at Valley Forge National Historical Park

Beyond the glowing screens and four walls that surround you is a world filled with magnificent splendor. Whether you're in need of a romantic getaway or in the mood for a memory-making family jaunt, grab your loved ones, load up the car, and head out to one—if not all—of these exquisite historical, American destinations.

### PRESERVING THE TRUTH

**Valley Forge National Historical Park guide George Matlack hates Wikipedia. He's not too fond of your sixth grade history book, either.**

Preserving Valley Forge goes beyond caring for the Colonial miscellany found on the 3,500-acre National Park. It includes an on-going commitment to accuracy, a task taken up by Matlack and his colleagues as they welcome—and educate—the 1.2 million visitors who come to this corner of Montgomery County, Pennsylvania, every year.

"In presenting the story of the important role Valley Forge played in the development of the Continental Army and the Revolutionary War, we encounter an awful lot of misperceptions," Matlack says. "There are grains of truth within them, but they're surrounded by a lot of myth." For example, "The most common images of Valley Forge," says Matlack, "include barefoot soldiers huddling around a meager campfire, clothed in tatters, faces drawn with starvation. And snow. Lots and lots of snow."

As Matlack explains, "We're geographically too close to the Atlantic Ocean and its relative warm temperatures to get the blinding blizzards depicted in school-kids' history books." In truth, "Transportation became a slog as the rutty cow paths that passed for roadways turned to muck," says Matlack. "Rain made supply lines difficult to maintain."

#### No Battlefield

Valley Forge visitors also ask about graves or markers but as Matlack explains, "Valley Forge was not a battlefield." During the 1777–1778 winter, British troops had ensconced themselves in Philadelphia, where officers enjoyed the warmth of occupied homes, while the Continental soldiers hunkered down in Valley Forge. By design, much time passed without a shot ever being fired in anger there.

#### Maintaining Balance

Today, Valley Forge National Historical Park strives to preserve its history, but also provide engaging and involving programs. Yearly, for example, the Park fetes George Washington on his birthday with singing and cake. And each spring, the Park hosts a five-mile Revolutionary Run. Matlack reflects on wanting to bring history to life. "The reality of the 1777–1778 encampment goes far beyond the perceptions lodged in the minds of the public," he says.

Paul Decker, president of the Valley Forge Convention and Visitors Bureau, says "Visitors deserve nothing less than absolute authenticity in the story they take home from

Valley Forge." Clearly, the Park staff are dedicated to 'keeping it real.'

For more information on Valley Forge National Historical Park and its programs and events, visit [www.valleyforge.org](http://www.valleyforge.org) before cracking open your kid's history book.



Photo by Wade Lawrence

Drayton Hall

### DRAYTON HALL, SOUTH CAROLINA A majestic relic of the south

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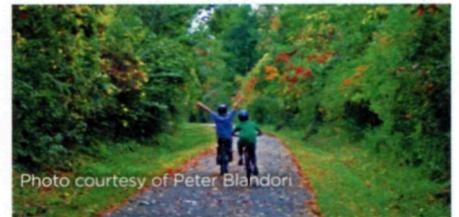
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South Carolina Just right.

historic grounds present a timeline of change and continuity in the American South.

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A National Historic Landmark and a National Trust Historic Site, Drayton Hall offers the "Connections" Program: From Africa to America, an interactive landscape tour on DVD, as well as self-paced nature walks, quiet reflection at the 18th-century African-American cemetery, and an artisan-inspired museum shop. Enjoy our online tour and interactive map at [www.draytonhall.org](http://www.draytonhall.org).



Harlem Valley Rail Trail

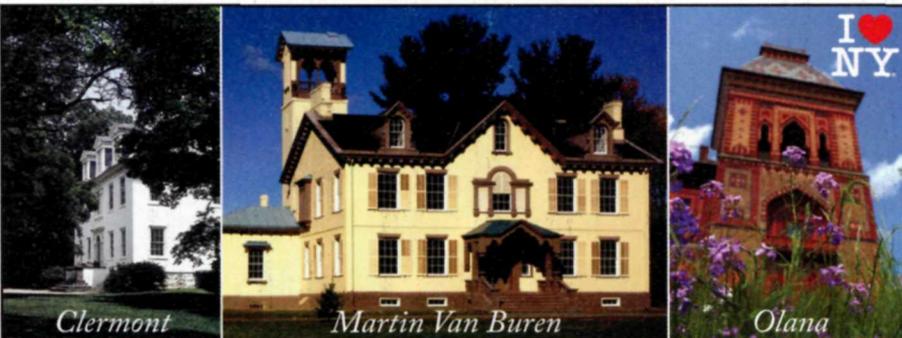
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Courtyard of Frank Lloyd Wright's Taliesin

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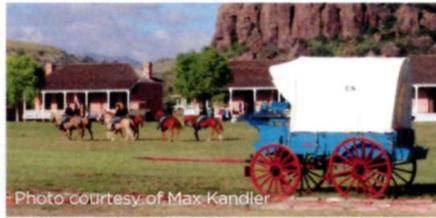


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The annual Fort Festival at Fort Davis National Historic Site

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Fonthill Castle

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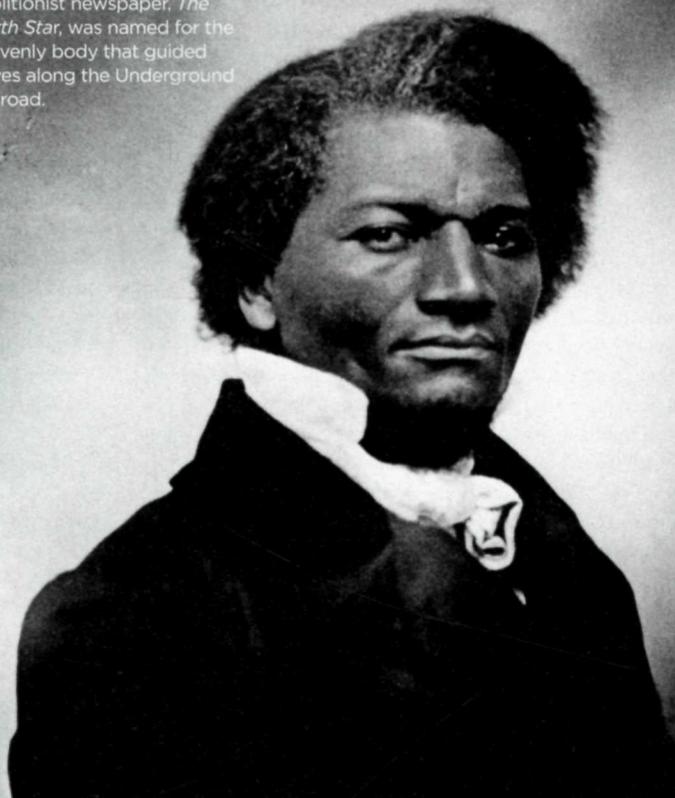
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**FREDERICK DOUGLASS'S** abolitionist newspaper, *The North Star*, was named for the heavenly body that guided slaves along the Underground Railroad.



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## Renaissance Man

Frederick Douglass's home tells the story of a man who overcame enormous obstacles and paved the way for others to do the same.

**T**AKE THE GREEN LINE subway train to Anacostia, in the Southeast quadrant of Washington, D.C. Walk past the Thurgood Marshall Academy on Martin Luther King Jr. Avenue., past the Baptist churches, the barber shops, and the colorful row houses, and you'll find a house perched high on a hilltop. The man who lived in this house launched a civil-rights movement long before Marshall and MLK had landmarks named after them, long before the term "civil rights" even existed.

Walk into the visitor center at Frederick Douglass National Historic Site, just steps from the Douglass home, and you'll hear a park volunteer repeat the words highlighted in the park's short film: "Agitate. Agitate. Agitate," she says. "What does the agitator in a washing machine do?" the volunteer asks the group of visitors, mostly children. "It moves things around, it stirs the pot, right? That's what Frederick Douglass did." And he encouraged others to follow his lead, amassing an enormous list of achievements for a black man born in the early 19th century—or, in fact, for any person of any race, born in any era.

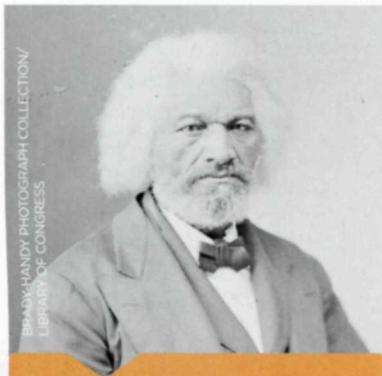
Frederick Bailey was born into slavery on a farm outside Easton, Maryland, in 1818. (After escaping from slavery in 1838, he would change his name to Douglass, to avoid being recaptured.) When he was only 8 years old, his slave master's wife taught him to read, using the Bible—a move that could have landed her in prison. When she was forced to stop, a young Douglass tricked other children into teaching him one letter of the alphabet at a time, according to Braden Paynter, an interpretive ranger at the park.

"Words were the lever that Douglass used to change the world," says Paynter. "And he was always making arguments. In fact, this house is an argument. It says, 'I am a gentleman, and you must treat me as one.'"

As visitors entered the home, they were taken into the living room, which still contains busts common to Victorian homes of the time. The wallpaper features colorful tropical plants, a symbol of Douglass's work as the U.S. minister to Haiti under the Benjamin Harrison Administration. To the right of the entrance is the sitting room, where Douglass would teach his grandchildren history lessons or show them how to

play the violin. Beyond the living room is the study, where he would spend up to five hours a day paging through one of the thousands of books he owned or drafting speeches and correspondence with friends and associates, including Susan B. Anthony, Ida B. Wells, and Mark Twain.

How did Douglass rise from a slave to a member of Washington's elite? When he was 20 years old, he borrowed papers from a free black sailor and escaped from slavery, moving to New York, then New Bedford, Massachusetts. He soon befriended William Lloyd Garrison and other key figures in the abolitionist movement, who urged him to share his own experiences. Douglass's stirring speeches became a powerful tool in the battle against slavery, and, ultimately, one of the chief ways



#### PICTURE PERFECT

**Frederick Douglass** believed white painters in the 1800s tended to distort Negro features, so he preferred to have his likeness taken with a camera—a fact that made him the most photographed American of the 19th century.

## “Words were the lever that Douglass used to change the world.”

he would earn a living. In fact, Douglass was such a skilled speaker that some people began to doubt he was a fugitive slave. To prove them wrong, he wrote his first autobiography in 1845, *The Narrative of the Life of Frederick Douglass*, in which he related his early years, including his original name and his owner's name; the move raised his public profile even more, and put his freedom in jeopardy once again.

To avoid being recaptured, Douglass fled to England, Scotland, and Ireland. British supporters were so impressed with Douglass that they purchased his freedom from his owners for \$711. Douglass returned to the United States a free man and settled in Rochester, New York, a hotbed of the abolitionist and women's rights movements.

Soon Douglass began advocating for political activism, using tactics that would gain popularity in the civil rights movement 100 years later. At one point in the early 1840s, he staged a one-man sit-in on a segregated train car in Massachusetts, which drew wide public attention. When the Supreme Court ruled in 1857 that fugitive slaves could be captured in a free state, returned, and enslaved once again, Douglass even considered resorting to violence; just before the Civil War, he thought about leaving the country for good.

But eventually, he saw the Civil War as a necessary evil that would bathe the nation in blood that might cleanse it of its sins. Douglass tried

to persuade President Lincoln of the moral imperative of ending slavery, and he was successful.

“In 1864, at Lincoln's second inaugural, he says, ‘Every drop of blood drawn with the lash shall be paid by another drawn with the sword, as was said three thousand years ago, so still it must be said, the judgments of the Lord are true and righteous altogether,’” says Paynter. “That's Douglass starting to get to Lincoln, who eventually realizes the need to link slavery and the war's outcome.”

After the Civil War ended and slavery was abolished, Douglass moved to the home in Washington, D.C., where he would serve as the U.S. Marshal for the District of Columbia and the District's Recorder of Deeds.

Douglass died on February 20, 1895, at the age of 77. But, his words live on as a testament to his work:

“If there is no struggle, there is no progress. Those who profess to favor freedom and yet deprecate agitation, are men who want crops without plowing up the ground, they want the rain without thunder and lightning. They want the ocean without the awful roar of its many waters. This struggle may be a moral one, or it may be a physical one, and it may be both... but it must be a struggle. Power concedes nothing without a demand. It never did and it never will.” **NP**

**SCOTT KIRKWOOD** is the editor in chief of *National Parks* magazine.



# That Was Then

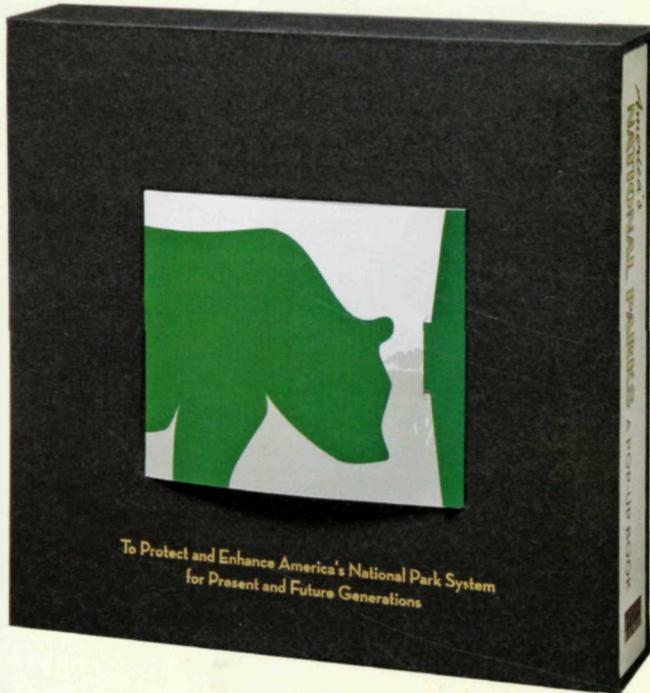
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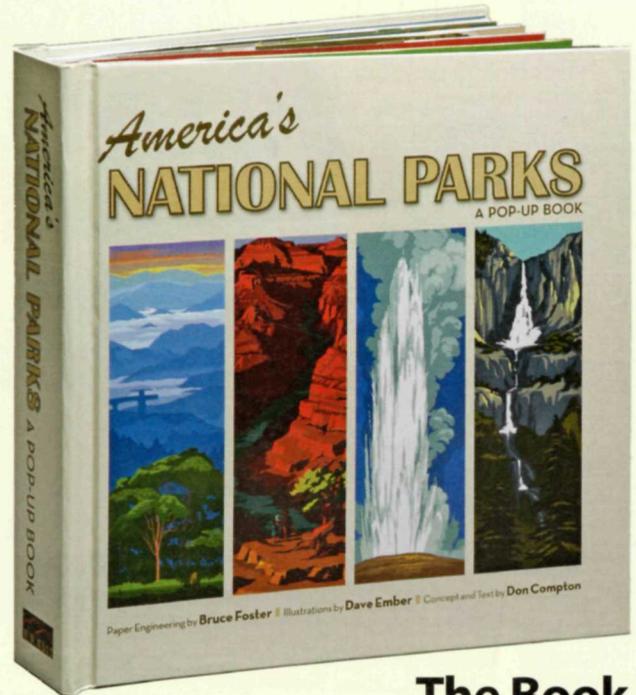
**WOMEN GOLFING** with black golf balls, a popular pastime at New Mexico's White Sands National Monument in 1936.

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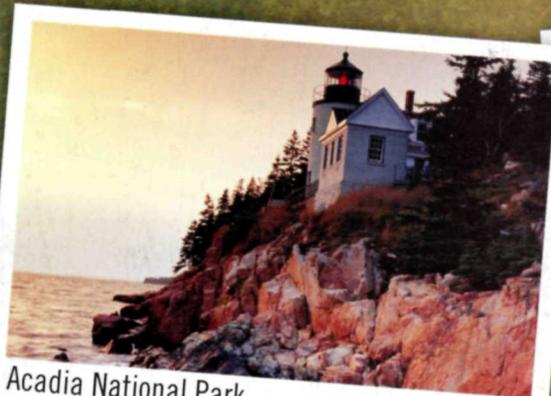
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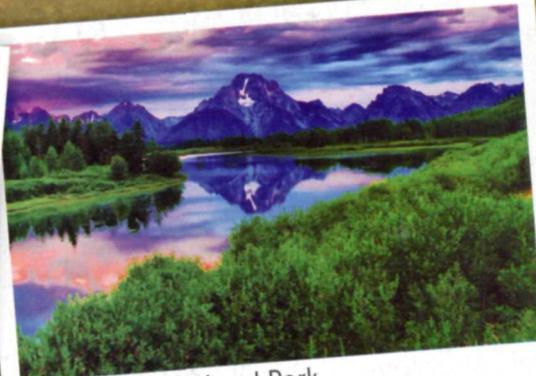
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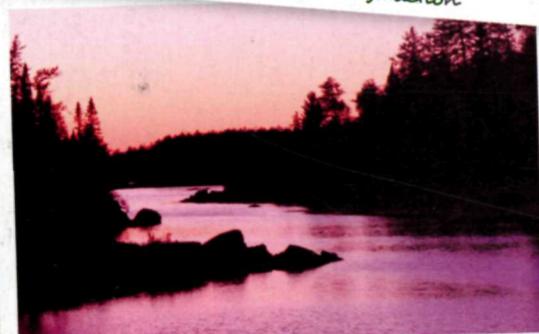
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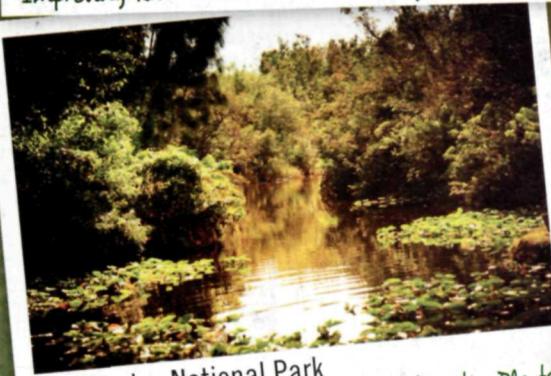
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