

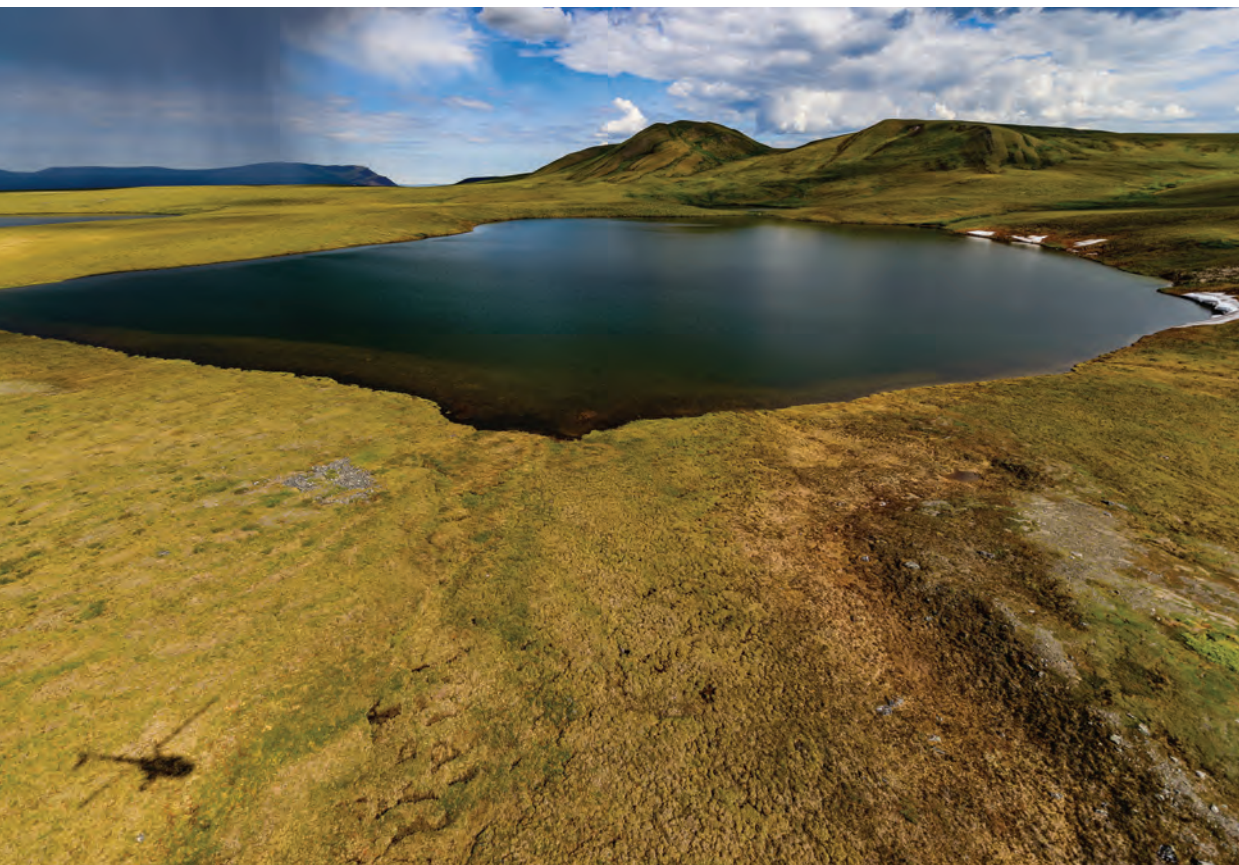
High Country News

For people who care about the West

Unfrozen North

Vast stores of carbon are locked in the world's permafrost.
What happens when it thaws?

By J. Madeleine Nash



Wolverine Lake, near the Toolik Lake Research Natural Area, underlain by permafrost, on the North Slope of Alaska. THOMAS NASH

On the cover

A storm clears in the late evening during the summer solstice in the valley between Shublik and Sadlerochit mountains of the Brooks Range, in the Arctic National Wildlife Refuge.

THOMAS NASH



Complete access to subscriber-only content

HCN's website
hcn.org

Digital edition
hcne.ws/digi-5003

Follow us



FEATURE

14 Unfrozen North

Vast stores of carbon are locked in the world's permafrost. What happens when it thaws? By J. Madeleine Nash

CURRENTS

5 Bucking the 'brain drain'

Interior cancels protections for migratory birds

6 'Orphaned' oil and gas wells are on the rise

Wells left behind by industry are overwhelming Western states

7 The Latest: Washington rejects oil terminal

8 Idaho protects the rights of faith healers. Should it?

A debate rages over the extent of religious freedom

9 The Latest: EPA restrictions on the Pebble Mine

10 And now their watch begins

In British Columbia, a coalition of 'guardians' enforces tribal and environmental laws

DEPARTMENTS

3 FROM OUR WEBSITE: HCN.ORG

4 LETTERS

10 THE HCN COMMUNITY Research Fund, Dear Friends

25 MARKETPLACE

28 WRITERS ON THE RANGE

To survive trying times, turn to the animals By Pepper Trail

29 PERSPECTIVE

The big sell-out: America's public lands By Jonathan Thompson

30 BOOKS

Coast Range by Nick Neely. Reviewed by Lawrence Lenhart

31 ESSAY

A Wyoming wedding By David Romtvedt

32 HEARD AROUND THE WEST

By Betsy Marston

Editor's note

Science matters

In Idaho, a political battle over climate change education is afoot. Lawmakers there want to scrub information about the subject from statewide science guidelines, veering away from national standards and leaving public-school students in ignorance. After all, the facts are in: Humans add greenhouse gases to the atmosphere, thereby trapping the sun's energy and heating up the planet. That's not a value judgment; it's just science. But denying it is akin to denying the existence of gravity.

For now, Idaho's more sensible teachers and students are pushing back, and it looks like some vestige of reason will be restored to classrooms. However, it is unlikely we've heard the last of this sort of thing, as a full-on ideological war on science is underway in our country. Ideas once confined to shock jocks and Twitter trolls have entered national politics, and now the White House.

As the venerable *Scientific American* recently reported, under President Donald Trump critical science positions in federal agencies have not been filled, science advisory panels are being disbanded, and science-based policies are being undermined. These, too, are facts, verifiable and indisputable, and yet I get letters these days asking me to stop disparaging the president. Believe me, I wish I could. But Trump's policies are endangering the long-term effectiveness of the Environmental Protection Agency, the Centers for Disease Control and Prevention, the Occupational Safety and Health Administration, the National Oceanic and Atmospheric Administration, and the National Aeronautics and Space Administration, to name just a few. In other words, this administration is undermining the American institutions that make our water and workplaces safe, cure diseases, and explore and study land, sea and space.

Why? I have no idea. But I do know this: The Earth's massive systems don't care a whit about you, me or Donald Trump. They will keep churning, turning, spinning and grinding according to universal laws, no matter what we say or believe. Here on this tiny rock in an infinite cosmos, we are free to extinguish ourselves or not, according to the rational (or irrational) choices we make.

This issue's cover story helps explain why these choices matter, why science matters. In it, writer J. Madeleine Nash takes us to the Alaskan Arctic, where researchers are trying to understand what will happen when vast stretches of permafrost thaw. Right now, no one knows for sure. What we do know is that, as temperatures rise, ice thaws. (Try denying that.) And when you defrost thousands of miles of muck, thousands of feet thick, something on our planet will change. If only it were the president's view of what actually makes America great: our power to reason, desire to discover and curiosity about the wonderful world we live in — at least while it lasts.

—Brian Calvert, editor-in-chief



Joe Sertich, from the Denver Museum of Nature & Science, liberates a jacketed fossil in Utah's Grand Staircase-Escalante National Monument. TOM FOWLKS/THE GUARDIAN

Monument reductions threaten fossil discoveries

In 2016, as paleontologist Rob Gay scouted through Bears Ears National Monument, he came across hundreds of bones from prehistoric reptiles that lived 220 million years ago. That site is jeopardized by President Donald Trump's move to cut the national monument by 85 percent. Trump has signaled he wants to shrink or modify as many as 10 national monuments, each with conservation or historical importance. The cuts put the national monuments at risk of being developed for energy, or not properly protected from looting. In Bears Ears and Grand Staircase-Escalante, leasing for uranium, coal and oil and gas exploration has begun. "The rock layers of the monument are like pages in an ancient book," said David Polly, Society of Vertebrate Paleontology president, which is suing the administration over the shrunken boundaries. "If half of them are ripped out, the plot is lost."

TAY WILES
Read more online: hcne.ws/imperiled-fossils

Trending

Wild horses aren't overrunning the West

In an opinion piece, Ellen Phipps Price writes that a wild horse management proposal by the Trump administration would reduce populations to "extinction levels," and says that the plan lacks widespread public support. Price argues that the Wild and Free-Roaming Horses and Burros Act is used more as "a pest-control statute that is designed to benefit ranchers who graze livestock on the public lands where wild horses live." Ultimately, Price recommends birth control as a humane alternative to slaughter. Congress' decision on this proposal "may not only determine the future of our wild horses, but also of the very public lands on which they live."

You say

RUSSELL WELCH: "Horses are OK on places like the Steens Range in Oregon, but they are murder on the desert ranges in west Utah and Nevada. They ruin water sources and drive off wildlife."

JAY BANTA: "The contention that 'horses are not over-running the range' is not a view that is supported by a majority of qualified range ecologists on the topic."

BRENT NEWMAN: "Feral horses are not only a drain on taxpayers but also the environment, as they spread invasive plants and wreak havoc on native plants and animals."

Read more online: hcne.ws/wild-horses and [Facebook.com/highcountrysnews](https://facebook.com/highcountrysnews)

20,000

Number of marbled murrelets believed to inhabit California, Oregon and Washington

4 Percent by which that population is declining annually.

Along the West Coast, the threatened marbled murrelet has remained elusive to researchers trying to aid in its long-term recovery. The bird — which forages in the sea and keeps a solitary nest, often in old-growth trees — was deeply impacted by logging. Its precipitous decline triggered habitat protections and reduced logging, but so far, murrelet numbers have not improved. Conservationists want to list the bird as endangered, and researchers want to better understand why populations have stagnated.

ERIC WAGNER/HAKAI MAGAZINE
Read more online: hcne.ws/murrelet-recovery

Photos



Aaron and Dana Steege-Jackson sell vegetables at the weekly market in Poulsbo, Washington. At their Around the Table Farm, they use only draft horses, rather than fossil-fueled tractors, to work fields and grow produce. Read about them and see more photographs by Andria Hautamaki in "The allure of horse-powered farms."

See the photo story online: hcne.ws/old-ways



A member of the Murded and Missing Indigenous Women's (#MMIW) contingent leads the Seattle Women's March 2.0 in January. MATT M. MCKNIGHT/CROSSCUT

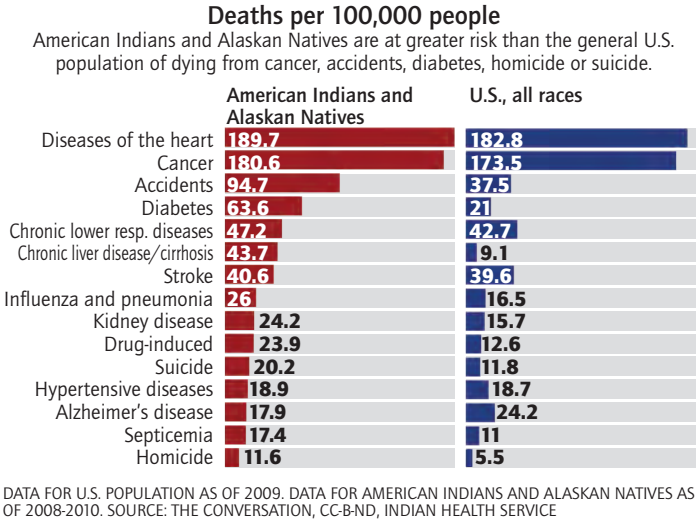
"If this was a white woman's issue, if there were white women murdered and missing on this level, this would be a national issue. Something would be done about it."

—Eve Reyes-Aguirre, an Izkaloteka Mexico woman running for Senate in Arizona, talking about missing and murdered Indigenous women — the exact number of victims is unknown — and the rise of the social media campaign #MMIW alongside the #MeToo movement, which some women of color regard as not inclusive or representative of their experiences.

Read more online: Indian Country News hcne.ws/marginalized-voices

Hidden health inequalities

As a young Native American woman, Annie Belcourt realized that her family and friends were more likely to die at an early age. Now a medical professional, Belcourt blames the problem partly on lack of federal funding and access to medical care. ANNIE BELCOURT/THE CONVERSATION
Read more online: hcne.ws/health-disparities



High Country News

EXECUTIVE DIRECTOR/PUBLISHER
Paul LarmerEDITOR-IN-CHIEF
Brian CalvertSENIOR EDITOR
Jodi PetersonART DIRECTOR
Cindy WehlingDEPUTY EDITOR, DIGITAL
Kate SchimelASSOCIATE EDITORS
Tay Wiles

Maya L. Kapoor

ASSISTANT EDITORS
Paige Blankenbuehler

Anna V. Smith

WRITERS ON THE RANGE
EDITOR Betsy MarstonASSOCIATE PHOTO EDITOR
Brooke WarrenCOPY EDITOR
Diane SylvainCONTRIBUTING EDITORS
Tristan Ahtone, Graham
Brewer, Cally Carswell,
Sarah Gilman, Ruxandra
Guidi, Michelle Nijhuis,
Jonathan ThompsonCORRESPONDENTS
Krista Langlois, Sarah
Tory, Joshua ZaffosEDITORIAL FELLOW
Emily BensonEDITORIAL INTERNS
Carl Segerstrom
Jessica KutzDEVELOPMENT DIRECTOR
Laurie MilfordPHILANTHROPY ADVISOR
Alyssa PinkertonDEVELOPMENT ASSISTANT
Christine ListMARKETING & PROMOTIONS
MANAGER JoAnn KalenakEVENTS & BUSINESS PARTNER
COORDINATOR Laura Dixon

WEB DEVELOPER Eric Strebel

DATABASE/IT ADMINISTRATOR
Alan WellsDIRECTOR OF ENGAGEMENT
Gretchen KingACCOUNTANT
Erica HowardACCOUNTS ASSISTANT
Mary ZachmanCUSTOMER SERVICE MANAGER
Christie CantrellCUSTOMER SERVICE
Kathy Martinez (Circ.
Systems Administrator),
Lisa Delaney, Pam Peters,
Doris Teel, Tammy York
GRANTWRITER Janet Reasonereditor@hcn.org
circulation@hcn.org
development@hcn.org
advertising@hcn.org
syndication@hcn.org
FOUNDER Tom BellBOARD OF DIRECTORS
John Belkin, Colo.
Beth Conover, Colo.
Jay Dean, Calif.
Bob Fulkerson, Nev.
Wayne Hare, Colo.
Laura Helmuth, Md.
John Heyneman, Wyo.
Osvel Hinojosa, Mexico
Samaria Jaffe, Calif.
Nicole Lampe, Ore.
Marla Painter, N.M.
Bryan Pollard, Ark.
Raynelle Rino, Calif.
Estee Rivera Murdock, D.C.
Dan Stonington, Wash.
Rick Tallman, Colo.
Luis Torres, N.M.
Andy Wiessner, Colo.
Florence Williams, D.C.

WORKING WITHIN THE SYSTEM

Perhaps if Kayla Brown ("A Separatist State of Mind," *HCN*, 1/22/18) had spent the last five years working to reinvigorate "the Northstate" instead of trying to divide the state, her husband might have a job in the area she loves. She could have been working with Extension Services and community colleges to bring in educational opportunities for retraining unemployed citizens. She could have been pushing for issues that would improve the area to draw in more businesses. She could have been lobbying businesses to bring in business opportunities. She could have been researching for federal and state grants to aid small businesses. The winery could have started an internship program. She could have been working to regulate marijuana-growing farms for the legalization of recreational marijuana. Why didn't she start using the monthly digital newsletter to promote growth? She could have accomplished a lot by using the system instead of fighting it.

Carol Fleshman
Holyoke, Colorado

SEPARATISM WILL BE
A FOOTNOTE TO HISTORY

With respect to the movement to create a state of Jefferson in far Northern California, the photo on the bottom of page 17 says all that needs to be said: Those promoting separation from California are overwhelmingly old folks. One was nodding out in the photo ("A Separatist State of Mind," *HCN*, 1/22/18)!

I've lived in the area for over 40 years. The young people have moved on; many are marijuana farmers. Those promoting the state of Jefferson are a lot like Donald Trump: Slick-talking salespersons with racist motives. At best they will get a footnote in the history books.

Felice Pace
Klamath, California

AGREEING – AND DISAGREEING –
WITH BUNDY

In his editor's note, Brian Calvert discusses the much-celebrated Cliven Bundy legal case, which was recently summarily dismissed by a Las Vegas judge ("Rural white scorn," *HCN*, 1/22/18). He reminds us of the issues that resulted in federal charges brought against Mr. Bundy — that Mr. Bundy was using federal (public) lands as



MONTE WOLVERTON/CAGLEARTOONS.COM

grazing pastures for his cattle, in a way prohibited by federal law.

Interestingly, (and curiously) Mr. Calvert, in his "closing argument," asks whether "we" (presumably the American public) may be better served by asking "whether or not we are all in the same boat after all," and whether we may "have more in common with these folks (the Bundys and white supremacists) than you think," vis-à-vis our dislike of being represented by corporate interests?

For now, my vote is unequivocally NO! The irony is palpable. I absolutely defend white supremacists' right to express themselves in any manner consistent with the provisions and proscriptions of the First Amendment. I also support Mr. Bundy's right to bring a claim against the government in matters where he believes he is being harmed. I part ways with Mr. Bundy and white supremacists, et al, on matters that are not only abhorrent to my fellow sentient beings' feeling or sense of morality, but abhorrent to our democratic processes institutionalized and memorialized by our rule of law.

Please count me as having absolutely nothing in common with those who view our constitutional tenets and proscriptions as simply tools to further an unlawful agenda or to support a platform that seeks to divide our citizenry.

Rudy V. Garcia
Gilpin County, Colorado

LESSONS OF THE BEARS

I read Christopher Solomon's essay on his visit to the McNeil River Sanctuary

with great interest ("Bear Essentials," *HCN*, 12/25/17). I was especially struck by the idea of humans learning how to interact with bears by figuring out what works for the bears, what their language is, rather than trying to force the bears to accommodate to us and our habitual way.

We would do well to utilize this general approach in all our interactions with the natural world. How much do we destroy and how much do we fail to notice or appreciate when we move heedlessly through our environment, assuming that only what meets our apparent needs or urgent desires is worthy of our attention or nurturing — when we attempt to bend the rest of life, however large or small, to our will?

It strikes me as strange, misguided and shortsighted to measure the intelligence of other beings merely by how well they conform to our immediate interests and demands, how well they understand our language and commands. Rather, we might also gauge our own intelligence by how well we can learn and respond carefully to the communications of other species and individuals with whom we share our environment.

The lesson of McNeil is profound. Difficult as it may be, let us find ways to apply it in all the places we inhabit and to all the creatures with whom we interact. Then we will have shown a truer and more reciprocal intelligence.

Stephen S. Lottridge
Jackson, Wyoming

High
Country
News

High Country News is a nonprofit 501(c)(3) independent media organization that covers the issues that define the American West. Its mission is to inform and inspire people to act on behalf of the region's diverse natural and human communities. (ISSN 0191/5657) is published bi-weekly, 22 times a year, by High Country News, 119 Grand Ave., Paonia, CO

81428. Periodicals, postage paid at Paonia, CO, and other post offices. POSTMASTER: Send address changes to High Country News, Box 1090, Paonia, CO 81428. All rights to publication of articles in this issue are reserved. See hcn.org for submission guidelines. Subscriptions to *HCN* are \$37 a year, \$47 for institutions. 800-905-1155 | hcn.org

printreleaf
CERTIFIED
Printed on recycled paper.

Bucking the 'brain drain'

Some youth return to their rural roots

BY ERIC DIETRICH/SOLUTIONS JOURNALISM NETWORK

In much of rural Montana, brain drain has been a fact of life for decades. After high school, ambitious sons and daughters leave for college or simply head for new horizons. Few of them ever return to their small hometowns.

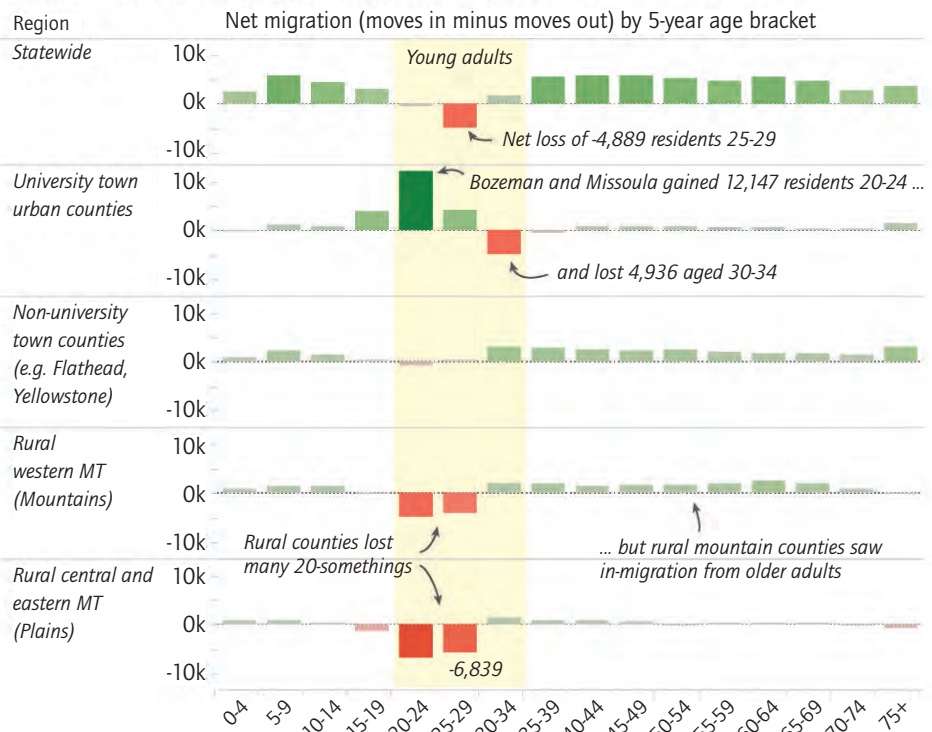
There are plenty of reasons young Montanans seek lives outside rural communities — better wages, larger dating pools, cultural amenities. But if the state's small towns are going to thrive, they will need new generations of talent — families to keep schools open, health professionals to staff hospitals, leaders with the energy to start businesses, coach sports teams and run for town council.

Montana does have a number of ambitious young residents who have deliberately chosen small towns, returning home after college or moving to an adopted place. They acknowledge the trade-offs involved, including having to hustle at multiple jobs to make ends meet or support entrepreneurial dreams. But many have a conviction that their talents can make a difference to their community's future. "There have been people who put their blood, sweat and tears into keeping Anaconda alive," says Kaitlin Leary, a fourth-generation local resident. "There was somehow honor in coming home."

Read more online: hcn.ws/mt-young-pros

Eric Dietrich is a Montana-based journalist and reporter for Solutions Journalism Network. [@eidietrich](https://twitter.com/eidietrich)

Montana migration by age bracket in the 2000s



GRAPH: ERIC DIETRICH/SOLUTIONS JOURNALISM NETWORK
SOURCE: UNIVERSITY OF WISCONSIN-MADISON APPLIED POPULATION LABORATORY

Interior cancels protections for migratory birds

A rollback prompts broad opposition from former officials from both political parties

BY ELIZABETH SHOGREN

A new legal opinion that seeks to allow the unintentional killing of most migratory birds has drawn unprecedented protest from a bipartisan group of top officials.

Under the Interior Department's new interpretation, the 1918 Migratory Bird Treaty Act, which prohibits the killing of any migratory birds without permission, will no longer be enforced against industries that inadvertently kill a lot of birds, such as oil drilling, wind power and communications towers. Now, only intentional killing without a permit — such as hunting birds for feathers — is forbidden.

A Jan. 10 letter from 17 former wildlife officials urges Interior Secretary Ryan Zinke to suspend the "ill-conceived" opinion, saying it makes it nearly impossible to enforce the law. For decades, the threat of prosecution encouraged industries to

collaborate with the federal government on minimizing bird deaths. Now, industries might end bird-friendly practices. "It's a complete giveaway, principally to the energy industry, but to industry writ large, at the expense of a resource that is precious and vulnerable," says Dan Ashe, who was Barack Obama's Fish and Wildlife Service director.

The new legal opinion shows how Trump's rollbacks attack fundamental conservation principles long supported by both Republican and Democratic administrations. "This legal opinion is contrary to the long-standing interpretation by every administration since at least the 1970s, who held that the Migratory Bird Treaty Act strictly prohibits the unregulated killing of birds," the letter states.

The old interpretation protected birds without being too onerous for industries, says Lynn Scarlett, deputy Interior secretary and acting secretary under George W. Bush. Companies were warned repeatedly before they were prosecuted. "The act and the way it has been implemented for many years has made people come to the table and think about important actions to protect birds," says Scarlett, now managing director of The Nature Conservancy. "Narrowing that is going to adversely affect birds and diminish the motivation for creative conservation partnerships."

But the Trump administration says the act was implemented too aggressively. "Interpreting the (act) to apply to incidental or accidental actions hangs the sword

of Damocles over a host of otherwise lawful and productive actions, threatening up to six months in jail and a \$15,000 penalty for each and every bird injured or killed," Interior's principal deputy solicitor, Daniel Jorjani, wrote in the legal opinion. Jorjani is a Trump appointee who came to Interior from Freedom Partners, a political organization largely funded by the anti-regulatory, fossil-fuel-billionaire Koch brothers. It will likely take several months to develop guidelines on implementing the changes in the field. □

National Renewable Energy Lab researchers release a bald eagle from a lift during research to develop radar and visual systems that prevent bird strikes with wind turbines.

DENNIS SCHROEDER AND JOHN DE LA ROSA/NATIONAL RENEWABLE ENERGY LAB



‘Orphaned’ oil and gas wells are on the rise

Wells left behind by industry are overwhelming Western states

BY JOSHUA ZAFFOS

In March 2015, Joe MacLaren, a state oil and gas inspector in Colorado, drove out to the Taylor 3 oil well near the tiny town of Hesperus, in the southwestern corner of the state. He found an entire checklist of violations. Atom Petroleum, a Texas-based company, had bought out more than 50 oil and gas wells after the company that drilled them went bankrupt. Now, Atom was pumping oil from those wells, but Taylor 3 was leaking crude, and it was missing required signage as well as screens on infrastructure to keep birds away from toxic gunk. Worse, the company had not performed safety tests to ensure the well wasn’t leaking fluids underground.

Over the following months, the state slapped Atom with fines, performed follow-up inspections, and demanded a \$360,000 bond to cover the cost of shutting down the wells, just in case Atom — hardly proving itself to operate in a trustworthy manner — didn’t clean up its act.

Indeed, the list of violations MacLaren and others discovered kept growing, yet Atom continued pumping oil and gas, and did not pay fines or put up the \$360,000 bond. So in 2016, the state took a rare step: It revoked the company’s drilling permit. Atom’s business, it said, was no longer welcome in Colorado.

Atom didn’t bother to follow through on one last important obligation, either. When companies cease production, they are supposed to plug wells with cement to reduce the risk of leaks, and to restore vegetation and wildlife habitat aboveground. They recoup their bonds if they do so, whereas if they don’t, the state cashes them. In this case, Atom flouted its responsibility to plug and reclaim its wells, leaving the state to clean up its mess. Colorado did claim a \$60,000 bond Atom posted when it first started operating, but the cleanup could cost taxpayers 10 times that.

The 50 or so wells Atom left behind comprise Colorado’s largest-ever “orphaned well” case, according to the Colorado Oil and Gas Conservation Commission. But it’s not an isolated problem. Companies that go out of business, become bankrupt, or, like Atom, simply ignore the rules, tend to skip out on cleanup and land

restoration. And since bond amounts set by states and the federal government rarely if ever cover real-world cleanup costs, it can be cheaper for a company to forfeit a bond than to follow reclamation rules.

Orphaned wells are more likely than properly plugged “abandoned” wells to leak pollutants, including methane gas, which can contaminate groundwater and even trigger explosions. So it’s troubling that the number of such wells in the West has soared. A downturn in energy prices starting back in 2008 has led energy companies to orphan thousands of wells across Colorado, New Mexico and Wyoming. States are struggling even to tally them, let alone remediate them. Officially, Colorado has 244 orphaned wells on its books, but state officials estimate another 400 have yet to be located. And with a new drilling boom tapping deep shale formations along Colorado’s urban Front Range, some worry that the next bust will saddle the public with thousands more.

On state and private land, major energy corporations typically explore and drill for oil and gas across large fields and then sell parcels to smaller operators when production dips. The little guys can still turn profits, just not at the margins big corporations need to satisfy shareholders.

But small companies tend to have shakier financing and are therefore more vulnerable to market swings. When gas prices plunged starting in 2008, it bankrupted many small companies producing marginal amounts of methane from coal seams, and thousands of coalbed methane wells were orphaned.

In Wyoming, the problem reached epidemic proportions. In 2014, under Republican Gov. Matt Mead, the state implemented an aggressive strategy to identify and plug orphan wells. To hedge against future busts, the state also significantly hiked the bonds companies must put up before drilling. It based those increases partly on well depth, since the deeper shale oil and gas wells now being targeted are much more expensive to reclaim than conventional shallow wells. Wyoming has since reclaimed 1,700 sites on state and private lands, using taxes and royalties paid by industry to chip away at the backlog caused by the spike in orphaned wells and insufficient bond funds. But it has also identified nearly 4,600 more or-



phaned wells — and that’s just on state and private lands.

“Wyoming is more ahead of the game than other states,” says Jill Morrison, director of the Sheridan-based Powder River Basin Resource Council. Even so, the state “can’t keep up,” she says, and the higher bond rates still don’t fully cover reclamation costs when a company orphans its wells. Reclamation on federal lands in Wyoming, where there are thousands of additional orphaned wells, has been even slower.

In Colorado, the state currently uses bonds and revenue from fines to cover cleanup costs for orphans. But that generates less than \$850,000 a year, so the state has only plugged and reclaimed 52 orphaned wells since 2013, at an average cost of \$82,500 each. According to a recent state analysis, dealing with all 244 of its known orphans will cost an estimated \$5.3 million annually over the next five years.

This August, Colorado Gov. John Hickenlooper, D, proposed several tougher rules for monitoring and reclaiming both

Correspondent Joshua Zaffos writes from Fort Collins, Colorado. [@jzaffosle](#)



Steve Labowskie, the southwest field inspector and project manager for orphan wells with the Colorado Oil and Gas Conservation Commission, walks around an abandoned oil well in Redmesa, Colorado. There are 244 known orphan wells in the state.

JERRY MCBRIDE/
DURANGO HERALD

orphaned and properly plugged wells. The announcement followed a deadly house explosion in a north Denver suburb last April, which elevated concern about all kinds of oil and gas infrastructure since it was caused by a severed methane gas flow line mistakenly attached to a previously idled well that had been made active again. Hickenlooper's reforms included creating a fund that would be used to eliminate the state's orphaned-well backlog within a decade. It would be bankrolled by energy companies, possibly through a property-tax increase, and could also pay for services like in-home methane monitors for neighborhoods that are next to or even on top of old wells.

Tracee Bentley, executive director of the Colorado Petroleum Council, acknowledges the need to "get ahead of a potential problem," but questions whether new taxes are the solution. Instead, she says, the state could direct existing tax revenues to the issue, or create a voluntary program for companies to help plug and reclaim wells. In Oklahoma, for instance, compa-

nies can choose to divert 1 cent for every \$100 of oil and gas they produce to a program that restores orphaned wells. The state claims that 95 percent of operators participate and the program has restored 16,000 well sites since 1994.

State Rep. Mike Foote, a Boulder County Democrat, says he would like to see higher bond rates in Colorado, but he doesn't expect much cooperation from state Republicans. In a letter to the Colorado Oil and Gas Conservation Commission, two state GOP leaders expressed concern over Hickenlooper's proposal for an orphan-well fund and disagreed with his portrayal of the issue as a "vast" problem. But without more money and regulatory muscle, Foote says, the state is not just ducking the current problem; it's inviting future calamity.

Since the deadly Denver house explosion last spring, watchdogs have documented an alarming number of poorly monitored abandoned wells and flow lines beneath Front Range communities. Some of this potentially perilous infrastruc-

ture lies directly beneath neighborhoods. With several small companies, some already cited for violations, currently drilling and applying to drill for oil and gas in Boulder and neighboring counties, Foote and others fear the next price crash could create a hazardous landscape rife with orphaned wells. And dealing with those wells could be even more complicated than before, because industry is now tapping deep shale formations, where wells are much more difficult and expensive to plug, reclaim and inspect.

According to the Colorado Oil and Gas Conservation Commission, there are currently 63 financially "distressed" operators in the state, who collectively own almost 4,000 wells. These companies have either missed required safety tests or aren't producing much, signs that they may be running out of money and therefore more likely to abandon their sites. If even a fraction of those companies become deadbeats, the state's problems will quickly multiply. Without broad action, says Foote, "It's a disaster waiting to happen." □

THE LATEST

Backstory

Between 2008 and 2013, the amount of **crude oil shipped by rail from North Dakota's Bakken oilfield increased almost twentyfold**. About 19 oil trains go through Washington state each week; each can be more than a mile long and weigh up to 15,000 tons. Since 2008, at least 10 have derailed in the U.S. and Canada, spilling crude, sparking fires, and causing injuries and deaths ("Trains carrying oil raise tough questions in Northwest," *HCN*, 11/24/14).

Followup

In late January, Washington Gov. Jay Inslee, D, **rejected plans for the nation's largest crude-by-rail terminal**, citing earthquake risks and the dangers of a spill, fire or explosion. The facility at the Port of Vancouver, which environmentalists and tribal groups had fought for years, would have transferred 360,000 barrels of crude daily from trains to barges. Michael Brune, the Sierra Club's executive director, called the decision a "historic victory." The companies involved, Andeavor and Savage, can appeal until the end of February.

JODI PETERSON



The Port of Vancouver.

WIKIPEDIA COMMONS

Idaho protects the rights of faith healers. Should it?

A debate rages over the extent of religious freedom in the face of preventable deaths

BY LEAH SOTTILE

In March 2011, the county coroner arrived at a Caldwell, Idaho home, to find a pale 22-month-old boy dead in his mother's arms. The child had been teething, his parents said, when they noticed a rattling cough in his chest. They didn't take him to a doctor. Instead, they told the coroner, they prayed over him.

The family belongs to the Followers of Christ, a Christian sect, concentrated in Idaho, that doesn't believe in modern medicine. When members get sick, even when they're dying, the Followers of Christ avoid doctors and rely solely on prayer.

Six days after the baby's death, the same coroner was called to a different home across town. There, she found a 14-year-old boy in a brown cotton sleeper — who'd also had a rattling behind his ribs — dead on his mother's lap. "There were no signs of trauma," the coroner wrote.

A 2013 report by the Idaho Child Fatality Review team noted that since state agencies don't compile the necessary data, "it is difficult to estimate the actual number of preventable deaths to children of religious objectors." But at least 20 times in the past 10 years, southern Idaho coroners have examined the dead children of Followers of Christ members. They died from treatable ailments: Babies had fevers, teenagers had food poisoning, newly born infants gasped for air for hours until their

bodies gave up. Or they were stillborn — carried to full term by mothers who never sought prenatal care.

It's not illegal to believe in faith healing, to believe that God will heal his loyal believers. But in many states, parents who choose prayer over medicine can be charged with negligent homicide if their child dies.

Not in Idaho.

For the past few years, a fierce debate over religious freedom has raged in Idaho's Capitol. On one side are lawmakers who fear that rolling back protections for faith healers could ultimately infringe on other religious freedoms, and parents who believe that no government entity should tell them how to raise their children. On the other are children's health advocates and ex-Followers of Christ who worry that more children will die if something isn't done — and done fast.

All this is happening at the confluence of several heated national conversations, involving states' rights, identity politics and religious freedom, one that's playing out now in the state with life-or-death consequences.

Idaho, long a beacon for conservatism and libertarianism, has the strongest protections for faith-healers in the West. It is one of just six states nationwide that shield faith-healing parents from felony charges — negligent homicide, manslaughter or capital murder — when their

children die of treatable illnesses.

Even as other states, including neighboring Oregon, have rolled back similar protections for faith healers, Idaho has, in some ways, dug in its heels. Last year, in considering a 2017 bill to modify the law, Sen. Lee Heider, R-Twin Falls, said Idaho shouldn't be "in the practice of taking away the constitutional rights of a small few in the name of goodness, correctness, medical appropriateness."

Laws protecting faith healing initially passed in the early 1970s. It took decades for lawmakers to revisit the issue, but so far, no proposed changes have passed.

In October 2013, a 5-day-old baby boy born to Followers of Christ died of a bowel blockage in a Caldwell home. The child's father told the coroner there that the parents did not seek medical treatment despite the fact that "the baby had not had a bowel movement" and had a scrotum swollen to four times the normal size.

Months later, in early 2014, Rep. John Gannon, D-Boise, sought to allow the prosecution of parents who rely on faith-healing "whenever a child's medical condition may cause death or permanent disability." But Gannon's efforts went nowhere. The *Idaho Press-Tribune* reported that Idaho lawmakers said, "There's no room in this Legislature for debate on the measure."

Later that year, a baby girl named Fern was stillborn in Canyon County. The coroner noted, "It was apparent that she had been dead for a while as the skin was slipping off the entire torso of the body." Not all stillbirths are preventable, but according to a nonprofit called Children's Healthcare is a Legal Duty, which advocates for more stringent laws, there is some evidence that stillbirths are higher among the Followers of Christ. In one Idaho cemetery owned by the sect, 35 percent of the graves from 2002 to 2013 are for minors or stillborn babies.

In 2015, instead of rolling back protections, Idaho legislators reinforced them,

Some of the gravestones at Peaceful Valley Cemetery.
SUSANKINIDAH/FLICKR



passing a “parental rights” bill that ensured parents “have a fundamental right to make decisions concerning the care, custody, education and control of their children.”

A month later, a full-term baby girl was stillborn in a Payette home. The next year, Gov. Butch Otter, R, called for a task force to examine the issue.

Finally, the bill put forward in 2017 failed, and the cycle continued: Lawmakers dismiss attempts to protect children in faith-healing communities, children continue to die.

Months after Heider and 23 other legislators voted down the bill, a 3-year-old boy died in Parma, Idaho.

When the coroner arrived at the remote trailer, the mother said the boy had seizures. He’d thrown up while he was napping, she said, and she couldn’t wake him.

Linda Martin has binders filled with coroners’ reports from Idaho dating back decades. An ex-Follower of Christ who left the church as a teenager, Martin has been one of the most determined opponents of Idaho’s legal tolerance of faith-healing. And she fears that with a right-wing president in the White House, lawmakers will continue to do nothing.

Last spring, President Donald Trump signed an executive order aimed at strengthening protection for religious people in America. “We will not allow people of faith to be targeted, bullied or silenced anymore,” he said from the White House rose garden. “In my opinion, when Trump got elected it, it actually empowered the conservative religious Republicans in Idaho,” Martin says.

Bruce Wingate, founder of the Protect Idaho Children Foundation, agrees.

Idaho lawmakers “fear that America is under attack, that the religious freedom of America is under attack. They fear gun control is under attack. They fear that

every non-conservative point is under attack,” he says. “Idaho, they feel, is one of the refuge centers for preventing this and maintaining freedoms.”

Attempts to reconsider faith-healing protections, he says, become “ideological questions of ‘Do we have freedom of religion or do we not?’”

Critics and legal scholars argue that protecting religious freedom is less important than saving the lives of children. “I think an argument that we don’t want to open the floodgates to scrutinizing religions misses the point. No one questions the right of faith healers to *believe* in faith healing,” says Shaakirrah Sanders, an associate professor of law at the University of Idaho. But belief and practice are two different things. “This is really about minors — individuals who don’t have the capacity to make decisions for themselves.”

In the summer of 2016, Daniel Sevy stood at a wooden podium in a red plaid shirt, a kerchief tied around his neck. As a member of the Followers of Christ, a notoriously secretive institution, he was invited by lawmakers to speak about his beliefs to the Children at Risk Faith Healing working group. (Sevy declined *High Country News*’ multiple requests for an interview after discussions with other church leaders: “We wish our view could be covered in a better manner than has been done so far,” he wrote. “But we lack confidence in all forms of media at this time.”)

“This is a way of life. We live it day to day, every day. If we are injured, sometimes we just pick up and go on,” he told the group. And if it’s more serious? “We refer to the Lord to take care of us.”

In emails obtained by *High Country News* between Sevy and Sen. Dan Johnson, R-Lewiston, Sevy was more forceful: “If these people really had children’s welfare at heart, they would support the rights of parents to protect children from a

runaway medical profession attempting to bring state oppression to anyone opposing their monopoly!”

Three years ago, when a TV reporter knocked on Sevy’s front door, he told the reporter, “Whenever you try to restrict on person or another in any fashion, then you’re chipping at freedom. Yours and mine.”

In some ways, that’s in line with the libertarian and conservative religious political culture of Idaho. In an essay titled “The Power and the Glory,” Jill Gill, a Boise State University history professor, writes that “faith groups have strongly shaped Idaho’s infrastructure, economics, politics, and cultures.”

Historically, “Idaho has always been seen as a refuge of sorts for religious groups that are not mainstream,” she says in an email.

State Sen. Grant Burgoyne, D-Boise, told *High Country News* that he has drafted a bill on faith healing for the next session. And Gannon said in a statement that he’ll continue to push for his bill to be considered this year. “I continue to support my bill to require parents to get medical care when a child’s condition may result in permanent injury or death.”

Faith-healers aren’t the bad people they’re made out to be, some legislators say. “They are hard-working, dependable people,” Sen. Patti Anne Lodge, R, said last year. “They take care of each other and they take care of themselves.”

But Linda Martin believes that statements like that miss the point altogether. Idaho legislators, she says, are shielding what amounts to a religious cult — a cult that endangers its youngest and most vulnerable members.

The church is “part of the community. They’re hiding in plain sight,” she says. “You don’t know what’s going on behind closed doors unless you’re behind that closed door.”

And what’s happening behind those doors, she says, is deadly. □



ECHOFORSBERG, CC VIA WIKIPEDIA

THE LATEST

Backstory

One of the world’s most valuable salmon fisheries is in Southwest Alaska’s Bristol Bay. **The proposed Pebble Mine** in the bay’s headwaters would extract gold, copper and molybdenum, but could devastate salmon by destroying habitat and spilling toxic mine waste (“Worst place for a major mine?” *HCN*, 11/25/13). In 2014, the Environmental Protection Agency proposed restrictions on large-scale mining there, citing environmental risks; in response, mining company Pebble Limited Partnership sued. The 2017 settlement included a promise from the EPA to scrap the proposed restrictions.

Followup

In late January, **EPA Administrator Scott Pruitt announced that after extensive negative comments from stakeholders, he will leave the Obama-era proposal in place** while gathering more information on Pebble’s potential impacts on fisheries and other natural resources. “What (the Trump administration) figured out is that you can’t just immediately reverse actions that were taken by the previous administration,” Bob Irvin, president of the nonprofit group American Rivers, told the *Washington Post*. “You actually have to be able to justify your decision.”

JODI PETERSON



And now their watch begins

In British Columbia, a coalition of 'guardians' enforces tribal and environmental laws

BY KRISTA LANGLOIS

Although gauzy clouds often smother British Columbia's coastal rainforest, they're nowhere to be seen on this brilliant September afternoon. The sky is stretched wide open; the ocean flickers with light. On a ragged scrap of land called Calvert Island, the beach is threaded with tracks left by people, shorebirds — even wolves.

At the end of the trail of human footprints, 11 students are gathered around a smattering of white blobs in the sand. Cyndi Peal, a member of the Nisga'a Nation who works seasonally on a commercial fishing boat, stares down at one with her hands on her hips.

"How do you tell when it's ready?" she asks.

Another trainee shrugs. "I don't know. I've never done this before!"

Peal and the other students are part of a two-year training program to become Coastal Guardian Watchmen — a network of First Nations people who monitor, patrol and enforce tribal and environmen-

tal laws in a 250-mile-long puzzle of islands and fjords known as the Great Bear Rainforest. The blobs they're examining are made from the same inexpensive plaster used to make dental castings. Now, however, the plaster has been poured over footprints and washed-up flotsam — the kind of evidence the trainees might encounter on future patrols.

Peal has poured her plaster over a rusty metal spike, used by loggers to drag timber across the beach to ships. She imagines a hypothetical scenario: Working as a Guardian Watchman, she stumbles onto an illegal logging operation. If a spike has initials or other identifying marks, maybe she can use her plaster cast to help convict the perpetrator.

It may sound like an episode of *CSI*, but it isn't outside the realm of possibility. The instructor leading this training, a retired Fishery and Conservation officer named Greg Klimes, once caught a man illegally dumping drywall in the ocean by making a cast of the man's four-wheeler tracks. He hopes arming Coastal Guardian Watchmen with similar skills will help

them promote environmental stewardship and protect their traditional territories from poachers, illegal loggers, and well-meaning tourists who don't understand the rich cultural heritage of a place that looks, at first glance, like untouched wilderness.

Stretching from north of Vancouver to the Alaskan border, the Great Bear Rainforest has gone by many names. Loggers call it the Mid-Coast Timber Supply Area. The 27 First Nations who call it home have their own names for its islands and rivers, passed down in dozens of languages for 10,000 years or more. The Great Bear Rainforest, in comparison, is a relatively new moniker, coined during decades of negotiation between environmentalists, timber companies and First Nations that culminated in 2016 with legislation to protect 85 percent of the region from logging and development. It's a name born of compromise, belonging to no one people. And after decades of government-sanctioned clear-cutting and other environmental degradation, it's tailor-made for the ecotourism that many First Nations have invested in as the foundation of their economic future.

Technically, most of the traditional territory claimed by First Nations and now patrolled by Guardian Watchmen falls under the jurisdiction of the provincial or federal government. But tribes never ceded that land through treaties, and in recent years there's been a push by First Nations to re-assert their authority over the land and waters they were once forced off of.

Their efforts were emboldened by a groundbreaking 2014 Canadian Supreme Court case that granted the Tsilhqot'in Nation in British Columbia's interior "aboriginal title" to 650 square miles outside the tribe's reservation. The case set a precedent for other First Nations — including those in the Great Bear Rainforest — to take a greater measure of control over natural resource management in their traditional land and waters.

Despite this progress, however, tribal authority isn't always recognized by provincial or federal governments. Although nine First Nations banned sport hunting for black and grizzly bears in 2012, for instance, the British Columbia government issued trophy hunting permits for grizzlies until November 2017, and continues to allow hunters to kill black bears for just their heads or fur.

Even when Indigenous and provincial laws do align — as with the Great Bear protections — such protections "mean nothing without monitoring and enforcement," says Doug Neasloss, elected chief of

Please see Guardians, page 24



Cyndi Peal cleans off a plaster cast of a logging spike that she found on the beach during the Coastal Guardian Watchmen training.

KRISTA LANGLOIS

RESEARCH FUND

Thank you,
Research Fund donors,
for sharing our road

Since 1971, reader contributions have made it possible for *HCN* to report on the American West. Your tax-deductible gift directly funds nonprofit, independent journalism.

Thank you for supporting our hardworking journalists.

INDEPENDENT MEDIA GUARDIAN

Pam Solo | Newton, MA

PHILANTHROPIST

Spring to Life LLC | Salida, CO

Tamara A. Cohn | Independence, CA

STEWARD

Anonymous

GUARANTOR

Anonymous

Caroline Culver, Owl Peak Farm | La Madera, NM

Jon Klusmire | Bishop, CA

Dave & Jody Larson | Santa Fe, NM

Thomas Mendes | Eugene, OR

Tom & Marita Neumann | Clarkdale, AZ

Rebecca Patton | Palo Alto, CA

Lester Rowntree | Berkeley, CA

George & Nancy Wallace | Fort Collins, CO

Peter & Tina Watterberg | Albuquerque, NM

BENEFACTOR

Anonymous (2)

In memory of Inge Lange

In memory of Sandy Thompson

K.C. Becker | Boulder, CO

William Greenberg | Solon, OH

Bill & Janet Hunt | June Lake, CA

Arul Menezes | Sammamish, WA

Mary Poss | Point Matilda, PA

Forrest Pound & Mira Inbar | San Francisco, CA

Robert Stoldal | Las Vegas, NV

Jim Struve & Jeff Bell | Salt Lake City, UT

Randy & D'Andrea Worrall | Midway, UT

Charles Yoder | Baltimore, MD

SPONSOR

Anonymous (2)

Robert G. Amundson | Portland, OR

William Barton | Tacoma, WA

Kevin & Maggie Berkemeyer | San Francisco, CA

Jill Brandt | Seattle, WA

Gene Edwin Bray | Meridian, ID

Virginia & Phil Campbell | Tijeras, NM

Odin Christensen | Flagstaff, AZ

Kenneth & Jane Cole | Albuquerque, NM

Richard E. Cooper | Caledonia, OH

Randy Crawford | Park City, MT

Jennifer Durban | Healdsburg, CA

Sam Enfield | Seattle, WA

Mary Fabri & David Goldberg | Chinle, AZ

Juli & Michael Fahy | Evergreen, CO

Maureen Gonzales | Chama, NM

Larry & Nancy Hayse | Blue Springs, MO

Kashmir Hill | San Francisco, CA

Kenneth Hill | Salmon, ID

Tony & Karen Hinkel | Paonia, CO

Myron & Susan Hood | Los Osos, CA

Dennis Johnson | Idaho Springs, CO

Kaye & Richard Klaucke | Reno, NV

Victoria Langenheim & Kevin Schmidt | San Mateo, CA

Arnold Miller | Lynnwood, WA

Jerry Mishler | Corbett, OR

Gary Moore | Denver, CO

David & Gail Niebruegge | Vista, CA

Tierney O'Dea Booker | Bend, OR

Robert Daniel Olson | Boulder, CO

Jeanne Panek | Berkeley, CA

Sara Pendergast | Snohomish, WA

Sarah Pitts | Fort Collins, CO

Gary Roberts | Tempe, AZ

Dave & Terry Ruiter | Grants Pass, OR

Charles R. Schulz | Carefree, AZ

Jose Skinner | Austin, TX

Gary & Mary Garrow Splittberger | Billings, MT

Alex Takasugi | Eagle, ID

Dan Tarlock | Evanston, IL

John Taylor | Nevada City, CA

June Van Vorst

Edie Zagona & Joe Prizio | Boulder, CO

PATRON

Anonymous (14)

In memory of Martha E. Gentry | Gunnison, CO

In memory of Tim Glashien

In memory of my sister, Lori Haugen | American West

In memory of Bill Wright | Sedona, AZ

Mark, KontentFilms

Talitha Arnold | Santa Fe, NM

Paul Ashby | Orinda, CA

Grant Barnard | Red Lodge, MT

Chris Barncard | Madison, WI

John Behrens

Ted & Molly Beisler | Reno, NV

Martha Betcher & Garth Pintler | Gardnerville, NV

Ann Bieri & John Fleming | Seattle, WA

Gail Blattenberger | Salt Lake City, UT

Cathy Bleier | El Cerrito, CA

Charles Bordner Jr. | Colorado Springs, CO

Todd Carmichael | David City, NE



Switchbacks on the Big Oak Flat Road leading into Yosemite Valley, 1903.

JULIUS BOYSEN/NPS

NATIONAL PARK ROADS

By Timothy Davis. 330 pages, hardcover: \$49.95. The University of Virginia Press and The National Park Foundation, 2016.

Most national park visitors view these beloved landscapes from inside their cars, driving down the roads that wind through them. How and why these roads came to be, the best ones to tour, the trade-offs involved in building roads through scenic landscapes, as well as thoughts about the future of park transportation – these are the subject of historian Timothy Davis' *National Park Roads*.

The large-format book combines stunning photographs, both old and new, with historical context and discussions of the purpose and place of park roads. University of Colorado professor Paul Sutter comments: "Roads share the view, define the line between preservation and use, and demonstrate above all else that our national parks are landscapes where nature and culture intersect." This book invites you to explore these intersections as you journey through the history of travel in national parks. **CARL SEGERSTROM**

Loretta Cartner | Wrenshall, MN

Dea Ann Cate | Salt Lake City, UT

Erik Christiansen | Boise, ID

Jim & Maryann Chubb | Ketchum, ID

Greg & Cindy Clark | Boise, ID

Al Cohn | Chicago, IL

Bonnie Cohn | Hermosa Beach, CA

Beth Conover | Denver, CO

Laura A. Cotts | Cedar City, UT

David Covey | Fraser, CO

Bryan Daneman | Fort Worth, TX

Peter Davis | Snowmass Village, CO

Dawn Decot | Cody, WY

Thom Dedecko | Brisbane, CA

John Dilley

Judith Dillman | Jamaica Plain, MA

Jennifer Duncan

Gregory Eaglin | Laramie, WY

Steve Elfing | Alpine, TX

Mike & Colleen Empey | Washington, UT

Dianne Engleke | Millerton, NY

Benjamin & Cynthia Everitt | Ivins, UT

Stephen Fischer | Los Angeles, CA

Julie Fitzgerald | Kayenta, AZ

Adrienne M. Fleckman | New York, NY

Cornelia Flora | Ames, IA

Ruth Marie Flucke | Bellingham, WA

Tom & Ann Fremgen | Golden, CO

Charles Fry | Parker, CO

Brian Gentner | Newport Beach, CA

Barbara & Wilbur Gentry | Tijeras, NM

Margie Gibson & Mike Holloway | Indian, Alaska

Mike & Caroline Gilbert | Indian Hills, CO

Jamie Gilroy | Paonia, CO

Steven Glogger | Palm Springs, CA

Martin Gothbart | Santa Clara, CA

David M. Graber | Three Rivers, CA

Bob Gray | Buena Vista, CO

Mary Gringsby | Austin, TX

Griffin Hagle & Kelly Forster | Utqiagvik, AK

David Hall | Bend, OR

Jeff & Susan Handwerk | Salt Lake City, UT

Frank Hanson | Taylorsville, CA

Nick Hazelbaker | Harpster, ID

Darla Heil & Bob Harrington | Bishop, CA

Charles Hoover | Portland, OR

Bill Hubber | Townsend, MT

Clark Huff | Parker, CO

Heather C. Huppe | Midpines, CA

John B. Ingleson | Murfreesboro, TN

Martin Allan & Cecelia Calkin Jackson | Lakeside, AZ

Daryl & Judy Jennings | Dayton, WY

Continued on next page

Continued from previous page

Mary & Jeff Jensen | Boulder, CO
Ada Jones | Grand Junction, CO
Christopher & Kirtly Jones | Salt Lake City, UT
Roy G. Jones | Addison, TX
David Kaye | Lakewood, CO
Kate Kelly | Washington, DC
Janet Killeen | Grand Junction, CO
Charles & Anita King | Santa Fe, NM
Christine M. Laney | Boulder, CO
David Lenderts | Alamosa, CO
Gavin Lord | Hood River, OR
Joan Lucas | Wilson, WY
Susan Lund | Montrose, CO
Nancy Masters | Independence, CA
Rose Masters | Independence, CA
Danny & Samantha McBride | Boulder, CO
Charles McDaniel | Grand Junction, CO
Mark McGuinness | Parker, CO
Bradley Meissner | Seattle, WA
Charles Melbuer | Colorado Springs, CO
Bill Michael | Independence, CA
James & Marsha Miller | Denver, CO
Rex Miller | Fountain, CO
Wayne & Gaye Momerak | Reno, NV
Jonah Moos | Essex Junction, VT
Ellie Moss | Alexandria, VA
Roger I. Moyer | Aspen, CO
Cletus Nolde | Lakewood, CO
Ryun Patterson | Chicago, IL
Jeff Pearson | Lovell, WY
Kimberly Petska | San Francisco, CA
Bruno Pierini | Olympia, WA
Jon Pigage | Peyton, CO
Eric Polczynski | Pagosa Springs, CO
Michael Prather | Lone Pine, CA
Robert Putsch | Canyon Creek, MT
Sharon Rader | Port Townsend, WA
Edwin & Sylvia Reis | Bethesda, MD
Jeanne Reneau | Morrison, CO
William Ritchie | Ilwaco, WA
Mary Roper | Independence, CA
Barbara Rose | Chevy Chase, MD
Greg Rose | Boulder, CO
Hans Royer | Pacific Grove, CA
Mike & Beth Sanguinetti | Salt Lake City, UT
Cynthia Scott | Boulder, CO
Phillip Scott | Seattle, WA
Kate & Charles Segerstrom | Sonora, CA
Donald V. Shaff | Boise, ID
Janna Shennan | Whitefish, MT
Sally Sherman | Boise, ID
David & Maureen Sherwood | Los Osos, CA

Kathy Margaret Shimata | Honolulu, HI
P.J. Simmons | New York, NY
E.F. Singleton | San Francisco, CA
Todd Soderberg | Leadville, CO
Justin Sowa | Oakland, CA
John Spezia | Steamboat Springs, CO
Scot Spicer | Boise, ID
William F. Stahly | Alta, UT
Sam Steyer
John R. Stratton | Iowa City, IA
Thomas Swetnam | Jemez Springs, NM
Kirk & Nancy Taft | Gig Harbor, WA
Bill Tallman | Albuquerque, NM
Carolyn Taylor | Paonia, CO
Kristin Roberts | Washington, DC
Jennifer & Mike Tennican | Jackson, WY
Mikki Teresin | Billings, MT
Lucas Thompson | Portland, OR
William C. Thompson | Ontario, OR
Joseph Tieger | Tacoma, WA
Paul Tomlinson | Edmonds, WA
Russell Tyldesley | Santa Fe, NM
Patricia F. Vadasy | Seattle, WA
Peter VonChristierson | Port Townsend, WA
Linda & Carl Wagner | Whitewater, WI
Tracy Wahl | Washington, DC
Christal Waters | Davis, CA
Neil A. Weaver | Brush Prairie, WA
Warren Weaver | Genoa, NV
Richard Webb | Liberty, UT
Jerry Welsh | Eugene, OR
Daryl Willmarth | Tucson, AZ
Alison Banks & Ian Wilson | Tucson, AZ
Mark Winne, Center for a Livable Future | Santa Fe, NM
James C. Woods | Littleton, CO
David Zarn | Mukilteo, WA
Robert Zerner | San Francisco, CA

FRIEND

Anonymous (27)
In honor of The Water Protectors
In honor of Michael Ehlers | Boulder, CO
In memory of the Paris Agreement, Earth
In memory of Lawrence “Mike” Booco | Arvada, CO
In memory of Christopher Doenges | Salt Lake City, UT
In memory of Samuel P. Hays | Boulder, CO
In memory of Donald McNabb
In memory of Devon Taylor
Celia Adamec | Salida, CO
Marla Adkins-Heljeson | Lawrence, KS
Andrew Aldrich | Berkeley, CA



Snow on Fall River Road, Rocky Mountain National Park, June 1926. FRED CLATWORTHY

Carolyn Jones Allport | Culver City, CA
Linda Anderson | Chugwater, WY
Mark J. Andrews | Golden, CO
Nancy Andrew | Pomerene, AZ
Jim Aton | Cedar City, UT
Roger C. Bales & Martha Conklin | El Cerrito, CA
Peter M. Banks | Santa Rosa, CA
Cody Barkley | Berkeley, CA
Thomas A. Barrett | Chico, CA
Owen Baughman | Flagstaff, AZ
Cole Bazemore | Seattle, WA
Jon Andrew Bell | Denver, CO
Thomas Beneduci
Edward Berg | Homer, AK
Karen Berntsen | Poulsbo, WA
David Bertelsen | Tucson, AZ
D. Binegar
Martin & Sylvia Bingham | Fruita, CO
Dondi D. Black | Boise, ID
Marshall & Toni Bloom | Hamilton, MT
Charles Blount | Grand Junction, CO
Kathleen Bond Williams | Loveland, CO
Dorothy & Leland Bowen | Placitas, NM
Jennifer Bradwell
Roslynn Brain McCann | Moab, UT
Jerry L. Brekhus | Red Lodge, MT
Mary Bresnan | Long Beach, CA
Betsy Brown & Jamie Hascall | Seattle, WA
Gordon Bruchner | Anacortes, WA
Cindy Burton | Elma, WA
Diane Burton | Fort Collins, CO
Peter Butler | Durango, CO
Doug L. Cain | Lakewood, CO
Ben Carlson | Redway, CA
Dr. & Mrs. Robert E. Carlton | Colorado Springs, CO
Richard & Lois Carter | Reserve, NM
Kale & Laura Casey | Lake City, CO
James Chinn | Timnath, CO
Ken Chopping | Napa, CA
Sharon & Malcolm Clark | Mammoth Lakes, CA
Marcia & Robin Clouser | Schwenksville, PA

T.J. Cochran | Tucson, AZ
Phyllis Cohn | Phoenix, AZ
Windsor & Pam Copley | Underwood, WA
Sara Cortese | Denver, CO
Merry E. Cox & Erik Hvoslef | Salida, CO
Howard F. Creed & Susan J. Packer | Providence, UT
Sharon Crespi | San Francisco, CA
Meredith Curtin | St. Louis, MO
Sarah & Bill Dakin | Bigfork, MT
Gardiner F. Dalley | Cedar City, UT
Mike Dalton | Great Falls, MT
Algernon D'Ammassa | Deming, NM
Jonathan Davie | Eliot, ME
John Day | Sedro Woolley, WA
Martha Martinez del Rio | Laramie, WY
Dan Downs & Gail Denton | Longmont, CO
Joshua Dickinson | Bozeman, MT
John R. Doidge | Pueblo, CO
Harry Dudley & Kathy Dapic | Portland, OR
Margaret Dunn | Fort Collins, CO
Victoria Dye & Doug Kelt | Woodland, CA
Timothy Ebner | Westminster, CO
Jonathan Edie | Napa, CA
Thomas Edson | La Verne, CA
David Ehrman | Boulder, CO
David Elkins | San Jose, CA
Liz Ellis | Aberdeen, WA
Tamara Enz | Ashland, OR
Frank Evans | Del Norte, CO
Blake Everhart | Los Angeles, CA
Suzanne Ewy | Gunnison, CO
Linda Fair | El Prado, NM
Anne & Scott Feighner | Boise, ID
Patricia Ferguson | St. Charles, MO
John & Jodi Ferner | Tucson, AZ
John Ferrill | Tampa, FL
Mark Ferris | St. Louis, MO
Donald L. Ferry | Denver, CO
Steve Finucane & Marjorie Bernardi | Prescott, AZ
Brian T. Fitzgerald | South Duxbury, VT
Neal T. Fitzpatrick | Washington, DC

☒ YES! I care about the West!

☐ \$35 Friend	Amount of gift \$ _____	☐ Make this amount recurring
☐ \$75 Patron	☐ Here's my check (or voided check/1st month's gift for recurring gifts)	
☐ \$150 Sponsor	☐ Charge my credit card	\$15/month minimum
☐ \$250 Benefactor	Card # _____	Exp. date _____
☐ \$500 Guarantor	Name on card _____	
☐ \$1,000 Steward	Billing Address _____	
☐ \$2,500 Philanthropist	City/State/ZIP _____	
☐ \$5,000 Publisher's Circle		
☐ \$10,000 & up Independent Media Guardian		

High Country News | P.O. Box 1090 | Paonia, CO 81428 | 800-905-1155 | hcn.org D016A010

Ellen Fockler | Reno, NV
 Paul Fowler | Denver, CO
 Glen G. Fredlund | Shorewood, WI
 Kelly Gallagher | Los Alamos, NM
 Bill Gardner | Forest Ranch, CA
 Dawn Gardner | Flagstaff, AZ
 J. Pat Geis | Santa Rosa, CA
 Jessica George | San Carlos, CA
 Stephen Gerdes | Bozeman, MT
 Lindsey Gilpin | Louisville, KY
 Katie Gnauck | Hotchkiss, CO
 Craig Goodknight | Grand Junction, CO
 Paul Gordon | Helena, MT
 Julie Gott | Chiloquin, OR
 Mark Govett & Lynn Buhlig | Boulder, CO
 Wiser Grace | Urbana, IL
 Scott Grasse | Long Beach, CA
 Lance Gray | Peñasco, NM
 Barbara Griswold | Golden, CO
 Debra Grove | Broomfield, CO
 Ronald Guidotti | Minden, NV
 Linda Halstead-Acharya | Columbus, MT
 Mike Hamilton
 Susan J. Harlow | Westminster Station, VT
 Dick Harmon | Portland, OR
 Robert C. Harriss | Boulder, CO
 Patricia Hartshorne | Tucson, AZ
 Clayton Hawkes | Portland, OR
 Greg Heiden | Bertrand, NE
 Vance Herring | Tucson, AZ
 Terry Hiatt | Enterprise, OR
 Lee Higbie | Portland, OR
 Katherine Holloway | Tacoma, WA
 Matthew Holt | Portland, OR
 Ashton Hooker | Laramie, WY
 Gerald G. Hooper | Golden, CO
 Joe Hoppe | Corvallis, OR
 Thomas & Debra Intlekofer | Loveland, CO
 Robert E. Jaeger | Golden, CO
 Michelle Johnson | Grand Island, NY
 James G. Jones | Evergreen, CO
 Kate Jopson | Los Angeles, CA
 Larry Kallemeyn | Spearfish, SD
 Rajan Kapur | Boulder, CO
 Daniel Karnes | Portland, OR
 Arthur Kessler | Carmel, CA
 David Kipper | Lake Havasu City, AZ
 Jo Anne Kiser | Crestone, CO
 Alexia Klamon
 A. Klusmire | Seattle, WA
 Shirley Kook & Rob Schanz | Olympia, WA
 Alfred J. Kreinberg | Grand Junction, CO
 Gary Lehr | Longmont, CO
 Sue Leininger | Poway, CA
 Arny Leslie | Redmond, WA
 Ann Littlewood | Portland, OR
 Daniel Littlewood
 Eric & Suellen Lodge | Solana Beach, CA
 Richard Long | Denver, CO
 Julia R. Lupton | Irvine, CA
 Truckee Lynch | Berkeley, CA
 George Lynn | El Sobrante, CA
 Thomas Magarian | Cut Bank, MT
 Kaitlin Marousis | Salt Lake City, UT
 Roger & Barbara Mattison | Denver, CO
 Scott Mattoon | San Francisco, CA
 Jim Matusoff | Paonia, CO
 Kim Mauch | Auburn, CA
 Richard Mauntel | Tucson, AZ

Beverly McBrien | Buena Vista, CO
 Dee McCarthy | Park City, UT
 Thomas McCray & Kathryn Hannay | Moss Landing, CA
 James McCue | Idaho Falls, ID
 Betsy & Jake McDonald | Bishop, CA
 Pat & Barry McDowd | Fort Collins, CO
 Meaghn McGrath | San Francisco, CA
 Steve McLaughlin | Corvallis, OR
 Don & Joan McMillen | Portland, OR
 Robert Menzies | Weed, CA
 Nancy Meredith | Loveland, CO
 Gretchen Merrill | Cedar City, UT
 Leah Meth | Los Altos, CA
 Michael Meyer | Poplar Grove, IL
 Kathryn & Steve Mikol | Fraser, CO
 Dianna Moore | Ocean Shores, WA
 Mary Moorehead | Durango, CO
 Steve & Donna Morrall | Grand Junction, CO
 Tish Morris | Albuquerque, NM
 Jack & Sally Morrison | Prineville, OR
 John D. Mozer | Aurora, CO
 Dawn Murphy | El Cajon, CA
 Claudia Newbold | Los Altos, CA
 Carter & Jenny Niemeyer | Boise, ID
 Nick & Ann Novich | Sheridan, MT
 John & Sharon Olbert | Tucson, AZ
 Ralph Osterling | Moraga, CA
 Jo Overton | Philomath, OR
 Dave & Lisa Peters | Minneapolis, MN
 Joanna Picchi | Dallas, OR
 Mabel P. Pool | Gresham, OR
 Jacob L. Pounds | Blue Lake, CA
 Caroline Pufalt | St. Louis, MO
 Fred W. Rabe | Moscow, ID
 Don Rea | Albany, OR
 Craig H. Reide | Langley, WA
 Gerry A. Roberts | Arvada, CO
 Duane Roller | Firestone, CO
 Charles Rowland | San Leandro, CA
 Berma Saxton | Helena, MT
 Andrew Scarborough | Durango, CO
 Shannon Schantz | Emmett, ID
 Max & Gene Schloemer | Reno, NV
 Tania Schoennagel | Boulder, CO
 Kate & Charles Segerstrom | Sonora, CA
 Kieth E. Severson | Isle, MN
 Julie Smith & Hilary Smith | Golden, CO
 Tim Smith | Portland, OR
 Robert Snow | Tucson, AZ
 Douglas H. Sphar | Cocoa, FL
 David Ross Spildie | Missoula, MT
 Gary Sprung & Carolyn Hales | Boulder, CO
 Richard Stipes & Cecilia Galindo-Stipes | Felton, CA
 Gene F. Summers & Mary Miron | Black Earth, WI
 Ron & Joy Surdam | Jackson Hole, WY
 Paul Tomlinson | Edmonds, WA
 Norma L. Van Nostrand | Granby, CO
 Kristiina Vogt | Mukilteo, WA
 Luann Waters | Wynnewood, OK
 Martin Wells | Spokane, WA
 Carole Wendler | Santa Fe, NM
 Sylvia Wendrow | Carbondale, CO
 Jim West | Detroit, MI
 Gayl Wiegand | Inkom, ID
 Charles F. Williams & Rosemary J. Smith | Pocatello, ID
 Caroline Wilson | Tucson, AZ
 L. Joyce Wittwer | Grand Junction, CO

HCN welcomes a few new faces

There are a few new faces around the *High Country News* offices here in Paonia, Colorado, as we welcome a new staff member and two interns to the fold.

Mary Zachman, a longtime subscriber, is our new accounts and office assistant. She and her husband moved to town three years ago, and she's excited to join the crew at *HCN*. "I love Paonia," Mary says, especially the mountains and the music and arts scene. "We found our spot here."

Originally from Littleton, Colorado, editorial intern **Jessica Kutz** discovered her "outdoor bone" exploring the Rockies and hiking Colorado's "Fourteeners," the many peaks that top 14,000 feet, as an undergraduate studying international affairs and media at the University of Colorado Boulder. After college, Jessica spent time living with the Indigenous people who run Nitmiluk National Park in Australia, teaching English in northern Chile and working on a microfinance project in rural Guatemala. She came to appreciate the bonds that connect people to place, but felt she had more to contribute back home.

So Jessica decided to try journalism, starting with an internship at the *Telluride Daily Planet* that soon turned into a full-time job. She exposed immigration status sweeps at a local affordable housing project and examined the gentrification pushing out local businesses for high-priced condos. At *HCN*, Jessica is excited to leave the grind of daily news reporting and produce stories that plumb the depths of the Western experience.

Editorial intern **Carl Segerstrom** grew up at the base of California's Sierra Nevada in a small mining and timber-milling town. He developed a deep relationship with nature through hikes in Yosemite National Park and daily life in a community dependent on natural resources. As an undergraduate, he studied conservation and resources at the University of California at Berkeley. All the while, Carl knew his passion lay in journalism, though he wasn't sure how to make a career in the field.

A few years ago, Carl and his partner, **Emily Irwin**, took a road trip through the West, meandering through Canada, down the West Coast, through the Rockies and eventually to Paonia, where he visited *HCN* in 2015. Shortly afterward, Carl earned a master's degree in journalism at the University of Oregon and interned at the *Eugene Weekly*. At *HCN* he hopes to merge his experience of the natural world with his desire to hold public officials accountable, thereby raising awareness of "lingering injustices" in the American West.

Finally, a couple of corrections. On the back page of our first issue of the year ("Heard Around the West," *HCN*, 1/22/18), we incorrectly identified the location of a picture of a carwash sign. The sign is in Montana, not Colorado. In the same issue, a picture caption misstated the name of the artist who sent us the charming sketch that appeared in this column; his name is Leo Hakola. We regret the errors.

—*Emily Benson, for the staff*



Carl Segerstrom and Jessica Kutz are the new editorial interns at *HCN*.

BROOKE WARREN





Unfrozen North

The world's permafrost holds vast stores of carbon.

What happens when it thaws?

Like a giant dragonfly,

the chopper skims over undulating swaths of tussocky tundra, then touches down at Wolverine Lake, one of a swarm of kettle lakes near the Toolik Field Station on Alaska's North Slope. Even before the blades stop spinning, Rose Cory, an aquatic geochemist from the University of Michigan in Ann Arbor, gracefully swings to the ground and beelines to the spot where, four years ago, a subterranean block of ice began to melt, causing the steep, sloping bank to slump into the water. The lake throws back a somber reflection of the clouds swirling above, its surface riffled by the wind.

Cory has brought me here because the slump provides a vivid example of the ordinarily inaccessible stuff she studies. Slick with meltwater, the chocolaty goop brims with microscopic bits of once-living things that have not touched sunlight or air or flowing water for centuries, perhaps millennia. Deeper still lie plant and animal remains that could be tens of thousands of years old, dating back to the Pleistocene, when steppe bison and woolly mammoths wandered a treeless region that extended from here across the Bering Land Bridge, all the way to Siberia.

For a moment we just stand there, staring down at the raw gash. Occasionally, Cory lifts her head to scan the shoreline for furry visitors. Despite our proximity to the field station, we are in a wild place, without roads or trails or protective shelter. For years, in fact, the lake was known to researchers only by a number. It earned its moniker in 2013, when a hardy trio of young researchers hauled their instruments nearly five miles cross-country to measure the just-discovered slump and spotted a wolverine circling a wounded caribou.

Cradled by cloudberry, dwarf birch and willow, Wolverine Lake crouches in the shadow of the snow-streaked Brooks Range. A bit over a third of a mile across, it formed during the retreat of a giant lobe of ice that, 60,000 years ago, advanced from its stronghold in those looming mountains to fill the valley of the Sagavanirktok River — commonly called “the Sag” — into which the lake's outlet stream now drains. The irregular shoreline still traces out the shape of the marooned ice fragment that molded the bowl-like basin. The buried ice that triggered the slump is yet another relict of this long-vanished world, as are the glacier-ground rock and organic debris now streaming into the water.

To those like Cory who know how to parse it, this slump is a source of wonder. It offers a tantalizing portal into the hidden world of permafrost, the broad band of perpetually frozen soils that undergirds a circumpolar region more than twice the size of the continental U.S. This region is now warming at twice the rate of the global average, with grave implications for the stability of permafrost and all it holds. Both small and large things are poised to emerge from this gelid domain, from common

soil-dwelling bacteria, to the nearly intact carcasses of Ice Age megafauna. The most important, however, is the carbon stored in the frozen layers of leaves, stems and roots that lie beneath our feet.

“Think of a cup of tea,” Cory suggests. The carbon-rich organic materials the slump is carrying into the lake are too small to be removed with a filter, but substantial enough to impart a tinge of color and even flavor. The water samples collected from the lakes, streams and rivers here indicate that the brew percolating out of freshly exposed permafrost differs sharply from the steep that comes from shallow layers of soil that thaw and



Previous page:
Caribou dot the landscape in the Tamayariak River drainage on Alaska's North Slope, near the base of the Sadlerochit Mountains in the Arctic National Wildlife Refuge.



refreeze in accordance with the natural cycle of seasons.

At first, this might seem little more than a bit of esoterica to tuck away for a trivia exchange in the Toolik dining hall. Yet discerning permafrost's protean signature is one of the keys to understanding what this vast landscape's transformation might mean — not just for the Arctic, but for the whole planet. The research Cory conducts on a meticulous, molecular scale is just part of a larger body of work aimed at answering an increasingly critical question. Globally, the frigid soils of the Far North store almost double the amount of carbon already circulating in the atmosphere in the form of heat-trapping carbon dioxide —

enough to drive the climate system into territory Earth has not experienced for millions of years.

But carbon travels an invisible highway with multiple on- and off-ramps, some of which lead into the atmosphere, some away from it. Figuring out all of this entails an excruciatingly complicated set of calculations. In order to plug in the numbers, scientists like Cory must first understand the biological and chemical processes that control the routes carbon takes through soils and surface waters. As the preserved past thaws and begins to decay, Cory wonders, just how much of that carbon will end up in the atmosphere? And how fast?

The Toolik Field Station on Alaska's North Slope, as seen from an approaching Robinson R44 Raven II helicopter.

A gleaming ice wedge in the permafrost within the Permafrost Research Tunnel north of Fairbanks illustrates permafrost's geophysical Achilles' heel. Once subsurface temperatures creep above freezing, the ice will melt and flow away. Visible surface of the wedge is about 8 feet wide. Holes near bottom are where ice samples were taken for scientific measurements.



If the warming trend continues, permafrost close to the surface could reach the thawing point by 2050.

TO PEEK AT PERMAFROST from below, I toured the “permafrost tunnel” bored into a hillside outside Fairbanks, Alaska, by the Cold Regions Research and Engineering Laboratory of the U.S. Army Corps of Engineers. Kept at a chilly 25 degrees Fahrenheit, it exudes a smell reminiscent of garden dirt. There, embedded in a matrix of frozen silt, I could see the bones of mammoths, the horns of bison and the roots and leaves of sedges that grew here more than 30,000 years ago. I could also see rocks and gravels and dark wedges of ice glistening in the artificial light.

This hard, heterogeneous composite has long been a barrier to economic development in both the Arctic and sub-Arctic. The gold miners who flocked to the Alaskan and Canadian Yukon hoping to make their fortune around the turn of the 20th century had to use wood fires, hot water and steam to thaw the gold-bearing gravels. “As resistant to excavation as a mass of reinforced concrete,” the general manager of one mining company complained, though the difficulty didn’t stop it from buying up and working a number of placer claims.

Yet as the slump at Wolverine Lake illustrates, permafrost has a geophysical Achilles’ heel. Once subsurface temperatures creep above freezing, the ice it contains melts and flows away. In the uplands, as around Wolverine Lake, this ice is often a glacial legacy. Elsewhere it comes from rain and snowmelt that have gradually worked their way down through a network of surface cracks and refrozen. Some sections of permafrost contain the merest flecks of ice, barely enough to moisten thawing soils; others are larded with massive wedges that can measure 10 or more feet across.

Until recently, worries about the stability of permafrost focused on the more southerly boreal zone. But geophysicist Vladimir Romanovsky, head of the Permafrost Laboratory at the University of Alaska Fairbanks Geophysical Institute, has grown increasingly concerned about the permafrost on Alaska’s cold North Slope. For four decades now, the lab has tracked permafrost temperatures in a network of deep holes that field crews have drilled across the region. Beginning in 1988,

Romanovsky notes, temperatures in the northernmost holes started to rise, echoing the rise in air temperatures. Readings taken near Prudhoe Bay show that the permafrost there has now warmed by more than 5 degrees Fahrenheit at a depth of 65 feet and by 9 degrees Fahrenheit at a depth of 3 feet, where temperatures are now in the 20s. If the trend continues, Romanovsky says, the permafrost close to the surface could reach the thawing point by 2050.

Even today, ice-rich permafrost can grow warm enough to lose its structural integrity. Almost anything that insulates the ground and blocks the flow of cold winter air can do it: a road, a building, a big pile of snow. So can the destruction of vegetation, which shades soils from the summer sun. In 2007, an intense North Slope tundra fire stripped the landscape bare, creating a new landmark, the Valley of Thermokarsts. (“Thermokarst” is the technical term for thaw slumps and related phenomena. Typically, karst topography, riddled with sinkholes and caves, comes from rain and snowmelt that trickles into the ground, dissolving underlying layers of limestone. In the case of thermokarst, water from ice melted by heat provides the erosive force.)

Areas adjacent to sun-warmed bodies of water — coastal bluffs, the banks of rivers and lakes — are prone to thermokarst, especially when undermined by floods or the persistent action of waves. In Alaska, the first recorded sighting of a thermokarst event in progress comes from a 19th century voyage along the Alaskan coast made by Otto von Kotzebue, a lieutenant in the Russian Imperial Navy. At one landing site, he and his party came across “masses of ... ice, of the height of a hundred feet, which are under a cover of moss and grass. ... The place which, by some accident, had fallen in ... melts away, and a good deal of water flows into the sea.”

Thaw slumps can occur in colder times — Kotzebue’s voyage took place towards the end of the centuries-long cold snap known as the Little Ice Age — but they are more likely to occur in balmy interludes. In 2005, a thaw-triggered landslide near Toolik hit another lake known to scientists only as N14. It charged the water with so much glacier-ground rock that



the color “went from clear to milky blue,” recalls Feng Sheng Hu, a paleoecologist at the University of Illinois at Urbana-Champaign. The same rock flour showed up as distinct deposits in the 6 feet of cored sediments Hu and his colleagues obtained from the deepest part of the lake. The sediments yielded a thermokarst record that covers the past 6,000 years. Of 10 large slumps that occurred over that time span, seven coincided with climatic intervals marked by warmer summers.

Thermokarst events are the “high-speed trains of permafrost thaw,” observes Cory’s colleague, University of Michigan ecologist George Kling, and there are suggestions they may be increasing. In 2008, an aerial census around Toolik counted nearly three dozen within a 230-square-mile area. Two-thirds did not exist prior to 1980. How many of these might have occurred without the profligate burning of fossil fuels is hard to gauge, but in the future, according to an international team of scientists, an estimated 20 percent of the area underlain by permafrost may become vulnerable to thaw-driven collapse as gears in the climate system continue to shift, ratcheting Arctic temperatures ever higher.

FOR A SENSE of how permafrost shapes Alaska’s northern reaches, you might drive to Toolik from Fairbanks, heading out on the Elliott Highway to Livengood, then turning north onto the Dalton Highway. This is the legendary Haul Road, the rough two-lane trucking corridor that parallels the flow of crude oil from the North Slope through the Trans-Alaska Pipeline to the tanker terminal at Port Valdez. The route roller-coasters through some of the state’s most scenic country. It is treacherous, with steep curves, virtually no guardrails, and, in places, a slalom course of thaw-triggered potholes.

For the first part of the journey, the Haul Road slices through the boreal forest of the cold, dry Alaskan interior. Here, the permafrost is disconnected, creating a subtle mosaic in the form of alternating stands of black and white spruce. White spruce mark the warmer, better-drained slopes that are often permafrost free, while black spruce — funny little trees that look like dark green bottle brushes — sink their roots into the

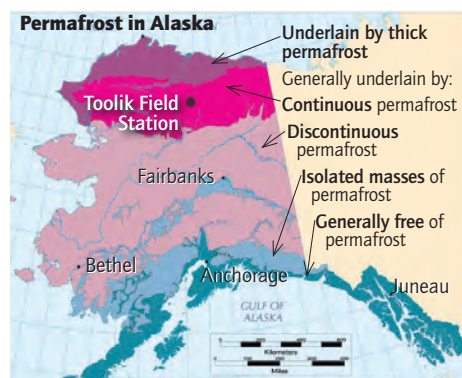
cold, soggy soils above an impermeable layer of frozen ground. After you cross the Arctic Circle and head into the Brooks Range, the trees become sparser and scragglier, then disappear.

Beneath the tundra of the North Slope, permafrost forms a continuous underlayment, extending from the Brooks Range to the edge of the Arctic Ocean. At Toolik, this icy substrate is 600 feet thick from top to bottom, compared to 150 feet in the boreal zone. Farther north, beneath the Arctic Coastal Plain, it extends to depths of 2,000 feet.

Throughout this vast realm of frozen soil, thermokarst serves as a source of ecological disturbance and renewal. On steep terrain it causes landslides, bulldozing new clearings and replenishing the nutrients in waterways. (Along with carbon, permafrost also contains nitrogen, phosphorus and calcium.) On the flat, it creates depressions that evolve into ponds, lakes and wetlands. In the boreal zone, along the Tanana River, successive episodes of thermokarst are now converting a birch forest into bogland. Thermokarst is impacting the built landscape as well. In Alaska, one of the most serious impacts of climate change will be the billions of dollars in damage, already extensive, that thermal erosion deals to infrastructure.

But until warmth awakens it, permafrost remains inert. The biological and chemical action takes place in the layer of seasonally thawed soil above it, the “active layer,” as it’s called. This is

Rose Cory in front of the thermokarst of Wolverine Lake, near the Toolik Lake Research Natural Area on the North Slope of Alaska. Cory, an aquatic geochemist from the University of Michigan in Ann Arbor, is studying how much carbon will end up in the atmosphere as the permafrost thaws.



SOURCE: U.S. GEOLOGICAL SURVEY

As permafrost thaws, its carbon will also enter the hydrologic system, becoming an increasingly important part of the emissions stream.

where the root zone is, where microorganisms live, where rain and snow melt circulate, blocked from following pathways that would lead to deeper drainage. Along with the chilly air, which stymies evaporation, the impermeability of permafrost is the reason the Far North can be so dry — Prudhoe Bay gets less precipitation than Phoenix, Arizona — and yet so water-logged.

A stunning example can be glimpsed from a bush plane flying northwest of Toolik, along the coastal plain. Everywhere, it seems, water puddles on the surface in geometric arrays. It twists and turns in sinuous ribbons. It collects in lakes that look like daubs of sky brushed across the tundra. These are the famous “thaw lakes,” scooped out of the permafrost by thermokarst. Many are too shallow to sustain fish, but nonetheless help support hundreds of thousands of migratory waterfowl and shorebirds, including Brant geese, king eiders and buff-breasted sandpipers.

This is a dynamic landscape, one highly responsive to climate change. Already the loss of ice along the coast is exposing the outer fringe of lakes and wetlands to seawater intrusion. In response, plants adapted to wet tundra are giving way to salt-tolerant species. Eventually, rising temperatures may combine with higher precipitation to cause a more rapid cycle of lake formation and decay. In 2014, one thaw lake swollen with rain and snowmelt breached its permafrost-armored banks and drained in the space of just 36 hours.

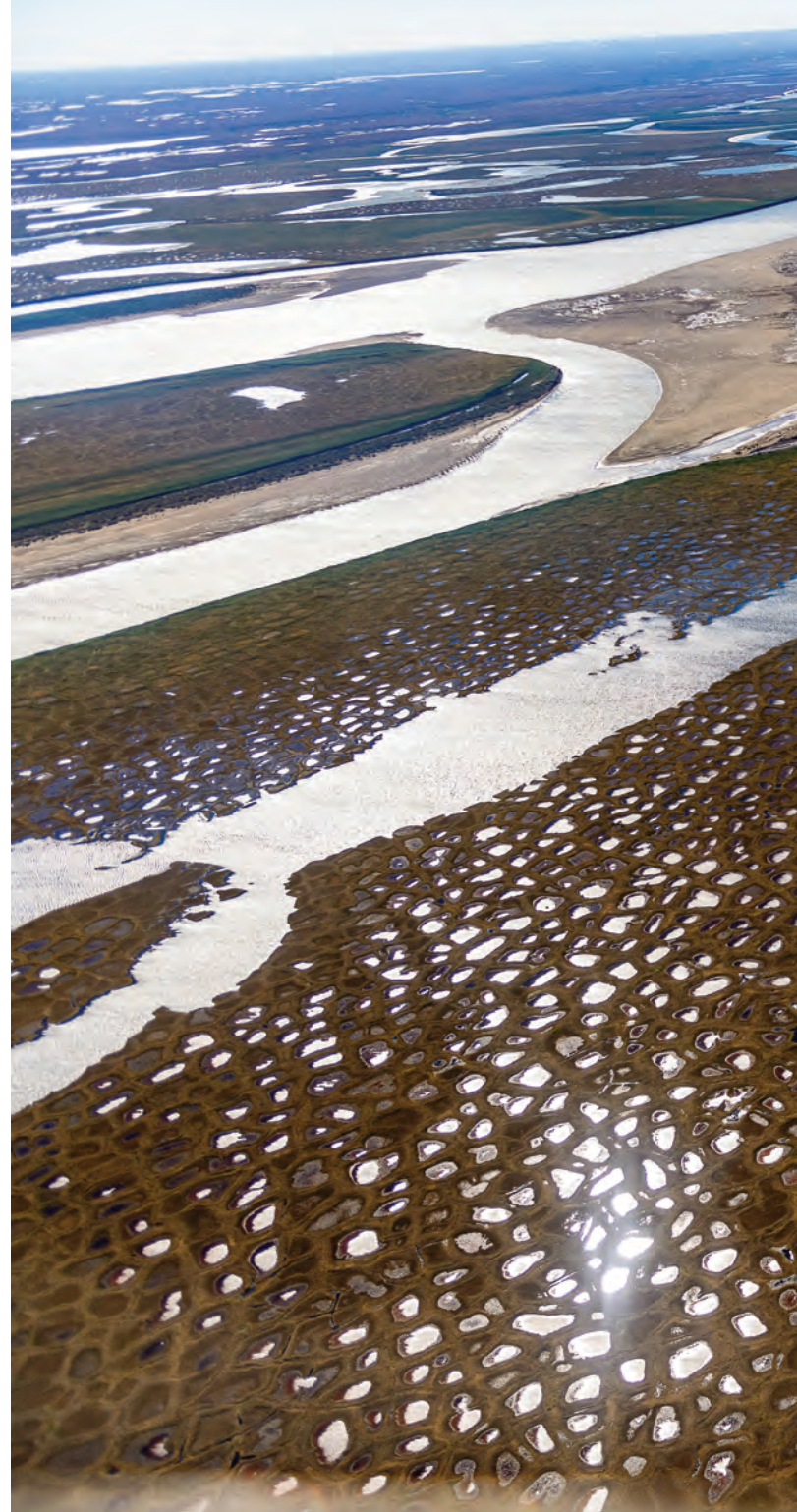
The aquatic environments of the Arctic are not just ecologically important; they are climatologically significant as well. Over 40 percent of the carbon dioxide currently entering the atmosphere from the Arctic comes from its surface waters. The reason is simple: In addition to the carbon-rich detritus thrown off by algae and other aquatic organisms, Arctic lakes, rivers and streams also receive generous infusions of soil carbon that seeps into their waters from the active layer above the permafrost. As permafrost thaws, its carbon will also enter the hydrologic system, becoming an increasingly important part of the emissions stream.

But a carbon molecule drifting through water doesn’t magically throw off carbon dioxide (or methane, a less common but even more potent greenhouse gas.) First, it must be broken down, most often by microbes that remain metabolically active year round. One of the curiosities around Toolik is the sudden release of CO₂ that occurs each spring when the ice covering its lakes breaks up. This short-lived event is a bit like uncapping a soda bottle, without the audible fizz. It’s due to the fact that, under the ice, microbes have been busy consuming carbon-rich molecules, exhaling carbon dioxide as a byproduct.

The addition of permafrost carbon to soils and surface waters adds a new layer of complexity. Not long ago, much of this carbon — dissolved organic carbon or “dead old carbon,” as Rose Cory calls it — was thought to be structurally so complex that it would take a long time for microbes to process it. Instead, Cory and her colleagues are finding, these tiny organisms lustily respond to fresh infusions of permafrost carbon, attacking tasty morsels with enzymes like nanoscale ninjas hurling dagger-sharp stars.

THE TOOLIK FIELD STATION, a compact jumble of pre-fab structures, straddles a site that once housed construction crews for the Trans-Alaska Pipeline. Operated by the University of Alaska Fairbanks and funded by the National Science Foundation, along with other government agencies, it has become a magnet for scientists involved in Arctic research. To avoid perturbing the permafrost, many of the buildings here are elevated above ground, as are long sections of the pipeline.

Climbing the steep staircase to Cory’s trailer lab, I find her huddled with her graduate students in front of a computer. She says it feels a bit serendipitous to find herself in a doublewide again. The shape and feel of the workspace evoke warm memories of the trailer in rural Montana that was her childhood home. “I loved it,” she says. “You know the old expression, ‘You can take the girl out of the trailer, but. . .’” Everyone has just arrived, so the lab is a study in controlled clutter. This is where the team will spend hours doing tedious and painstaking analysis. Still unpacked are boxes of plastic bottles, which, over the



summer, will be filled in the field with samples of water as swirl with carbon and brought here for study.

Now 42, Cory first set foot in Toolik 15 years ago when she herself was a student. Ever since, the arc of her career has tracked rising concern about the fate of permafrost and the carbon it contains. Trained in photochemistry, Cory often sees things others do not. Previously, for example, scientists thought mostly about the carbon dioxide released by microbes that, in soils, operate totally in the dark. But from the moment she arrived at Toolik, Cory saw a landscape awash in light. For a few months of the year, 24 hours a day, Arctic waters are quite literally sun-struck, which turns out to be relevant to the release of carbon from permafrost.

Starting in 2010, Cory linked up with Michigan’s George Kling and Byron Crump, a microbiologist from Oregon State University, to explore the biochemical and geochemical impacts of light. One set of experiments involved collecting water samples from seven active thermokarst sites. After removing impurities with a filter, the team put the samples into plastic pouches and left them outside to bask in the sun. This “sun tea” was then presented to bacteria sieved from the same thermo-



Thaw lakes and patterned ground surrounding the Colville River at the edge of the National Petroleum Reserve on Alaska's North Slope. More than 40 percent of the carbon dioxide entering the atmosphere from the Arctic comes from its surface waters.

karst-infused water.

This sunlight treatment, the scientists found, substantially boosted the microbes' ability to convert the dissolved carbon compounds in the samples into carbon dioxide. The mechanism? Light, ultraviolet light in particular, is a breaker of chemical bonds. Like a kitchen knife, it slices and dices organic molecules into smaller, more palatable bits. A second series of experiments focused on the microbial communities cultured from Arctic soils. Most effective at decomposing light-treated organic carbon were those that emerged from thawed chunks of permafrost where they'd remained dormant, or even — as some believe — sluggishly active for centuries.

But microbes are just part of the story. In a study of more than 70 lakes, streams and rivers, including the Sag, Cory and her colleagues have established that exposure to sunlight alone can turn carbon into CO₂ without any microbial involvement. The rate at which this happens varies with the cloudiness of the sky, the thickness of the ice cover and the depth and clarity of the water. But on average, they found, this abiotic conversion may account for about a third of all the carbon dioxide currently released by Arctic surface waters. It's a photochemical pathway

that will increase in importance as rising temperatures accelerate the thawing of permafrost and the melting of sunlight-occluding ice.

Climate is only one factor that affects the rate at which carbon is wrested from organic material and released into the atmosphere. Another is molecular structure. Soil samples that Cory and a graduate student cored from the watershed of a major creek contained more than 2,500 different organic compounds. Twenty percent were found only in permafrost; 30 percent, only in the active layer, with the remainder common to both. The masses of these compounds are known, as are the identities of the atoms that compose them, but not the Tinker-toy-like configurations in which the atoms are arranged.

It's a knowledge gap that bears directly on the question of how much additional carbon will end up in the atmosphere, and Cory and others are racing to fill it. Not all the carbon in permafrost will end up being converted to carbon dioxide. Some of it will be captured by sediments and swept by the Sag and other rivers into the carbon graveyard in the Arctic Ocean. Some of it will prove difficult for microbes and sunlight to break down. "Without knowing the structures of these compounds,

Peering into carbon's future

An open-air experiment in the permafrost zone near Denali simulates a warmer North

STRUGGLING TO KEEP MY BALANCE, I teeter along a narrow plankway that wends through the rolling foothills near Denali National Park and Preserve. Just ahead, Northern Arizona University ecologist Ted Schuur, a lanky 6-footer, leads the way to Eight Mile Lake, his research field site since 2003. Occasionally I slip off the planks onto the squishy vegetative carpet below. The feathery mosses, sedges and diminutive shrubs that grow here — Labra-

ing selected patches of tundra, Schuur's open-air experiment aims to mimic the future, when air temperatures in Alaska are expected to be significantly higher. By 2100, the state is projected to see an additional warming of at least 4 to 5 degrees Fahrenheit over what's already occurred, and that's under the most optimistic scenario. Already, the tundra here is leaking carbon dioxide to the atmosphere, according to recent satellite-based measure-

then laboriously remove again in April. Snow is an excellent insulator, he explains: "It's like a giant blanket." Beneath the drifts, Schuur and his colleagues have found, the ground can stay a good 3 to 4 degrees Fahrenheit warmer than it does in the unfenced control plots, thereby accelerating the warming that occurs in spring.

The impacts of this manipulation are many. Triggered by the extra warmth, subsidence caused by slumping permafrost has lowered the surface of the experimental plots by several feet. The depth to which the soil thaws at the end of summer has likewise increased, indicating that the top layer of what used to be permafrost has added more organic matter to the microbial dining table.

Most dramatic of all is the speed-up in the carbon cycle that Schuur and his colleagues have observed. Plants in the experimental plots grow faster, and sop up more carbon dioxide, than do plants in the cooler control plots. Soil microbes in the experimental plots have likewise increased their metabolic rate. But plants lock up carbon only during the growing season, whereas microbial activity continues year round. On an annual basis, the CO₂ microbes release more than offsets the amount removed by plants.

Given the present rate of temperature rise, the imbalance between plant uptake and microbial release of CO₂ may well grow. By the end of the century, Schuur says, the amount of carbon the world's permafrost zone transfers to the atmosphere each year could be in the range of 1 billion tons, comparable to the present-day emissions of Germany or Japan.

Still unaccounted for, though, is the significant amount of carbon that appears to have vanished from underlying soils — about 20 times the amount Schuur and his colleagues have detected in the air. "Wow," Schuur remembers saying to himself when he realized the size of the discrepancy. "This is a surprise." Perhaps water seeping downslope is ferrying the missing carbon into streams, rivers and lakes, including Eight Mile Lake, or shunting it to swampy, oxygen-poor pockets of soil ruled by microbes that convert carbon to methane.

How much of the carbon coming out of permafrost will be transformed into methane? That's another question Schuur is starting to tackle, for while methane is less abundant than CO₂, it has 30 times the heat-trapping power over the course of a century. On the way back to the car, Schuur points out a clump of cotton grass whose partly hollow stems pipe methane into the atmosphere. "What matters is not that carbon goes in and out," he says. "The important question is, what's the net effect?" J. MADELINE NASH



Ted Schuur with his permafrost research monitoring equipment at Eight Mile Lake study area, near Healey, Alaska. Schuur mimics conditions expected in the future to monitor how much carbon will be released in a warmer future Alaska.

dor tea, low bush cranberry, bog rosemary — are well-adapted to wet, acidic soils.

Rounding the top of a knoll, we look down on an expanse of tundra that bristles with so many sensors and cables that it resembles an outdoor ICU ward. At the center of the site stands a gas-sensing tower that sniffs out the carbon dioxide drifting through the air from as far away as a quarter of a mile. At ground level, polycarbonate chambers placed atop the tundra *whoosh* as their tops periodically shut, then open, then shut again. Their job, I learn, is to trap the carbon dioxide rising from the surface and shunt it to an instrument that measures the amount.

The objective is to keep a running tally of CO₂ as it's inhaled and exhaled by plants and soil microbes, but not merely in the here and now. By artificially warm-

ments. The question Schuur is hoping to answer: As the region continues to warm, just how much more carbon dioxide will it contribute to the global pool?

Along with terrestrial and aquatic plants, the soil microbes that decompose organic matter are major players in the global carbon cycle. In the lingo of climate science, plants are "sinks" for carbon. Through the sunlight-driven process of photosynthesis, they lock up more carbon dioxide than they release, thus keeping it out of the atmosphere. By contrast, soil microbes that decompose organic matter are "sources" that burp out micro-bubbles of CO₂ night and day, winter and summer.

Schuur draws my attention to the stack of drift-catching snow fences that, come October, researchers will array around half a dozen experimental plots,



The Trans-Alaska Pipeline crosses the Toolik Lake Research Natural Area on the North Slope. In Alaska, one of the most serious impacts of climate change will be the billions of dollars in damage, already extensive, that thermal erosion deals to infrastructure.

it's impossible to predict how many will get converted to carbon dioxide, and over what time scale," Cory observes. "Is it five seconds or a thousand years?"

LEAVING CORY'S LAB, I head out on the network of boardwalks that lead from the field station to study sites scattered across miles of tundra. In one way or another, most of the scientists who work here are involved in tracking the changes rippling through this region. On either side of the boardwalk, fields of cotton grass prepare to carpet the landscape with silvery seed heads. What will this high-latitude ecosystem look like a century from now? Will cotton grass, Toolik's signature plant, still grow here in such profusion?

The last time our planet confronted such a consequential upheaval was around 12,000 years ago, when the last Ice Age ended in a rolling thunder of warmth. On a geological time scale, the changes that followed were fast — sea levels rose, weather patterns changed, species migrated pole-ward — but measured against the lifetime of an itinerant hunter-gatherer, they would have been all but imperceptible. This time around, the rate of transformation and its impacts on our densely settled planet are becoming obvious within a generation, especially in the Far North, where air temperatures have been rising at a clip of 1 degree Fahrenheit per decade.

The natural world is now responding in ways that amplify that warming. Dwindling sea ice is changing the color of the Arctic Ocean, uncovering dark blue waters, which absorb solar heat rather than reflect it. The loss of ice is likewise exposing the permafrost-rich coastline, and the remote communities along it, to storms and frenzied waves. In the boreal zone, wildfires stimulated by record heat and drought have burned through millions of acres of trees and released the carbon once locked into wood; they have also turned thick layers of forest duff to ash, ripping away the summer insulation that once protected the permafrost.

The good news, says Northern Arizona University ecologist Ted Schuur, lead investigator for the Permafrost Carbon Network, is that a sudden, catastrophic release of CO₂ from permafrost seems unlikely. The bad news is that a steady, incremental leak is plenty problematic on its own. Under the current warming trajectory, Schuur and his colleagues estimate, between 5 and 15 percent of the carbon stored in the Far North's soils is

likely to make it into the atmosphere by the start of the 22nd century.

This might not sound like much, but 15 percent is equal to the jump in atmospheric CO₂ — from 280 to more than 400 parts per million (ppm) — that has occurred since the Industrial Revolution. To avoid courting danger, any additional rise in global mean temperature would wisely be kept below 2 degrees Fahrenheit, according to the Intergovernmental Panel on Climate Change (IPCC). That, in turn, means stabilizing carbon dioxide levels at 450 ppm, leaving little time to dawdle. This is why permafrost carbon is such a wild card. Even a modest release will complicate efforts to step back from the brink. So new is this concern that the global climate models used by the IPCC have not yet factored in permafrost. Likewise, the permafrost models currently under development do not incorporate the potential for rapid, landscape-scale carbon release through thermokarst, which could cause projections to rise. But one thing is clear, says the Permafrost Carbon Network's Schuur: By easing up on the pressure we're placing on the climate system, we can reduce the potential for unpleasant surprises. "The more we push the system, the less control we have," he says.

AS I HEAD BACK DOWN THE HAUL ROAD, the questions that arose at Wolverine Lake seem more pressing than ever. Out the side window, I watch the pipeline track along its 800-mile journey. Late last year, in an attempt to keep the pipeline at full capacity, Alaskan Republican Sens. Lisa Murkowski and Dan Sullivan tacked onto the federal tax bill a provision that opens an ecological gem along the coast — the Arctic National Wildlife Refuge — to oil and natural gas exploitation. Signed into law by President Donald Trump, the bill revives a long-simmering controversy that pits economic interests against potentially enormous environmental costs.

Were it not for the pipeline, and the occasional 18-wheeler lumbering by, I would feel as though I were traveling through an exquisitely rendered scroll painting, marveling at timeless vistas of craggy peaks, rolling hills and jewel-like lakes. The sweep of the terrain invites a sense of permanence, as if things have always been this way, as if they will continue to be this way forever. And, yet beneath the surface, a geophysical dragon is stirring. A penumbra of clouds gathers above the pipeline, casting it into shadow. □



J. Madeleine Nash is a San Francisco-based science writer who frequently covers climate issues. A former senior correspondent at *Time Magazine*, she is working on a book about climate change with her physicist-photographer husband, Thomas Nash (nashpix.com).

This coverage is supported by contributors to the High Country News Enterprise Journalism Fund.

This story was made possible in part through the Institute for Journalism and Natural Resources.

Guardians *continued from page 3*

the Kitasoo/Xai'Xais Nation and a former watchman. And with provincial budgets shrinking, Coastal Guardian Watchmen are taking over monitoring and enforcement in corners of the Great Bear Rainforest too remote for provincial officials to regularly reach.

The Guardian Watchman model began on a British Columbia archipelago called Haida Gwaii in 1981, but only in the past decade or so has it spread across Canada. Although Watchmen are employed by their own tribes or communities, the network has proven so successful at curbing crime, creating jobs and reconnecting people to their ancestral homelands that, in 2017, the Canadian government pledged \$25 million to help fund it.

In the Great Bear Rainforest, watchmen jobs offer well-paid, long-term employment in a region with few such opportunities. They also strengthen First Nations' ties to forgotten parts of their

homeland. And, just as importantly, their mere presence helps deter illegal activity.

The watchmen lack the legal authority to make arrests. But they've found that it's often enough simply to teach the people they encounter about Indigenous laws — which may not be recognized by provincial or federal governments — as well as new protections put in place by the Great Bear legislation. As they walk, boat or paddle canoes through the rainforest, they also record observations about salmon runs or bear activity that are later used by tribal resource managers. "The work Coastal Guardians engage in is work that First Nations people have been committed to since time immemorial," says Elodie Button, a training coordinator with the network. "That's why these resources are still here."

Mostly, the work is peaceful. But occasionally — like the time Doug Neasloss came across a headless grizzly carcass — Guardian Watchmen may need to collect evidence or mitigate a conflict, perhaps with people who insist they have the right to take salmon from a river that a tribal

government has closed to fishing.

Cyndi Peal once thought she was too shy for such work, but two years of Guardian Watchmen training have convinced her otherwise. "Women are more able to get people to relax, to just talk," she says. And in Nisga'a culture, women are the keepers of certain kinds of knowledge, especially that related to wild foods. "This is the same thing," she adds. "A passing on and sharing of knowledge."

Peal also likes the fact that work as a Guardian Watchman would allow her to be closer to home, or at least offer more stability than the commercial fishing she currently does. But that's in the future; now, Peal decides her plaster casts are ready. She watches several classmates extract theirs, then digs the spike from the sand with a piece of driftwood. The casting comes up cleanly, and she rinses it with salt water and puts it aside.

Next, she lifts another blob, one she poured over her own footprint in the sand. Briefly, she holds it to the blue sky, the ephemeral shape of a human footprint captured permanently in plaster. □

Two Coastal Guardian Watchmen from the Kitasoo/Xai'Xais Nation patrol part of their traditional territory by canoe.

KRISTA LANGLOIS



Notice to our advertisers: You can place classified ads with our online classified system. Visit hcn.org/classifieds. Feb. 16 is the deadline to place your print ad in the March 5 issue. Call 800-311-5852, or e-mail laurad@hcn.org for help or information.

BUSINESS OPPORTUNITIES

Conservationist? Irrigable land? Stellar seed-saving NGO is available to serious partner. Package must include financial support. Details: <http://seeds.ojaidigital.net>.

Advertising is a great way to support High Country News and get your word out – Consider a classified ad in *HCN* when you have a conservation or green technology job to fill, a conference or special event coming up, a house to sell, unique home and garden products, professional services to promote, travel opportunities or any other information you would like to get out to like-minded people. Visit <http://classifieds.hcn.org> or call 800-311-5852.

EDUCATION

Earn a master's of education with North Cascades Institute and Huxley College of the Environment at Western Washington University. We offer a unique professional residency program designed to prepare a cohort of students in all aspects of environmental education and nonprofit administration while living amid the towering peaks of the North Cascades.

Now accepting applications for 2018! Visit ncascades.org/study to learn more.

EMPLOYMENT

The Montana Outdoor Science School in Bozeman seeks a new Executive Director. Go to www.outdoorscience.org/job-openings/.

Regional organizers, Billings, Mont. The Western Organization of Resource Councils (WORC) seeks two experienced organizers to join our team. See full job announcement and how to apply on our website at www.worc.org.

Rural development specialist – financial – Your financial management skills can make a real difference in rural communities! www.rcac.org/careers.

Executive Director, Palouse Land Trust

Lead a rapidly growing, successful land trust in Moscow, Idaho. Learn more and apply at: <http://www.palouselandtrust.org/careers>.

Executive Director – Wildlands Restoration Volunteers

– WRV's Board of Directors seeks an Executive Director to build on WRV's significant success and to lead the organization to new levels of achievement and impact. See www.wlrv.org for details. EOE



Digital Printing for Western Colorado and Beyond!

**Frisco • Avon
Grand Junction
Glenwood Springs**

- Business Cards
- Brochures
- Posters • Blueprints
- Banners • Envelopes etc. etc.

**order online at
copycopy.biz**

**Hey!!
Looking for
a good deal?**



10 acre lot,
all utilities,
great view,
Boulder, Utah

www.blackbouldermesa.com

High Country News
For people who care about the West

outdoor & travel ISSUE

**Reserve Now –
Space is Limited!**

Reservation Deadline: **April 23, 2018**
Materials Deadline: **April 27, 2018**
Publication Date: **May 14, 2018**

To Reserve Contact:
laurad@hcn.org or 800-311-5852

Mendenhall Loop by James Baker

G E O G R A P H Y O F
H O P E

**FINDING RESILIENCE IN NATURE
IN PERILOUS TIMES**

MARCH 17 & 18 • POINT REYES STATION, CA

During these fraught days of political upheaval, social turmoil, and environmental assaults, find ways to build emotional and spiritual resilience, using nature as a touchstone.

Featuring: Caleen Sisk, Winnemem Wintu Tribal Chief • Rue Mapp, founder & CEO of Outdoor Afro • Peter Wohlleben, author of *The Hidden Life of Trees* • Peter Forbes, educator, writer & founder of Center for Whole Communities

Information and tickets at
gohconference.org
Pre-registration required.

Presented by  Black Mountain CIRCLE

Co-Sponsors  POINT REYES BOOKS

 CENTER FOR HUMANS & NATURE

 FOREST SERVICE UAS

Media Sponsors  High Country News

KWHR 90.5 FM & Point Reyes Light



**maria's
Bookshop**
DURANGO, COLORADO

Goddard Spiral Stairs

Visit our website, www.spiral-staircases.com
or call toll-free: **1-800-536-4341**




HEMP: ITS TIME HAS COME!
HIGHLY PRODUCTIVE ACREAGE!
50 fully-irrigated acres outside Crawford, Colorado. 1 domestic water tap.
Create your dream: Hemp farm or small livestock operation.
\$350,000 #725075

VALUE PRIVACY?
119 glorious acres outside Crawford, Colorado with irrigation for hemp, hay,
or livestock. Large shop for storage or processing. 3BD/2.5BA brick home.
\$750,000 #738874

Bob Pennetta 970-872-2232 • 970-234-2232
Bob@WesternColoradoRealty.com




**High Country News
Editorial Internship
Program**

Work as a reporter,
gain real skills and
write in-depth stories for
our award-winning magazine.

Apply Today!

Details at:
hcn.org/about/internships

Photo by Michael Remke

Assistant Attorney/Policy Director
Wilderness Watch, a Missoula, Montana-based national conservation organization, is hiring an assistant attorney/policy director to join our team of Wilderness defenders. Full job description and application details at www.wildernesswatch.org. Open until filled.

Executive Director – The Wyoming Wilderness Association, a nonprofit organization dedicated to conserving Wyoming's public wild lands, with offices in Sheridan, Jackson and Laramie, is seeking applications for the position of Executive Director. For more details and how to apply, visit www.wildwyo.org, email info@wildwyo.org, or call 307-672-2751.



General Manager – Northern Water
Under general direction of the Board of Directors, the General Manager manages and directs the overall activities of Northern Water, including the Northern Colorado Water, Conservancy District, the Municipal Subdistrict, and their several water activity enterprises. See www.northernwater.org for details. EOE. carolyn.mccormick@peakhrconsulting.com.

Policy Director – Western Landowners Alliance, a West-wide nonprofit organization based in Santa Fe, N.M., seeks a Policy Director to help implement our mission to advance policies and practices that sustain working lands, connected landscapes and native species. The director will work with organizational leadership, members and partners to identify policy priorities, develop and execute strategies to achieve state and federal policy goals. Successful candidate will have broad understanding of agricultural and environmental public policy issues, BA or higher, and minimum five years of experience in public policy and nonprofit work. Santa Fe residency not required. For complete job description and to apply: westernlandowners.org.



Wildlife Conservation Society seeks a Regional Director, Rocky Mountain West Region – The position will be based in Fort Collins, Colo., or Bozeman, Mont. Apply today at <https://tinyurl.com/ycm249rb>.

HOME AND GARDEN

Naturally raised Heritage Heifers for sale – A fun group of Scottish Highland and longhorn cross heifers for sale, one-and-a-half-years old, gentle. Father a registered Scottish Highland bull. Mothers have tight udders, small teats, lots of milk and good feet. A cool starter herd for your land. 208-940-0827. dsuehaas22@gmail.com.

Western Native Seed – Specializing in native seeds and seed mixes for Western states. 719-942-3935.

MERCHANDISE

Enduring Performance in wide-ranging applications with environmentally friendly, extended drain AMSOIL synthetic lubricants. Wholesale accounts encouraged. 877-486-7645. www.PerformanceOils.US/index/html.

PROFESSIONAL SERVICES

Expert land steward – Available now for site conservator, property manager. View resumé at: <http://skills.ojaidigital.net>.

REAL ESTATE FOR SALE

Custom mountain valley home for sale
Home/horse property on 22.8 acres, pasture and ponderosa pines, near Mora, N.M. Views of the Sangre de Cristo Mountains. Near fishing, skiing, back-country hiking. Taos MLS 100971. 435-881-3741. johnj.taosnm@gmail.com.

A 160-acre hidden paradise in northern Washington – Surrounded by Idaho Panhandle National Forest. Handcrafted home, barns, shop, garage, fruit trees, gardens, greenhouse, hay, pasture, wetlands, at headwaters of year-round creek. \$865,000. For details, contact 208-448-1776 or begolf014@gmail.com.

TOURS AND TRAVEL

Grand Staircase-Escalante, Utah
The Old Bailey Place is where to hang your hat when visiting Grand Staircase. www.theoldbaileyplace.com.

COPPER CANYON, MEXICO, TREKKING
Ten-day tour, from Los Mochis airport, two nights El Fuerte, train, two nights canyon rim hotel, five nights trek-style camping. \$2,000 pp/do www.coppercanyontrails.org. 520-324-0209.

Learning Adventures on the Colorado Plateau – Small group, active, adult field seminars with guest experts, plus private custom trip options for your family or group. Canyonlands Field Institute, Moab, Utah. 800-860-5262. www.cfimoab.org.

Coming to Tucson? Popular vacation house, everything furnished. Rent by day, week, month. Two-bedroom, one bath. Large enclosed yards. Dog-friendly. Contact Lee at cloler@cox.net or 520-791-9246.

Experience Grand Canyon's remote North Rim – Support and enjoy your national parks by immersing yourself in this extraordinary place with Wonderlust Expeditions and Grand Canyon Field Institute, Sept. 17-22, 2018. www.wonderlustexpeditions.com.

UNIVERSITIES AND SCHOOLS

Instructors: Get High Country News for FREE in your classroom! Help your students unravel the complex issues facing the American West with this tremendous resource. The HCN Classroom Program gives FREE magazines and/or digital access to instructors and students. Sign up at hcn.org/edu.

Did you know we publish stories online that aren't in your magazine?

It's true! We write stories for our website each work day to keep you up to date on the latest news affecting the West.

Visit hcn.org and read all our work.

Get our free newsletter and see all our latest stories.

*Sign up at
hcn.org/enewsletter*



High Country News

TOM BIHN

SINCE 1972 - MADE IN U.S.A.



Help our reporters spot
the important stories.

Consider including *High Country News* in your estate planning.

To learn more about our planned giving program, call or email:

Laurie Milford, Development Director · lauriem@hcn.org · 800-905-1155, x31

Or visit our website: hcn.org/support/planned-giving

Photo by Ron Wolf

To survive trying times, turn to the animals



OPINION BY
PEPPER TRAIL

How are you doing? I confess that I'm having a rough time. Everything I care about is under attack by the regime in power. Whether it's wilderness preservation, endangered species protection, action on climate change, the integrity of science, corporate accountability, separation of church and state, access to health care, racial justice, LGBTQ rights, immigrant rights — all, all are in danger of being torn to shreds. Trying to keep up with the litany of horrible news is like drinking from a fire hose spewing toxic waste.

It's easy to feel overwhelmed and hopeless, which is exactly what those in power are counting on. So, how to move past that trap?

For our friends who are struggling, we need to be supportive and understanding — and also offer encouragement that resistance is helpful. I don't try to deny my depression when it comes, but I try not to feed it. Usually, after a few days or a week, outrage cuts through the fog, and I'm awake again. But then what?

Looking around me, I see three basic coping strategies. I'd like to call them after the species that best exemplify them: the armadillos, the tigers and the ants.

The armadillo is famously covered with an armor of tough scales, and when attacked it tucks its head under and rolls up into a protective ball. This is, of course, the strategy of denial, and lots of people I know have shut down and become armadillos. I'm lucky to live in a beautiful small town, where it's easy to feel insulated from unpleasant reality. If you never pay any attention to the news, you can live here very happily, tending your garden, going out for coffee, taking a nice hike.

There are a couple of problems with being an armadillo, however. First of all, there are some very strong-jawed monsters out there, and I submit that the current administration in Washington, D.C., is such a monster. Second, sooner or later, every armadillo has to uncurl and go about its life. Like me, a lot of my armadillo friends are in their 60s, and I think they're betting, consciously or not, that they won't be around when the worst comes to pass. Perhaps that's what counts as optimism these days.

Then there are the tigers. Tigers are fierce and uncompromising. Some fearless people — my wife, for one — have become tigers. A pediatrician with



A "tiger" takes the megaphone at Portland's National March for Impeachment in January. DIEGO DIAZ/ICON SPORTSWIRE VIA GETTY IMAGES

It's easy to feel overwhelmed and hopeless, which is exactly what those in power are counting on.

a demanding practice, she still spends hours every day telephoning not just our own worthless representative but also leaders in Congress like Paul Ryan and Mitch McConnell. She goes to rallies and makes sure I come, too. She donates money to an ever-lengthening list of activist groups and promising candidates. She gets, on a good night, four hours of sleep. I am in awe of her passion and that of the other tigers I know. But not everyone can be a tiger, burning so brightly without burning out.

That leaves the ones like me, the ants. Like our totem animal, we may be small, but we are single-minded and we are legion. The most encouraging discovery of this terrible year has been

how many of us there are, working in local networks to form a national resistance. Every week, I take at least three or four actions — I write a letter, make a call, go to a meeting. That's a level of activity I know I can sustain. I focus on environmental defense, while my friends and allies swarm into action on health care, racial justice, immigrant rights, and all the other issues under threat. In the long run, I believe it's the collective work of these people, some of whom have never been politically active before, that will save our country from its present nightmare.

So, I say: Join us. Shoulder your small burden, one that is not so heavy that it will leave you broken, and make a path that works toward change. Don't forget to thank the mighty tigers who inspire the rest of us, and as you pass the armadillos, give them a little kick to wake them up.

We have nothing to lose but our despair. □

Pepper Trail is a writer and retired forensic biologist in Oregon.

WEB EXTRA

To see all the current Writers on the Range columns, and archives, visit hcn.org

Writers on the Range is a syndicated service of High Country News, providing three opinion columns each week to more than 200 media outlets around the West. For more information, contact Betsy Marston, betsym@hcn.org, 970-527-4898.



Oil drilling infrastructure surrounds Pierre's Site, an archaeological site on a road leading out of Chaco Canyon. The site itself is protected, but the BLM plans to lease thousands of acres nearby for oil and gas development this year.

JONATHAN THOMPSON

The big sell-out

Even without wholesale land transfers, America's public lands are being conveyed to industry at an alarming rate



ANALYSIS BY
JONATHAN
THOMPSON

Next month, hundreds of corporate representatives will sit down at their computers, log in to something called EnergyNet, and bid, eBay style, for more than 300,000 acres of federal land spread across five Western states. They will pay as little as \$2 per acre for control of land in Utah canyon country, Wyoming sage grouse territory and Native American ancestral homelands in New Mexico.

Even as public-land advocates scoff at the idea of broad transfers of federal land to states and private interests, this less-noticed conveyance continues unabated. It is a slightly less egregious version of the land transfers that state supremacists, Sagebrush Rebels and privatization advocates have pushed for since the 1970s.

This is oil and gas leasing, conducted under the Mineral Leasing Act of 1920. With President Donald Trump proclaiming in his Jan. 30 State of the Union speech that Republicans have “ended the war on American energy,” you can expect such leasing to ramp up in years to come. While title to the land is not transferred, the power of public oversight — which puts the “public” in public lands — is. Theoretically, leased land remains under federal control, meaning that companies are subject to federal regulations and oversight, public access to the land is retained, and the American public still has a say over what happens there. This, however, is only theoretically.

In practice, the public has very little voice in the leasing process or the permitting of development that follows. After an energy company or the Bureau of Land Management nominates parcels for leasing, the public is given

a chance to comment or file a formal protest. Quite often these protests fall on deaf ears. BLM data show that over the last 20 years, the number of parcels protested has no bearing on how many were removed from bidding. The Obama administration tried to give the public a bit more say on the front end of the process with its master leasing plans, but Interior Secretary Ryan Zinke killed that rule, and public impotence appears to be worsening. A *High Country News* analysis found that hundreds of protests were lodged against nearly all of the 1.4 million acres offered by the BLM for lease in six Western states in 2017. A vast majority of those protests were dismissed or denied.

From 1988 to 2016, an average of 3.43 million acres — or 5,300 square miles — of federal land was leased out to energy companies each year. The leases vest the companies with property rights to extract oil, gas or other resources from the land. Those rights are retained for the term of the lease — 10 years or more without development and indefinitely after production begins. If the land becomes a national monument or gains other protected status during the lease, the property rights remain in place. By the end of the 2016 fiscal year, private interests controlled more than 27 million acres of federal land through leasing.

Before the leaseholder can scrape away a half-acre of vegetation and topsoil for a well pad and start drilling miles into the earth, it must get a drilling permit. While public input is typically not part of the permitting process, citizens have an indirect voice by way of

the regulatory framework that officials must work within. This process represents the last vestige of public ownership over the leased land.

But now Zinke is doing his best to blow that process to bits. The Interior secretary has weakened regulation of fracking, methane waste and other emissions and reopened a loophole that was closed under Obama to reduce royalty fraud on public lands. Now, he's looking to ax older rules, too, many of which protect wild spaces and cultural resources. Under Zinke, industry will run over the public's land like it owns the place, and land-management agencies (public employees on public lands) will have little power to stop it. So, while Zinke has repeatedly expressed his vociferous opposition to wholesale federal land transfers, his enthusiasm for leasing adds up to the same thing. The Interior secretary is running a de facto privatization scheme.

Zinke's zeal is now being tested in northern New Mexico's San Juan Basin, where, as part of the March auction, the BLM is scheduled to lease 4,434 acres of land that is culturally significant to the Navajo and Pueblo people. The BLM has received 120 formal protests against the sale, including from the All Pueblo Council of Governors — a consortium of 20 tribal nations — four Navajo chapters, the National Trust for Historic Preservation, eight environmental groups, the Pueblo of Acoma and numerous individuals. We have yet to see how the BLM will respond to these official protests, but when it does, we'll know who really calls the shots and whether we — the public — still own our nation's public lands. □

Collecting curiosities from land and sea



Coast Range

Nick Neely

200 pages, softcover:

\$16.95

Counterpoint, 2017.

There's a moment midway through Nick Neely's nonfiction debut, *Coast Range*, in an essay called "The Garden of Earthly Delights." Neely apparently sets out to write about the fleshy madrones — the "refrigerator trees," he calls them — that he encounters on the way to Lower Table Rock in Medford, Oregon. But he's distracted by the mutilated bark of the madrones on the trail's periphery, carved with phalluses, hearts, initials and enigmatic phrases along the line of "Jesus Team A. A+C =<3." One might expect Neely, an environmental writer, to rebuke the carvers, accuse them of being inane graffiti-scrawling vandals. Instead, Neely realizes they're his kind of person. "What is an essay, a book, but an incision into a tree?" he writes, and he concludes the piece with photographs of the arborglyphs. In this moment, it's hard to discern word from page, page from tree, tree from word.

Named after the mountain range spanning the Pacific Northwest in California and Oregon, Neely's *Coast Range* is populated by chiton fossils, madrone trees, salmon, steelhead, chanterelle mushrooms, hummingbirds, coyotes and a cache of agates. The millions-year-old agates, culled from Neely's beachcombing, are "comforts, pacifiers. Curiosities." They sit on his desk as he writes, displaced from the eternity that created them. "Once an object joins a collection," Neely writes, "it tends to become more than itself." It becomes sacred, carrying layers of history and association. As other objects join it, almost of their own volition, the collection gradually grows to "fill some part of the psyche." Neely, obsessed about ID'ing certain agates of distinction, reaches into the cubbyholes of his lexicon, deeming them "Rorschachian" and "amygdaloidal." They have crescents, crystals and spots as they cobble the shore. Look at their striations, their chemical variations: One is a webbed lima bean, while another is a pool of translucent blue. Considering Neely's habit of handling the agates, it's not

surprising that these wondrous pebbles are sometimes "ruddy and skin-like," as dermal as the palms that cradle them.

In this book, the difference between agate and skin, bark and flesh, nature and human is sometimes imperceptible. This is most obvious when Neely is on a quick march through the wood. During more extended wilderness sojourns, though, humankind and mountankind are occasionally at odds. This is most true in the 44-page penultimate essay, "Homestead," in which Neely lives off-grid with his wife, painter Sarah Bird, in southern Oregon along the Rogue River, as a participant in the Boyden Wilderness Writing Residency. They begin as interlopers, hanging one of those classic hummingbird feeders, "plastic ruby-red with yellow florets. Without a doubt ... the most garish object for twenty miles." Nick and Sarah watch the birds "parry each other's jousts," but this is a minor project when compared to the daily work that will be required of them.

In a single paragraph, they sweep needles, prune grapevines, pull thistle, eradicate poison oak, and mow grass for a fire buffer. Weeding, clearing, shoring up? If these verbs aren't for you, then that particular residency is probably not for you either. Their human habitat is conspicuous amid the encroaching natural world, and over the course of weeks, it takes a toll on their physical and emotional endurance.

In this long-form essay, Neely strays

from the personal to include Indigenous histories, trapper records and accounts from Oregon's first homesteaders. And despite its breadth, it's every bit as polished as the micro-essay on 500 million-year-old chiton that opens the book. By "Homestead's" end (the end of the residency, too), Neely is so thoroughly immersed in the landscape that one can barely see him, "(plunging) down the Rattlesnake, glissading through scales of scree and fragile earth; catching trees with (his) hands and swinging (himself) around to temper (his) fall, (his) momentum." Blink, and you might miss this momentous caroming. Blink, and the body is gone: pure landscape painting. As a testament of their tenure, Sarah leaves some paintings in the meadow and Nick leaves his words in the cabin, all a part of "the clay of vocabulary." Neely is as agile a witness as he is a custodian of the range.

As a writer, Neely often behaves like a shadow; in one essay, he stands by as hatchery technicians select diverse broodstock. Rather than watch "disposed" salmon simply recede out of the frame, his impulse is to follow them, which leads him to the kitchen at a nearby casino and a ceremony for the Cow Creek Band of Umpqua Tribe of Indians. The shadowing transcends the physical into the realm of the psychic. He may not "speak salmon," but his shadow gets so close to the carcass it nearly "(becomes) the flies" swarming above it.

Though Neely is a native of the California bounds of the Coast Range, it's clear he feels equally at home in Oregon; it's part of his "biological address" (to borrow a term from environmental writer Ellen Meloy). For the reader, the word "range" might equally apply to the scope of this book's roaming, the array of its narrative approaches, or the breadth of its collecting. Or maybe range is just the literal space between the first and last page of this book, inside which Neely makes his meticulous incisions. Like arborglyphs in a stand of madrones, it is "a coming-together, a declaration of identity."

BY LAWRENCE LENHART



Agates found at Siletz Bay in Oregon.

ALAMY STOCK PHOTO

A WYOMING WEDDING

On love, land and equality

ESSAY BY DAVID ROMTVEDT

In November 2016, my daughter and I played fiddle and trikitixa accordion for a Wyoming wedding — traditional Basque music on the steps of Cheyenne's Cathedral of St. Mary. The bride was descended from a sheepherding family of Basques, a group of people who came to northern Wyoming in the early 1900s and built the nation's largest wool industry, and the groom came from a cattle-ranching family, so the wedding was as much cowboy as shepherd.

The bride wore a brilliantly white gown, the groom a white suit and a white cowboy hat. The groomsmen and bridesmaids wore black, formal attire. One of the bridesmaids told us, "We feel lucky we don't have to dress like cheerleaders applying for jobs as cocktail waitresses." It was unseasonably warm and we stood in sunlight, wearing white shirts, red neckerchiefs, and black berets. People smiled at us as they passed, relishing the sinuous, rapid-fire melodies of the old Basque songs — *Zazpi jauzi*, *Axuri beltza*, *Hegi*, *Tirauki*.

A bridesmaid delivered the first reading, from Genesis:

"The Lord God said: 'It is not good for the man to be alone. I will make a suitable partner for him.' So the Lord God formed out of the ground various wild animals and various birds of the air, and he brought them to the man to see what he would call them; whatever the man called each of them would be its name. The man gave names to all the cattle, all the birds of the air, and all the wild animals; but none proved to be the suitable partner for the man. So the Lord God cast a deep sleep on the man, and while he was asleep, he took out one of his ribs and closed up its place with flesh. The Lord God then built up into a woman the rib that he had taken from the man. When he brought her to the man, the man said: 'This one, at last, is bone of my bones and flesh of my flesh; This one shall be called "woman" for out of "her man" this one has been taken.'"

A groomsman read from 1 Corinthians:

"If I speak in human and angelic tongues but do not have love, I am a resounding gong or a clashing cymbal. And if I have the gift of prophecy and comprehend all mysteries and all knowledge; if I have all faith so as to move moun-

tains but do not have love, I am nothing. If I give away everything I own, and if I hand my body over so that I may boast but do not have love, I gain nothing. ..."

The priest came forward. "This passage from Genesis proclaims one of the most radical doctrines of our faith," he said, "the absolute equality of men and women. The Lord God made us of the same material and we stand as equal beings before the Lord and before each other."

Oh, my God, I thought, *that's not the way they interpreted the rib story when I was a kid. He's talking about the president, about attacks on the rights of women, Blacks, Latinos, Native people, gays and lesbians, immigrants, refugees, Muslims — everyone.*

"The absolute equality of women and men, that is what the Lord offers." The priest paused. "And First Corinthians — we often hear this at weddings and it's beautiful — you may have all the things of this world, but without love, you have nothing." He shifted to ranching: "The love of the land is the same love scripture addresses, reminding us to care for the land and to treat humanely the animals who give their lives so that we may live. If we accept this gift but do not have love, we have nothing." No one stirred, but I'd like to believe everyone listened.

Following the service, my daughter and I went outside to play another set of Basque tunes. The wedding guests lined the sidewalk to await the bride and groom, who would ride to the reception in a replica of an early Yellowstone National Park motor coach, with its long yellow carriage with black fenders and running boards. Yellowstone, larger than Delaware and Rhode Island combined, had been set aside forever. It's as if the priest had channeled Henry David Thoreau, who wrote, "I wish to speak a word for Nature, for absolute freedom and wildness ... to regard man as an inhabitant, or a part and parcel of Nature."

Each guest held a soap-bubble container in the form of a white plastic cowboy boot. Instead of throwing rice, we blew bubbles. The sun disappeared, and it was suddenly cold. People hunched their shoulders up in their coats. Kids jumped up and down. A young mother, baby wrapped in blankets in her arms, swayed in time to the music. As the priest passed, I thanked him. "About equality and loving the land," I said. He smiled. The cowboy-boot soap bubbles rose into the sky. □

David Romtvedt is a writer and musician from Buffalo, Wyoming, whose most recent book is *Dilemmas of the Angels*.



HEARD AROUND THE WEST | BY BETSY MARSTON

OREGON

Once you put your garbage in a can by the curb, whose garbage is it? For decades, the Portland, Oregon, police considered it free for the picking. An old story from *Willamette Week* is making the rounds, detailing how police even swiped the trash of a fellow officer to help build a drug case against her. Multnomah County Circuit Judge Jean Kerr Maurer “rubbed this practice,” ruling that scrutinizing garbage is an invasion of privacy that requires a proper search warrant. After the district attorney’s office vowed to appeal what it called the “very unique” judge’s position, two reporters at *Willamette Week* decided to find out how elected officials would feel if their own garbage was searched and cataloged. This “junkaeological dig,” as reporters Chris Lydgate and Nick Budnick dubbed it, required thick gloves and a strong stomach, but their garbage gleaning was worth the effort. Police Chief Mark Kroeker, for example, had stated: “Things inside your house are to be guarded. Those that are in the trash are open for trash men and pickers — and police.” But when the reporters spread highlights from the chief’s own trash on a table in front of him, he was appalled: “This is very cheap,” he complained. Some of the chief’s throw-aways were highly personal: a summary of his wife’s investments, “an email prepping the mayor about his application to be police chief of Los Angeles,” a note on a napkin “so personal it made us cringe,” and a newsletter from the conservative group, Focus on the Family. (When reporters asked whether he was a member of the group, Chief Kroeker replied, “It’s none of your business.”) No whiff of scandal was detected, the reporters concluded, though they agreed that “there is something about poking through someone else’s garbage that makes you feel dirty — and it’s not just the stench and the flies.” Rummaging through someone else’s garbage to build a case against them isn’t just an invasion of privacy, the dumpster detectives warn: “This is a frontal assault, a D-Day, a Norman Conquest of privacy.”

THE WEST

When it comes to sneaking a peek at what goes on inside factory farms, however, the 9th Circuit



MONTANA Rest in peace, Rosebud. MIKE O'CONNELL

Court of Appeals ruled Jan. 1 that Idaho’s “ag-gag” law is unconstitutional. The case stemmed from 2012, when Mercy for Animals, an animal rights organization, went undercover to videotape cruelty to animals raised and slaughtered in the state’s \$2.5 billion dairy industry. *Nation of Change* reports, “Idaho felt a deep threat,” so it passed a law in 2014 making it a crime to “surreptitiously videotape agriculture operations.” But the court overturned it, saying it “criminalizes innocent behavior” and targets free speech and investigative journalists. Ag-gag laws remain in place in seven other states, including Montana, Utah, North Dakota, Missouri, Kansas, Iowa and North Carolina, where it’s still illegal for activists to smuggle cameras into industrial animal operations.

ARIZONA

Too many extraterrestrial visitors can get on a person’s nerves, reports *The Week*. An Arizona man said he has bumped into “dozens of aliens trespassing” on his 10-acre desert property. Not only that: He said they once tried to “draw (his wife) into the craft.” Now John Edmonds is fed up and selling his ranch for \$5 million. *Caveat emptor*: Prospective purchasers should be “well grounded,” Edmonds warns, “because the energy here has the tendency to manifest with whatever is going on with you.”

UTAH

Another wildcat has gone missing at the Salt Lake City Zoo, reports The Associated Press. Two years ago, a 60-pound leopard squeezed out of its enclosure and turned up snoozing on a wooden beam near the ceiling. This time, an 8-pound Pallas’ cat, known for its glower, has escaped. Zookeepers plan to entice it home with yummy treats at night, when it’s active.

THE WORLD

After Environmental Protection Agency boss Scott Pruitt claimed that human activity was not a “primary contributor” to climate change, the nonprofit Public Employees for Environmental Responsibility asked what evidence he relied on to make that judgment. Apparently, the public will never learn about the reasoning, scientific or otherwise, that formed Pruitt’s opinion, because the Justice Department — representing the EPA — considers PEER’s Freedom of Information Act request “a trap” that would mean “an endless fishing expedition.” Paula Dinerstein, PEER’s counsel, said the request was not all that complicated. “We presume Administrator Pruitt must have had some factual basis for his public statements, and we merely seek to see what it is.” The agency did do one very odd thing, despite refusing to search for efforts: It produced “links to large amounts of archived material that had been removed from the agency website. However, all that material contradicted Pruitt. ... As such, it was not responsive to PEER’s request.”

COLORADO

Bumper sticker seen on a truck in Basalt, in western Colorado: “Trust everybody. But brand your calves.”

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 or tag photos #heardaroundthewest on Instagram.



High
Country
News

For people who care about the West.

High Country News covers the important issues and stories that are unique to the American West with a magazine, a weekly column service, books and a website, hcn.org. For editorial comments or questions, write *High Country News*, P.O. Box 1090, Paonia, CO 81428 or editor@hcn.org, or call 970-527-4898.

“It’s been a long and lucrative ride, but the age of fossil fuels is ending, and failure to plan for a realistic future is going to have severe repercussions for folks across the West.”

Jesse Alston, in his essay, “The power of fossil fuels is fading,” from *Writers on the Range*, hcn.org/wotr