

ntering Denali National Park & Preserve in Alaska, visitors encounter an immense landscape that stretches across the horizon. Far below the massive snow-cloaked summits of the Alaska Range, caribou and wolves may appear in the foreground as mere specks moving across the tundra. In this park that is larger than the state of New Hampshire, it is easy to feel enveloped by wilderness.

The park's remoteness has also created a special challenge—in the form of what to do with its waste, especially with an increase in visitation. And this in turn has led to creative solutions. To address the issue of its trash, the park launched the Denali Zero-Landfill Project in 2015. The project's outreach and education coordinator, Melissa Blair, describes it as "a catalyst for innovative solutions to unique waste-management challenges." Already, the program—which now has affiliated programs in Yosemite National Park and Grand Teton National Park—is making strides. The hope is that similar efforts will be made in all U.S. national parks.

The grandeur of Denali illustrates the value of America's park system, and its pilot program is an example of the work being done by parks around the country to incorporate new initiatives and ideas.

Today's National Park Service manages more than 85 million acres across 417 sites, ranging from giant preserves to tiny historical sites. It has seen visitation grow from 1 million recreational visits in 1920 to about 331 million in 2017. From the Alaska wilds of Denali, to the venerated wonderlands of Yellowstone and Yosemite, to the beautiful sculpted sandstone of Arches National Park in Utah, officials are working to enhance access and experiences while setting examples of eco-friendly practices worthy of emulation.

As the park service ventures into its second century, it is redefining an Ameri-



Denali National Park & Preserve, in a partnership with Subaru of America, has been conducting public outreach programs and installing infrastructure to reduce waste via the Denali Zero-Landfill Project.

can legacy by promoting sustainability and introducing new ways to engage with a growing number of people.

INNOVATION IN A REMOTE LOCATION

Heading into 2015, Denali National Park & Preserve was sending nearly 400 tons of waste annually to the Denali Borough Landfill, filling up this site at a rapid rate.

To address the issue, Blair says, it was important to involve local communities and make business alliances. In an era of declining budgets, funding for initiatives can be hard to find. For Denali's program, the Alaska park entered a partnership with Subaru of America, which has its own zero-landfill manufacturing plant in Indiana. Through innovation grants and sharing expertise, Subaru helps national parks understand their waste streams and improve infrastructure for recycling, composting and repurposing materials.

In the program's first years, results have been notable. "The amount of municipal solid waste being sent to the Denali Borough Landfill from the Denali National Park & Preserve [from the NPS and concessionaire Doyon/Aramark Joint Venture decreased about 37 percent from 2014 to 2017, while the number of recreational visitors increased 23 percent," Blair says.

The park's location, more than 200 miles from the recycling facility it commonly uses, presents issues—and opportunities. Working with local stakeholders, the park is empowering communities to solve recycling challenges in the region even as it tackles its own waste reduction. It plans to recycle all of its cardboard at a plant expected to open soon in the nearby Alaska Native village of Cantwell. The plant will produce a cardboard-brick fuel for use in wood-burning stoves and fireplaces. This will bring jobs to the area and help residents combat high heating costs.





Yellowstone National Park encourages fishing for invasive lake trout, right, by offering to cook them at restaurants in its lodges. Its new Canyon Lodges, inset, feature sustainable design and materials.

In addition to businesses and locals, program managers aim to engage park guests. "We want visitors to see that they are part of the solution," says Blair. Visitors are encouraged to bring or purchase reusable water bottles and bags, minimize trash brought into the park, and use the recycling bins in the park that are more widely available thanks to the initiative.

In Denali, an area known for its majestic scenery, the zero-landfill program may be showing that what you don't see can be as significant as what you do see.

SUSTAINABLE EATS, GREEN SLEEPS

The largest high-altitude lake in North America, shimmering Yellowstone Lake, is a vibrant part of the Yellowstone ecosystem, with human presence dating back at least 12,000 years. At its outlet at Fishing Bridge, spawning cutthroat trout attract grizzlies and bald eagles. For millennia, it has been a place of abundance.

Yet the natural balance was upset by the introduction of invasive lake trout around 30 years ago. The lake trout consume the native cutthroat trout and live at depths inaccessible to predators.

To help restore ecological balance, visitors are encouraged to fish for their dinner. Park dining rooms will serve the catch, prepared several ways. "For every adult lake trout removed, it saves up to 41 cutthroat per year," says Cameron Walker, sustainability program manager at Yellowstone National Park Lodges. "It definitely makes a difference. You catch your fish, bring it to get a meal, and be happy that you helped save cutthroat trout."

In addition, the park concessionaire is introducing the rental of electric outboard motorboats, which assist with a quiet approach to fishing grounds.

Fishing isn't the only way to dine eco-consciously in Yellowstone. Park restaurants now offer sustainable cuisine for more than half of their selections, supporting small regional farms and dairies that supply everything from organic greens and natural beef to locally made goat cheese and ice cream.

Green lodgings are also being emphasized. A short walk from the magnificent Grand Canyon of the Yellowstone, the park's new Canyon Lodges represent the largest green-building project in parkservice history. With LEED (Leadership in Energy and Environmental Design) Gold and Silver certifications from the U.S. Green Building Council, the lodges reduce their environmental impact while helping to serve the public. The redesign features a reduced footprint, switching from cabins spread over a large area to five three-story lodges with waste-sorting stations. The change provides more space for wildlife and more trails for human enjoyment.

Better buildings start with materials.

The lodges use local wood impacted by





The Utah-based Canyonlands Field Institute runs programs for young park explorers, such as this geology hike near the Colorado

mountain pine beetles, as well as countertops of recycled glass and fly ash (capturing a carbon byproduct of coal burning, which is a major energy source in the region). Drinking glasses in rooms are made from repurposed wine bottles.

The lodges have also seen a positive response to their green housekeeping program, which reduces laundering to save more than 300,000 gallons of water and 150,000 kilowatt hours of electricity per year. Visitors who participate in the program get \$5 off per night.

Small changes, such as switching to green cleaning products, can make a big difference in improving environmental health. Yellowstone National Park Lodges has a pilot program in the park's Mammoth region for using environmentally sensitive cleaning products. Walker notes that their new products curb the necessity for toxic chemicals that are ecologically damaging, risky to transport and potentially dangerous to employees.

DEEPER CONNECTIONS

One way to increase people's connections to parks is through expert-led learning experiences. Such programs aren't brandnew, but they stay up to date with modern science and engage younger generations.

Based in Moab, Utah, the Canyonlands Field Institute (cfimoab.org) offers youth programs carried out in camps and over multiple days rafting the Colorado River. Children learn about the geology and wildlife of the Colorado Plateau from naturalist guides. The institute also offers a "step-on naturalist" service to bus-tour groups visiting Arches or Canyonlands national parks in Utah.

In Yosemite National Park, some of the most popular activities are ranger-led bear walks, which explore the natural habitat and behaviors of American black bears.

"Visitors from around the world are very excited to learn about black bears," says ranger Jamie Richards. "Publiceducation programs such as bear walks are critical tools that the National Park Service uses to help inform people about bear behavior, and these programs ultimately help rangers better protect bears."

In addition to in-person learning experiences, parks are using smartphone apps to help visitors get more out of their experiences. Citizen scientists enjoy iNaturalist (inaturalist.org), an app used by researchers as well as the public to identify plant

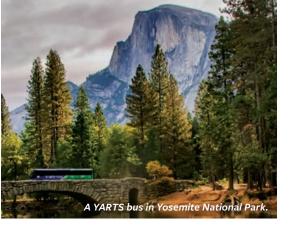
and animal species. With the app, users can keep track of animals they see, crowdsource identifications from a half million users and contribute data to studies.

Another resource, REI's National Parks app (rei.com/mobile.html), available to download for free, has topographical maps, hikes listed by difficulty, and general park information. It works offline, which helps in areas without good cell service. It can also tell you about real-time activities in parks and mark your location.

GETTING IN. GETTING AROUND

When visitors drive into one of Yellowstone's five entrances this summer, they won't have to fumble around in the glove box for their annual parks passes. Yellowstone has joined with seven other national parks in offering digital entrance passes (yourpassnow.com). Visitors can save time by buying an annual pass or sevenday pass online, and they can then show these at park gates on a mobile device.

How people get around parks is changing, too. As part of a broader initiative called the Green Parks Plan, the National Park Service is transforming its transportation fleet and adopting greener travel



methods to lower emissions and ease traffic. Parks are improving nonmotorized-travel infrastructure, such as the 3-mile Greenway Trail for cycling at the South Rim of the Grand Canyon. There are also new biodiesel buses, more hybrid vehicles in service fleets, and electric-vehicle charging stations in many of the parks.

Meanwhile, the number of vehicles in the national parks keeps growing. With nearly 5 million visitors per year, Yosemite National Park is at the forefront of confronting this issue. "Yosemite can handle the volume of people that we have, but it's the number of automobiles that is a challenge," says Yosemite ranger Richards.
"We do not have enough parking spaces to
meet the demand. We are looking at a
variety of options to improve parking."

Searching for a solution, the park has partnered with Yosemite Area Regional Transportation System to improve traffic flow by making it more attractive and convenient for visitors to use buses.

"If you are staying at one of the hotels or facilities outside the park, you can avoid some of the hassle of trying to find somewhere to park on your own by utilizing the YARTS buses," says Richards. A YARTS bus ticket includes admission to the park. Prices depend on distances traveled. YARTS offers service to multiple stops in Yosemite seasonally from Fresno, Mammoth Lakes and Sonora, and yearround from Merced (yarts.com). In summer, visitors can take a YARTS bus all the

way from the Fresno airport to several Yosemite Valley locations. YARTS buses into the park are free on Earth Day weekend this year (April 21 and 22), as well as on other national parks free-admission days through 2020.

The acclaimed writer Wallace Stegner once called the national parks America's "best idea"—a phrase repopularized by a 2009 Ken Burns TV series. And, through initiatives that range from models of sustainability to efforts that increase accessibility and learning, America's National Park Service is showing it can change with the times. The managers of these lands that represent the nation's best idea are showing they are open to new ideas, as well. ⊀

Travel writer Carolyn McCarthy is the author of several national park guidebooks.



