

High Country News

For people who care about the West

Outflanked

Where wildfire is overtaking us

Feature by Michelle Nijhuis





A year after the Carlton Complex Fire went through, causing heavy damage, Sofia Onishenko and her nephew, Elijah Orekhov, prepare for a swim while on a camping trip at Alta Lake State Park in Pateros, Washington. DAVID RYDER

On the cover
Rubble and a burned area smolder near Alta Lake Golf Course after the Carlton Complex Fire went through in July 2014 near Pateros, Washington.
DAVID RYDER



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A county recovers from a record-setting wildfire — and prepares for the next one. By Michelle Nijhuis

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Editor's note

No ordinary fire

On a Friday afternoon in July, a wildfire sparked on Southern California's Cajon Pass. The brush was dry and the winds were strong, speeding the fire toward Interstate 15 and its weekend traffic. Those who saw it later described what followed as surreal: flames shooting into the air, cars on fire, and semis on fire, and semis hauling cars on fire. People abandoned some 70 vehicles, fleeing across the hills, uncertain where to go, as flames merged into traffic like true Angelenos. Fights broke out at a nearby gas station. Looting, too.



Wildfire is terrifying. That may be why, in the 20th century — after the devastating "Big Blowup" of 1910, which burned 2.6 million acres in Idaho's mountains — we tried so hard to vanquish it. This legendary policy blunder left our forests full of fuel and more vulnerable than before. Today, despite some ecological enlightenment, we still snuff many fires, for fear they will burn houses or towns. Meanwhile, as Michelle Nijhuis writes in this issue's feature, "The Bigger Burn," fuel is only one side of the equation. The other is climate. That side is catawampus, too.

Nijhuis profiles a town in Washington state, Pateros, disastrously surprised by the Carlton Complex Fire in 2014, and still recovering. We've supplemented her story with others that describe where, and how, wildfire is outrunning us. The West's once-bounded fire season, for example, is running longer and could one day last all year, overwhelming managers, firefighters and their resources. Scientists, meanwhile, need to learn more about different fuels and what they mean for places like the rainforest of the Pacific Northwest, which is again ablaze this summer, as are the forests of Alaska.

There's an even bigger picture. A recent study found that fire seasons between 1979 and 2013 had lengthened across 25 percent of the Earth's vegetated surface. That matters because annual CO₂ emissions from wildfires worldwide can be 50 percent greater than emissions from fossil fuels. Fire and climate, in other words, are in a feedback loop.

The I-15 wildfire destroyed 20 vehicles and four homes, and though no one died or was seriously hurt, it was an abrupt reminder of how close we live to fire and its whims — and to all the natural world, really. In the end, the blaze was deterred less by firefighters than by a freak rainstorm that swept up the coast. A quarter inch of water fell on Los Angeles in one day, breaking a record set in 1886. The storm soaked the brush of Cajon Pass, and by Saturday afternoon, a Forest Service official told the *Los Angeles Times*, the fire that had sown chaos on the highway was "just creeping around." If only all such fires were so easily quelled.

—Brian Calvert, managing editor



A crop duster in northeast Oregon. In March, the World Health Organization said that glyphosate, the active ingredient in the herbicide Roundup, is likely a carcinogen. Now, the EPA will study its effects, as well as those of three other pesticides, on endangered species. BAKER COUNTY (OR) TOURISM

EPA to study Roundup

While the impact that glyphosate, better known as Roundup, has on milkweed and monarch butterflies is well known, the damage the herbicide might do to other plants and animals is not. The Environmental Protection Agency has announced it will spend the next five years studying the effects of glyphosate, atrazine, and two other commonly used pesticides on 1,500 endangered species. The study is the result of a settlement between the EPA and the Center for Biological Diversity, which sued the agency in 2007. The group said the EPA did not conduct due diligence on how such pesticides would affect rare species before registering the chemicals. Although Roundup has been around since the 1970s, its effects haven't been broadly studied since 1993, when only 10 million pounds were used annually. Today, more than 300 million pounds are applied to U.S. fields each year.

GLORIA DICKIE

hcne.ws/roundupEPA

Trending

Wilderness vs. mining

The Forest Service has approved a mining company's request to build a four-mile road and make as many as 571 trips a year with bulldozers, dump trucks and drill rigs into the Frank Church-River of No Return Wilderness. Thanks to the 1872 Mining Act, which predates the 1964 Wilderness Act, mining claims made prior to wilderness designation can continue to have validity. The Golden Hand deposit was discovered in 1889, and the courts have determined that its latest owner has the right to prove whether the long-dormant claim is still valid. But how? With pack animals and pickaxes, or with bulldozers and jackhammers?

KRISTA LANGLOIS

You say

JOSHUA SERFASS:

"I understand that the mining company has the right to prospect the area, but the USFS should not be allowing them to do so with trucks, bulldozers, or other modern means."

CHRIS LINK:

"It's not much of a 'wilderness' by conventional standards. This doesn't change the future of wilderness."

MARK LEWIS:

"What sort of idiotic ruling is this? Gotta love the duplicity. If mountain biking made as much money as mining, there wouldn't be a problem."

JIM ANDERSON:

"Only when the last tree is cut, the last of land pillaged and the last of the water polluted, will the greedy be happy."

hcne.ws/church-wild and [facebook.com/highcountrynews](https://www.facebook.com/highcountrynews)

\$35 billion

what it would cost to reclaim the half-million-plus abandoned mines in the U.S.

40

percent of headwaters in the West contaminated by mining

Hundreds of state and federal employees, students, advocates, volunteers and contractors have spent over a decade planning, litigating and working on Montana's Upper Clark Fork Superfund cleanup. There has been a lot of successful restoration, but it has a long way to go. Still, the Superfund project, which is projected to take another several years, legally can't do anything to address the contaminants from hundreds of abandoned mines upstream. Federal and state agencies lack the necessary funding to deal with them. And federal money doesn't touch the hundreds of thousands of sites on private and state lands.

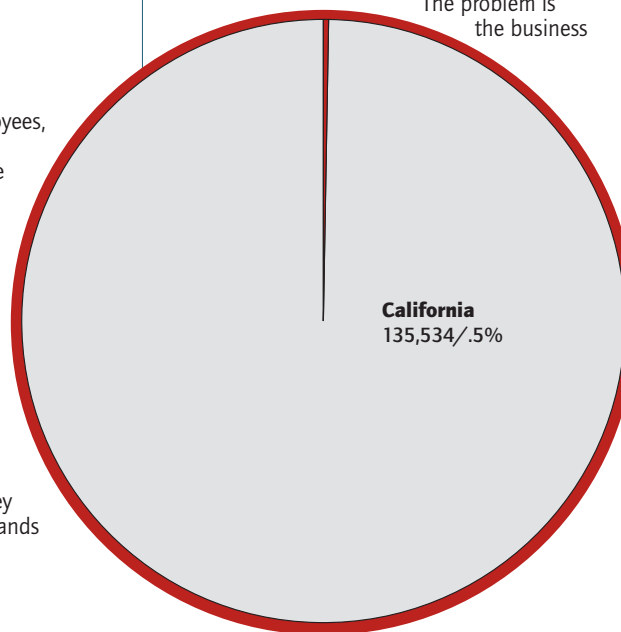
KINDRA MCQUILLAN

hcne.ws/MTmines

Western prisons

While the total prison population in the U.S. grew 16 percent between 2000 and 2011, the number of inmates housed in for-profit prisons grew 106 percent. Western states have some of the highest rates of private prison incarceration.

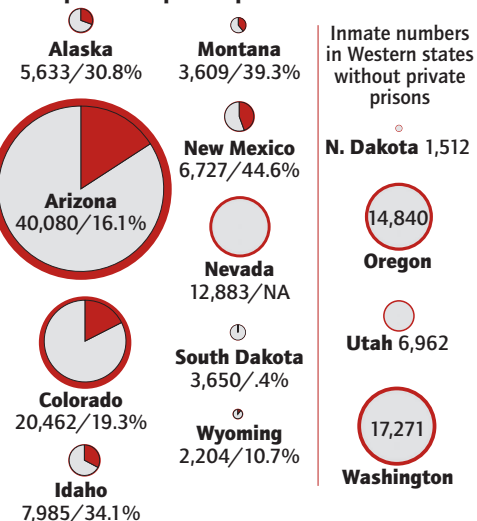
The problem is the business



model of incarceration. Companies promise to save states money, but they also need to make a profit. To do that, they often cut corners. A 2012 report by the Sentencing Project found that on average, private prison employees earn about \$15,000 less per year than their state-employed counterparts and have 58 fewer hours of training.

SARAH TORY hcne.ws/crowded-prisons

State and federal prison population percent in private prisons in the West



\$5K

The fine cliff-jumpers could face for trespassing in Los Padres National Forest's Tar Creek, where endangered California condors live.

KIT STOLZ

hcne.ws/SoCal-condors

Video

No water, bad water

In "How the California drought exacerbates water contamination," videographer Zoë Meyers explores East Oroquieta, California, a rural community that couldn't drink its water, even if they had it.

hcne.ws/orosi-water



ZOË MEYERS

"If we want to take that glass of water and fill it up out of our faucet, we should be able to."

—Elvira Camacho, East Oroquieta, California, resident

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STEVE GREENBERG

BAGGED LIONS, FEWER BIGHORNS

As discussed by Frank Carroll (“We’re letting another predator go down,” *HCN*, 6/22/15), many Western states appear to have a war on mountain lions. In Arizona, the Arizona Desert Bighorn Sheep Society, a trophy ram hunting group, and the state Department of Game and Fish have cooperated on multiple bag limits, which allow a hunter to kill more than one lion per year, in an attempt to reduce lion numbers. In Aravaipa Canyon, Arizona, about 60 miles northeast of Tucson, Game and Fish established a bag limit of 20 lions per year in 2011, while the bighorn group has paid a bounty hunter to kill at least 10 lions per year. This resulted in at least 43 lions killed over the three years from July 1, 2011, to June 30, 2014.

Did this slaughter have an impact on the Aravaipa bighorn sheep population? In the two most recent surveys before the multiple bag limits, Game and Fish observed an average of 84 total sheep, of which 26 were rams. In surveys from the three subsequent years, the agency observed an average of 52 total sheep (38 percent less), of which only 12 were rams. In other words, this mass killing of 43 lions appears to be associated with a decline in sheep, not the increase these groups had wished for.

*Phil Hedrick
Winkelman, Arizona*

SURPRISE ATTACK

In his letter “High-Flyin’ Hypocrisy,” (*HCN*, 6/8/15) Robert Michael accuses Kathleen Dean Moore of hypocrisy for considering mankind’s destruction of the world because her plane uses the very fuel being produced by the horrors she

observes on the ground beneath her. He might have a point, except for the fact that she never separates herself from those who are doing the harm. Careful reading of her piece reveals that she never once says “you” or “they” are at fault. She continually uses first-person plural — “we” — as she considers what is happening. It is clear to me as I read her article that she considers herself a part of the problem. I am certain that you received quite a few letters along this vein and wish that you would have chosen one that was slightly less inflammatory to print. Mr. Michael’s letter reminded me of the kind of intentionally aggressive attack that has made me steer clear of much of social media. I was a little surprised to see it printed in *High Country News*.

*Eric Bowman
Springvale, Maine*

ENTERTAINING TODDLERS

Start them young. My 19-month-old grandson, River, is in love with the “Tree of Life” illustration on the June 8, 2015, cover. My thanks to Bryce Gladfelter for an image that can entertain a small child, over and over: birds, bugs, lizards, spiders and so much more to point at. But I must say he was equally enthralled with the back-cover photo of a car being dropped by a crane in a junkyard. The image caught it mid-air, and I’m sure his little brain is trying to figure out why the car is in the sky.

*Katy Tahja
Comptche, California*

PROTECTION IN NAME

A recent feature lauds the powers of the president to protect lands by declaring

them national monuments (“Monument Man,” *HCN*, 5/25/15). Meanwhile, in a companion article discussing grazing and oil drilling, the author finds “little has changed on the ground” since Canyon of the Ancients National Monument received its designation. A second sidebar describes a similar situation at Upper Missouri River Breaks National Monument: “The BLM’s management plan made so few changes that it even garnered the support of a local group of ranchers who had opposed the monument designation.” If this is the case, one must ask: Has anything been protected at all? Or are these new designations national monuments in name only?

*Brian Gatlin
Grand Canyon, Arizona*

MONUMENT-MAKING

John Hart’s essay, “Making a national monument from scratch,” (*HCN*, 5/25/15) beautifully illustrated the unique history and landscape of the Berryessa Snow Mountain region and the tremendous work it takes to ensure permanent protection for our public lands. It is important to underscore that the effort to designate these lands as a national monument is supported by the California State Assembly and Senate and a diverse group of interests, including local business owners, nearby cities, five counties within the boundaries of the designation, private landowners, citizens, farmers, conservationists and a variety of recreation groups. Protection of these lands will provide an environmental and economic benefit to the region for generations to come, and allow visitors to continue to experience the area’s natural splendor.

*Bill Dodd
California State Assembly
Napa, California*

DAMAGE FROM SMUGGLERS

As a longtime subscriber to your magazine and someone who values your focus on issues across the West, I do take exception to your “Latest” item about Sen. John McCain’s bill to increase the Border Patrol’s access to the borderlands, (*HCN*, 5/25/15). I can assure you that, as a retired Border Patrol agent, any environmental damage done while agents perform border security pales in comparison to smuggling.

*Wayne Lackner
Willcox, Arizona*

High
Country
News

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The arrival of the cost-benefit state

A Supreme Court ruling wants the EPA to consider costs

BY ELIZABETH SHOGREN

When President Ronald Reagan signed an executive order in 1981, requiring federal agencies to analyze the costs and benefits of major regulations in order to ensure that the extra expense for businesses would be justified, environmental activists and congressional Democrats were aghast. They warned that such cost-benefit analyses would favor industry profits over the public good. “They are trying to put into numbers something that doesn’t fit into numbers, like the value of clean air to our grandchildren,” Richard Ayers, a founder of the Natural Resources Defense Council, told *The New York Times* at the time. “It is deceptively precise and ignores ethical and moral choices.”

But for more than three decades — no matter which party was in office — the mandate for cost-benefit analyses remained strong. President Obama even expanded Reagan’s order, decreeing that such analyses should be used for minor regulations, too. Agencies routinely calculate what companies likely would spend to, say, install pollution control devices to comply with air quality rules or air bags to meet automobile safety rules. They also assign monetary values to benefits, such as reducing the risk of death, injury or illness. (The Environmental Protection Agency estimates the value of a human life at \$8.6 million in calculating the EPA’s mercury rule, for example.)

Less clear is how the Supreme Court views actual environmental law. At times, the court has allowed the EPA to overlook costs, as in a 2001 case concerning air-quality standards for smog and soot. At other times, it has ruled in favor of analysis, as in 2009, when it upheld the EPA’s right to consider costs in regulating how companies extract water from lakes to cool coal-fired power plants. The court now appears to have moved even closer to embracing the use of cost-benefit analysis.

In late June, the court ruled on the EPA’s Mercury and Air Toxics Rule, in a case brought by 21 states, including Arizona, Alaska, Idaho, Utah and Wyoming, as well as by power companies. The 5-4 decision, with the lead opinion written by Justice Antonin Scalia, says the EPA acted irrationally, unreasonably and illegally when it elected to regulate mercury and other toxic air pollution from power plants based entirely on the public health

impact, without weighing the costs to industry.

Even more telling was the dissent presented by Justice Elena Kagan for herself and three other liberal judges. Absent a contrary indication from Congress, she wrote, “an agency must take costs into account in some manner before imposing significant regulatory burdens.” Kagan argues that the EPA clearly met this requirement later on in its regulatory process, when it did consider the costs to industry. That’s not how the liberal argument would have been framed 20 years ago. Now, though, as Harvard Law School Professor Cass Sunstein — a former economic guru in Obama’s White House — recently crowed: “The cost-benefit state has arrived.”

“If you were to plot it against time, you would see that the court is gradually developing more cost-benefit friendly decisions,” says Michael Livermore, associate professor at the University of Virginia Law School and co-author of a 2013 book on the subject.

The latest decision suggests that unless Congress says otherwise, the EPA has to consider costs when making regulations. That would at first appear a boon for industry and a hit for environmentalists. But William Pedersen, an industry lawyer, sees it differently. He reads Scalia’s mercury opinion as an invitation for the EPA to consider *all* the benefits of a regulation.

ESTIMATED 2016 COSTS AND BENEFITS FOR MERCURY AND AIR TOXICS STANDARDS

The EPA says its rule would prevent:

4,200 to 11,000 premature deaths
2,800 cases of chronic bronchitis
4,700 heart attacks
130,000 cases of aggravated asthma
5,700 hospital and emergency room visits
6,300 cases of acute bronchitis
140,000 cases of respiratory symptoms
540,000 missed work days
3.2 million restricted activity days

Health benefits associated with meeting the standards are **\$37 billion to \$90 billion.**

Total national annual cost of this rule will be **\$9.6 billion.**

SOURCE: EPA



“Scalia opened the door wide for them to use that logic,” Pedersen says. “It would be unwise if they don’t step through it.”

This could help the EPA not only salvage the mercury rule but also defend its Clean Power Plan, due out this summer. The plan, which includes the first-ever limits placed on greenhouse gas emissions for existing power plants, is the centerpiece of Obama’s climate change agenda. The cost is enormous, but the EPA justifies it with the enormous benefits, including better air quality and less premature death and illness.

More broadly, the problem with the ascendancy of cost-benefit analyses is that the EPA, in many instances, lacks the scientific data to prove exactly how dangerous certain chemicals might be. That makes it hard to argue with well-armed opponents, who can say exactly how much — or even exaggerate how much — a regulation will cost the industry.

That has not kept the EPA from trying. For years after Reagan’s executive order, cost-benefit analysis was used to curtail environmental regulation, but over time, the EPA developed techniques to measure health benefits and justify policy. “Cost-benefit analysis has matured as a methodology,” Livermore says. “The costs are lower than many people would think they would be, and the benefits are quite high.”

Still, some legal scholars and environmental activists find the concept anathema to the whole point of environmental policy. “EPA has been pretty clever about turning the weapon around,” says Ayers, now an independent environmental lawyer. “I don’t think it has any more validity when they do it than when the other guys do it.” □

Cholla Power Plant in Arizona is one of the major causes of the smog contributing to low visibility in national parks and wilderness areas. When the EPA drafted plans to reduce emissions at Cholla, Arizona Public Service and the Arizona Department of Environmental Quality chose to draft their own plan because they deemed the EPA’s not cost-effective. DAVID KESSEL



On life support

All but extinct in the wild, the silvery minnow foretells the Rio Grande's future

BY LAURA PASKUS

U.S. Army Corps of Engineers team members in the Albuquerque District use the dual-net seining process to collect silvery minnows and other fish in the Rio Grande in 2014. The district is part of a program to increase the number of silvery minnows in the river and improve their habitat.

RONNIE SCHELBY/
ALBUQUERQUE DISTRICT,
USACE

On a cloudy May morning after a pre-dawn rainstorm, biologist Kimberly Ward winds through the Albuquerque BioPark's Aquatic Conservation Facility, one of three hatcheries for endangered Rio Grande silvery minnows. Inside, pet-shop-sized fish tanks hold about 8,000 nearly invisible eggs.

Outside are the 20,000-gallon pools that host the fish after they hatch, as well as a massive concrete "raceway" designed to mimic a river and encourage them to spawn without hormone injections.

There's always a challenge: Minnows spawn in the raceway, but their eggs get sucked into its intakes. Biologists also struggle with wonky pH levels in the tanks, and bacterial infections can spread. And conditions aren't much better in the minnow's natural habitat, the Rio Grande. Sometimes, Ward finds it hard to be optimistic.

"But I feel pretty lucky to be part of a program that's fighting for species diversity," she says, adding that saving the minnow is about more than one species; it's about the entire river. "If we lose the fish, something worse is probably coming down the pike. It's an indicator."

If that's true, the prognosis seems grim. For about a decade, scientists, environmentalists and water managers have

gone to great lengths to keep silvery minnows alive, in accordance with the Endangered Species Act. It's not easy. Each spring, when the Rio Grande rises and the fish spawn, biologists collect eggs as they float downstream. When the river channel dries south of Albuquerque during irrigation season — as it has almost every year since 1996 — the scientists grab fish from shrinking pools and truck them to still-wet downstream stretches. After Halloween, when irrigation canals stop diverting water and the dry stretches regain some flow, the tanker trucks arrive, bearing minnows raised in hatcheries from eggs collected earlier in the year.

And yet the minnow's numbers continue to decline. Agencies have devised new plans, built partnerships, and spent more than \$150 million to boost the population. But the effort nibbles at the edges of a systemic problem: Fish need water, and what with unrelenting drought, rising demand and a changing climate, there's just not enough of it in the Rio Grande. The fish — historically one of the river's most abundant — hasn't totally disappeared, but the wild population is functionally extinct. Today, it's almost impossible to find one without at least one hatchery-reared parent. "The entire genetic trajectory of the fish is determined by a hatchery now," says Thomas Turner, who started studying its genetics in 1999 at his University of New Mexico lab. "You

get this false sense of security that technology can get you out of these environmental problems. The big question is: If we can raise them in the hatchery, why do we have to worry about the river?"

In 1994, the U.S. Fish and Wildlife Service listed the silvery minnow as endangered. The fish once occupied 2,400 miles of the Rio Grande and one of its tributaries, the Pecos River. But during the early- to mid-20th century, federal agencies began damming, diverting and channelizing the Rio Grande to deliver water to farmers and cities and prevent flooding.

That work was incredibly effective, so effective that it transformed the river's entire ecosystem. Spring floods no longer roared through the valley, creating a braided channel and leaving behind sediment and seeds; the water's chemistry and temperature changed. The resulting combination of habitat loss, introduced species and declining water quality decimated the minnow, which needs shallow eddies and backwaters to survive.

By the time it was listed, the fish had disappeared from all but a 174-mile stretch of the Middle Rio Grande near Albuquerque. But the listing didn't guarantee its recovery. The river remained fragmented by dams and diversions, and its waters were entirely claimed by people. New Mexico's farmers and cities need water, and the state also has to send Texas

Laura Paskus is a reporter and radio producer based in Albuquerque, New Mexico. @LauraPaskus

an annual share. The Fish and Wildlife Service couldn't upend nearly a century of water development just to assist a two-inch-long fish.

Then, in 1996, about 90 miles of the Rio Grande south of Albuquerque dried up entirely — an unprecedented event, according to many. "It was really weird to watch this river just go dry," recalls Christopher Hoagstrom, who was then an Albuquerque-based Fish and Wildlife biologist. That year, he and a few other biologists rode ATVs up and down the channel, stopping to pound t-posts into the mud and sand where pools remained as the river trickled to a halt. They checked the water daily for fish and tracked how quickly the pools evaporated.

"The fish would be so packed in these pools that when you'd (run a net) through it, you'd just be bumping fish," he says — minnows, red shiners, flathead chub, catfish, carp, buffalo fish. Sometimes they'd whiz past a t-post that marked the site of a pool that had vanished from a day earlier. "I guess the vultures and raccoons came in, because you couldn't even see a fish bone," he says.

One evening after work, Hoagstrom and another biologist sat outside their office, feeling the weight of despair. The minnow was going extinct on their watch. "We said to ourselves, 'We could collect eggs, bring them to the hatchery,'" he recalls. If they didn't, they wondered, could they live with themselves if the fish blinked out? They decided they couldn't. "But we knew we were giving up by doing this," says Hoagstrom — giving up, that is, on the wild population.

Some biologists objected. Captive propagation would give water managers an easy out, allowing them to avoid keeping water in the river without losing the species altogether. "We wanted to be idealistic," says Hoagstrom. He hoped Fish and Wildlife would require water managers to

keep the river flowing for the fish, a move that would also contribute to the river's health.

Instead, in 2003, the agency ignored its own biologists' recommendations and issued a new policy that allowed water managers to dry the riverbed after June 15, when irrigation season begins. And even though it was supposed to be updated again in 2013, the agencies are still operating under that 12-year-old plan. "If we were idealistic," Hoagstrom says now, "the silvery minnow would have been screwed."

Today, most of the Rio Grande's minnows come from the Fish and Wildlife Service's Southwestern Native Aquatic Resources and Recovery Center in Dexter, in southeastern New Mexico. Tucked against the Pecos River and surrounded by alfalfa fields and dairies, the center includes indoor and outdoor pools, a fish health center and a genetics laboratory. It consistently rears enough eggs that biologists can release hundreds of thousands of minnows each fall. "We've been making adjustments for 13 years," says director Manuel Ulibarri, including improved spawning techniques and genetic testing on parents to ensure healthy offspring. "We're getting to the point where it's almost a cookbook. We have a recipe that works to meet the numbers."

But the river's minnow densities remain "extremely low." When biologists monitored it in April, fewer than 20 of the more than 3,200 fish collected were silvery minnows. According to a recent report from American Southwest Ichthyological Researchers and Colorado State University, those low numbers show that current efforts aren't "sufficiently buffering the population" against decline. For the fish to survive on its own in the wild again, the researchers concluded, the river must flow in the spring and summer.

But as it stands, the Rio Grande lacks

rights to its own water. And even though the U.S. Bureau of Reclamation's water managers are constantly trying to wring more water from the system for minnows, the river and the species that depend upon it come last in line.

This year, for instance, after a dry winter, Reclamation determined in April that it couldn't spare water from upstream reservoirs for a spring pulse of water, a temporary surge needed to trigger spawning. Federal, state and local partners hustled to devise a way to find a little more water. Then, in May, it rained and rained; Reclamation could release water after all. Biologists watched the water levels, checked temperatures and monitored for eggs.

The increased flows may have triggered spawning, says the BioPark's Ward, but collecting eggs became impossible: The water was too deep, the flows in many places too dangerous. In the end, biologists ended up with few more than the roughly 10,000 eggs they had collected by mid-May. It marked another point on a downward trend: In 2013, they collected around 60,000 eggs; last year, only 13,000. And by early July, fish salvage crews were preparing to rescue minnows once again, depending on the summer's monsoon rains.

Hoagstrom left Fish and Wildlife in 2002 and now works as a professor at Utah's Weber State University. He won't criticize the work being done in New Mexico. But he wonders if rearing fish outside the river was a mistake. "The minnow can live in this sandy, harsh, hot, flowing water that's only about this deep," Hoagstrom says, measuring out six inches with his hands. "But it needs floods, it needs flowing water all the time, and it needs a lot of habitat. It needs a lot of things that don't occur now."

The problem isn't the fish; it's the river. Even in good years, there's no longer enough water. But the changes necessary to protect the fish are big, challenging and expensive. They range from changing the crops farmers grow and the methods they use, to curbing urban sprawl and retooling infrastructure to capture and store summer rains — maybe even changing how the state administers water rights.

Most of the Rio Grande's native fish species have already disappeared. "The odds are, if it still rained all the time, if there weren't drought, it would still be on the track to extinction," Hoagstrom says. "The fact that the others are gone suggests that it's just lagging behind. But nobody ever talks about that — that the Rio Grande is really destroyed from an ecological standpoint. And the more we forget about that, the easier it is." □

This story was funded in part by an Institute of Journalism and Natural Resources Frank Allen Field Reporting Award.



OREGON GOV. KATE BROWN. OREGON.GOV

THE LATEST

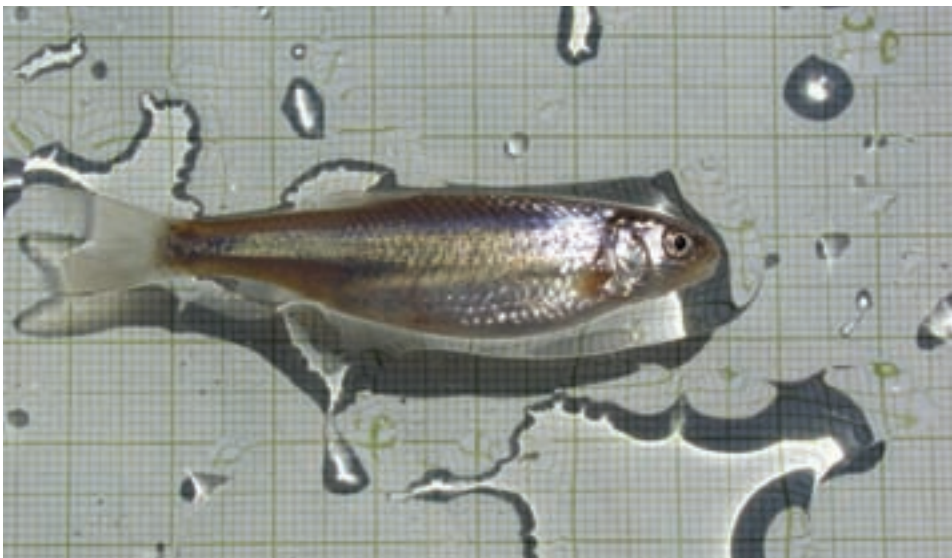
Backstory

Given Oregon's green reputation, it's fitting that the scandal that prematurely ended Democratic Gov. John Kitzhaber's fourth term involved environmental issues ("Governor down," *HCN*, 3/16/15). Starting last fall, newspaper investigations revealed that Kitzhaber's fiancée, Sylvia Hayes, a clean economy consultant, had landed at least \$213,000 in contracts from groups with progressive social and environmental agendas. Hayes, however, also promoted similar agendas directly to the governor as an unpaid policy advisor and used her "First Lady" title for public speaking engagements that were part of her consulting contracts. **The extent of Kitzhaber's involvement remains uncertain, but he resigned in February amid allegations of influence peddling.**

Followup

On July 1, new Gov. **Kate Brown finalized ethics reforms** that clearly define the "First Partner" as a public official, legally forbidden from using the position for personal gain. The new laws strengthen penalties for abuse of office, bar statewide elected officials from accepting paid speaking engagements and expand the state ethics commission. A review of the state's public records practices will also begin.

SARAH GILMAN



A Rio Grande silvery minnow is measured at the BioPark Aquatic Conservation Facility. ALBUQUERQUE BIOPARK

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Claret cup cactus on the Yampa River. JOHN FIELDER

COLORADO'S YAMPA RIVER: FREE FLOWING AND WILD FROM THE FLAT TOPS TO THE GREEN

Photography by John Fielder, text by Patrick Tierney
172 pages, hardcover: \$45.
John Fielder Publishing, 2015.

Legendary photographer John Fielder joined forces with writer Patrick Tierney to produce *Colorado's Yampa River: Free Flowing and Wild from the Flat Tops to the Green*, a passionate call to preserve one of the West's last untouched waterways. Fielder and Tierney, a whitewater raft guide and head of the Yampa River Awareness Project, follow the river as it flows past sunlit wildflowers and rushes through echoing canyons. In words and images, they tell the Yampa's story, from the Fremont Indian culture that flourished a thousand years ago to contemporary battles over water use. So far, dam proposals for Echo Park and Cross Mountain have failed. Yet a new threat looms: a \$5 billion project to divert water to Colorado's Front Range. The story resonates like an epic novel, as the protagonist — the Yampa itself — and its human allies fight to keep these waters "free flowing and wild."

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Welcome, new interns!

July means fresh blood here at *High Country News* headquarters in Paonia, Colorado. Our newest interns began their half-year stint July 6 and are already hard at work.

Paige Blankenbuehler arrived shortly after a five-day, 50-mile hike through Zion National Park's red sandstone canyons. That expedition was the hardest physical thing she's ever done, she says, but well worth it because it reconnected her to the West. Born in Parker, Colorado, Paige began her journalism career at *The Durango Herald* as an intern and general assignment reporter before moving on to *The Summit Daily* in Frisco, where she covered science, the ski industry and local government. She is currently a master's student at the University of Missouri School of Journalism, with plans to graduate in December. Her studies have taken her to Costa Rica's tropical dry forests to report on drones and conservation, and landed her a gig at the Bond Life Sciences Center, where she wrote about infectious disease, biochemistry and plant science.

But Paige missed Colorado's mountains and climate when she was in Missouri. "I love the West. I love journalism, and I love marrying those two things," she says. "This is a complicated place with lots of layers. It's really fun sussing out the personality of a place through its people."

Gloria Dickie has wanted to be a journalist since she was just 14 years old, snapping photos of sparkling Lake Louise on family trips to Banff National Park in Alberta, Canada. Since then, Gloria, who is from London, Ontario, has covered urban bear issues in the West, as well as wildfire in Arizona, eastern Colorado and Montana.

Gloria earned a bachelor's degree in media, information and technology and minored in geography at the University of Western Ontario, where she was one of the few female editors-in-chief during the 106-year history of the university's daily student newspaper — Canada's largest. She has since interned at *National Geographic* and the *Boulder Daily*

Camera, and was a research assistant at the Center for Environmental Journalism in Boulder, Colorado. In May, she graduated from the University of Colorado with a master's degree in environmental journalism. "Landscape is a strong character that matters to the story," Gloria says. Someday, she hopes to work as a freelance magazine journalist, specializing in stories about environmental crime and international wildlife poaching.



New interns Paige Blankenbuehler, left, and Gloria Dickie.

BROOKE WARREN

CLARIFICATION AND CORRECTION

The op-ed "Wyoming acts to discourage citizen scientists" (*HCN*, 6/8/15), ran with a photo showing citizen science in action — not in Wyoming, however, but in Montana's Glacier National Park.

Our photo essay on open-air cremation in Colorado, "Last remains" (*HCN*, 6/22/15), overstated the amount of wood required for a cremation; it's actually one-third of a cord. In addition, the Crestone End of Life project gives cremated remains only to family members, not the community. *HCN* regrets the errors.

—Gloria Dickie,
Paige Blankenbuehler
and Sarah Gilman
for the staff

THE BIGGER BURN

*A county recovers from
a record-setting wildfire
— and prepares for the next one*

FEATURE BY MICHELLE NIJHUIS

On Thursday, July 17, 2014, as a lightning-sparked wildfire known as the Carlton Complex was swelling into the largest fire in Washington state history, Carlene Anders drove 15 winding miles up the Methow Valley to try to save a house. By the time she and the other members of the Pateros Volunteer Fire Department arrived, the fire was roaring through trees and shrubs on both sides of the valley. The afternoon sun glowed through clouds of soot and ash. Emergency vehicles lined the highway, and a helicopter whirled overhead, a bucket of water suspended from its belly.

Anders, who was one of the first two female smokejumpers in the state of Washington, has been fighting fires in and around the Methow Valley for almost 30 years. But she was stunned by the intensity of the Carlton Complex. “Wow,” she thought. “How are we ever going to control *this*?”

Anders and her fellow crewmembers began to pull the hoses off their engine, certain that downvalley, their own town was safe. Pateros is bordered on the south by Lake Pateros, a reservoir on the Columbia River, and on the north by a high mesa topped with a 125-acre apple orchard belonging to the Gebbers family, Okanogan County’s largest private landowner. For three decades, the Gebbers orchard had served as an impenetrable



firebreak for Pateros. But that evening, the weather was unusually dry, hot and windy, and the Carlton Complex, which had started three days earlier as four separate fires, was moving with terrifying speed, covering more than an acre every four seconds.

As the Pateros firefighters joined the battle, their department chief, Jerry Moore, who was vacationing in Alaska, got a call from his son Eric in Pateros.

The fire, Eric said, had just jumped the orchard.

OKANOGAN COUNTY IS USED TO WILDFIRE. The nation's first smokejumpers plummeted into its forests in 1939, and in recent years residents have contended with some of the state's largest and most damaging burns: The 2006 Tripod and Tatoosh complexes, the 2003 Fawn Peak Complex, and the 2001 Thirtymile Fire, which killed four firefighters. But not even Okanogan County was prepared for the Carlton Complex.

In Pateros, there had been no evacuation orders, no emergency alerts. From Alaska, Jerry Moore called his assistant chief, who was working alongside Anders, but cell service was spotty and Moore could not get through. Moore eventually reached his captain, who was able to alert the assistant chief by radio: Pateros and its 650 residents were in danger.

When the volunteers heard the news, they piled into their rigs and barreled, sirens wailing and lights flashing, down the narrow, twisting road toward Pateros. They covered the distance in just 12 minutes, but by the time they reached town, flames were spilling toward the houses at the base of the mesa. Though the sun was still up, it was as dark as night.

The firefighters began canvassing the town, using their engines' loudspeakers to call on their neighbors to evacuate. George Brady, a local fur buyer and trapper and the town's mayor pro tem, was carrying a pile of 19th-century fur-company records to his truck when the Pateros engine roared by his house. He remembers hearing a voice crackle through the speakers: *"Drop that shit and get out of here!"* He did.

THE CARLTON COMPLEX DESTROYED 131 HOMES within the Pateros school district. The high school alone sustained nearly \$2 million in damages. When the sun rose on Friday, July 18, the town's power was down, the water supply was drained, and the ground was still warm underfoot. Most residents had fled to hotels, campgrounds, and the homes of friends and relatives. City Administrator Jord Wilson, who grew up in Pateros and now lives in nearby Brewster, crammed dozens of people into his and his neighbor's houses. ("They took turns cooking breakfast," he

Outflanked

Where wildfire is overtaking us

Cumulative fatigue

What if wildfire season never ends?

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Aerial firefighting

Is it worth it?

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The fast and the furious

What we know about how plants burn

Page 18

A firefighting helicopter amid the smoke of the Carlton Complex Fire, July 2014. STEPHEN BRASHEAR

"The further we get into climate change, the more the system is going to tip toward climate- rather than fuel-driven fires."

—Dominick DellaSala, president and chief scientist, Geos Institute

remembers.) Carlene Anders, like many of the volunteers, was unable to reach some of her own family members during the worst of the fire. She knew that her teenage daughter, also a volunteer firefighter, was helping evacuate the town, but not until 10:30 on Thursday night did she learn that her husband, son and elderly mother were safe. Her mother's home — a family homestead that Anders helped build — had burned to the ground.

The Carlton Complex would burn for another 38 days, eventually covering a record-breaking 256,108 acres — 400 square miles of public and private land. It destroyed 256 homes and 55 cabins. Its heat and speed gave it a kind of whimsical cruelty: Some houses were reduced to blackened chimneys, while those next door were left untouched. That no one suffocated or burned to death in the fire was, in the months afterward, reflexively described as miraculous. (Robert Koczewski, a retired state trooper, died of a heart attack while defending his Methow Valley home; John Daniel "Danny" Gebbers, the 84-year-old patriarch of the orchard family, never fully recovered from a concussion he suffered while fighting the fire on his property, and died in October.)

The fire burned more than a thousand miles of public and private fencing, leaving orchards vulnerable to browsing deer. It killed 900 head of cattle. It cut short the summer tourist season in the county's mountainous northern end, forcing restaurants and shops to lay off staff or even shut their doors. It left the landscape littered with tons of burned cars, mattress springs, and other debris. It closed highways and interrupted cell and Internet service for weeks; during the height of the fire, reporters for the *Methow Valley News* filed handwritten stories while bathing in the river and cooking on camp stoves. It exposed economic divides usually obscured by topography and distance. Sandy Moody, who owns a bed and breakfast in the small town of Twisp and volunteered at the local emergency shelter, remembers a woman arriving in tears: Her family had just saved up enough money to fill their freezer with meat, and during the week-long power outage, everything spoiled.

State records obtained by the *Methow Valley News* show that firefighters and equipment were stretched extremely thin during the early days of the fire, and many county residents believe more could have been done to control the fire and protect homes. Alex Thomason, a local lawyer, is preparing to file an \$80 million suit against the state Department of Natural Resources on behalf of 205 residents, charging that the department failed in its responsibility to contain the fires on its land. (The department, which led the early response to the fire, has defended its actions, pointing to the extreme weather conditions.)

It's not clear if more initial resources could have reduced the fire's costs. What is clear is that the Carlton Complex is an



especially dramatic example of a disturbing pattern: Over the last two decades, wildfires in the continental U.S. have gotten larger, more damaging to homes and property, and more expensive to fight. That's partly because a century of fire suppression has created thick stands of trees and shrubs, and partly because more people have moved into fire-prone areas along the urban-wildland interface. But it's also because the climate is changing. As extreme heat and drought become more familiar in the West, fires are igniting more frequently and spreading more quickly. Fuel treatments — the deliberate burning and large-scale thinning of vegetation in order to slow fire spread — are becoming less effective in some places.

"You can classify fire systems into two types, fuel-limited and climate-limited," says Dominick DellaSala, president and chief scientist of the nonprofit Geos Institute. "The further we get into climate change, the more the system is going to tip toward climate- rather than fuel-driven fires, and the more the climate is going to overwhelm what we can do to minimize fire spread with fuel reduction."

In Okanogan County last July, an extremely dry spring and summer, combined with above-normal temperatures, had left the forests and shrublands parched. High winds further stressed a thirsty landscape. On Monday, July 14, when more than 2,400 lightning strikes hit northeastern Washington during a 12-hour period, the conditions on the ground were such that any spark or ember was all but guaranteed to ignite.

And the Carlton Complex didn't stay

in the woods. Only about a quarter of the area burned was forested. Half was shrubland, where the effects of fuel treatments are short-lived; the rest was grassland, farmland, or sparsely vegetated. Prescribed burning and large-scale thinning can still help contain fires and reduce their intensity, and researchers are currently studying the effects of previous fuel treatments within the forested area burned by the Carlton Complex. But fuel treatments were never designed to insulate humans from wildfire, and they're even less likely to do so now.

In light of such changes, many Western fire researchers are urging us to treat wildfires more like we treat floods and earthquakes: not as adversaries that can be mastered, but as inevitabilities for which we need to be far better prepared.

Susan Prichard, a University of Washington forest ecologist who lives in the northern end of the Methow, spoke to her son's sixth-grade campout in September, shortly after the Carlton Complex was finally contained. "One boy said, 'So that was bad, but we're done with fires now, right?' I've spent my career trying to get people to understand the importance of fire, to understand its role in the ecosystem, but I got choked up when I had to say, 'No. No, we're not done with fires.'"

NO ONE IN OKANOGAN COUNTY EXPECTED CATASTROPHE. Pateros' disaster plan was a generic guide distributed by the county, and the fire department lacked the detailed local maps they needed to check on remote residences. Mayor Libby Harrison, who had been elected only six



months earlier and had little governing experience, resigned to help her own family recover from its losses; George Brady, mayor pro tem, whose family, home, and collection of historic trapping records escaped the flames, was sworn in to finish her term.

During those first surreal hours and days, the firefighters ate little and rested less, trying to help fire victims while still answering panicked calls about smoldering stumps and spot fires. The city council chambers were overwhelmed with donated goods and offers of help. Mayor Brady called on Team Rubicon — a disaster-relief organization founded and staffed by military veterans — which sent a 70-member incident command team and a mobile computer lab. For the next 17 days, the Rubicon crew led cleanup efforts and collected the documentation needed for federal emergency aid. “We told them we were going to flatten their trailer tires to get them to stay longer,” Brady jokes.

Okanogan County, which is defined on the south by the Columbia River and on the north by the Canadian border, was one of the last places in Washington reached by white settlers. Even now, in good weather, the twisting drive to Seattle over the North Cascades takes three and a half hours; in bad weather, it is impossible. The county’s 40,000 residents live in a handful of tiny towns, each separated from the others by long, narrow highway miles and a distinct sense of self. To many of those who move here from busier places, the isolation — even the insularity — is part of the romance, just

like the salmon streams and snowbound winters and gentle meadows of blooming balsamroot. But the fire was a sprawling, complicated, and enduring disaster, and it required a countywide response. For a set of towns that knew each other as high school sports rivals, that wasn’t always easy.

Anders was appointed to the Pateros town council after Brady’s promotion to mayor, and she met daily — sometimes twice daily — at the darkened town hall with other local leaders. The county’s lack of coordination was complicated by exhaustion, and by new fears: On Aug. 1, the Rising Eagle Road Fire, near Twisp, destroyed eight homes and interrupted a visit by Gov. Jay Inslee, who had flown in to see the aftermath of the Carlton Complex. Twenty-four hours later, a major windstorm caused more power outages. On Aug. 21, when heavy rains hit bare hillsides on the eastern side of the county, mudslides destroyed or damaged 15 more homes.

To manage its recovery, the county relied on an approach developed by a national coalition of volunteer disaster-assistance organizations: It established two local long-term recovery organizations and an overarching recovery group for the county as a whole. The groups included both local officials and ordinary citizens, many of whom volunteered their own time.

Anders, who stepped up to head the Brewster-Pateros Long-Term Recovery Organization, left her day-care business in the hands of her employees and volunteered for 72 days straight. “I just kept

expecting someone else to take charge,” she remembers. But she kept showing up, in part because she felt indebted to her town. In 2002, when her son was born more than four months premature, Pateros rallied around her family, helping Anders keep her business open and raising money to defray more than \$3 million in medical bills. (Her son, who weighed less than two pounds at birth, is now a healthy 12-year-old.)

Though Anders had served on the board of the local ski school for many years, she had no political experience other than her brief time on the town council. Suddenly, she was coordinating hundreds of volunteers and a bewildering array of activities. “Just to get the acronyms right was huge,” she says. In late September, a church in the nearby town of Wenatchee funded her position with the Brewster-Pateros recovery organization through the end of 2014. Soon afterward, the county received two large anonymous donations that funded staffing for both the local and county recovery groups, and Anders was hired to lead the countywide group.

Last November, when I visited Pateros, Anders seemed comfortable at the helm. Early one Saturday morning, she stood in a downtown parking lot dressed in jeans and a fire-department jacket, her hair in a practical ponytail and a smile on her broad face, welcoming a group of sleepy AmeriCorps volunteers from all over the country.

“Anyone here ever built fence?” Anders called out, grinning. Two tentative hands went up. “Whoo-ee,” Anders teased.

Brothers Jesús (standing) and Eric Gonzalez, above left, stand at the remnants of the home they rented in Pateros, Washington, after the Carlton Complex Fire went through July 17, 2014. A year after the fire, research scientist Susan Prichard records data while doing field research in an area affected by the Carlton Complex fire near Twisp, Washington.

DAVID RYDER



Firefighters battle an April wildfire on a hillside in Los Angeles.

JONATHAN ALCORN/REUTERS

Cumulative fatigue

What if wildfire season never ends?

"You just can't staff all the time for a big disaster."

Shane Greer, assistant director for risk management for the Forest Service's Rocky Mountain region

When Bob Johnson, wildfire division manager for the Washington Department of Natural Resources, thinks about past fire seasons, he does so with a certain amount of nostalgia. There were some things that used to be true, he knows, that aren't anymore — when and where the big fires burn, for example. He used to think of the wet Washington coastal forests as "asbestos forests," where fire rarely, if ever, gets going. And the winter and early spring months used to be quiet and mostly fire-free, a time for him to catch his breath, talk to his staff and plan for the coming infernos of summer.

But in recent years, he's had to reconsider: Fire risk is now a reality on the coast, and his teams had already responded to almost a hundred fires by the first week of May this year. He'd had to deploy helicopters to a fire on April 8, the earliest he could remember in 33 years.

"There is no true off-season anymore," Johnson says.

Wildfire managers from California to Colorado are starting to feel the same way. As the changing climate has disrupted the typical seasonal weather patterns, they've had to grapple with how that disrupts the human systems we've developed to respond. The fire season is longer, and the winter months are no longer immune. In response, fire agencies are beginning to consider what it will take to deal with it,

both now and in the future, in terms of manpower and money.

Firefighting generally used to follow a semi-regular pattern: During the summer, the vast majority of wildfires were tackled by seasonal firefighters, typically college students. By fall, most of them would have returned to school, and fire agency staffing would be reduced to bare bones. There'd be a lull during the winter, as fire risk dropped close to zero and fire managers took a breather. Then, as spring began, the planning and hiring stages kicked off, and by summer, firefighters were back in the field.

Today, that routine is shifting. Some of the shifts are logistical: putting firefighters up in hotels, rather than tents, to stay warm when they're fighting winter wildfires, and recruiting nearby restaurants or vendors to feed emergency responders when the usual food service providers are off for the season. But many of the shifts require re-examining who to hire and when, what resources to keep around — and how to pay for it all.

Take Larimer County in northeast Colorado, home to roughly 300,000 people and, these days, at least a few "off season" fires. When a few of those wildfires got out of hand in the mid-2000s and early 2010s, the county's fire team began to realize they needed some sort of plan to respond.

"It's started coming up more and

more," Bill Nelson, the undersheriff who oversees the firefighting program, says. When fires broke out in November or December, it would be a mad scramble to find enough people. Nelson would call everyone he knew, anyone who had said they could possibly be available. "We would just look for bodies," he says. That meant that he often had inexperienced people, and not enough of them.

So he applied for some grants and managed to get enough money to keep on a small crew of experienced firefighters year round. But he's not sure it'll be enough: The money's not secure, and if more than one fire breaks out, his staff still gets stretched thin.

State and federal agencies have started to make similar adjustments, hiring seasonal staff earlier and keeping helicopters and fire engines staged and ready to go throughout the year.

For example, after a February wildfire burned 40 homes in the mountains near Bishop, California, and the state's drought produced fire-ready conditions, CalFire, the state's fire fighting agency, brought on seasonal firefighting staff almost two months early. It also kept on 70 fire engines through the winter, rather than the usual 10.

But those kinds of decisions have had their own repercussions, which affect everything from agencies' budgets and planning to firefighters' personal lives. If fire agencies understaff during the winter and spring and fires break out during those times, they could face the situation Nelson faced in the past, where they are forced to scramble to respond. If they overstaff and no fires materialize, they are faced with payroll and resource costs, with nothing to show. "You just can't staff all the time for a big disaster," says Shane Greer, the assistant director for risk management for the Forest Service's Rocky Mountain region.

Nonetheless, his division is keeping its seasonal incident management teams on call for an extra month. For firefighters, that means more months on the ground and in the field. For fire managers, that means fewer of their traditional seasonal firefighters — college students bound by school schedules — are able to participate. As a result, Nelson in Larimer County and others are considering what it would take to hire more professional firefighters.

But Greer has his own set of worries about whether it's safe for his staff to maintain the pace that a lengthening fire season requires, which gives them fewer opportunities to rest and recuperate. "If you're exhausted in the morning, you're not making crystal-clear decisions," he says. "If we keep this up for too long, people get tired. We start to wear them out." KATE SCHIMEL



"I'm seeing a lot of faces going, 'OK, what am I in for?' " After dispensing encouragement, a few tips — "let the equipment do the work" — and thanks, she left the volunteers with Shane and Sarah Rinker, a young couple from the nearby town of Cashmere who had trained as "disaster chaplains" through their church.

"Look, this is a big, big deal," Shane Rinker said. "Some of the people who have been through this fire, they've lost heirlooms, they've lost their great-grandpa's shotgun, they've lost everything. They may say, 'I don't know why this happened.' "

He looked sternly at his charges. "You don't have any answers, so don't try to come up with them. Say, 'I don't know why this happened, but I'm so glad you're safe, and we're standing by you.' "

AS ANDERS ORGANIZED VOLUNTEERS in Pateros, Mark Nelson shuffled through the ashes of the Carlton Complex, doing what he could to prepare his property for winter. Nelson, a 61-year-old carpenter with a bad back and an artistic bent, lives in the thinly populated hills above Brewster, Washington, about 10 miles northeast of Pateros. On this blustery Saturday, a group of volunteers from the Seventh-day Adventist Church was helping him insulate his carport with a layer of blueboard. The only remnant of his two-story wooden farmhouse was a pile of blackened boulders, part of its century-old foundation. "Last year, when I was thinking about selling the house, I asked a realtor if I should remodel it, and he



Carlene Anders, above, volunteer firefighter and executive director of the Carlton Complex Long Term Recovery Group, trains on a new water truck at the Pateros Fire Station in Pateros, Washington in July, a year after the big fire devastated her community. Above left, Anders holds a photograph of herself as a young smokejumper. At left, volunteer firefighter Tyler Copenhagen displays an extensive tattoo commemorating the battle against the fire. DAVID RYDER

said, 'Remodel it with a match,' " Nelson said, laughing. "I guess that's what happened."

Nelson is familiar with fire: Almost every summer, he watches smoke rise from forest fires to the north. Last summer, he kept an eye on the Carlton Complex, and on the night the fire hit Pateros, he reckoned that the flames were still about two days from his house. He had heard no calls to evacuate. Shortly after 7:30 p.m., he went to bed.

When he awoke three hours later, his room was filled with light. He looked out

the window and saw flames pouring over the nearest ridgeline. He scrambled out his front door and into the driver's seat of his Plymouth Voyager, wearing nothing but a pair of jeans and carrying his ancient white housecat, Fluffy. A wave of intense heat, moving ahead of the fire, ignited the grass and shrubs around him. He started the car, knowing he had just seconds to escape.

Blinded by the thick smoke, he soon ran off the road and stalled out in a meadow. Barefoot, cat in arms, he hobbled back toward the road. There, from a

Mark Nelson poses for a portrait with his cat, Fluffy, next to the van he used to try to flee the Carlton Complex Fire, before crashing and abandoning it. Below, watercolors Nelson painted of the fire. DAVID RYDER



small crest where the air was relatively clear, he saw that the flames had already overwhelmed his house. A young doe emerged from the smoke, followed by five quail and a pair of chukars. The animals stood nearby as Nelson crouched on the dirt, shielded his cat as best he could, and braced for the fire to pass over them all.

The speed of the Carlton Complex, combined with some fortunate geography, probably saved Nelson's life: He and Fluffy waited out the flames in a shallow dip in the road, where the air was relatively cool. (Days later, on the next rise, he would find a handful of pennies that had been blackened and twisted almost beyond recognition.) He escaped with second-degree burns on his arms and buttocks. Fluffy suffered only a wounded ego

— though when they finally made it to the hospital, she got her own room.

More than three-quarters of the households affected by the Carlton Complex were uninsured or significantly underinsured; Nelson's home had not been eligible for fire insurance. He lives on disability payments. Since returning to his land late last summer, he had been camping in his carport, the only building still standing on his property. He salvaged the woodstove from his farmhouse, and bought a sink and a mattress with emergency funds from local churches and relief organizations. He bought dimensional lumber, and began to divide the carport into rooms. He added an old television and a single battered chair.

In November, the Plymouth Voyager that Nelson and Fluffy abandoned on the night of July 17 listed on a nearby hillside, its frame a black and empty shell. Still inside were Nelson's boots, which he'd grabbed when he left his house but hadn't had time to put on; the heat of the fire had melted their soles to the floor. The day before the fire hit, he had loaded the cargo space with paintings — his own, his mother's, his late wife's — but all that was left of them was a pile of ash and broken glass.

Like almost everyone else affected by the Carlton Complex, Nelson was still talking about his experience. As he walked toward help that night, he said, embers sparkled across both sides of the valley — red, yellow, even blue. The flickering carpet of light against the black sky was, he said, spectacularly beautiful. He'd like to paint it, he said, but he hadn't done so yet.

Instead, as the temperature dropped,

he was spending a lot of time drinking beer and looking out the window of his carport. He had always loved the view from his property, but he had come to hate the black clouds of dust and ash that still rose on windy days, coating his shoes and Fluffy's paws, along with every surface of his makeshift apartment. "Sometimes," he said, "I'm really tempted to leave."

IN HER PICKUP TRUCK, which functions as a mobile office, Carlene Anders keeps a copy of a graph showing the emotional phases of disaster. First come the initial highs of survival and community cohesion, followed by a jagged drop into disillusionment, followed by a slow, unsteady, and indefinitely long rise toward recovery and reconstruction. Along the way are "trigger events," such as anniversaries, that remind survivors of the disaster and its costs. When I returned to Okanogan County in May, 10 months after the fire began, the county was still climbing toward recovery. "We're not even close to getting people back to where they were," Anders said. "The volume of loss is just too great."

Directing the county-wide recovery organization still required about 80 hours a week. Anders' husband, Gene Dowers, a postal worker with his own heavy schedule, had long since taken over all the household chores. (In the spring, he had joined the volunteer fire department, in part to see more of his wife and daughter.) Anders and her colleagues had testified to the state Legislature and met with the governor in Olympia, and they had hosted visits from members of the state's congressional delegation and their staff.

They had attended hundreds of meetings and put thousands of miles on their vehicles.

"I've gotten a whole college degree in the past nine months," she said. "I've had to come up 100 percent in politics, 100 percent in disaster recovery, 100 percent in just about everything you can think of."

Forty-two families who lost their homes in the fire — and who had been uninsured or underinsured — were still waiting to rebuild. Volunteers from a small Amish congregation in Montana had just poured foundations for four of the first 11 homes, and volunteers from the Mennonite Disaster Service as well as Methodist and Presbyterian church groups would soon arrive to help with construction. For Anders and her colleagues — who had raised money for materials, dealt with county inspections, and frequently pitched in with their own muscle — the groundbreaking was a milestone.

The cavernous emergency distribution center in Pateros, which for months had been filled with clothing, baby equipment and other essentials, was almost empty. Distribution center organizer Cindy Cook reported that most people were stopping by to pick up tools, or large furniture and appliances for their rebuilt homes. Some wanted camping gear so that they could guard their new homes during construction. "People are starting to come in and say, 'I got to take a shower in my own house!'" she said.

Memories of the fire, however, were still fresh: Cook and her husband, John, who live outside Brewster, near Mark Nelson, were trapped at home during the worst of the fire. Cook recalled watching her husband as he stood atop their woodpile, garden hose in hand, while 60 feet above his head, the fire-heated air roiled as if it were boiling in a pot. "We had put some things in the truck, thinking we would be able to evacuate," she said. "But after I saw that, I thought, 'This is about survival.'"

Though the Carlton Complex left a lot of bare hillsides, there is plenty of fuel still in the area, and given the dry winter, warm spring, and hot summer, the county could well see more severe fires soon. So as Anders and others nudge the recovery effort forward, they're preparing for future disasters, too.

The county has implemented a reverse-911 system for evacuation alerts, and is encouraging more homeowners to not only build with fire-resistant materials but also clear brush and prune trees within a 200-foot "ignition zone" around their homes — steps which repeated studies have shown do more to protect individual houses than large-scale fire-suppression or fuel treatment efforts. (The Cooks had followed the national Firewise guidelines for landscaping and construction, which almost certainly made it possible for them to save their home.) The county conservation district



A DC-10 very large air tanker drops fire retardant above Greer, Arizona.

JAYSON COIL (WWW.JAYSONCOIL.COM) PHOTO COURTESY U.S. FOREST SERVICE; APACHE-SITGREAVES NATIONAL FOREST

Aerial firefighting

Is it worth it?

When large wildfires blaze, the public counts on airplanes to put them out. Pilots fly air tankers over mountainous terrain and drop fire retardant — up to nearly 12,000 gallons per trip — onto the dense forests below. The bursts of red slurry bring hope to those whose homes are imperiled. Politicians and the media thrill at the sight and clamor for more. But is it safe? And is it effective enough to justify the high costs?

The U.S. Forest Service, which saw its large air tanker fleet shrink to just nine planes in 2012, has 20 air tankers on exclusive-use and call-when-needed contracts for the 2015 season, plus one under Forest Service operation. Spokeswoman Jennifer Jones said the agency is working to bring up to 28 air tankers into service. Last May, Colorado Gov. John Hickenlooper approved a \$21 million budget for the state to develop its own aerial firefighting fleet of helicopters, spotter planes and small retardant-dropping air tankers. California, currently the only state to have its own firefighting fleet, has 22 air tankers, 12 helicopters and 14 air tactical planes.

But unpredictable atmospheric conditions make flying over wildfires difficult and dangerous. Thirty-seven firefighters have died in aerial firefighting accidents in the last decade. If similar casualty rates prevailed on the ground, the Forest Service found, more than 200 ground firefighters would die every year. And the slurry, which is rich in nitrogen, can harm fish, wildlife and watersheds, despite agency guidelines to prevent drops onto vulnerable areas.

Aerial firefighting is expensive. Tankers cost upwards of \$6,000 per hour to operate. The slurry itself averages about \$2 per gallon, and the Forest Service used almost 9 million gallons of it last year. Forest Service Chief Tom Tidwell recently predicted that high fire-suppression costs for the 2015 season will divert funds from other important agency programs.

Andy Stahl, director of Forest Service Employees for Environmental Ethics, has criticized aerial firefighting. "They must have a lot of money to spend — to waste," he says of Colorado's air corps budget. Stahl claims that fighting fire from the air is not only expensive, dangerous and environmentally harmful, but that it has yet to be proven to work.

Forest Service experiments have demonstrated that retardants can reduce fire intensity and spread up to twice as effectively as water. But in 2011, Stahl's group did a correlational study using Forest Service data that found retardant use had no effect on wildfire size or initial attack success rates. (Jones said a new study hopes to address the data deficit, but data collection will need to continue for several more years.)

Once a big fire is burning, there's no time to pause and debate issues of effectiveness or cost, however. "If a house burns down and you failed to use a 747 that could dump dollar-a-gallon fancy fertilizer water because you didn't think it would make any difference, you shouldn't be fighting fires," Stahl says. "You will get clobbered politically when that house burns." KELSEY RAY

"We had put some things in the truck, thinking we would be able to evacuate. But after I saw that, I thought, 'This is about survival.'"

—Cindy Cook,
Brewster, Washington,
resident

The fast and the furious

What we know about how plants burn

It's rare for the rainforest to catch fire; the Pacific Northwest's old-growth forests are some of the wettest places in North America. But this year, the Olympic Peninsula saw its driest spring in over a century, and in late May, a bolt of lightning ignited the desiccated lichen and timber of the Queets River Drainage in Washington's Olympic National Park.

Since then, the Paradise Fire has burned more than 1,600 acres, and fire officials expect it to continue until the end of summer. Much of the blaze has been spread by lichen, a composite symbiotic organism generally made up of fungus and algae. Lichen mantles the forest's centuries-old Sitka spruce, western hemlock and Douglas-fir, forming ladders that flames easily crawl up. When those ladders collapse, fallen logs provide more fuel and intensify the fire. Lichen and mosses are unusual culprits. Typically, fires are driven by one of four vegetation groups — grass, shrub, slash or timber. But climate change and an altered fire cycle mean different fuel types are now carrying fires, and that makes it all the more urgent for scientists to understand each species.

Matt Jolly, at the Missoula Fire Sciences Laboratory in Montana, is one of the only researchers in the world attempting to model fire behavior after

individual vegetation types. Instead of looking at a group, like timber, as a whole, Jolly examines the individual needles of a ponderosa pine. How quickly a plant ignites, and gets wet or dries, he explains, is directly related to its surface-area-to-volume ratio. "The fastest way to cook something is to flatten it out," he says. "By flattening it out, you increase the surface area and therefore the contact with heat."

That makes lichen, for example, incredibly flammable, far more than any other vegetation group. Moreover, unlike timber, which can take weeks to dry out, lichen can dehydrate in minutes. But just because lichen ignites quickly, doesn't mean it causes the most intense fires. Very hot fires need a large volume of fuel, or vegetation, to sustain them. That makes timber the most dangerous vegetation group.

Although the Pacific Northwest's forests are home to both lichen and massive stands of old-growth timber, fires there are typically restrained by other ambient factors, including rainfall. But as the drought persists and climate change alters humidity levels, rainforest fires could become more frequent. "It really depends what happens in the climate over the next 30 years," Jolly says. GLORIA DICKIE

has coordinated efforts to revegetate burned, mudslide-prone slopes.

Just as important as such concrete measures, Anders says, are the formal and informal networks built after the fire — within the county and without. "When we have to get a helicopter here, when we have to get the Red Cross here, we'll know who to call, and we'll be calling people we know intimately and personally," Anders says. "That is really the key — having that spiderweb of contacts that you can access right away."

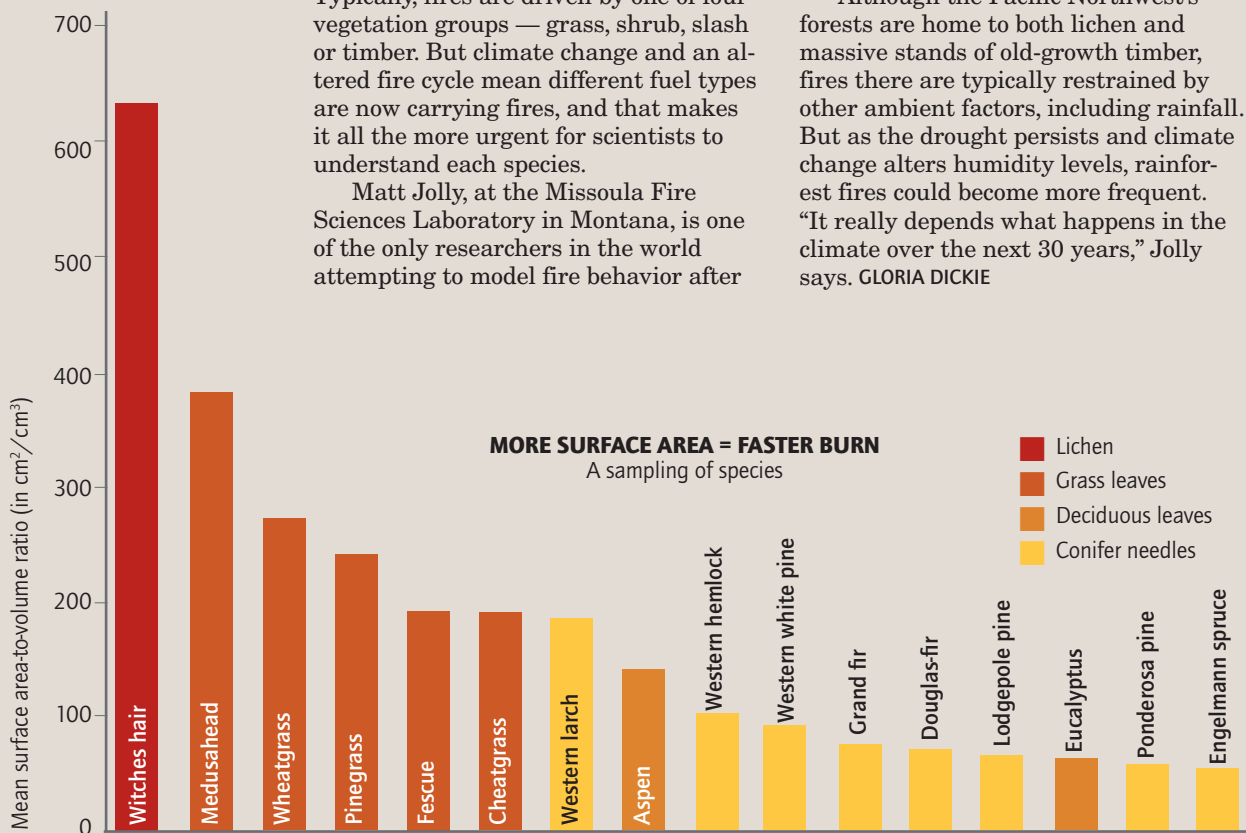
Relationships at the most local level have changed, too. "You think you know your neighbors," she says, "but you don't know them until you're sitting across the table from them and they're telling you about the pictures that they lost, the insurance they didn't have, all the things that are bothering them."

"We know each other like we've never known each other before — and I can tell you, these people will cover each other for decades. There is generational support in these relationships."

The cultural contradiction at the heart of the rural West — stubborn individualism combined with a deeply ingrained expectation of government support — may have met its match in large, destructive fires like the Carlton Complex. While many in Okanogan County still treasure their independence, many now recognize the value of interdependence, among their communities and beyond county boundaries. And though questions linger about last summer's state and federal firefighting efforts, there's a growing sense that wildfires are no longer just someone else's responsibility. Modern wildfires require more of everyone—not only of federal, state and local governments, but also of homeowners and neighborhoods.

Since 2009, the Department of the Interior and the Department of Agriculture have been developing a new wildland fire management strategy — usually referred to as the "Cohesive Strategy" — that emphasizes community preparation. "We've evolved from saying 'We can get it done' to recognizing that shared responsibility is absolutely critical," says David Calkin, a Forest Service fire researcher. Community preparation not only protects homes but may also relieve persistent local and state pressure on the Forest Service to fight essentially untamable fires — which would, in turn, save money, reduce firefighter risk, and allow fires to finally regain their place in the ecosystem.

This summer, Sen. Maria Cantwell, D-Wash., is preparing to introduce legislation that would, among other measures, build on the Cohesive Strategy by providing financial assistance to counties that protect existing houses and prioritize development in areas with lower fire risk. At the same time, Western governors, including Inslee, are calling on the Federal Emergency Management Agency



BURNS FASTEST (under similar environmental conditions)



BURNS HOTTEST

SOURCES: MATT JOLLY, MISSOULA FIRE SCIENCES LABORATORY; JAMES K. BROWN, RATIOS OF SURFACE AREA TO VOLUME FOR COMMON FUELS, 1969. PHOTOS CC VIA FLICKR BY, FROM LEFT, SCOTT DARBEY, JIM KENNEDY, NATURE80020, MAREN, SANCHO MCCANN



Volunteer firefighters, including Carlene Anders, center, and her husband Gene Dowers, left, run from the spray of water during a training session with a new water truck at the Pateros Fire Station. Below, a singed water tank above town.

DAVID RYDER

to change its criteria for individual assistance so that wildfire victims are more likely to qualify for aid. (FEMA did fund repairs to public highways, bridges and other infrastructure damaged by the Carlton Complex, but rejected a request for funds to help individuals and families, in part because the fire affected relatively few people over an extremely large area.) Both Inslee and Cantwell support using money from FEMA's Disaster Relief Fund to fight very large wildfires, a reform intended to end the practice of emergency "fire borrowing" from the Forest Service's fire prevention and forest health programs.

Behind each of these efforts is the same basic argument: Big, fierce wildfires will be with us for the foreseeable future, and reducing their human costs requires preparation and coordination — at every level.

Few in Okanogan County need convincing. "The kids at my day care are still playing fire," Anders says. "Even if they were just 2 years old at the time, they know where they were. They're playing games where they pack up their suitcases and go to the hotel because they've lost their home." The adults are also on alert, she adds. "When we go to do a fire drill, by golly, it's a fire drill. My employees want to know where the car seats are, where the keys are, where the backpacks of supplies are."

On June 28 of this year, a grass fire on the northwestern edge of Wenatchee spread quickly into town, destroying 29 homes and severely damaging several businesses. Anders and other members of the Pateros Volunteer Fire Department worked through the night to try to save a fruit-packing plant and a warehouse

belonging to an orchard-supply company, scaling ladders to break out windows and douse the buildings' interiors with water. The weather was extremely hot and windy, just as it had been during the Carlton Complex, making every spark a threat. At one point, when Anders and a fellow firefighter stopped to rest, a two-inch-long ember landed on her companion's rubber oxygen mask and started to melt it.

MARK NELSON SPENT THE WINTER on his property outside Brewster. The weather was relatively mild, so his carport remained livable, and he more or less got used to the soot. Every day, he cut and split downed timber for firewood for as long as his back allowed, then switched to reading, though he found that the trauma of the fire had diminished his attention span. As the weather warmed, he slowly built a small porch on the end of his carport. He even went looking for a telephone pole that, on the night of the fire, had toppled toward and almost broken through the windshield of the fire truck that rescued him. He sawed up the pole and turned it into a replacement support for his neighborhood's mailboxes.

When I returned to visit Nelson in mid-May, his burned-out Voyager had sunk even more deeply into its meadow. But a carpet of green grass had grown on the valley floor, and Nelson was delighted. "Don't you know what this means?" he said. "Every time I walk across it, it cleans my shoes. You have no idea how fun it is."

The weeds were coming back, too, and there wasn't as much native bitterroot as there had been before the fire. He hadn't yet seen any mountain lion, bear or



skunk tracks on his morning walks. But there were plenty of songbirds and plenty of quail, and many of the enormous poplars that once shaded his farmhouse had survived. A skinny ponderosa pine that he'd given up for dead had recently sprouted fresh needles.

Nelson didn't plan to apply for one of the new houses being built by the recovery group. Other people needed them more, he grumbled, and he was pretty comfortable. "I think I'll stay," he said. He waved at the view from his porch, still stunningly expansive despite the lingering traces of soot. "I could never replace this." □

This story was funded with reader donations to the High Country News Research Fund.



Michelle Nijhuis, a longtime contributing editor of *High Country News*, writes from White Salmon, Washington. Follow her @nijhuis.

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Oct. 7-10, 2015, SHIFT Festival, Jackson, Wyo. An in-depth exploration of outdoor access, responsible recreation, conservation leadership and youth engagement for communities striving to live in balance with nature. Tickets at www.shiftjth.org.

Sixth Annual Roundtable on the Crown of the Continent Conference, Missoula, Mont., Sept. 16-18, 2015. Please visit www.crown-roundtable.org/6thconference2015.html.

EMPLOYMENT

WorkInFarming.com — Where job seekers and farmers connect. Facebook, Twitter, LinkedIn, Google+.

The Wyoming Outdoor Council is seeking a director of external relations to help achieve its mission through engagement with decision makers, including government, nonprofit and business leaders. This individual will build strong relationships and serve as a primary contact for state and federal elected officials, Wyoming's governor and policy staff, key regulatory agency staff and business leaders working in the natural resources, energy, recreation, and travel and tourism sectors. S/he will monitor and engage in legislative and regulatory issues and ensure that environmental interests and the Outdoor Council's views and opinions are represented and well understood. The external relations director will work to defend, improve and cultivate environmental policies and laws that protect public health, as well as Wyoming's public lands, wildlife, air and water. The successful candidate will be able to identify opportunities to improve and implement sound conservation policies and defend the effective policies we already have on the books. For a full job description, go here: wyomingoutdoorcouncil.org/about/job-opportunities/.

President — The Yellowstone to Yukon Conservation Initiative (Y2Y) is a joint Canada-U.S. nonprofit organization with a mission to connect and protect wildlife habitat from Yellowstone to Yukon so people and nature can thrive. The organization is seeking a President passionately committed to large-scale conservation and possessing the vision, skills and other attributes necessary to build on past successes with new accomplishments.

The successful candidate will report to the Board of Directors and be responsible for leadership of all aspects of the organization including fundraising, planning and programs, fiscal management, personnel, administration and Board relations. The President will also provide leadership within the conservation community at large. For a detailed job description, qualifications and details on submitting an application for this position visit our website: y2y.net.

Executive Director — The Quivira Coalition, a nonprofit dedicated to building resilience in Western working landscapes, is seeking an executive director to provide inspired leadership and management. The ideal candidate will have seven or more years of leadership experience within a highly respected organization, the skills necessary to build bridges and consensus among diverse constituencies, and the vision and creativity to develop effective programming. For a full job description, see quiviracoalition.org/About_Us/Quivira_Executive_Search/index.html. To apply, send a résumé, cover letter and contact information for three professional references to the Quivira Coalition, Attn: Board of Directors, 1413 Second Street Suite 1, Santa Fe, NM 87505, QuiviraExecutiveSearch@gmail.com.

The Center for Collaborative Conservation (CCC) at Colorado State University is seeking an innovative leader and manager to become the founding Director of the Colorado Conservation Exchange. The Exchange is a watershed investment fund designed to

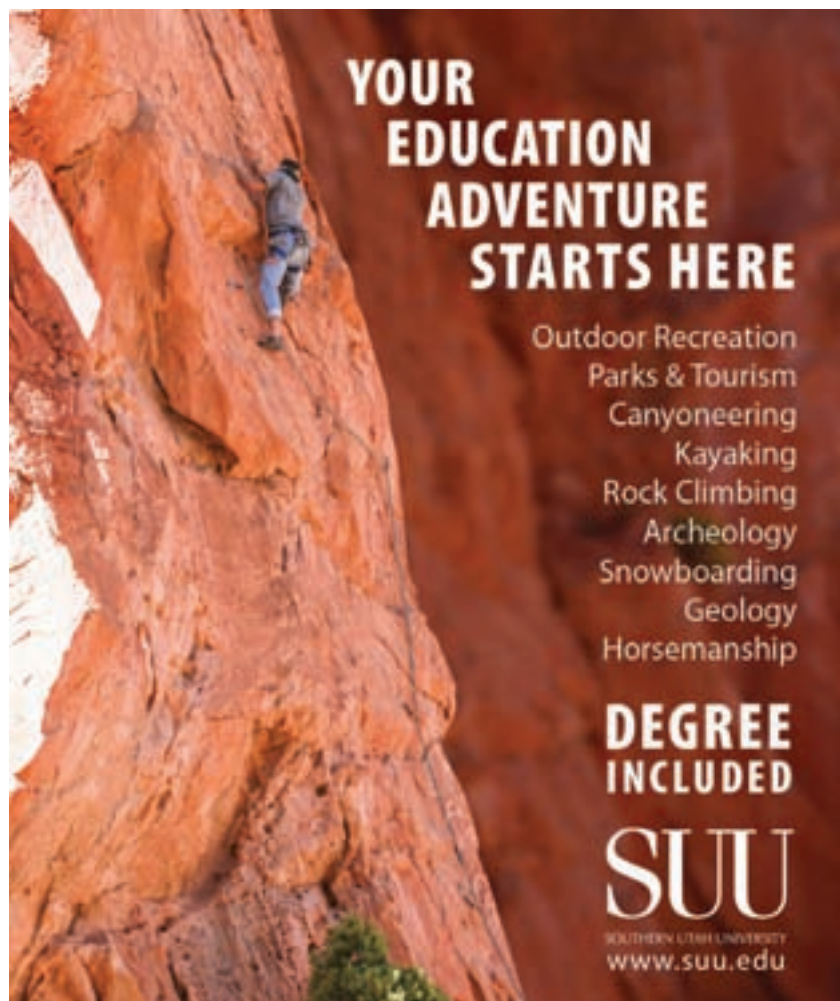
accelerate investment in watershed health and wildfire risk reduction in Colorado and potentially across the American West. The Exchange Director will be housed at the CCC and co-supervised by The Nature Conservancy (TNC). The mission of The Nature Conservancy is to conserve the lands and waters on which all life depends. The mission of the CCC is to understand and achieve conservation through collaboration to sustain people and the natural communities they depend upon. To apply and view a full position description, please visit: jobs.colostate.edu/postings/16050.

Membership Coordinator — The Southwest Environmental Center seeks a part-time Membership Coordinator to increase our membership and manage membership programs. Responsibilities include: membership development, communications, fundraising, and outreach. Visit www.wildmesquite.org to view job description.

Field Organizer — The Southwest Environmental Center seeks a part-time field organizer based in Las Cruces to mobilize public support for our campaigns to protect native wildlife and wildlands in the Southwest. Experience preferred but not required. Details at wildmesquite.org.

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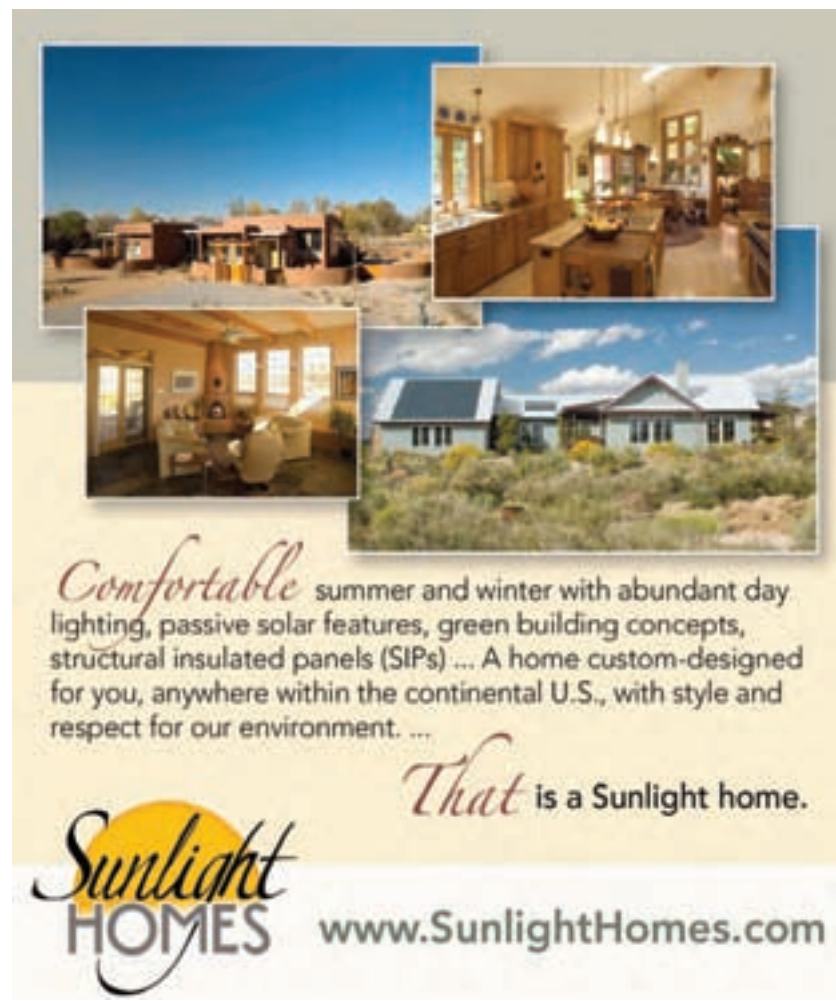


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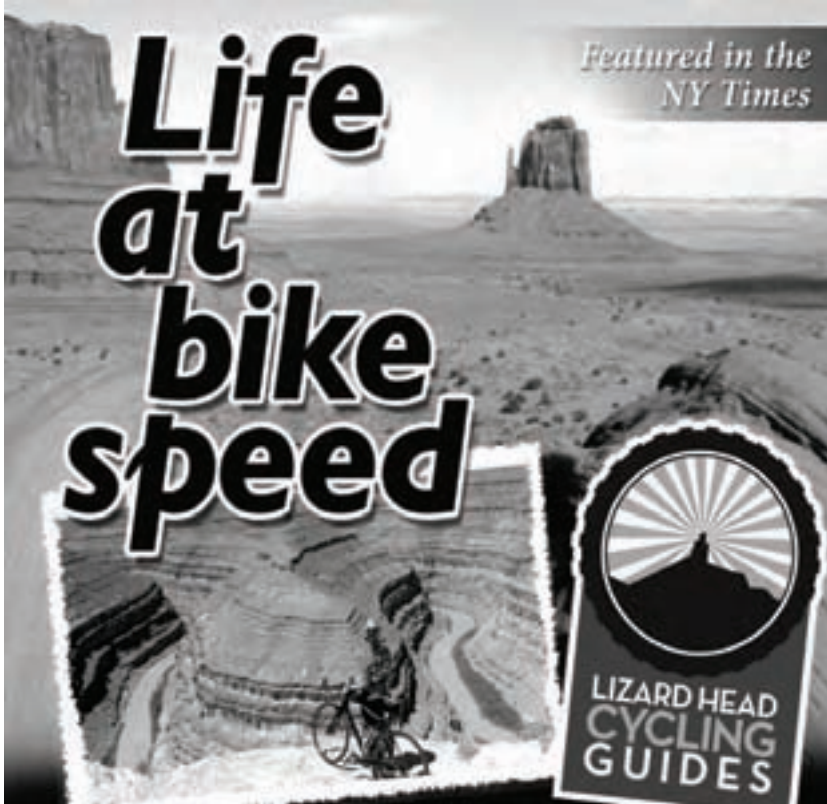
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INN & RESERVE

It's time to end Custer worship



OPINION
BY TODD
WILKINSON

As the rebel flag of Dixie disappears from prominent public flagstaffs, questions are being asked about other symbols of defiance. For example, is it appropriate to display statues of Confederate Civil War generals, some of whom were members of the Ku Klux Klan and outspoken in their racist views?

It's easy for us Westerners to wag fingers of political correctness at those states south of the Mason-Dixon Line, criticizing their legacy of race relations. But we have our own messy history to deal with, a conundrum we've never really addressed. It's left us with some giant blind spots in our thinking about regional

June 139 years ago, unwisely launched a surprise attack against an encampment of Sioux, Cheyenne and Arapaho along the Little Bighorn River.

At that spot in Montana, an unremarkable hill that rises now above Interstate 90, Custer paid the ultimate price by hastening his own demise. His hubris cost the lives of 267 others, not including Native American casualties.

Should Custer be celebrated as a hero of conquest or recast as the bigoted, egotistical, narcissistic villain he apparently was? Does he deserve to have his name attached to towns, counties, a state park and a national forest, or

of the few times in human history when a battlefield got named after a military strategist who committed a catastrophic blunder. Only in the wake of many decades of simmering protest was the name changed and a monument built on the site to recognize and honor the Native American warriors who fought and died there, repelling attackers hell-bent on their slaughter.

Custer graduated last in his class of 34 cadets at West Point and, according to historians, racked up one of the worst records of personal conduct ever accumulated at the military academy. Vainglorious, prone to insubordination, insecure and craving attention, Custer got on the wrong side of President Ulysses Grant.

Before he fled West, hoping to pad his résumé with a few bloody triumphs over Indians, Custer had pursued a book deal in New York and contemplated seeking high elected office. Once in the West, he drifted from his post and finally went AWOL. He violated treaties forged in sacred trust between the U.S. government and indigenous tribes, and he led a ruthless attack on a Cheyenne village, killing several women and children.

Recently, *New York Times* columnist David Brooks addressed the reassessments now being made of Confederate supreme commander Robert E. Lee. "Every generation has a duty to root out the stubborn weed of prejudice from the culture. We do that, in part, through expressions of admiration and disdain," he wrote. "Given our history, it seems right to aggressively go the extra mile to show that prejudice is simply unacceptable, no matter how fine a person might otherwise be."

Custer never was that fine a person. In the end, Brooks concludes, "We should remove Lee's name from most schools, roads and other institutions, where the name could be seen as acceptance of what he did and stood for during the war."

As Westerners, let us ask ourselves: Why should members of the U.S. Cavalry who committed racially motivated atrocities against Native people during the "Indian Wars" be treated any differently from Lee? Until our answer comes down on the side of justice and acknowledging prejudicial wrongs that still linger, we're no better than Dixie. □

Todd Wilkinson lives in Montana and is the author of the new book, Grizzlies of Pilgrim Creek — An Intimate Portrait of 399, the Most Famous Bear of Greater Yellowstone.

Writers on the Range is a syndicated service of *High Country News*, providing three opinion columns each week to more than 70 newspapers around the West. For more information, contact Betsy Marston, betsym@hcn.org, 970-527-4898.



George Armstrong Custer in 1865. CIVIL WAR COLLECTION, PRINTS & PHOTOGRAPHS DIVISION, LIBRARY OF CONGRESS, LC-BH831-1314.

identity and the meaning of democracy.

Part of our own much-needed reckoning involves some decorated Civil War officers, men who — and they were all white men — fought for the Union Army before becoming "Indian fighters." Across the Western Great Plains today, their deeds are commemorated in a variety of place names.

Let me throw out one that blows in the breeze every year around this time: U.S. Cavalry commander George Armstrong Custer, who, on a day in late

should his name, like the Confederate flag, be removed?

Travel anywhere in Western Indian Country, as I have done on assignment for a quarter-century, and you will find few names deemed more offensive to Native people.

We forget it wasn't all that long ago that the Little Bighorn Battlefield National Monument was called the Custer Battlefield by the National Park Service, which manages it.

Never mind that it represented one

WEB EXTRA

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Young men and fire



On the Burning Edge:
A Fateful Fire and the
Men Who Fought It
Kyle Dickman
277 pages,
hardcover: \$26
Ballantine Books,
2015

On June 30, 2013, Arizona's infamous Yarnell Hill Fire overran the Granite Mountain Hotshots, killing 19 firefighters as they crouched beneath their woefully inadequate aluminum shelters. The tragedy was nearly as mysterious as it was horrific: Minutes earlier, Granite Mountain had been stationed in the secure "black," already-burned land that couldn't reignite. Why the hotshots abandoned safety is a question that has spawned two official reports, hundreds of articles, and countless Internet-fueled conspiracy theories. Was it incompetent leadership? Hubris? Or a reasonable decision rendered disastrous by a sudden shift in the wind?

Kyle Dickman's new book, *On the Burning Edge*, can't provide a definitive answer, but it's the best account yet of the Yarnell catastrophe. Dickman, a contributing editor at *Outside Magazine* and a former firefighter, is concerned less with how Granite Mountain's men died than with how they lived. *Burning Edge* offers an intimate window into the singular culture of hotshots, the men and women who defend America's public lands with chainsaws, axes, and an endless supply of prepackaged meals and chewing tobacco.

Granite Mountain's members, most of whom are in their 20s, are a study in contradictions: Testosterone-driven in the field and tender at home, hard-drinking

and yet eager to join hands and pray "in the soft glow of the dying fire." We meet Scott Norris, a mentor to younger hotshots who bonds with his girlfriend over their mutual affinity for handguns; Grant McKee, an aspiring paramedic lured by good pay and repulsed by the team's hazing rituals; and guilt-wracked sole survivor Brendan "Donut" McDonough, a third-year hotshot "with the crew's longest rap sheet and foulest mouth." The most complex character is Eric Marsh, the ambitious superintendent who moves his team away from safety and toward the fire's path — perhaps, Dickman speculates, to impress higher-ups. To some firefighters, Marsh's mistake was understandable; to others, it was an "egregious and unforgivable error in judgment."

Still, no one man led the Granite Mountain Nineteen to their deaths. *Burning Edge* provides a deft synopsis of a century of firefighting malpractice, from the nascent Forest Service stamping out all fires to save valuable timber, to the ascent of the anti-fire mascot Smokey Bear, whose "fame rivaled that of Santa Claus." By interfering with natural cycles, forest managers permitted brush and saplings to choke meadows, creating a "ladder of fuels" that help low-intensity conflagrations climb into treetops and become mega-fires.

Not until one-third of Yellowstone National Park burned in 1988 did America's public-land agencies recognize the folly of kneejerk suppression. Even today, however, firefighters extinguish 98 percent of blazes in their early stages. Though Dickman devotes a few pages to contemporary fire policy, he rarely pulls back to analyze the larger land-use trends that put hotshots in harm's way, particularly population growth in the wildland-urban interface and landowners who fiercely decry building codes even as they demand that the federal government ride to their rescue. Climate change, which is making the West hotter, drier and more flammable, casts an omnipresent shadow over *Burning Edge*, but earns little explicit mention in its pages.

In the end, this is a book not about the scientists who study fire or the wonks who manage it, but about the grunts who face the consequences. Jesse Steed, Granite Mountain's captain and an ex-Marine, called hotshotting "the next best thing to the military," and the parallels are unmistakable: There's the grueling training, the obsession with equipment, the interminable deployments, the special camaraderie. As Dickman retraces the crew's final weeks, we eavesdrop on our protagonists in their most private moments: Kevin Wojciek dancing in the

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backseat of McKee's car, Norris slipping away from camp to steal one last shower with his girlfriend. Knowing the fate that awaits these young men makes their precious happiness almost unbearable; as June 30 draws ever closer, turning the pages starts feeling downright cruel.

When the Granite Mountain hotshots finally reach Yarnell, they're greeted by "total nonstop chaos." Three-mile walls of fire roar through the chaparral, and "dozens of propane tanks (send) columns of flames shooting into the air like fires off an oil derrick." Communications deteriorate as hotshot crews, agencies and commanders tussle for control of radio frequencies. Airplanes and helicopters nearly collide. Granite Mountain, trapped in a canyon, tries desperately to hail air support, which fails to grasp the crew's predicament until it's too late.

The Yarnell Hill Fire may have been sparked by lightning, but it was partly a manmade calamity, exacerbated by uncertain hierarchies, miscommunications and breaches in safety protocols. If these 19 deaths accomplished nothing else, perhaps we can use them to improve how the West's firefighting agencies interact on the line — because more, and bigger, fires are on the way.

BY BEN GOLDFARB



Firefighters walk across scorched land in Yarnell, Arizona, in the aftermath of the Yarnell Hill Fire, which claimed the lives of 19 members of an elite firefighting crew known as the Granite Mountain Hotshots. TOM TINGLE/AP

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The image shows the cover of the 'High Country News' magazine. It features a vibrant, colorful illustration of a mountain landscape with a large green tree in the foreground. The word 'ADAPTATION' is written at the bottom of the cover.

The internal West

My first job in Montana was de-horning cattle. I can barely call it a job, since my task was just to stand between calves being dehorned and their foamy-mouthed mothers — to stand all day in a barn doorway, distracting cows. I was a vegetarian during the summer of 1995, and there I was in Havre, Montana, working on a cattle ranch for a week. It doesn't sound like much of a job, but I was pretty much useless, anyway.

I ate toast and drank murky Earl Grey tea all week. Every morning, I buttered bread while the others sliced beef on the wobbly tree-stump table in the kitchen. The house blurs in my memory: bare light bulbs, yellowed flypaper, stacks of *National Geographics* from the late '70s, the faint scent of winter in every room. It was a house of men; by my third day, I learned I was the first female to visit the ranch in 14 years. After that, I stopped asking questions.

If that sounds romantic, reminiscent of a Jim Harrison screenplay, it wasn't. And yet that week spent west of the Bear Paws inspired a lasting love affair. It didn't begin on the ranch, but on a day trip to Great Falls with a friend.

He dropped me off downtown while he went to fix a saddle. I did my best to get lost, exploring used bookstores and searching for shade. In a small gallery, I saw an exhibit of sepia-toned photographs

My body a silo in the wind, and the silence inside my heartbeat, echoing. And I am comfortable with being so small, so beautifully insignificant in this vast place.

paired with sturdy poems. There were no people in the images, just silos, meadows, wind- and work-worn fields. I don't remember the poems or the name of the person who wrote them, but I remember following the words of *sky*, *meadow*, *dust* and *distance* as if I understood what they meant for the very first time. Suddenly, even the word *prairie* opened up inside of me — expansive, unbounded, filled with the watery sound of a lone meadowlark.

Until then, my words for great expanses had been *Great Lake* or *dune* or *peninsula*. The colors of my longing were shades of the inland sea and its ice. But in that gallery, away from pickup trucks and cattle dogs, I felt comfortable with being alone — with being so far out West.



The sun sets on the Montana prairie. TONY BYNUM

For many Americans, the West is synonymous with wildness, boundlessness, lawlessness, hope and dust — in varying amounts, depending on how much Steinbeck or Kerouac you have read. “My witness is the empty sky,” Kerouac said, which sums up how I felt about living under so much blue. All that sky brings light and a welcome solitude. Not loneliness, but longing. Not the ride on the train, but the sound of it passing, leaving you there, alone on the platform.

This is my internal West. When I find it, I simply wait and let the intensity of the present pass. This is what I sensed in those photos of bleak Western landscapes. They captured a place of wind and silence that had always existed inside me: My body a silo in the wind, and the silence inside my heartbeat, echoing. And I am comfortable with being so small, so beautifully insignificant in this vast place.

When we returned to the ranch, we went back to work. One morning towards the end of my stay, I asked Gerald, the owner, if he had any loose-leaf tea; I was out of Earl Grey.

“Third drawer down, under the coffee tin,” he said looking up from his morning paper.

I fumbled with tins and dried-out bags

of faded greens into gray. Finally, in the back of the drawer, I found a small red rusted tin. I opened it and paused. Turning to Gerald, I said slowly, “Is this tea?”

Gerald, who wore his cowboy hat all day long, inside and out of the house, peered over the top of the newspaper. Paused. Looked straight at me. “Nope,” he said. “That’s the ash to my son.” And went back to reading.

Carefully, I put the lid back on the tin. Quietly, I pushed the drawer back in, waited for my toast and went outside to eat breakfast. The screen door slapped shut behind me. I looked out over the cows, the morning rising, the hot cup of water in my shaky hand, and I tried to hold the weight of all that silence. The silence of what we cannot talk about, the silence between people when words seem useless. And sitting there on the stoop, looking to the prairie horizon, I could feel the vastness of the internal West inside everyone. How far our feelings travel but cannot be mapped. And how much we need that space. This West is the freedom to feel what cannot be framed into words. To allow ourselves to echo in wind, silos and what remains. □

Emily Walter is a poet and runs a cooking school in Missoula, Montana.



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HEARD AROUND THE WEST | BY BETSY MARSTON

THE NATION

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Sen. Al Simpson — a man who never minces words — to boldly lecture his party about finally abandoning some of its more conservative stances. When *wyofile.com* asked him about Wisconsin Gov. Scott Walker's plan to push a constitutional amendment to overturn the Supreme Court's decision allowing gay marriage, Simpson appeared exasperated. "Merry Christmas!" he exclaimed. "Thirty-seven states already approved it, and to get a constitutional amendment he has to have two-thirds of the vote in the legislatures in three-fourths of the states. I can't think Custer would have been in a worse position on that one." As for the argument that allowing homosexuals to marry somehow threatens the "sanctity of marriage," Simpson said straight couples were perfectly able to ruin their relationships without help: "As a practicing attorney, I did 1,500 divorces in Park County, Wyoming (and) these were heterosexuals. ... Marriage got destroyed a long time ago." Always delighted to tell people that he's been married to the same woman for 61 years, Simpson concluded, "What's wrong with people being happy? It doesn't matter what that is."

NEVADA

Both scofflaw rancher Cliven Bundy and the federal government got a tongue-lashing in the *Las Vegas Review-Journal* recently. The critic wasn't the environmental activist you might expect; it was David Jenkins, president of Conservatives for Responsible Stewardship, a national nonprofit that stands for "putting the conserve back into conservative." Bundy, said Jenkins, was nothing more than a "bully" for defying the government when it fined him more than \$1 million for illegally grazing his cattle on public land. Unfortunately, though, the bullying worked because the Bureau of Land Management failed to enforce the law; when Bundy and his armed supporters threatened violence if the federal agency tried to collect, it backed away, though this act of appeasement "served only to embolden Bundy and



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encourage further lawlessness and intimidation." Jenkins said it was long past time for the BLM to get tough, to shed its timidity and show that "nobody is above the law — not the president and certainly not Cliven Bundy."

MONTANA

Never, ever, underestimate a rattlesnake, especially a big one with nine impressive rattles. The snake was just sunning itself happily when Scott Adler's daughter happened to notice it as she was walking her 4-H sheep back to its pen. The rancher decided to shoot the somnolent snake, but an unidentified friend said he had a better idea. Explaining that he was "experienced in handling rattlers and would remove it," reports the *Missoulian*, the friend reached down and grabbed the snake, which promptly "bit him in the arm as he held it" — nailing him three times altogether. In a matter of seconds, Adler said, he saw his friend's arm turn black and his face begin to swell, and "the next thing we knew, he was getting Life-Flighted out of there." In defense of rattlers, it is said that they are rarely a problem — provided you leave them alone.

COLORADO

Congratulations to the Southern Utes on their beautiful new 48,000-square-foot headquarters, based in Ignacio, Colorado. The three-story

modern glass-and-steel building will house 140 employees who oversee what has become a multibillion-dollar, tribally owned conglomerate of oil and gas companies, a nearby gambling casino and diverse real estate, reports the *Durango Herald*. "We look at this building as really a piece of who we are today," said Mike Olguin, treasurer of the tribal council. Starting in the 1980s, the Southern Utes decided to back away from the federal Bureau of Indian Affairs, which manages natural resources for many tribes, and take control of their own economy by starting a tribal Growth Fund. Now, "80 percent of the Growth Fund's revenue comes from outside investments." They include a deep-sea oilrig off the coast of Mexico and 22 blocks of commercial space in the Denver suburb of Lakewood.

WYOMING

For the second time in three years, a dauntless treasure-hunting couple from Lynchburg, Virginia, had to get hauled out of the backcountry near Cody, Wyoming. In 2013, the unprepared duo tried to hike out to a legendary mine, supposedly laden with fabulous riches. Instead of a leisurely day hike, they spent three nights out "with nothing more than the clothes on their backs," reports ktvq.com. This summer, Park County search and rescue folks got yet another distress call: Still hunting that elusive treasure, Madilina L. Taylor, 41, had broken her ankle, and her companion, Frank Eugene Rose Jr., 40, badly blistered his feet, not to mention losing his wallet and cellphone after falling in a swollen river. It took searchers several hours to locate the lost couple and airlift Taylor out. The couple was sternly warned *not* to return for a third treasure hunt until they had mastered a few basic survival skills.

WEB EXTRA For more from Heard around the West, see hcn.org.

Tips and photos of Western oddities are appreciated and often shared in this column. Write betsym@hcn.org.



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“She knows that a law or a fence may slow the flow, but nothing can stop it because **the mind's dreams and the desires of the heart are powerful goads.**”

Laura Pritchett, in her essay, "On crossing the border, writing novels and mangos," from *Writers on the Range*, hcn.org/wotr