COAL CLEANUP | BEHIND THE OREGON OCCUPATION | RE-ENGINEERING THE RANCH

High Country News

For people who care about the West

THE FOREVER WAR

A federal agency called Wildlife Services has been researching nonlethal means to protect livestock for decades. So why is it still killing so many predators?

By Ben Goldfarb

January 25, 2016 | $5 | Vol. 48 No. 1 | www.hcn.org

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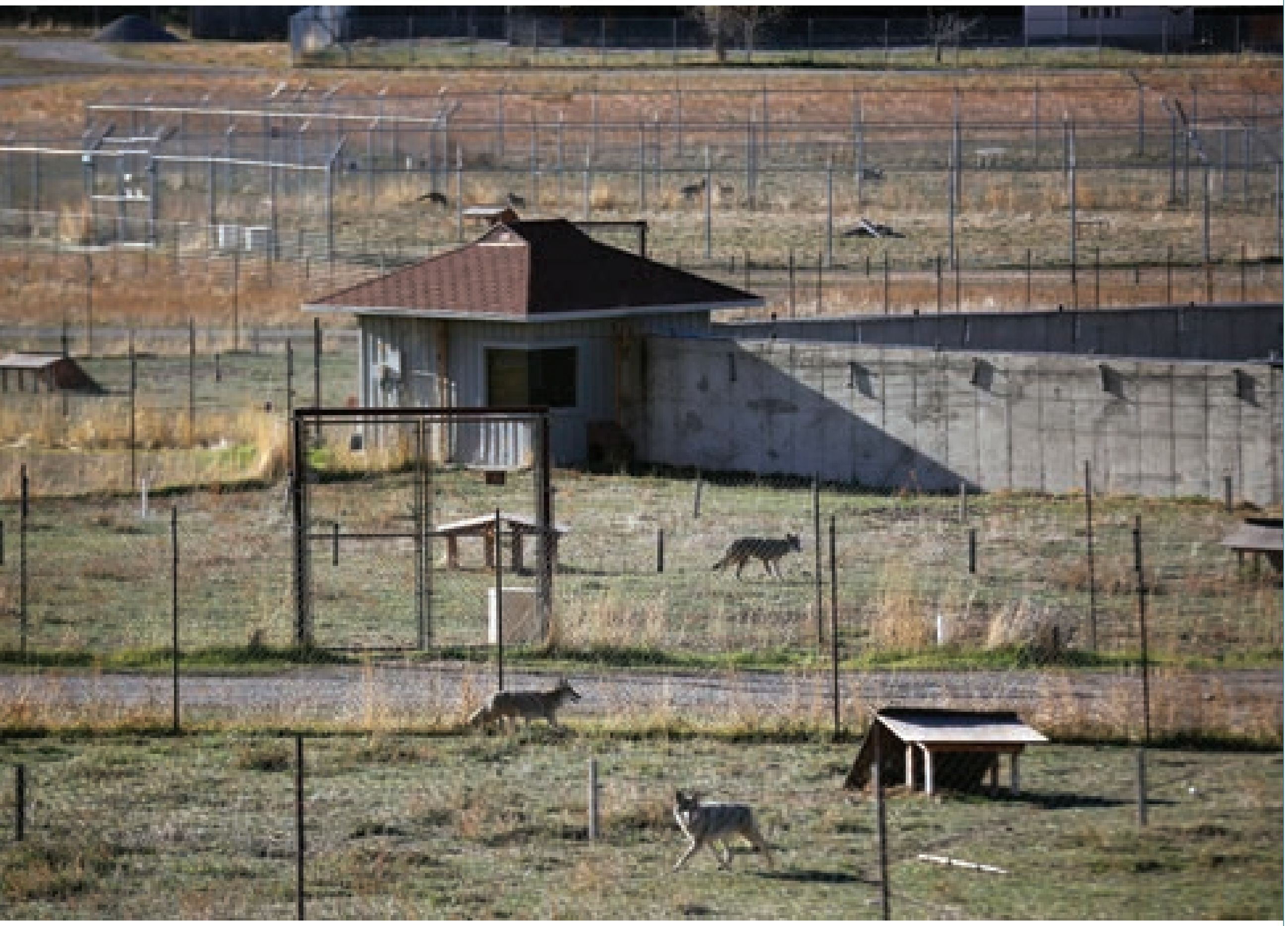

A Wildlife Services' Predator Research Facility near Logan, Utah. KRISTIN MURPHY

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A federal agency called Wildlife Services has been researching nonlethal means to protect livestock for decades. So why is it still killing so many predators? By Ben Goldfarb

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On the cover

Coyotes at the Predator Research Facility near Logan, Utah, where nonlethal methods of predator control are studied.
KRISTIN MURPHY

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Editor's note

Human and canine coevolution

I remember the day, years ago, I first saw them, while wandering through the raggedy wildlands behind our Midwestern neighborhood. Suddenly, they appeared — a pack of dogs at the edge of the woods, looking straight at me. I froze. Surely they would advance, snarling, to take down this slow, weak suburban prey. But they gazed at me without fear and apparently without malice, and then slipped silently into the oaks.

Not dogs. Coyotes.

I never saw coyotes there again, but decades later, when I moved to the rural West, they became a steady presence in my world. They ran across our fields by day and sang haunting choruses by night. My rancher neighbors were highly attuned to them as well; they routinely shot any coyote they saw. It was the only way, they believed, to keep these wily predators fearful and few.

That's been the attitude of the little-known federal agency that, for nearly a century, has "controlled" predators on behalf of ranchers and farmers. As Ben Goldfarb reports in this week's cover story, Wildlife Services routinely kills tens of thousands of coyotes every year — 61,638 in 2014 alone.

Yet the coyote has survived, and even expanded its range to virtually every ecosystem on the continent. Ecologists believe that killing adult coyotes actually encourages early breeding and more successful pup production, yet the agency has stuck to its guns — and its traps — largely because, as Goldfarb reports, its rancher clients, who help pay its bills, want a quick return on their investment.

The story, though, doesn't end there. Prodded on the inside by folks like biologist Julie Young, Wildlife Services is slowly evolving, just like the other federal natural resource agencies in the West, and it has begun introducing the nonlethal forms of predator control favored by activists, such as guard dogs, fencing, noise and lights. More and more ranchers are willing to give them a try.

Though significant barriers to reform remain, especially the agency's reliance on local funding, it was heartening to hear Young say at a recent meeting, "I can think of people who hate the fact that I work for the agency I work for, but 80 to 90 percent of what we're trying to do is the exact same thing."

And that is to manage these marvelous lands with ecological intelligence and a sense of compassion for all their denizens, whether human, domesticated or wild. As we go to press, a band of misinformed rogues is occupying the Malheur National Wildlife Refuge in eastern Oregon's high desert. They seem to have forgotten that the West's public lands belong to all of us, and that there is common ground to be found, even with deeply entrenched bureaucracies, if we are willing to work for it.

—Paul Larmer, executive director/publisher

Children play near a pumpjack in a neighborhood in Frederick, Colorado. Colorado citizens can now report health problems potentially related to oil and gas development. DAVID ZALUBOWSKI/AP

Colorado to track fracking-related health problems

Colorado recently became the first state to have a health response program for oil and gas operations. Fracking and drilling can release a range of pollutants that harm human health, but definitive proof of links between oil and gas production and health problems is often elusive. The new program will allow citizens to report symptoms they believe may be related to oil and gas activity. Health specialists will also provide information on existing research, track complaints and look for patterns of illness. The program is based on recommendations from the state's oil and gas task force. But it stems from a groundbreaking 2010 study performed in Battlement Mesa, Colorado, which looked at the health impacts of a proposal to drill some 200 natural gas wells within town limits. Meanwhile, worries linger in the state over wells built too close to homes and schools. **JODI PETERSON**

MORE: hcne.ws/co-oil-gas-health

$43 trillion

estimated amount that carbon dioxide and methane released from permafrost thawing could cost the world by 2200.

16 to 24

percent of Alaska's permafrost that will disappear by the end of the century.

Until recently, relatively little was known about the repercussions of thawing permafrost. Today, as its role in global carbon cycles grows more apparent, a slew of studies are transforming our understanding of the frozen soil. Among the most notable takeaways are U.S. Geological Survey research that produced an unprecedented map of permafrost distribution, and studies that found that tundra fires, which are becoming increasingly common, accelerate permafrost thaw.
KRISTA LANGLOIS

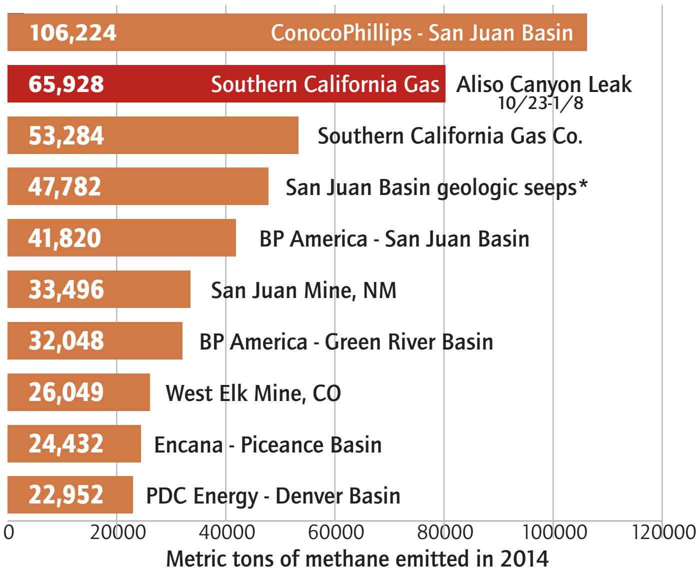
MORE: hcne.ws/permafrost-studies

Slow-motion methane disaster

North of Porter Ranch, California, natural gas has been leaking from a massive underground storage facility. Additives in the gas have caused health problems for some local residents, including burning eyes, nausea and headaches, but the long-term impacts promise to be even more devastating. Natural gas is mostly made up of methane, which is much more potent in terms of global warming than carbon dioxide. Although natural gas burns more cleanly than coal, leaks like this one undermine its advantages. The company will begin burning off some of the methane to prevent further damage. **JONATHAN THOMPSON**

MORE: hcne.ws/slow-mo-methane

MAJOR METHANE EMITTERS IN THE WEST



SOURCE: CALIFORNIA AIR RESOURCES BOARD, EPA, LT ENVIRONMENTAL. *SAN JUAN BASIN GEOLOGIC SEEPS ONLY INCLUDE THE PORTION OF THE BASIN IN COLORADO ON NON-UTE LAND.

7

fishers were released into Washington's Gifford Pinchot National Forest on Dec. 3. It was the first time the weasel-like creature had been seen in the South Cascades in more than 70 years. **BEN GOLDFARB**

MORE: hcne.ws/wa-fishers

Video

A California housing development dries up

"It's imperative that the community continues to grow. If it's arbitrarily truncated or cut short, I don't see how the existing ratepayers will be able to bear that debt burden on their own. If we're not a growing community, we're a dying community."

–Edwin Pattison, general manager of Mountain House, a housing development east of San Francisco whose water supply was cut off last year due to drought

MORE: hcne.ws/drying-up

ZOË MEYERS

Trending

Ranchers bought out

In an opinion piece, conservation advocate Tom Ribe praises a new wilderness bill for buying up federal grazing leases surrounding Idaho's Boulder-White Clouds Wilderness. The Forest Service would take control of the leases and put them out of production, helping minimize predator-cattle conflicts. National buyout programs are rare, due to opposition from the ranching industry, and Ribe lauds the compromise as a sign of progress from a gridlocked Congress. Wilderness bills can make damaging compromises, Ribe says, but this one benefits both ranchers and environmentalists. **KATE SCHIMEL**

You say

JACK PRIER: "So we can step away from an 1800s land experiment on behalf of the public's wildlife ecosystem? Good news."

DEB HOCHHALTER: "Not only do the grazers destroy the land, but they, along with their friends at Wildlife Services, are decimating the predator populations. Loss of these predators and their ability to control the ungulate populations are decimating ecosystems."

MARK BAILEY: "Nothing is harder on the public lands in the West than livestock grazing. This is such a win-win fix."

MORE: hcne.ws/rancher-buyout and Facebook.com/highcountrynews

LETTERS

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COOPERATING FOR THE COMMON GOOD

Being alone is no way to live, and so humans, being communal animals, evolved specific biological reactions to social threats. Those living on the periphery of their tribes faced increased risks of starvation, predation and early death.

Today, feelings of isolation may result in nervous behavior and unhealthy physiological responses that cause the body to produce stress-related biochemicals, leading to inflammation and reduced ability to fight off infections.

Loneliness also impacts how one sees the world and how one responds to increased risks to his security and wellbeing.

And so the Malpai Borderlands Group, recognizing the dangers of living on the periphery of their tribe in our harsh Southwestern deserts, has chosen to formalize "neighboring," taking on the social responsibilities of caring for one another in the self-interest of each of them ("Good Neighbors," *HCN,* 12/7/15).

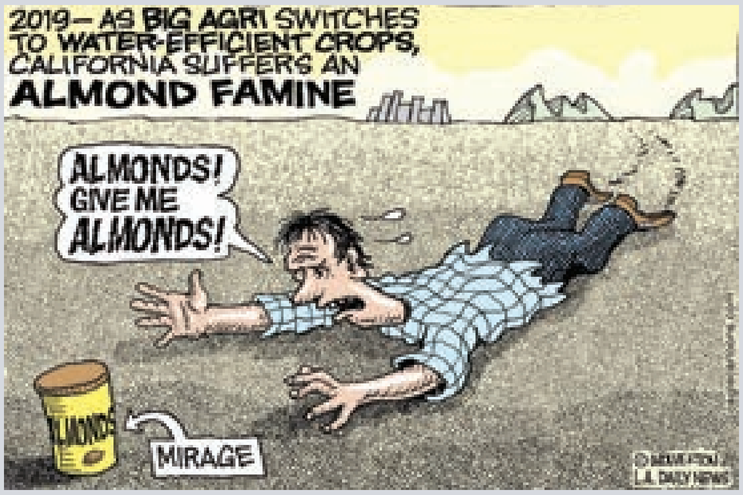
Thanks for sharing a wonderful lesson about respect, responsibility and restraint. We should welcome more such examples.

Hugh Jameson
El Paso, Texas

BEAVER BELIEVER

Regarding Avery McGaha's wetland article ("A desert oasis, lost and found," *HCN*, 12/21/15): Cattails are considered a weed. They overtake ponds and wetlands, crowding out native species that are more beneficial. Instead of cattails, the *cienega* should have native willows and cottonwoods. Instead of messing around with logs and dams of his own making, A.T. Cole should import some beavers. The beavers belong in that ecosystem and would do a much better job of restoring it. They can even take an arroyo, with intermittent water, and make dams with mud and stones and bring it back to a healthy system. If Mr. Cole would use the help of beavers instead of trying to be a human beaver, he wouldn't have to worry about floods; the beavers would prevent those. The areas where beavers are allowed to do their thing are amazing. Yeah, beavers!

Penelope M. Blair
Moab, Utah


2019— AS BIG AGRI SWITCHES TO WATER-EFFICIENT CROPS, CALIFORNIA SUFFERS AN
ALMOND FAMINE
ALMONDS! GIVE ME ALMONDS!
ALMONDS
MIRAGE
L.A. DAILY NEWS

WOLVERTON/CAGLE CARTOONS

IMMIGRATION AND POPULATION

I don't doubt that a lot of opposition to immigration is due to nativism, as Forrest Whitman writes, but many favor lower immigration to stem overpopulation ("Western nativism has a rotten odor," *HCN*, 12/21/15). U.S. population will exceed 400 million by 2050. If we had maintained the immigration levels of the 1950s and '60s, our population would have leveled off by now. Which population future would you prefer, half-a-billion and growing, or a steady state of 260 million? Some informative articles and graphics on the consequences of our permissive immigration levels are at www.numbersusa.org, but I am equally swayed by a piece by *HCN*'s own Ed Marston in the Feb. 3, 2003, issue ("The son of immigrants has a change of heart," at www.hcn.org/issues/243/13710), where he describes his thoughtful reaction to a conversation with a Mexican father of 11.

Lee Badger
Ogden, Utah

WATER FOR COWS

The Nov. 23 stories "The city as sponge," about Los Angeles possibly designing its way to water independence, the related story "The Revival of Mono Lake," and the cover story, "Water Hustle," brought back the July 16, 2015, *TED Radio Hour*: "Finite: Ideas about the Resources We Use and How to Make the Most of What's Left." About 14.5 minutes in, John Foley, an ecologist who runs the California Academy of Sciences, offers this observation (which I paraphrase): "Just think about the last 50 years. Population has more than doubled, our use of water for food production has more than tripled, and our use of fossil fuels has more than quadrupled."

Focus in on water for agriculture, Foley continues: "Seventy to 90 percent of all water used around the planet is to irrigate crops. California's water problem is a food problem. The biggest consumer of water in California is alfalfa. Alfalfa alone is using more water than all the other water uses combined, and most of it is being shipped overseas for use as feed for dairy cows. So we are exporting California water to the Middle East and China to make milk."

So, yes, while the possibility of making LA water independent is tremendous, the darts we are throwing are still missing the bull's-eye — California alfalfa exports — which Gov. Jerry Brown, for all his 2016 green energy and water policies, has said is "off the table."

Cynthia Mitchell
Reno, Nevada

RESPECT ALL AROUND

I was deeply saddened by the Dec. 7 cover's display of animal cruelty. The cover caption states that "neighbors helping neighbors" on branding day "is the cultural norm." Unfortunately, inflicting pain appears to be a "cultural norm" in the cowboy culture also. I wonder how many of those "neighbors" subduing that poor animal would enjoy being treated like that. Apparently, the castration and branding were done without pain mitigation. At least I saw no mention of anesthesia. There is enough suffering in the world. How about *HCN* covers that inspire awe instead of revulsion? My understanding of the international and interdisciplinary field called "compassionate conservation" is that we must not only respect the land on which we and other animals live but also the animals themselves.

Bob Muth
Kalispell, Montana

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**

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Coal company bankruptcies jeopardize reclamation

Public at risk of footing billions in cleanup costs

BY ELIZABETH SHOGREN

L.J. Turner gazes across a pit so massive its size is hard to fathom. Enormous draglines dredge up shiny black coal. Once, Turner grazed cattle on 6,000 acres of publicly owned grassland here. Then the land was swallowed by Peabody's North Antelope Rochelle Mine, the world's largest coal mine. Thirty-some years ago, the rancher says, before mining companies turned Wyoming's Powder River Basin into the nation's most productive coal region, they made a promise: When they finished extracting coal, they would restore the land.

Under federal law, companies must reclaim the land they've mined. To ensure that cleanup is completed, they must provide financial guarantees — bonds, cash or collateral to cover the entire cost of reclamation. That way, even if the company goes out of business, the public is protected from expensive cleanup bills or abandoned mines that scar the land, pollute waterways and eliminate rangeland and wildlife habitat. These days, for a big Powder River Basin mine, reclamation costs can reach several hundred million dollars.

Instead of setting aside cash or getting a financial institution to guarantee that land will be reclaimed, though, several of the biggest coal companies, including Peabody, took advantage of a provision of the Surface Mining Control and Reclamation Act of 1977 that allows them to self-bond. That means companies with adequate finances can make legally binding promises they'll cover reclamation costs. The companies benefit because they avoid tying up their money or spending it on surety bonds.

But recently, after decades as industry stalwarts, some of those companies, including Peabody, have seen their finances nosedive, and fears about whether they will be able to meet their growing financial obligations to restore the land have reached a crescendo.

If those self-bonded companies go bankrupt without adequate assets to back their reclamation liability, state and federal taxpayers could find themselves responsible for filling in those massive pits, reseeding grasslands and trying to restore damaged streams, springs and aquifers. At a congressional hearing last month, Interior Secretary Sally Jewell said self-bonding has become a "big issue," given coal companies' financial fragility. "It does potentially leave the states and the taxpayers at risk."

As long as a mining company meets financial requirements, states can accept a self-bond. State conditions vary but must be at least as strict as federal standards. (Similar self-bonding rules apply to hardrock mining, but currently attention is focused on coal because of the industry's financial crisis.) The total covered by self-bonds for Western coal mines has swollen in recent years. Most of it, $2.25 billion, is in Wyoming, which produces 40 percent of the nation's coal. Colorado and New Mexico have much less self-bonding, and though Utah also allows it, the state currently has no self-bonds. Montana, the West's second-largest coal producer, does not allow any self-bonding.

Western states that permit it say that mining companies are up-to-date on reclamation and have yet to default. But Turner and some environmental groups have long complained that reclamation was happening too slowly. Now, they fear it may not happen at all. "I'm just very concerned (companies are) going to try to use bankruptcy to get away from doing anything," Turner says.

Arch Coal, which is self-bonded for nearly half a billion dollars in Wyoming, filed for bankruptcy in mid-January, following Virginia-based Alpha Natural Resources, which filed in August. These bankruptcies leave big question marks over whether the companies can or will keep their reclamation commitments. Others could follow. Alpha, Arch and Peabody made huge investments in metallurgical coal before prices tanked, leaving them swamped in debt. And the outlook for coal is increasingly dim as electric companies switch to low-cost natural gas and as climate change policies encourage cleaner power sources.

The coal industry's rapid financial decline caught regulators by surprise, and its implications for self-bonding remain unclear. "We all anticipated that the use of self-bonds and corporate guarantees was a safe and reliable bonding alternative for well-positioned mining companies," says Greg Conrad, executive director of the Interstate Mining Compact Commission, which represents state regulators. Now, he says, that confidence is gone: "You've got an industry on the ropes here. … There's a lot of uncertainty about how that's going to play out."

Wyoming's experience with Alpha illustrates just how murky the situation is. State regulators told Alpha in May that it no longer met financial criteria for self-bonding, and gave the company 90 days to

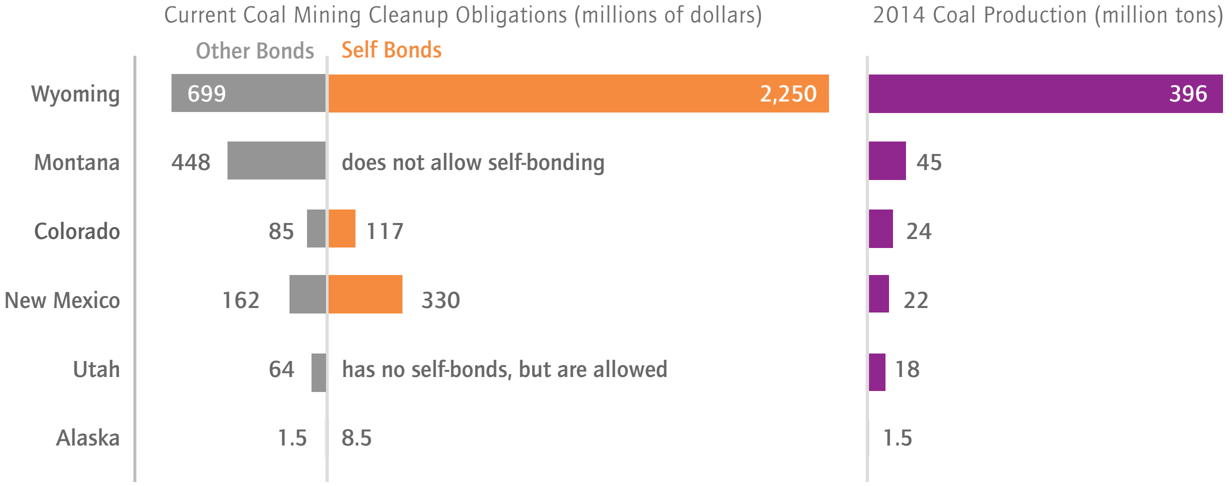
Please see **Coal**, *page 8*

Belle Ayr mine has the highest production costs in the Powder River Basin, at $11.81 per ton in 2013. Alpha Natural Resources, which owns the mine, filed for bankruptcy in 2015, and the company may not be able to meet its reclamation obligations.
EVAN ANDERMAN

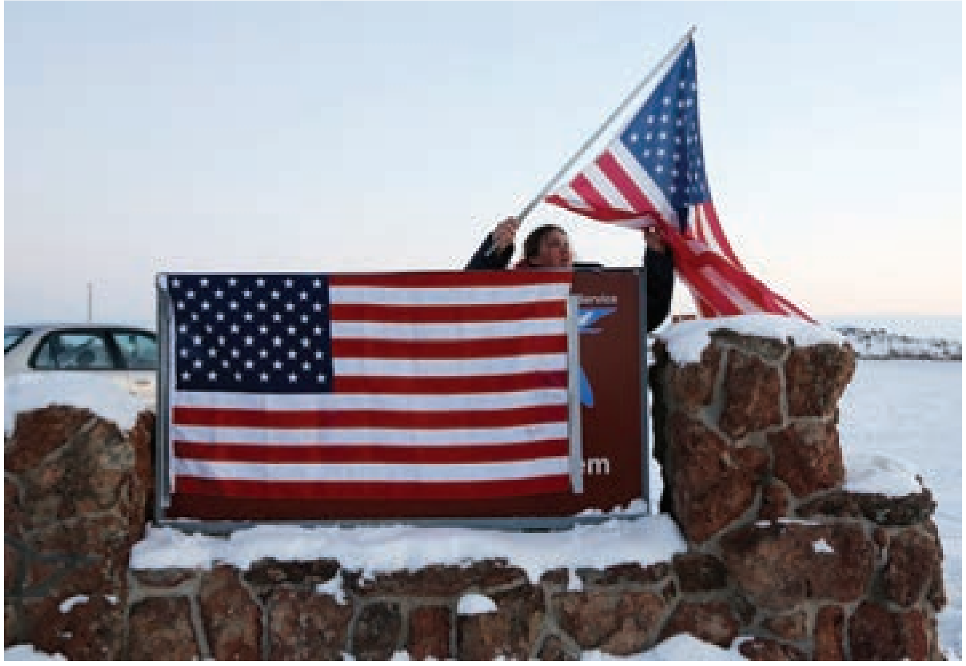
Correspondent Elizabeth Shogren writes HCN's DC Dispatches from Washington. @ShogrenE

COAL MINE CLEANUP COSTS

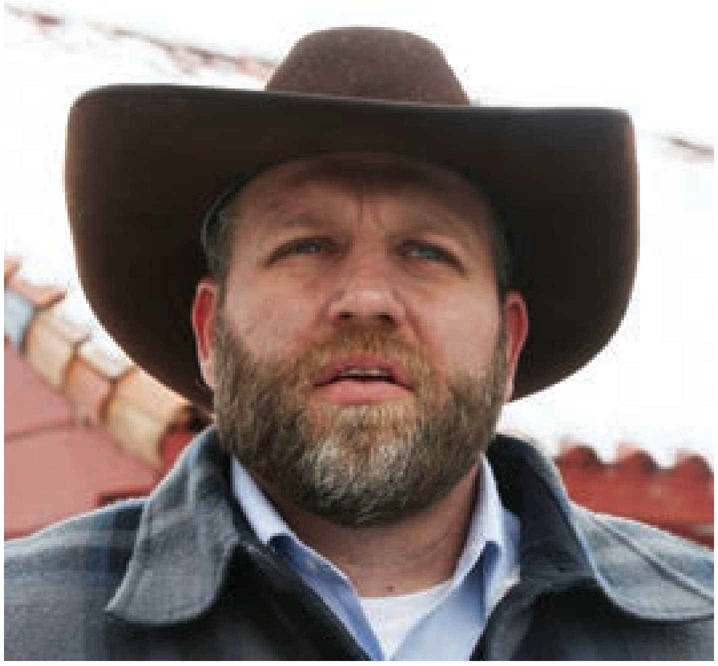
In top-producing Western states, self-bonds mean that billions aren't backed up by cash



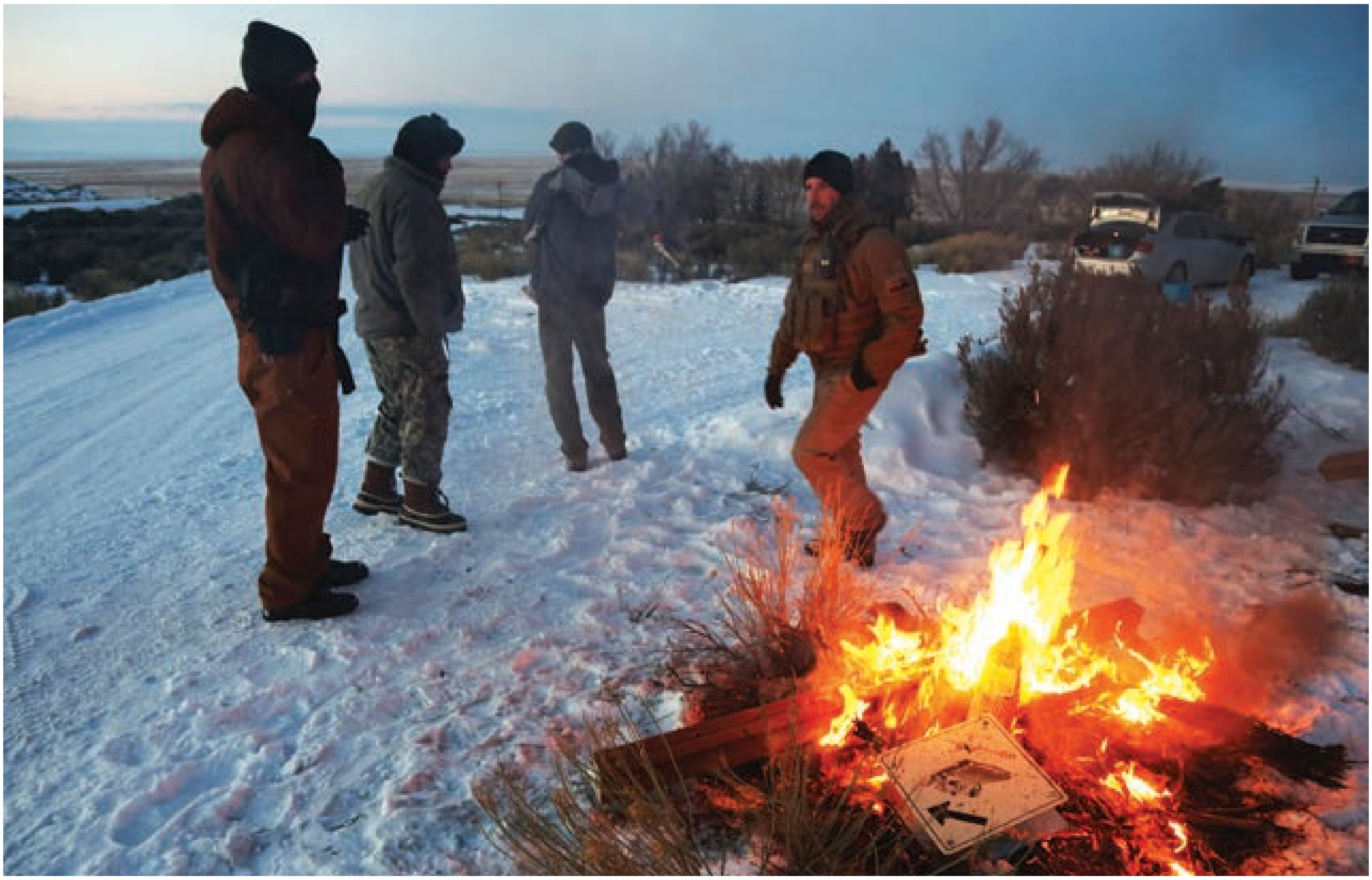
DATA: ENERGY INFORMATION ADMINISTRATION; STATE ENVIRONMENTAL QUALITY DEPARTMENTS, 2015 | GRAPHIC: JORDAN WIRFS-BROCK / INSIDE ENERGY, BROOKE WARREN



Rosella Talbot drapes an American flag over the Malheur National Wildlife Refuge Visitor Center sign. She brought supplies to the refuge headquarters where the Bundy brothers and other self-described "patriots" occupied U.S. Fish and Wildlife Service buildings.



Ammon Bundy, the leader and designated spokesperson of the group that seized the refuge headquarters, before a press conference on Jan. 3.



Armed men standing guard at the entrance of the road leading to the occupied buildings at the Malheur National Wildlife Refuge cut down signs pointing to the "Outlook Trail" and the refuge headquarters with a chainsaw and used them to fuel a fire. Occupiers also drove a U.S. Fish and Wildlife Service vehicle, saying the "keys were in it."

Photo Essay

At Malheur, a moment behind the limelight

Before Malheur National Wildlife Refuge became a media madhouse, it was occupied by a small group of men determined to make a point about public land. They had left a larger protest in nearby Burns, Oregon, in support of local ranchers Dwight and Stephen Hammond. It was nerve-racking, following heavily armed men into the middle of nowhere, to a 187,757-acre wildlife refuge 30 miles from the nearest town.

I arrived at dusk on Jan. 2, the only reporter present. Four armed men stood around a sagebrush fire they'd built behind a white truck, which blocked the road to the occupied buildings. They were "not at liberty to talk to the media," one said, and they initially refused to be photographed. But when I reminded them that I had a constitutional right to take pictures on public land, they agreed.

About a hundred yards down the road, a woman draped an American flag over a visitor's center sign. She was upset that the Hammonds were going to jail, echoing many people in Burns. "Everything they had has been taken from them," she said. "If we don't stand up for this one family, it's going to happen to others. And it already has."

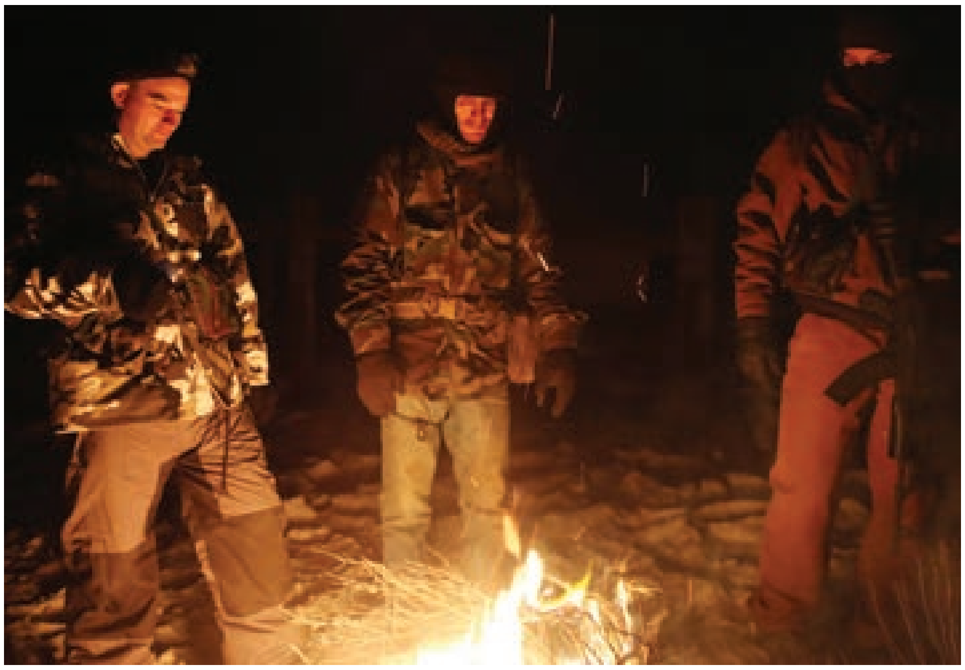
"How come the mainstream media isn't covering this?" a camera-shy man asked me. Neither of us knew how strange that question would soon come to seem.

As darkness fell, the men took a chainsaw to some refuge signs to feed the fire. Eventually, more occupiers drove up in a U.S. Fish and Wildlife Service truck, carrying a Dutch oven and some food: beef and rice and chili. "This is Bundy beef," one of the men told me. The Bundy ranch was far away, in Nevada, but clearly still part of the story.

They were short on plastic utensils and paper plates; when Ammon Bundy threw his plate into the fire, others reminded him they had to reuse the limited supplies. They were armed but didn't seem dangerous. Some laughed and joked, and others reminisced about the wives and children they'd left at home. A few kept quiet, peering out sharply from under their balaclavas. Sentries watched from a fire tower. In the morning, the group prepared to meet the press. By then, they had put away their guns, at least for the moment. BROOKE WARREN

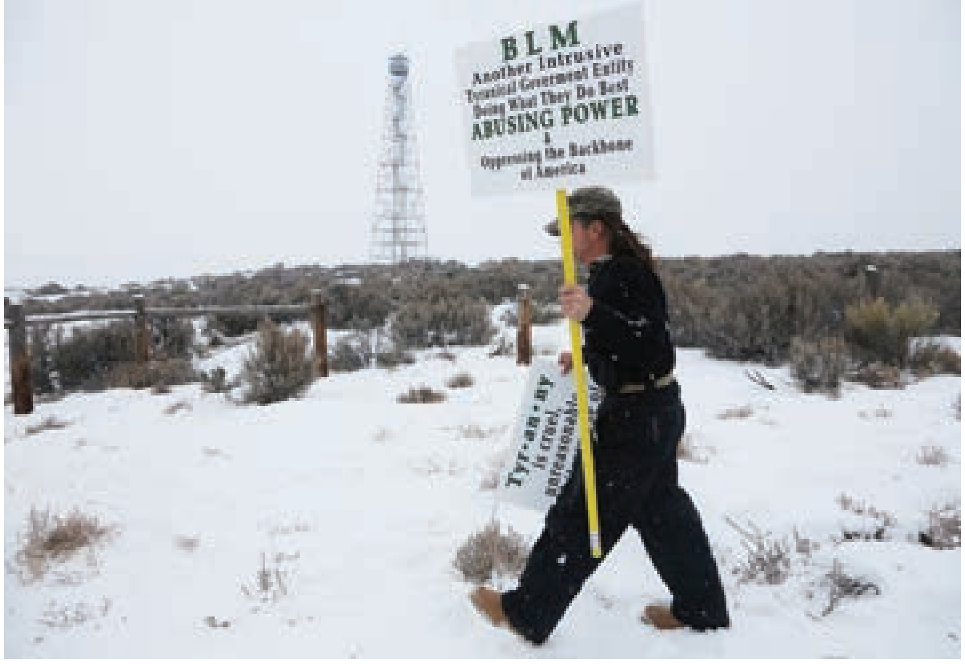
WEB EXTRA Read more than 20 years of coverage on the movement that sparked the Oregon occupation at **hcn.org/topics/sagebrush-rebellion**.

Occupiers fill their plates for dinner the first night at the refuge. "We were kinda hoping that this place was stocked, and it ain't," said one protester about why they were reusing paper plates and plastic utensils.



Armed men gather around a fire to keep warm on Jan. 2, after they occupied the Malheur National Wildlife Refuge headquarters in what they called a "peaceful gathering" to protest federal "ownership" of public land.

Steens Mountain, seen from the occupied space of the wildlife refuge, where about 100,000 acres are protected from livestock grazing and about 900,000 acres are protected from mining.



A man carries signs denouncing the Bureau of Land Management. In the background, two men keep watch from a fire tower. The occupiers built a wooden ladder to the second tier of the tower, for easier access.

Coal, *continued from page 7*

come up with another guarantee for the estimated $411 million needed to reclaim its two Powder River Basin mines. But Alpha failed to do so before it filed for bankruptcy.

Wyoming reached an agreement that $61 million for reclamation would get first priority in bankruptcy court. In exchange, the state is allowing Alpha's mines to continue operation, despite the invalid self-bonds. Kyle Wendtland, administrator of the land-quality division of the Wyoming Department of Environmental Quality, says that if Alpha emerges from bankruptcy, as the state expects, it will be required to post new reclamation bonds and will no longer qualify for self-bonding.

Right before Arch, an even bigger company, filed for bankruptcy, environmental groups pressed Wyoming to revoke its self-bonds. But the state rebuffed that effort, saying a subsidiary of the company still qualified for self-bonding to guarantee the reclamation of 78,000 acres — roughly the size of Utah's Arches National Park. "Bankruptcy should not be used as a haven for the company to escape its obligations," says Bob LeResche, chairman of the Powder River Basin Resource Council.

For now, Conrad thinks that there's only a minimal risk that big surface mines in the West will default, though he admits, "If the markets continue to go south, we could have a bigger problem on our hands."

In the meantime, at least one Western state is moving away from self-bonding. "We think it is less secure than other forms of financial assurance such as corporate sureties or cash bonds," says Todd Hartman, spokesman for the Colorado Department of Natural Resources. Peabody currently is selling its Colorado mines, and Hartman says the buyer will not be allowed to post self-bonds. Officials in Wyoming and New Mexico, though, say rethinking self-bonding would require lengthy regulatory processes that have not yet begun. At the federal level, the Department of Interior, which oversees mine reclamation, recently created a new task force to help states ensure that reclamation continues to be guaranteed despite companies' poor finances. Bonding for reclamation was not included in the multiyear review of the federal coal program that Interior launched this month.

While the bureaucrats and politicians sort out what to do, people like L.J. Turner worry about what's at stake. Even the small uranium mines from the 1950s have left lasting scars on his ranch. Nature alone won't quickly reclaim the vast amounts of land, restore the streams or recharge the aquifers damaged by today's coal mining, he says. "It will be a disaster." □

This story was reported in collaboration with Leigh Paterson at Inside Energy, *a public media project focusing on America's energy issues. More at* **insideenergy.org**.

Snapshot

A tale of two mascots

From Johnny Horizon to Seymour Antelope — a shift in BLM priorities

Revelers in Phoenix for the 2015 Super Bowl likely expected to see Blitz, the muscular blue bird that is the Seattle Seahawks' mascot, along with Pat Patriot, the war-hero symbol of the rival New England Patriots.

But they weren't prepared for the shorts-wearing pronghorn handing out bookmarks in front of a desert backdrop.

"People would say: 'What is this? Who are you?' We'd say, 'This is Seymour Antelope. He's the mascot of the Bureau of Land Management,' " recalls BLM spokesman Dennis Godfrey.

Forty years ago, then-BLM mascot Johnny Horizon was a fairly well-known presence; With his cowboy hat and rugged good looks, Johnny inspired a nationwide litter-cleanup campaign and all manner of consumer goods before quietly retiring in the late '70s. Seymour emerged in 2008, when BLM New Mexico adopted him as a local mascot. In 2010, the agency made the ungulate the face of its youth programs nationwide — the closest thing to a mascot that it now has.

Johnny Horizon nodded to the BLM's old guard of miners and ranchers even as the agency entered a new era of environmental concern. Seymour was born in another transitional period, as the BLM was given management of new national monuments, partly to infuse the agency with conservation values. If Seymour sticks around, it may be a clue that those values, too, have stuck — even as the BLM's multiple-use mission becomes more complex than ever. MARSHALL SWEARINGEN

1940s

FRANK GATTERI

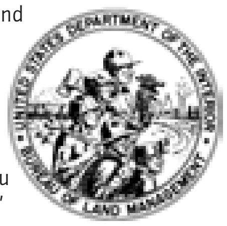
1946

President Harry Truman merges the U.S. Grazing Service with the General Land Office, creating the Bureau of Land Management to administer grazing and mineral rights.

1950s

1953

The BLM's first-ever logo features a rancher, miner, engineer, logger and surveyor looking sternly ahead to an industrialized landscape, with raw frontier behind them, illustrating the agency's reputation as the "Bureau of Livestock and Mining."


UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

1960s

1964

The Classification and Multiple Use Act directs the BLM to classify its lands according to various values, including primitive character — a first step toward managing for non-commodity uses. The following year, the agency releases a new logo, featuring an idealized natural landscape, still in use today.

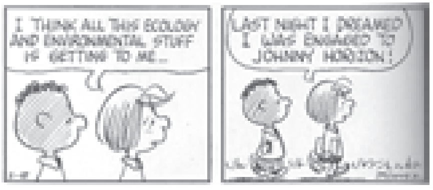
1968

The BLM unveils its first-ever mascot, Johnny Horizon, who asks public-lands visitors to be careful with fire, leave gates as they find them, and obey state game and fish laws.

1970s

1970

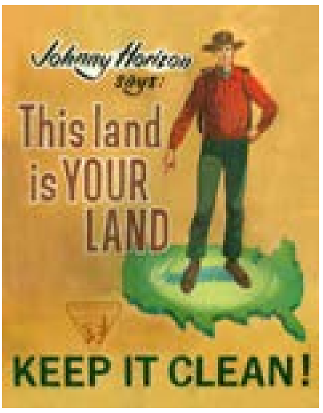
As the environmental movement builds steam, actor and folksinger Burl Ives sings Johnny Horizon's theme song. The Interior Department collects royalties from Johnny's image, which appears on everything from wristwatches to ashtrays.


I THINK ALL THIS ECOLOGY AND ENVIRONMENTAL STUFF IS GETTING TO ME...
LAST NIGHT I DREAMED I WAS ENGAGED TO JOHNNY HORIZON!
PEANUTS WORLDWIDE

1972

The Department of Interior channels Johnny Horizon's growing fame into its "Clean Up America" campaign, an anti-litter and environmental awareness program.

FOREST HISTORY SOCIETY



BLM

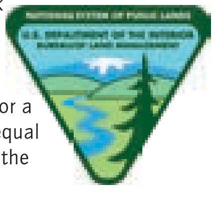
1980s

1976

The Federal Land Policy and Management Act clarifies and secures the BLM's multiple-use mission. Interior announces plans to retire Johnny: "(He) has served his purpose and will now leave the scene, letting the people do the job themselves."

1977

Interior Secretary Cecil Andrus tells the National Wildlife Federation: "The initials BLM no longer stand for Bureau of Livestock and Mining." A federal civil rights commission lambastes Johnny Horizon as a gender-biased stereotype and calls for a female sidekick displaying "equal familiarity and concern with the terrain of our country."


NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

1990s

1996

President Bill Clinton designates the first-ever monument to be managed by the BLM, Utah's Grand Staircase-Escalante National Monument, and goes on to create a dozen other monuments under BLM jurisdiction.

JOHN FOWLER

2000s

2000

The National Landscape Conservation System bundles BLM's national monuments, wild and scenic rivers, wilderness areas and other outstanding lands under a new mission to "conserve, protect, and restore."

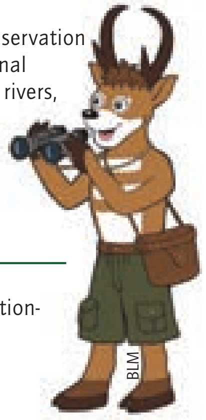
2008

BLM New Mexico adopts Seymour as mascot for a state-wide restoration program.

2010s

2010

The BLM adopts Seymour nationwide as mascot for its Youth Program.


BLM

2014

BLM launches its Planning 2.0 Initiative, the first major revision of its land-management-plan creation process. The initiative emphasizes public input and landscape-scale planning, which could help protect migration corridors used by wildlife — including pronghorn. You go, Seymour!

Erik Kalsta on the ranch along Montana's Big Hole River that's been in his family for generations. The changing climate, documented over the decades in meticulous ranch logs, presents new challenges for his grass-fed cattle and sheep operation.
SARAH JANE KELLER

Re-engineering the ranch

A Montana rancher looks to the past to prepare for tomorrow's climate

BY SARAH JANE KELLER

As a kid on his family's Montana ranch, Erik Kalsta performed a daily chore: He'd walk 500 paces from his house to a white shed, where an instrument panel recorded the height of the nearby Big Hole River. Then he'd march home and call in the measurement to a U.S. Geological Survey hydrologist. Over time, the data points created a long-term history of the river's ebbs and flows.

On a warm day last February, Kalsta, now 48, sat in the kitchen of the same home, wearing wire-rim glasses, a silvering goatee and a lightweight Patagonia sweater. He pointed out the window at the stream gauge, which is now automated. Kalsta's success as a rancher depends on snow and rain, and 92 years of stream data tell him that runoff patterns are changing. "This is that early spring pulse that's been coming earlier and earlier," he says, glancing towards the swollen river. It's become normal for snow to begin melting into the river in March instead of April. But in 2015, it started rising in February. That's a problem, because it means that the water's availability might be out of sync with the growing season or the times he can legally draw from the river to irrigate. "This is kind of scary," Kalsta admits. "(But) we've still got time to turn this thing around."

He's talking about the possibility that spring snow might compensate for the early melt, but he could just as easily be contemplating the future of his ranch, which his great-grandparents started working in the 1880s. Most of Kalsta's property — which gets only about 7 inches of moisture per year — is already too dry to support his grass-fed cattle and sheep business over the long term. Kalsta worries that without management changes, and if climate change continues to disrupt runoff and parch the land, he'll have to sell. "If I have to leave here, this place is going to make a fantastic subdivision," he says wryly.

Kalsta is trying to adapt by getting his soil to absorb more water. It's a simple idea, but hard to execute. If he's successful, it will help him ride out droughts, keep violent rains or snowmelt from washing his soil into the river, improve wildlife habitat, and ultimately boost grass production.

"In general, our watersheds here were much spongier in the past," says Molly Cross, a Montana-based Wildlife Conservation Society climate researcher who consults with Kalsta. As snowpack becomes a less reliable natural reservoir, it's increasingly necessary to recover some of the capacity for water retention that's been lost through floodplain development and overgrazing. To that end, the Wildlife Conservation Society is working with landowners east of Kalsta to build screen-like structures from willows. These slow the river's flow, encouraging the water to spread out and soak in, so streamside plants can take hold.

Kalsta hopes to accomplish something similar through different means. And so he's turning his ranch into a laboratory for figuring out what "climate adaptation" actually looks like in practice. Justin Derner, director of the U.S. Department of Agriculture's Northern Plains Regional Climate Hub, says ranchers are keenly aware that climate and weather variability makes their business riskier, and for some, makes it more likely that they'll have to sell their land. "I think the periodic droughts since 2000 have really hit home," he says. Ranchers are trying a variety of things to cope with wild swings in moisture and grass production, he says, including setting aside pasture to "bank" grass for bad years, and using new long-term weather-prediction tools to plan stocking rates. "There's no one-size-fits-all answer, where everybody is going to do the same thing."

Kalsta is focusing his efforts on an arid, ancient volcano called McCartney Mountain, his property's dominant landform. Late last winter, the dry gullies on McCartney's lower flanks looked like something you'd see in New Mexico. Kalsta hopes that by slowing the flow of water, he can initiate a soil-building scheme that will increase plant productivity by 400 to 500 percent. With McCartney's stubby grass, rabbitbrush, prickly pear and rock, it's hard to imagine. As his 86-year-old neighbor told him, "Son, if I remember my math right, five times zero is still zero."

The ranch's history is unusually well documented; McCartney hosted a weather station for 60 years and Montana State University has grazing research plots on the property. Kalsta's family also kept exceptionally detailed journals that go back to the 1880s; his grandmother's later entries are handmade spreadsheets with weather, river flows, calving dates and wildlife sightings meticulously lined out on manila folders.

Those journals serve as a baseline for what he hopes to achieve. One 1896 entry by his great-grandfather, Horace, describes the grasses up on McCartney as "belly high to a mule." Kalsta suspects

Please see **Rancher,** *page 20*

Sarah Jane Keller writes from Bozeman, Montana.
@sjanekeller

THE LATEST

Backstory

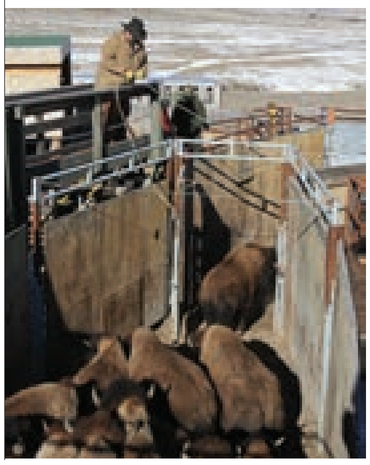
The yearly migration of bison out of Yellowstone National Park to their historic winter range in Montana has created a decades-long conflict with ranchers, who fear the animals will transmit the abortion-causing disease brucellosis to cattle. So the state hazes bison back into the park and captures and slaughters hundreds each winter; hundreds are also killed by public and tribal hunters ("The Killing Fields," *HCN*, 2/06/06).

Followup

In early January, Yellowstone officials announced that **600 to 900 bison will be culled this winter**, about 20 percent of the park's 4,900 animals. Meanwhile, Montana Gov. Steve Bullock has released **a plan that takes the first step toward ending the state's harsh treatment of bison. If agencies and tribes approve the plan, up to 600 of the ungulates will finally be allowed to roam year-round outside Yellowstone**, on 400 square miles north and west of the park. Much of the animals' preferred winter range will still remain off-limits to them, though.

JODI PETERSON

Bison in pens before culling for slaughter.
JIM PEACO



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ROCK ART: A VISION OF A VANISHING CULTURAL LANDSCAPE
By Jonathan Bailey
187 pages, softcover: $28.95.
Johnson Books, 2016.

Jonathan Bailey's haunting photographs of Western pictographs join essays by Lawrence Baca, Greg Child, Lorran Meares and others to tell the larger story of a disappearing cultural heritage and the need for its conservation. *Rock Art: A Vision of a Vanishing Cultural Landscape* brings an ancient people to life through their stone-etched images, many of which are threatened by development and vandalism. "What will the future be for these images?" Bailey asks. The passion behind his photographs is apparent – and hard-won. Bailey often climbed, unassisted, to towering narrow ledges to view the sites the way the original artists did, centuries ago. The mysterious pictures they left still seem to whisper a hidden meaning. "If we don't preserve that," he writes, "we don't deserve the land we walk on." PAIGE BLANKENBUEHLER

A petroglyph of a human figure etched into a wall in Utah. JONATHAN BAILEY

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Home after the holidays

After a nice holiday break (with some of us taking more time than others), the *High Country News* editorial staff is finally back to work. Our first order of business involves correcting an error that squeaked into the last issue of 2015. A neighborhood struggling with an expansion of Interstate 70 in Denver ("Eastbound and Down," *HCN* 12/21/15) was misidentified; it was Elyria, not Elysia. We regret the error.

In the midst of the hustle and bustle of gift-wrapping news for our readers, we enjoyed a visit from **Taya Jae**, who grew up here in Paonia, Colorado, and is currently going to college in Vermont. **Josh Banyard**, a filmmaker who lives in Portland, also came by *HCN* headquarters to get a glimpse behind the pages of a magazine his father has subscribed to for decades. Thanks for stopping by, Taya and Josh!

While many of us were buried in snow out West, editor **Betsy Marston** was basking in the sun of Cuba, where she learned how to buy black-market wireless Internet access and edit stories from a park bench. This issue's *Heard Around the West* was filed from the tropics. Betsy has returned, but no, she did not bring back any Cuban cigars to hand out to new subscribers. Sorry.

Speaking of hotspots, we received an ode to fire lookouts from Canton, New York, reader **Tom Vandewater**, inspired by our Dec. 7 story "Fire lookouts burning out:" "We lookouts may be a dying breed," Tom writes, "with new high-tech cameras ready to take over our jobs, but nothing will replace real eyes and a real heart to greet visitors at the top of the mountain, not to mention finding fires. My friend **John (Henry) Crawford** has been a lookout since the '70s and still works as an Idaho lookout." Tom even wrote a song for his friend, inspired by the folk classic, "John Henry":

The man who invented that
tech-camera
He thought he was
mighty fine,
But Johnny spotted 14
lightning fires
While the camera only spotted
nine, Lord, Lord
The camera only spotted nine.

Sadly, we recently lost a couple of remarkable friends. **Jay Kirkpatrick**, 75, who generously shared his knowledge of wild horses with *HCN* reporters over the years, passed away in December. Jay helped pioneer the use of a contraceptive vaccine for wild horses, bison and urban deer. We were also sorry to hear about the passing of legendary Northwest alpinist and environmentalist **Doug Walker**. Doug, 64, was trying to summit Granite Mountain near Snoqualmie Pass, Washington, when he was likely caught in an avalanche on Jan. 1, authorities said. Throughout his life, Doug helped preserve access to wild places for climbers and hikers.

—Paige Blankenbuehler
for the staff

Doug Walker, who was president of the American Alpine Club, climbing in Washington. Doug perished in the mountains he loved on Jan. 1.
COURTESY AMERICAN ALPINE CLUB

FEATURE | BY BEN GOLDFARB

THE FOREVER WAR

A federal agency called Wildlife Services has been researching nonlethal means to protect livestock for decades. So why is it still killing so many predators?

The verb that people most often associate with coyotes is "howl," though it fails to capture *Canis latrans*' vocal spectrum. Wolves howl. Coyotes also yip, squawk, whine, bray, bark, wail and croon. First one starts — motivated by changing barometric pressure or its neighbor's insolent gaze or who knows what — and another joins in, and another, and soon a discordant chorus hollers skyward, voices melding into an eerie drone. And then one coyote drops out, and another, and the aural tapestry unravels to a single thread until the original soloist, too, tapers off. And then it's silent on the steppe.

So it sounds at the Predator Research Facility in Millville, Utah, when I visit Julie Young, the wildlife biologist who directs the station, one crisp October morning. The 165-acre compound, which houses 100 coyotes in fenced enclosures, is operated by the National Wildlife Research Center, the scientific arm of an agency called Wildlife Services. If you're well acquainted with Wildlife Services, a branch of the U.S. Department of Agriculture, you're likely a rancher who relies on the agency, or a conservationist who despises it. Otherwise, you may have only a vague idea that an army of trappers has used your tax dollars to kill millions of animals every year for most of the past century.

In 2014, Wildlife Services killed a coyote every eight and a half minutes.

Wildlife Services overwhelmingly targets invasive species and nuisance birds: Over 40 percent of its 2.7 million kills in 2014 were European starlings. But it's the slaughter of native predators — mostly to defend livestock and revenue-generating game animals like deer, often on public land — that outrages environmentalists. In 2014, Wildlife Services exterminated 796 bobcats, 322 wolves, 580 black bears, 305 cougars, and 1,186 red foxes. And that's nothing compared to coyotes. That year, the agency killed 61,702, one coyote every eight and a half minutes.

That bloody reputation notwithstanding, scientists at the agency's Predator Research Facility have spent decades considering more peaceful deterrents: guard dogs, electric fencing, motion-activated alarms, and strings of flags, called fladry, that confuse carnivores. Researchers also study coyote behavior — how dominants and submissives interact, how individuals learn from neighbors, how they defend territory. Young and I talk inside an observation tower that stands, panopticon-like, near the facility's center. Below us, pairs of coyotes pace wedge-shaped pens. No two animals look alike — we see rust-tinged foxy ones, robust wolfish ones, scrawny piebalds. One lopes clockwise around its pen; two more jog along a fence line, like mirror images. A coyote trots to the tower's base and stares up, watching the watchers.

The tower's interior has fallen into disrepair: Paint peels from walls, smudges cloud windows, dead flies litter sills. The coyotes have proven too smart to let humans observe them. "They know when you're in here, and no matter how long you sit, some never behave normally," says Young, a Southern California native with startling aquamarine eyes and an ebullient laugh. "We've tried having three people walk in and two walk out. But coyotes can count." Now Young uses the room to set up video cameras. The coyotes haven't figured out they're being recorded, yet.

A coyote shies from a transportation box, facing page, at the Predator Research Facility near Logan, Utah, where biologists study coyote behavior to determine what might keep the animals from killing livestock. This facility is one of two in Utah; the other is in Millville.
KRISTIN MURPHY

A canid starts to yip, and soon the whole research center is singing again. I ask Young what the nearby town thinks of the ruckus. Nobody seems to mind, she says. One neighbor was stunned to learn that he lived near coyotes at all. He thought he'd been hearing cheers from a football stadium.

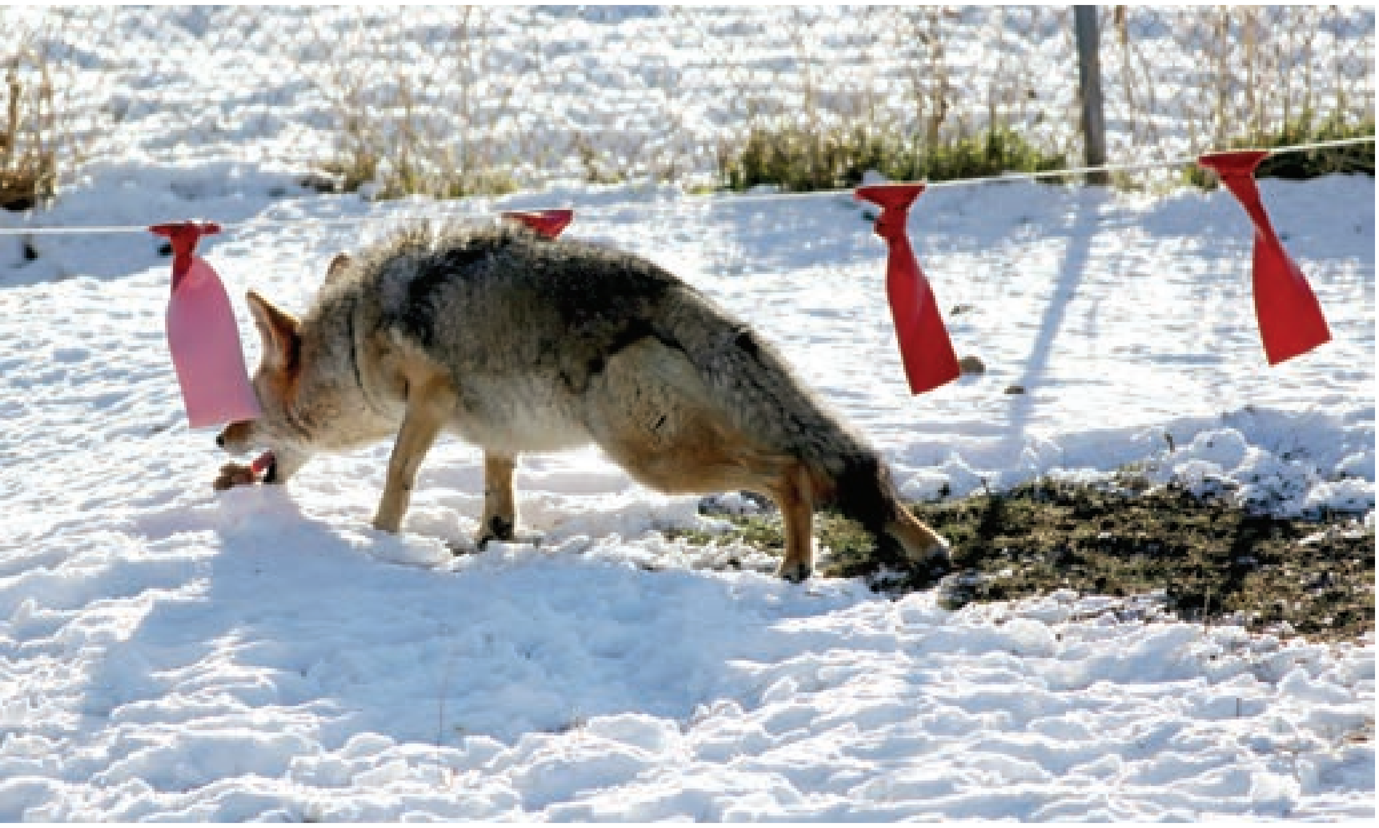
That the Predator Research Facility evades detection without being altogether hidden seems fitting: Wildlife Services annually publishes voluminous charts tallying its kills, but other information — why it killed which creatures, at whose behest, and after attempting what alternatives — remains elusive. Activists and journalists have long sought to drag the agency's lethal activities into the public glare. Wildlife Services has weathered exposés (including a 1991 *High Country News* feature), multiple federal investigations, scathing environmental group reports and countless angry petitions. "This is an agency whose time has passed," Rep. Peter DeFazio, D-Ore., Wildlife Services' most vocal congressional assailant, told the *Los Angeles Times* in 2014.

In response to criticism and evolving science, Wildlife Services claims that it's changing course. Agency scientists and officials have spoken at Humane Society conferences, launched new nonlethal research projects, and held workshops on deterrence techniques. Even 2014's eye-popping coyote kill total represented the agency's lowest figure in more than 20 years, though whether that's a one-year aberration or an emerging trend remains to be seen. "We've always had nonlethal methods, but we're getting more proactive in recommending them," says John Steuber, Wildlife Services' Montana state director. "We're evolving with the rest of wildlife management."

Still, 100 years of tradition can breed inertia in any organization. Though biologists at the Utah field station have studied nonlethal techniques since 1972, body counts have mostly stayed level. "The National Wildlife Research Center does good work, and their scientists collaborate with all sorts of non-agency people," says biologist Bradley Bergstrom, who chairs the Conservation Committee of the American Society of Mammalogists. "But they don't seem to influence field operations."

All the science in the world means nothing, in other words, unless it sways the agency's field trappers — and the states, counties, municipalities, private businesses and ranchers whose contracts supply half of Wildlife Services' funding. Antipathy toward predators often runs bone-deep among those partners. Reform, therefore, may require transforming attitudes at the agency's grassroots, rather than merely assailing it through courts and Congress. "Until Wildlife Services is told differently by the people who pay the bills, it's hard to imagine real change," says former agency biologist John Shivik. "Managing animals is easy. Managing people is really hard."

WESTERNERS HAVE BEEN BATTLING carnivores since before Meriwether Lewis shot a grizzly along a Montana creek in 1805. But Wildlife Services' story doesn't truly begin until 1915, when Congress allocated $125,000 to exterminate wolves, coyotes



Giulia Chivee, top, an intern at the National Wildlife Research Center near Logan, Utah, watches how coyotes interact with strings of flapping red flags, or fladry, from an observation tower. Above, fladry didn't keep this coyote from reaching for a morsel.
KRISTIN MURPHY

and other predators. Sixteen years later, President Herbert Hoover created the Division of Predator and Rodent Control (PARC) to remove irksome wildlife. PARC, Wildlife Services' progenitor, took plenty of fire: In 1964, a committee of scientists led by A. Starker Leopold — son of Aldo Leopold, America's most famous carnivore-killer-turned-defender — published a report concluding the agency was slaughtering far more animals than could be "justified in terms of total public interest."

A handful of name changes notwithstanding, Wildlife Services' predator playbook has changed little since. Operations, one former trapper told me, tend to be "very professional, not just driving through the desert with our guns out." Yet as reporter Tom Knudson documented in a 2012 *Sacramento Bee* series, the agency's specialists, as its trappers are called, have been implicated in various ugly imbroglios, including taking eagles, wolverines and family pets as collateral damage. Whistleblowers have described fellow specialists siccing hunting dogs on defenseless coyotes and leaving traps unchecked for months. "These individuals have such deeply entrenched mindsets that it's hard to imagine how the agency can ever be reformed," argues Brooks Fahy, director of the nonprofit Predator Defense. Wildlife Services nearly lost its predator control funding to a 1998 House bill, but was saved by eleventh-hour lobbying from ranching-state lawmakers.

To be sure, combating carnivores is just one task among many, and killing animals that damage crops and livestock occupies a smaller proportion of Wildlife Services' attention than it once did. These days, the agency also eradicates harmful feral pigs, fights rabies, protects endangered sea turtles and drives birds off runways. "We help keep people safe and healthy, and strive to do it in a way that won't impact wildlife populations," says agency biologist Buck Jolley. "You don't think about it when you're flying, but there are people nationwide relocating thousands of raptors to keep planes in the air."

Still, around a quarter of the agency's budget goes toward protecting livestock. And no predator occupies Wildlife Services' attention like coyotes, fast-reproducing generalists that over the past century have colonized the United States' length and breadth, from Alaskan tundra to Cape Cod beaches. In Chicago, eastern coyotes have learned to follow traffic lights; in New York City, they roam rooftops. In the West, their fierce intelligence makes them formidable foes for ranchers. Though hazards like disease, foul weather and lambing complications take a much greater cumulative toll on sheep, coyotes killed a reported 118,000 in 2014, far more than other carnivores. Dogs finished second.

According to agency officials, specialists strive to remove only the offending animals when trappers resort to lethal measures. "Although we emphasize the use of nonlethal tools … no one tool provides 100 percent protection," Wildlife Services Western Regional Director Jason Suckow and National Wildlife Research Center Director Larry Clark wrote in an email to *High Country News.* "In many cases, producers have already tried and exhausted their nonlethal options."

Oftentimes, however, coyotes also face population reduction, a presumed-guilty policy critics call "mowing the grass." Terminate enough coyotes with poisons, traps, and aircraft-based guns, the logic goes, and you can pre-emptively quell livestock conflicts or protect mule deer. "The closer preventative work is associated with lambing or calving, the more successful it is," explains Steuber. "If you do it six months ahead, there's a good possibility that other coyotes will move in. But if you do it right before, you give calves a chance to grow to where they're less susceptible." A 1999 experiment in Idaho and Utah found that fewer than 1 percent of lambs were lost to coyotes in pastures strafed with aerial gunning, while losses in untreated fields hovered near 3 percent.

External researchers, however, challenge such studies. Adrian Treves, a University of Wisconsin-Madison conservation biologist, notes fatal flaws with the aerial gunning paper, including substantial differences between the pastures studied. Shoddy experimental design is not an isolated issue. When Treves and his colleagues recently sifted through more than 100 papers on lethal and nonlethal predator management, they found a mere three that adequately deployed randomized controlled trials, what Treves calls the scientific "gold standard"— all of which tested nonlethal methods. "The standard of evidence in the field is really low," Treves says. "There has *never* been a properly designed study of lethal control."

Coyotes, too, seem almost supernaturally resistant to eradication. As one maxim goes, "Kill one coyote, and two show up to its funeral." "When you reduce the number of breeding adults in a territory, there's more food to go around, and that food is shunted to the pups," says Bob Crabtree, an ecologist who began studying coyotes in Yellowstone in the 1980s. Pup survival skyrockets — and since alpha coyotes with young kill the most livestock, eliminating coyotes willy-nilly typically fails to reduce predation, an inconvenient truth corroborated by the agency's own researchers. Extermination can also catalyze disastrous chain reactions: Soon after the government began slaying carnivores in 1915, rabbit populations exploded, and the agency poisoned lagomorphs en masse.

"Wildlife Services bears the burden of proof to justify the indiscriminate killing of predators — economically, ecologically and ethically," Crabtree says. "I'll go to my grave saying that."

AFTER JULIE YOUNG and I leave the tower, we drive to the Predator Research Facility's equipment shed, where jumbled tractors and ATVs await repair. Bouquets of retired traps dangle from pegs on one wall, jaws aglint. "Most of these designs don't get used anymore," Young says. But some do: She hoists one metal apparatus, its padded mouth snapped tight. "These are still the main traps for wolves: the long-spring."

After collecting her doctorate studying coyote territoriality at Utah State, Young spent two years with the Wildlife Conservation Society, researching saiga, an endangered antelope, in Mongolia and examining drilling's impacts on pronghorn in Wyoming. A scientist with those conservation credentials might seem a strange fit for an agency despised by conservationists. But when I ask about that apparent contradiction, Young shrugs. "I've always been pragmatic about it," she says. "Carnivores have personalities. Some are going to cause problems." That's especially true of coyotes. "Their behavioral profiles fall along this bell curve on the bold-shy spectrum," Young explains. "Too shy, and you're not going to establish a territory. Too bold, and you're probably getting shot." Understanding their dispositions has important implications: Discourage a dominant coyote's taste for sheep, for example, and its subordinates might stay away, too.

Young pursues a dizzying array of deterrence research. With help from engineers, she's looking into livestock ear tags that will activate an alarm if a sheep's heart rate spikes, possibly indicating an attack. In the coyote paddocks, she's experimenting — unsuccessfully, so far — with hormonal sterilization treatments. She's been distributing bolder breeds of guard dogs from Bulgaria, Turkey and Portugal to ranchers coping with recovering wolves and grizzlies in five Western states. In one room, a French intern busily rolls a bundle of red flags, a design that's been tweaked to prevent coyotes from adapting to fladry.

Nonetheless, Young defends Wildlife Services' lethal activities. Among her proudest achievements was designing an M-44 — an exploding cyanide cartridge favored by many trappers — that kills coyotes without accidentally taking swift and kit foxes. "I know people will disagree, because it's still lethal," she says, "but this is a great selective tool."

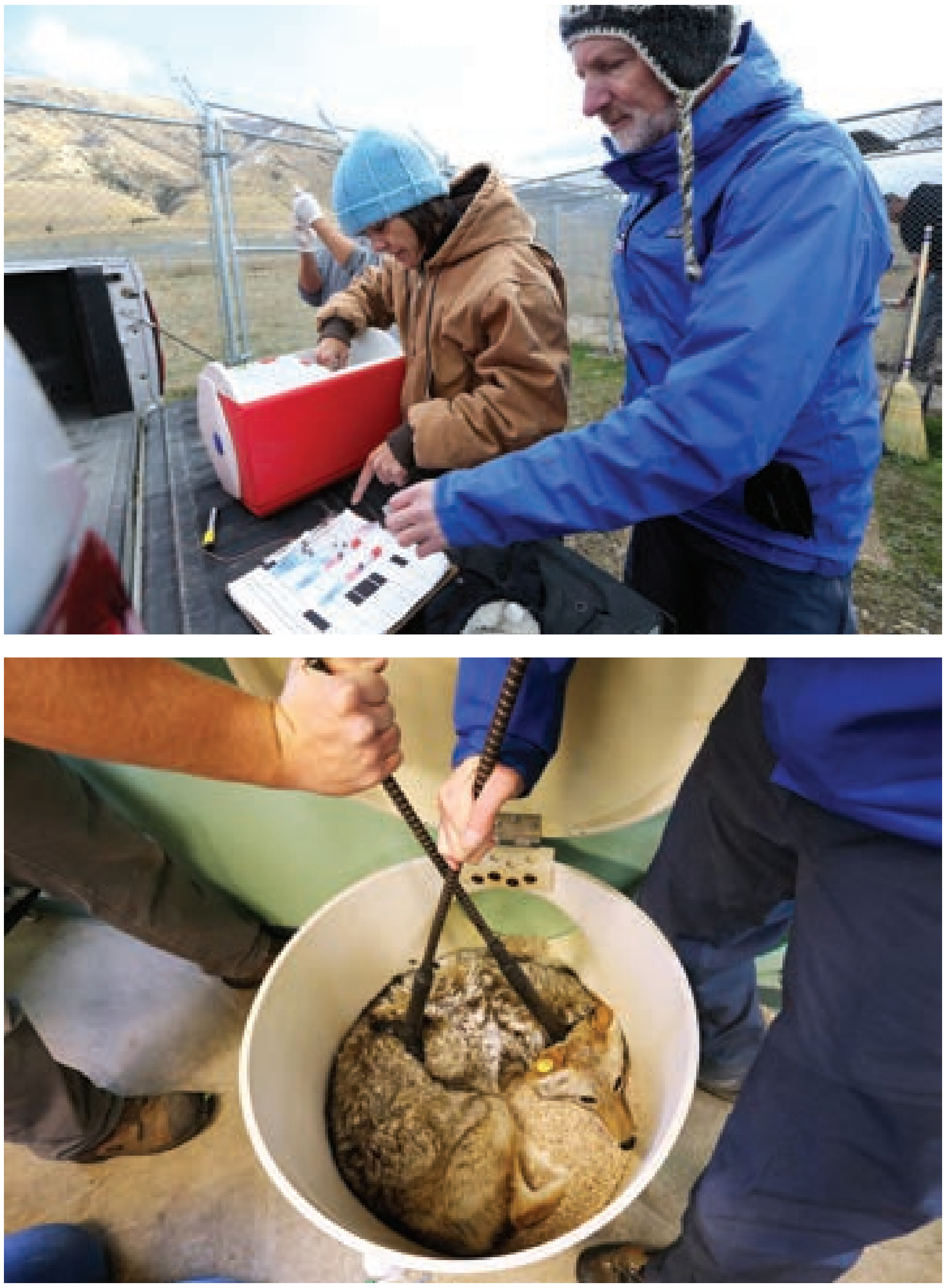
Every ecosystem, she explains, has an ecological carrying capacity: the number of animals it can sustain given food, water and habitat. But systems also have a *social* carrying capacity — the number of carnivores that their human cohabitants will accept. Wildlife Services, Young claims, boosts that capacity by giving ranchers somewhere to turn when they lose stock. Other researchers disagree: Adrian Treves, who dismisses the theory as "a little blood buys a lot of good will," has observed that lethal removal actually *reduces* wolf tolerance, perhaps by diminishing the animals' perceived value. Young, however, recently found that Western ranchers who had lethal options better accepted the wolves in their midst.

"Imagine you're a rancher: You have guard dogs, you have herdsmen, you put up fladry, yet you still have depredation," Young says, gazing over the sprawling compound. "Now what do you do? You call us. We're your last resort."

THE NEXT DAY, I drive up a long hill overlooking the nearby town of Logan to

"Carnivores have personalities ... Too shy, and you're not going to establish a territory. Too bold, and you're probably getting shot."

Julie Young, biologist and director of the Predator Research Facility near Logan, Utah



Biologists Julie Young and Eric Gese, top, ready vaccinations for coyotes at the Predator Research Facility near Logan, Utah. At left, workers hold down a coyote in preparation for its shot.

KRISTIN MURPHY

John Shivik, who became disenchanted with Wildlife Services' "inertia."
KRISTIN MURPHY

> **"Unless I show up with a dead wolf on the tailgate, they don't think I'm doing my job."**
>
> John Shivik, recounting how one Wildlife Services trapper explained why he wouldn't switch to nonlethal controls.

visit John Shivik, the Predator Research Facility's previous director. In 2014, five years after he left Wildlife Services, Shivik published *The Predator Paradox*, a book that explores advances in nonlethal management. One needn't read between the lines to detect his frustration with his former employer. "Given bureaucratic realities … there is a certain amount of inertia involved" in its preference for lethal control, Shivik writes.

Shivik, a gregarious biologist with close-set blue eyes and tousled brown hair, cut his teeth in coyote research under the tutelage of Bob Crabtree in Yellowstone. When the young scientist assumed control of the Predator Research Facility in 2002, he launched an ambitious nonlethal program, investigating aversive taste conditioning, territorial marking with coyote urine, and a heat- and motion-activated alarm called the Critter Gitter. He even found evidence for potential "guard coyotes," territorial animals whose fear of fladry also kept submissives at bay.

While Wildlife Services awarded him raises and promotions for publishing in prestigious journals, however, trappers seemed to ignore his research. Sometimes, his nonlethal tools conflicted with traditional ones: M-44s, for instance, may kill guard dogs alongside coyotes, leaving some specialists reluctant to prescribe dogs. At annual state meetings, he found himself politely disregarded. "They were always gracious," he recalls. "But what I was saying didn't seem to have any immediate relevance to them."

Among the few trappers who incorporated Shivik's research was Rick Williamson, the agency's longtime Idaho wolf specialist. In 2000, Shivik began supplying Williamson with radio-activated guard boxes that erupt with disturbing noises — shattering glass, tumbling bowling pins — when a radio-collared wolf approaches. Though the boxes only worked on collared wolves, Williamson, with the help of agency scientists, discovered they effectively discouraged predation in small pastures. Yet few trappers shared his interest. "The majority felt like they had a full workload already," says Williamson, "and this was going to take more time at the scene versus just setting a trap. I think that was a huge mistake."

That attitude, Shivik believes, stems partly from Wildlife Services' funding mechanism, whereby "cooperators" — the agency's term for those who contract with it — share operational costs. In 2013, cooperators provided the agency $80 million, compared with $85 million in federal money. As a consequence, trappers can feel pressure to appease their de facto clients. "I was out with a specialist once, and he said, 'John, I think the nonlethal stuff is worth trying,' " Shivik says. " 'But unless I show up with a dead wolf on the tailgate, they don't think I'm doing my job.' "

Sam Sanders, a former Wildlife Services assistant district supervisor from eastern Nevada, corroborates Shivik's account. According to Sanders, who departed the agency in 2011 and later founded a private pest control company, his supervisors favored aerial gunning for its visibility, even in situations where other tools would have proved more effective. "They'd say, 'Make sure you fly over that politically powerful rancher's house so he knows we're out there doing our job and will funnel state money to the agency,' " Sanders recalls.

Former Nevada Wildlife Services Director Robert Beach backs that claim in a 2008 affidavit: "One of the first things I was told by the Sheepmen when I arrived … was that they could have me removed in a heartbeat if I did not *(sic)* something they felt jeopardized their livestock operations. … Mr. Paris told me on several occasions that he would have me removed if I tried to take (his trapper) away from him." The Mr. Paris in question, a sheep rancher, today chairs Nevada's Predatory Animal and Rodent Control Committee, which helps fund Wildlife Services' operations.

The cooperator model may also explain why the battering ram of public outrage has scarcely dented the agency. If you're reading this article in San Francisco or Seattle, you're not an influential constituent, no matter how many petitions you sign. Environmentalists who want to reform the agency, Shivik says, delighting in the heresy, shouldn't fight to slash Wildlife Services' federal funding — they should *double* it, making it fully accountable to taxpayers. "All stakeholders are created equal," he adds as the last glimmers of sun fall on the distant Bear River Range. "But some stakeholders are more equal than others."

WILDLIFE SERVICES' FEALTY to its cooperators frustrates critics. But it comes with a promising corollary: If ranchers buy into nonlethal management, specialists may follow suit.

Many producers already appear to be coming around, in some cases nudged by predator-friendly groups like Defenders of Wildlife. According to USDA surveys, 58 percent of sheep ranchers now employ some form of nonlethal deterrence, compared to 32 percent in 2004. "We fence, we have herders, we have guard dogs, we have sheds for lambs," says John Baucus, a Helena-based rancher who serves on the American Sheep Industry's Predator Management Committee and is the brother of former Montana Sen. Max Baucus. "We've been working with predators for a long time, and we understand what's required."

In Montana, the agency appears to be following ranchers' lead. According to state director John Steuber, specialists recommended guard dogs 1,655 times in 2014. "You'll see producers coming out of the feed store with a one-ton pallet of dog food on a forklift." When the Office of the Inspector General audited Wildlife Services last year, investigators observed nonlethal techniques on every ranch.

What's more, the agency has taken some steps in response to Shivik's primary criticism — that nonlethal research doesn't percolate from scientists to specialists. In 2009, Wildlife Services promoted Michael Marlow, a biologist and ex-trapper, to serve as liaison between researchers, trappers and livestock producers. Marlow's networking has paid dividends: A tip he gleaned at an American Sheep Industry conference, for instance, led to Julie Young's European guard dog project. "We talk about being in contact with livestock more, altering pasture schedules, using scare techniques," Marlow says in an Oklahoma drawl. "Across the board, we've seen people interested in learning how to better protect their livelihood."

Wildlife Services has also stepped up its education efforts. That's especially true in Montana, where in January 2015, Steuber launched a series of workshops at which ranchers, conservationists and scientists recommend nonlethal tools, from fencing off chicken coops to safely discarding cow carcasses. A half-dozen other states, including Oregon and Idaho, have also held workshops, and Utah, Nevada and Washington will soon stage their own conferences.

For all its consulting and outreach

work, however, the agency's fundamental approach remains unchanged. Though Wildlife Services' directives advise specialists to recommend nonlethal methods first, the instructions aren't requirements, and former trappers say the directives hold little sway. What's more, the agency doesn't generally view nonlethal management as its duty. "We get asked all the time, 'Why doesn't Wildlife Services use nonlethal more?' " says Stewart Breck, a biologist at the National Wildlife Research Center. "Part of the answer is that we do, and people don't know about it. And part is a paradigm that says it's not the responsibility of Wildlife Services to use those tools. Specialists may recommend them, but it's up to the livestock owner to implement them."

Need help killing the coyotes menacing your lambs? We'll put out traps. Want to erect an electric fence? We'll offer advice, but the wire's coming from your wallet.

Officials claim they lack capacity to deploy nonlethal measures on a large scale. "It would be expensive and impractical to have our limited numbers of Wildlife Services experts dedicated to daily implementation," wrote Suckow and Clark. But killing takes money and manpower, too: In 2014, Idaho paid Wildlife Services $140,000 to gun down 31 wolves — $4,600 per wolf. Zack Strong, wildlife advocate at the Natural Resources Defense Council, sees that disconnect as illogical. "More producers are beginning to ask, 'Why shouldn't Wildlife Services help us prevent conflicts from happening in the first place?' "

The agency has begun taking hesitant steps in Montana, where Wildlife Services and NRDC will soon split costs for around $13,000-worth of so-called "turbo fladry," flags attached to electrified fences. "People are starting to grasp that predators are here to stay, and we gotta figure out how to deal with them," says Bryan Ulring, owner of Yellowstone

A sampling of animals killed by Wildlife Services, by method, 2014

	Black Bears	Coyotes	Red, gray Foxes	Mountain lions	Wolves
Firearms	209	7,725	376	166	23
Snares (Foot/leg, neck)	206	13,615	645	58	12
Traps (Body grip, cage, foothold)	154	4,515	799	77	211
Cyanide capsule/gas cartridge		11,581	592		
Calling device*		2,887	187		
Fixed wing/helicopter*		21,065	72		75
Spotlight*		203	12		
Night vision/infrared*		35			
Other	1	12	8		
Unintentional (cyanide, traps, snares)	10	64	89	4	1
Total	580	61,702	2780	305	322

*Accessories used to aid killing, which would take place by firearm or other means.

SOURCE: USDA ANIMALS EUTHANIZED OR KILLED BY WILDLIFE SERVICES - FY 2014. ILLUSTRATIONS: THE NOUN PROJECT, INCLUDING AMANDA WRAY (COYOTE), LORENZO STELLA (FOX) AND JASON DILWORTH (WOLF)

Percent of operations using various nonlethal methods, by year

	1994	1999	2004	2014
Guard dogs	28.2*	28.2	31.6	40.5
Fencing	29.6	57.0	52.5	54.8
Herding	unavailable data	6.6	5.7	11.0
Fright tactics	7.2	5.1	2.2	3.1
Lamb sheds	unavailable data	46.0	30.8	34.4

*1994 number refers to guard animals in general.

SOURCE: USDA SHEEP AND LAMB PREDATOR AND NONPREDATOR DEATH LOSS IN THE UNITED STATES, 2015

A coyote attacking a sheep, left. Above, officials radio-collar a wolf after darting it from a helicopter. USDA

Big Otis, a Great Pyrenees, stands guard as Marcia Barinaga feeds her flock of ewes in Marin County, California.
TERRAY SYLVESTER

“I hear coyotes howling every night, and it used to strike fear into my soul. But the dogs have proven so effective that it doesn't scare me anymore.”

Marcia Barinaga, Marin County sheep rancher

Grassfed Beef, who attended one of Steuber's workshops in Dillon. Ulring uses range riders to protect his own Centennial Valley herd. “Sometimes that's going to mean lethal. But I don't think anybody wants to spend $5,000 to kill a wolf with a helicopter when there are better ways of doing things.”

AN UNLIT BROOM CLOSET tucked inside a Petaluma, California, airplane hanger seems like a strange place to observe those better ways. Yet that's where I find myself one steamy afternoon, surrounded by the dim outlines of mops and boxes. Windex tingles in the air. The only light emanates from a yellow cylinder, a bit chunkier than a thermos, which flashes white, then blue, then red. Some bursts are strobe-like, others, long, lighthouse-style beams.

This is a FoxLight, invented by an Australian sheep rancher. “The lights are random, so it's harder for predators to habituate to it,” Keli Hendricks says from the darkness. “You set this out in a field during lambing season, and coyotes think it's people out there.”

Hendricks, an amiable rancher with a curtain of blond hair, raises around 300 cows down the road from the airplane hangar, which sits on her father's ranch and vineyard. She despises the wanton predator killing endemic to her industry, and she forbids it on her ranch. “Our cows calve in pastures with coyote packs,” she says as we depart the closet. “Coyotes eat the afterbirth and leave. We don't shoot 'em and we don't trap 'em. I'm not saying we never have problems, but they're rare.” Granted, cows are far less vulnerable to coyotes than sheep. Still, fire a few warning shots over coyotes' heads, and Hendricks says you can almost train them. The well-behaved resident packs keep out troublesome transients — the “guard coyote” dynamic hypothesized by John Shivik.

Hendricks' gentle approach would make her an outlier in Wyoming, but it's less remarkable in Marin County, a liberal, affluent community just across the Golden Gate Bridge from San Francisco. More than 15 years ago, Marin expelled Wildlife Services and implemented a nonlethal approach to deterring coyotes, a campaign led by an activist named, appropriately, Camilla Fox. Today, Fox, with help from Hendricks and other volunteers, runs Project Coyote, a Larkspur-based nonprofit devoted to human-carnivore coexistence — and one of the noisiest bees in Wildlife Services' bonnet.

Carnivore advocacy comes naturally to Fox, a slim, laser-focused woman whose father, Michael, studied canids at Washington University in St. Louis. Camilla grew up alongside an orphaned wolf named Tiny, which had imprinted on her father. (She's reluctant to share that detail for fear it will encourage others to make pets of wild predators.) Michael fed the wolf roadkill he peeled off the streets himself. “Tiny was the most intelligent, conscientious, sensitive being I have ever been around,” Fox tells me inside the echoing hangar.

Fox moved to California in the early 1990s, eventually joining an advocacy group called the Animal Protection Institute. Shortly thereafter, Wildlife Services — then known as Animal Damage Control — proposed inserting Compound 1080, a once-banned poison, into special livestock collars that would administer a lethal mouthful to any predator that bit them. Fox and other advocates fought the idea, and in 1998, California voters passed a ballot initiative prohibiting 1080, sodium cyanide and steel-jawed leghold traps. Soon local conservationists were clamoring for Marin to drop its Wildlife Services contract altogether. Stacy Carlsen, Marin's agricultural commissioner, sought a compromise: What if the agency killed predators only as a last resort? Wildlife Services, however, rejected the bargain. The restrictions, wrote one official, “hamper the effectiveness of providing needed services.” It was Wildlife Services' way or the highway. Carlsen reluctantly pointed the agency toward the highway.

Not all of his constituents were pleased. “My job is to promote agriculture, and you want to back your guys,” says Carlsen, a genial man with a tan pate. “At a gut level, services were being taken away from a community.” What, ranchers wondered, would replace their federal support?

The answer emerged in 2000 — the Marin County Livestock and Wildlife Protection Program. The arrangement rerouted Wildlife Services contract funds to ranchers to help them build fences, house guard dogs and llamas, install alarms, and change husbandry practices. Ranchers with more than 200 sheep could receive up to $2,000, smaller flocks up to $500. You could still shoot or trap coyotes on your property, but you'd have to do it on your dime.

The Marin program, in other words, flipped Wildlife Services' paradigm on its head: The county provided support for nonlethal measures, and laid the burden of killing at ranchers' feet.

But did it work? Fox interviewed ranchers, pored over records and collected data for a master's thesis at Arizona's Prescott College. Her study, completed in 2008, showed substantial reductions in both wildlife killed and in annual predator take of sheep and lambs, from 24 head per ranch to just 8.5. These days, the program covers over 2,000 acres of sheep ranches, as well as 11,000 head of poultry.

Among the beneficiaries is Marcia Barinaga, a dairy owner who grazes sheep on around 100 acres. Though Barinaga grew up in New York, her grandparents raised sheep in Idaho, and her dad recounted harrowing tales of coyote attacks on livestock. After a career in biology and journalism, Barinaga returned to her ranching roots in 2009. She's used Great Pyrenees guard dogs since day one — county payments cover a substantial portion of food and vet bills — and has installed impermeable fences. She's never lost a lamb.

"I hear coyotes howling every night, and it used to strike fear into my soul," Barinaga says. "But the dogs have proven so effective that it doesn't scare me anymore, and I feel no need to kill a coyote. I'm proud of this program."

WILDLIFE SERVICES, HOWEVER, has fought to prevent Marin's model from spreading. Soon after the program launched, Carlsen was attending California's annual agricultural commissioners conference when he made an unpleasant discovery: Wildlife Services had used his data — inaccurately, Carlsen says — to distribute reports detailing how much money other California counties stood to lose if they followed Marin's lead. "I thought that was about the lowest thing they could do," he says.

More than a decade later, the agency's opinion of Marin remains unchanged. When Wildlife Services published a draft environmental assessment evaluating its Idaho operations in July 2015, it rejected a Marin-style option as impractical and ineffective. The agency based this dismissal entirely on a 2006 analysis by Stephanie Larson, director of the University of California's Sonoma County extension office, which suggested that Marin's conversion to nonlethal management led to more dead coyotes. "Taxpayer dollars aren't being used to manage coyotes, but ranchers are shooting whatever they see," Larson claims. Dissenting wildlife biologists, however, point out that Larson's paper lacks listed sources for its coyote estimates and makes the dubious assumption that ranchers rarely killed predators before losing their trapper.

Still, no two ranches are alike, and techniques that deter coyotes in Barinaga's tight pastures might prove less manageable in the sprawling meadows grazed by ranchers like Bill Jensen. For years, Jensen, a fourth-generation sheepman whose 500 acres overlook Tomales Bay, ranked among the Marin program's most outspoken advocates; indeed, he helped author it. Today, his fields are crisscrossed by county-funded electric fences, which helped Jensen limit predation to just six sheep last year, a fraction of his historic losses. But the fences require constant upkeep: Trees fall on them, floods wash them out, pampas grass engulfs them. So Jensen keeps a .22-250 varmint rifle in his truck. He estimates he killed 35 coyotes in 2015.

"Nonlethal is the term that makes it palatable," Jensen says as we rumble past two dappled lambs nudging at their mother. "But all it's changed is who kills the coyotes. I'm tired of being pointed at as the model for everyone. This is just another idea."

Jensen contends that escalating depredation has pushed some sheepmen out of business and compelled others to convert to cows. Budget cuts have forced Carlsen to cease compensating ranchers for slain sheep, an initial feature of the program. Even so, agricultural reports state that Marin's sheep industry has grown by 2,500 head since 1999. Nearby Mendocino County, which retained its trapper, has lost 6,000 sheep.

Yet despite pressure from Project Coyote and other animal groups, California counties have been slow to follow Marin's lead. The city of Davis terminated its Wildlife Services contract after a trapper triggered public outrage by killing five coyotes on a golf course in 2012, and Sonoma County defected in 2013. But other dominoes haven't toppled. Humboldt and Mendocino Counties suspended their contracts, but ultimately opted to renew. Mendocino's contract remains in jeopardy: The county now faces a lawsuit from wildlife groups for failing to evaluate Wildlife Services' environmental impact before re-upping.

Two recent court cases suggest the lawsuit may succeed. In July 2015, an appeals court ruled that the conservation group WildEarth Guardians had standing to challenge lethal activities in Nevada, where it had sued the agency for relying on outdated science. And in December, a judge barred Wildlife Services from killing wolves in Washington without preparing a full environmental impact statement, deeming that experts have "significant disagreement" about whether lethal removal works.

That Wildlife Services has sought to discredit Marin's model rather than learn from it is, Fox believes, proof that the agency hasn't truly embraced nonlethal methods. "Wildlife Services has done everything it can to make sure other counties don't sever their contracts," Fox says. "We are such a target."

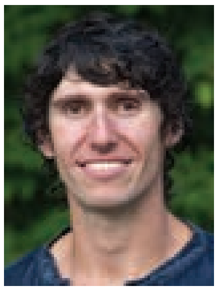
IN DECEMBER, I TRAVEL to the Hopland Research and Extension Center, a University of California field station tucked in 5,300 acres of Mendocino woodland, to see a Wildlife Services workshop in action.

Though the mood is amicable enough, a glance around the room reveals entrenched battle lines. Trappers in Carhartts congregate on the left side, while activists, Keli Hendricks among them, cluster to starboard. A parade of Wildlife Services scientists — Michael Marlow, Stewart Breck, Julie Young — detail their research. "I can think of people who hate the fact that I work for the agency I work for," Young says at the end of her presentation. "But 90 percent of what we're trying to do is the exact same thing."

There's some truth to that: Camilla Fox preaches the gospel of FoxLights; Young has a FoxLight sitting in her facility. Guard animals are a pillar of the Marin program that Fox champions; Young studies the efficacy of new breeds. Where the agency and its detractors differ is in the application of those techniques — should nonlethal be the foundation of a predator management regime that kills only as last resort, or a tool on the same shelf as airplanes and cyanide? How acceptable should it be to slaughter coyotes? Each answer requires cracking open another question: Who belongs on the land, and for what purpose? How much risk should ranchers accept? What is a coyote's life worth — or a sheep's? Who pays, in the end?

Those philosophical nested dolls have ecological and economic answers. But wildlife management is also a cultural dilemma, one whose spiritual and ethical facets frequently supersede technical

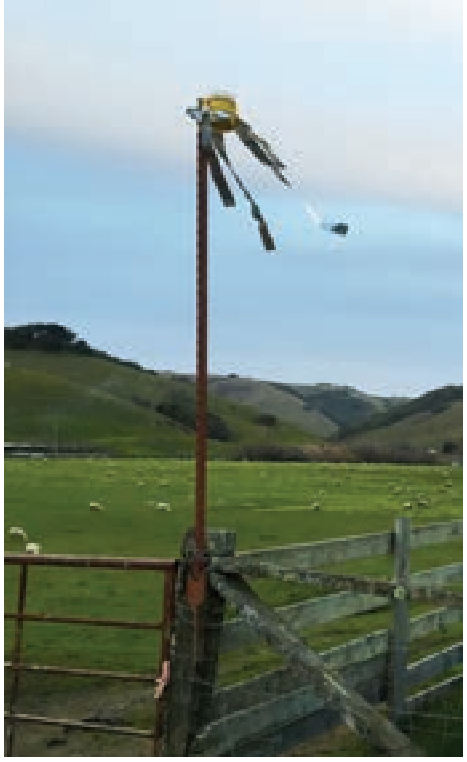
Camilla Fox, top, founder and director of Project Coyote, helped push through a California ballot initiative to ban certain methods of killing predators. Marin County Agricultural Commissioner Stacy Carlsen, above, broke ties with Wildlife Services when the agency refused to hold off on killing predators unless absolutely necessary. TERRAY SYLVESTER ones. Many ranchers feel a moral obligation to defend their stock by any means necessary; for their part, animal activists see inflicting superfluous suffering upon individual carnivores as profoundly wrong. Today, too, many Westerners regard lethal management as an agrarian relic, one that no longer reflects the region's urbanized, recreation-oriented reality. As land changes hands, as "best and highest use" swings from sheep and cows toward hiking and conservation, the very meaning of wildlife evolves as well. Once, predators signified an impediment to making a living. Now vast segments of the public believe they're one of the things worth living for — an evolution that has yet to permeate Wildlife Services' cost-benefit analyses.



Correspondent Ben Goldfarb writes about wildlife from New Haven, Connecticut. @ben_a_goldfarb

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

Wildlife Services' foes often point out the hypocrisy of conservative producers demanding federal aid when carnivores come calling. As Predator Defense's Brooks Fahy asks: "Why should we subsidize sheep ranchers and not, say, plumbers?" It's a fair question, one that Fahy used in 2005 to convince Oregon's Lane County to end its predator control contract. Then again, sustaining ranching, at least on some private lands, provides a bulwark against the tide of subdivision — the classic "cows, not condos" argument. Wildlife Services' prioritization of M-44s and aerial gunning may contravene national sentiment and available science, but preventing conflicts between the wild animals we worship and the domestic ones we eat qualifies, in some cases, as the public interest. The need for reform runs deep, but a Wildlife Services that kills as a last resort rather than a reflex, and that first and foremost distributed guard dogs and fladry and alarm boxes — the techniques that its own researchers have devoted their lives to developing — could be a valuable agency indeed.



A FoxLight can fool coyotes into thinking people are around by flashing random light.
COURTESY PROJECT COYOTE

After the workshop, a small cohort of ranchers, activists and trappers wander up to a 28-acre pasture, a field where Camilla Fox had proposed a series of FoxLight trials. Sunset bathes the hills; ungulate pellets squish underfoot. "Sheep tend to sleep in the highest spot in the pasture," says Jeff Furlong, Sonoma County's trapper, pointing to a clearing. "You could put the light up here and get it as close as possible."

Furlong, whose position was partly funded by by Wildlife Services until Sonoma dropped its contract, also moonlights as a rancher in Marin County. At an agricultural meeting nearly a year back, Camilla Fox had asked the room whether anyone might be willing to try out FoxLights. Furlong, the trapper, was the sole volunteer. Ravens hammered his new lambs, but *Canis latrans* mostly left him alone, though he still snared a few that tried to breach his pasture. "Coyotes will habituate to anything," Furlong says; he's worked with ranchers who keep 22 guard dogs and suffer predation nevertheless. "But if it helps for two weeks during lambing season, it's worth it."

Back at the grassy parking lot, Fauna Tomlinson, a Project Coyote volunteer, hands Furlong two FoxLights still enclosed in packaging. He's recommended the devices to his producers, and decided to buy more himself. Tomlinson claps her hands in delight. "We're going to save some animals," she cheers. Furlong smiles tolerantly and stows the FoxLights in his truck as the light fades over Mendocino County. In the hills, coyotes prepare to hunt, the chorus silent, for now. □

Rancher, *continued from page 9*

Kalsta farm journals, dating back to the 1880s, note everything from late frost that "took a nip off the alfalfa," to river levels.
SARAH JANE KELLER

that historical overgrazing by wild horses and during big cattle drives is partly to blame for the grasses' decline. Below-average precipitation in seven out of the last 15 years hasn't helped. Kalsta thinks the mule-high grass was Great Basin wild rye, a species he's never seen on that part of the ranch. But he knows the big, bushy grass could return, given better conditions, because he's sifted its seeds out of the soil and germinated them.

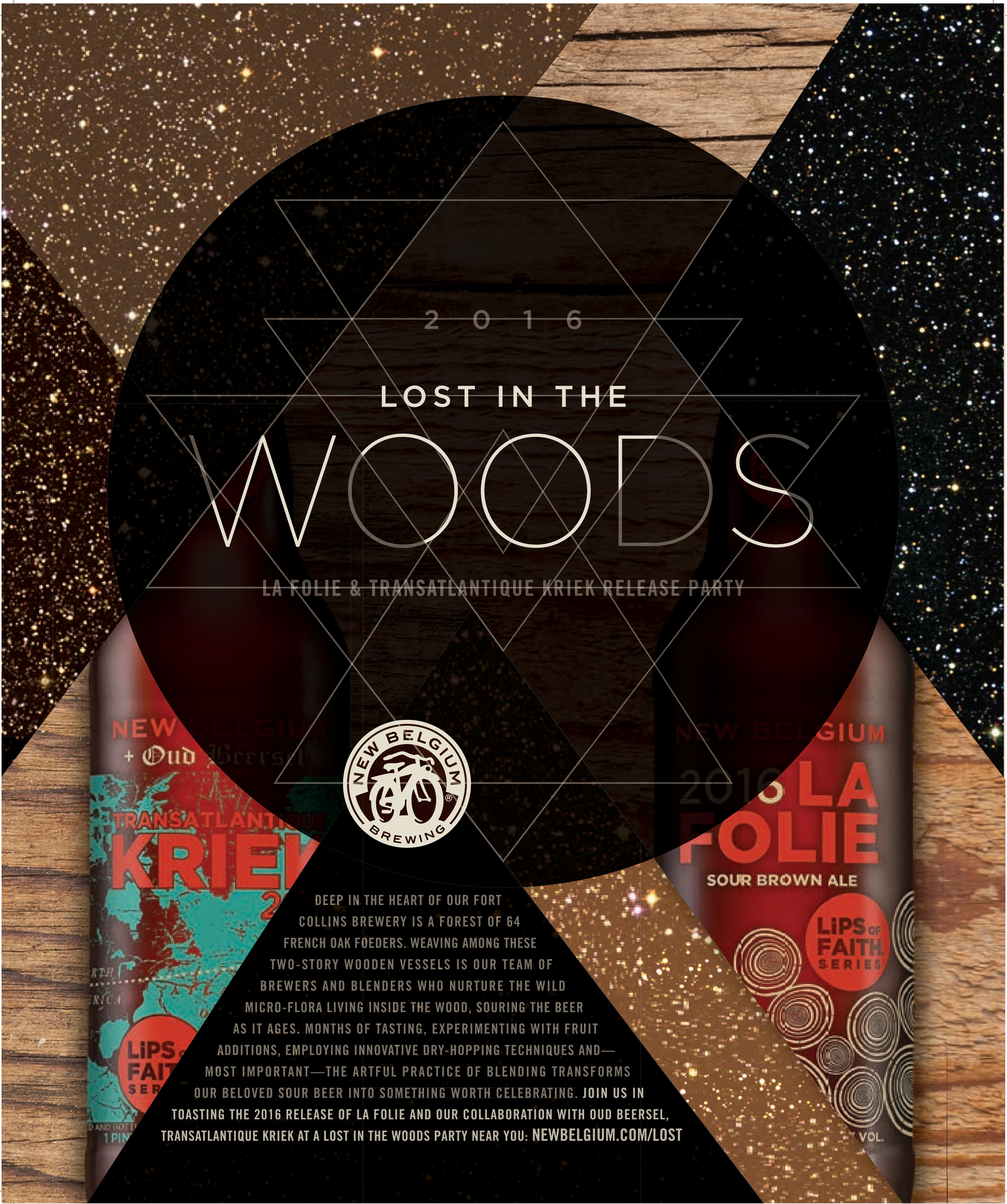
Being resilient to climate change, he's begun to think, might mean looking backwards in order to move ahead — restoring and re-engineering the soil to regain the land's former productivity and water-storage capacity. Four years ago, after Kalsta noticed that the washes already hosted soil-building lichens and mosses, student volunteers installed rock dams in the dry gullies running down McCartney Mountain. Ideally, the dams will slow the flow of torrential summer rains and rapidly melting snow to trap the water and the soil it can carry away. "It's mostly about water movement," Kalsta says, standing at the base of McCartney's golden slopes. "How we get it down here and what it does in between is what's going to help us in the long term and keep this from turning into dunes."

Kalsta is also tinkering with a meadow that was contaminated when storm water flushed out phosphates from surrounding rocks. Afterward, the only plants still growing were undesirable for grazing, like greasewood and cheatgrass. It seemed like a low-risk place to experiment. Using a laser level and a tractor, Kalsta built water-capturing ditches along the meadow's contours. He even spread some puffball spores on the soil in hopes that the fungal mycelium would help bind the soil together and improve its water-holding capacity.

In past years, Kalsta's water-trapping efforts have yielded modest gains. But this summer, either because the timing of the rainfall was just right, or because his improvements are starting to take, he saw huge differences. Puffballs carpeted the meadow, and some grasses were almost mule-belly high — a good start. When a late-summer deluge dropped over two inches in 45 minutes, the water soaked in behind the contours. A year ago, it would have puddled up for days.

Water soaked into McCartney's gullies, too, and more native bluebunch wheatgrass was growing than ever before. "I can't wait for my first ryegrass plant to come up in here," he says, inspecting the new soil collecting behind one of his dams.

Kalsta wants to build more rock dams, and create contours higher on McCartney. His niece, who studies engineering, is helping him design a robot that will dig the contours. "Someday, a kid's going to take over this ranch," Kalsta says. "And he'll look at this and say, 'Grandpa sure got things right.' Or, he'll say, 'Grandpa sure screwed things up.' " □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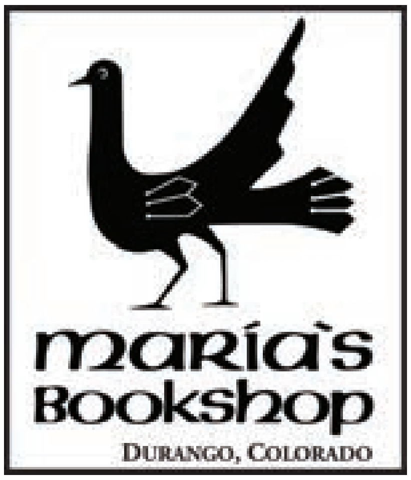
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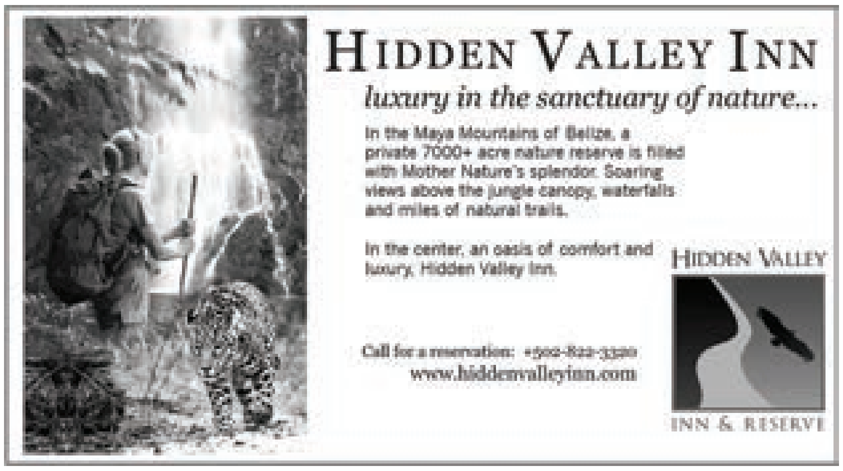
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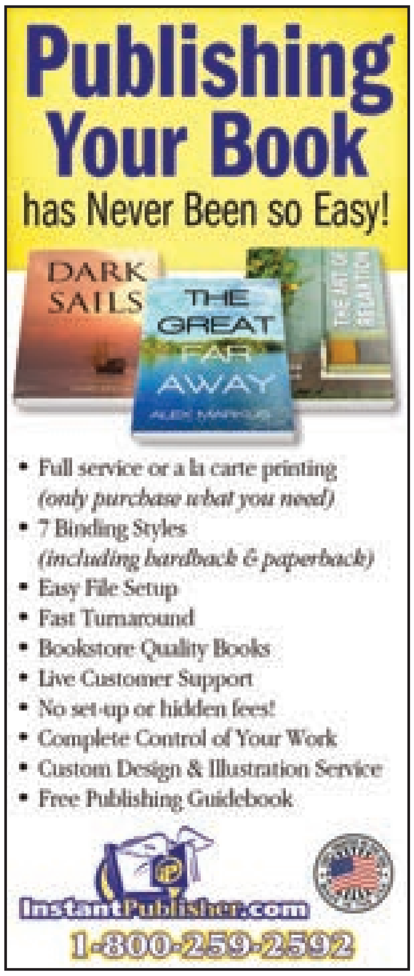

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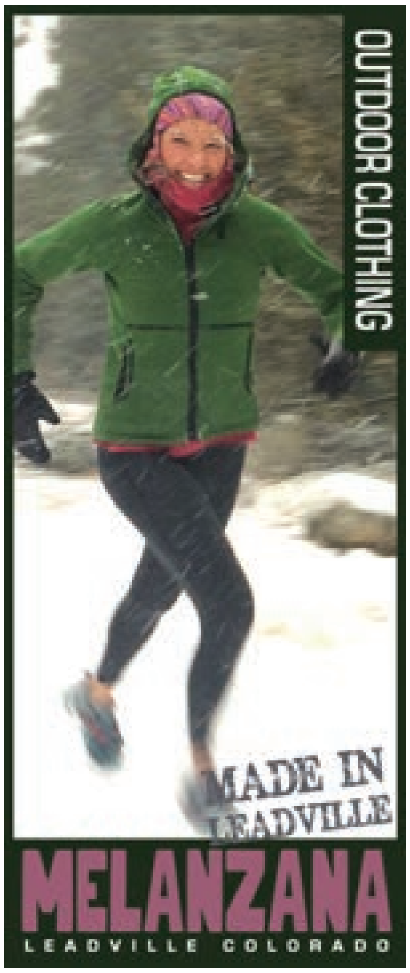

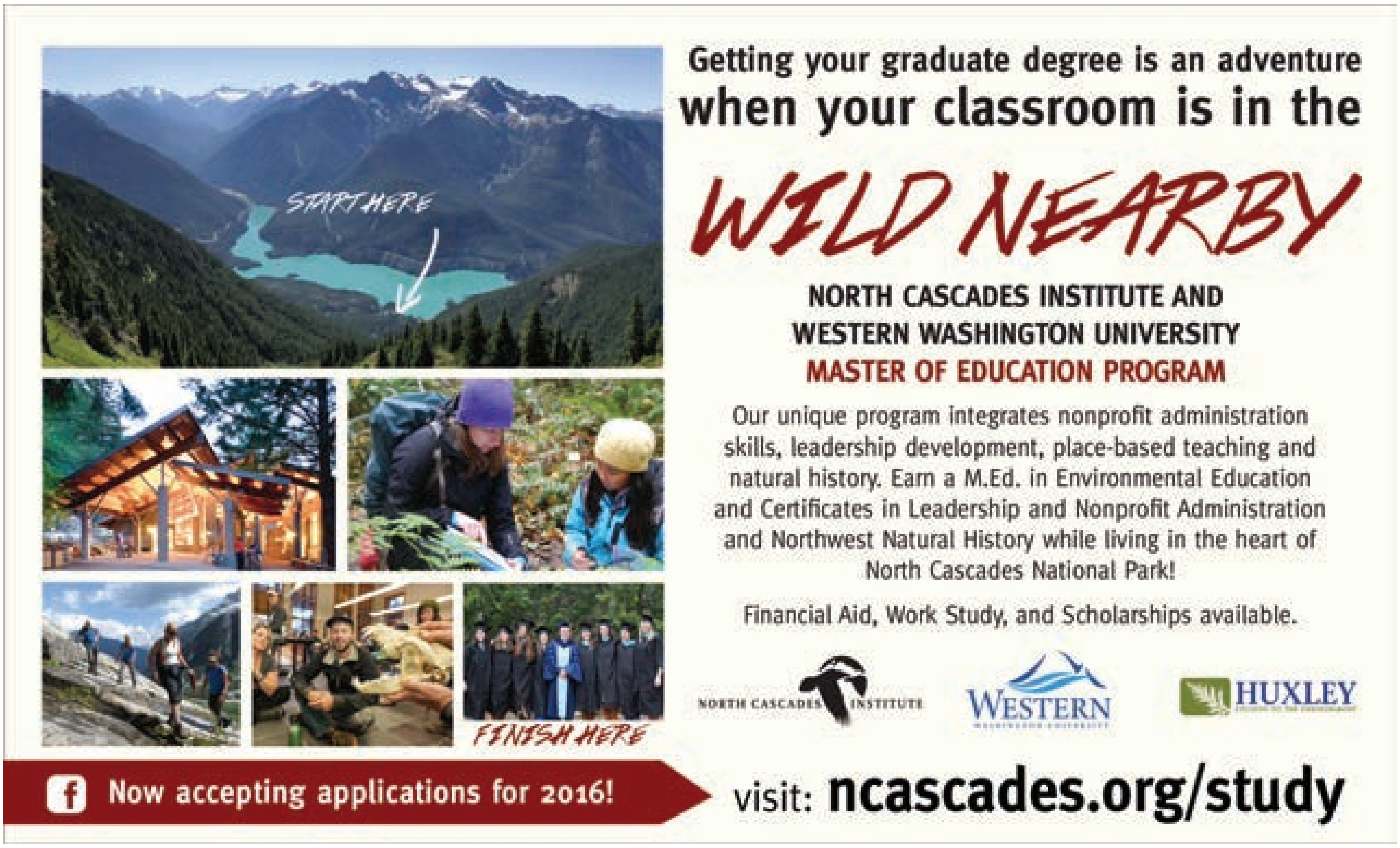

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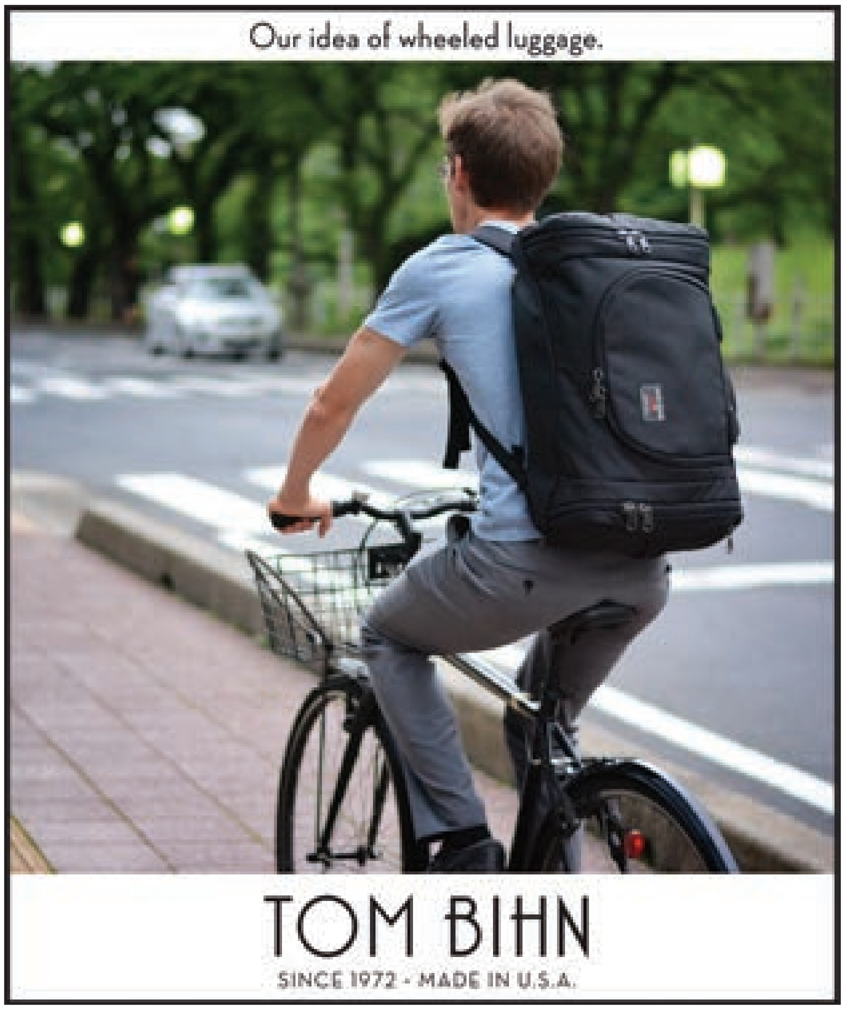
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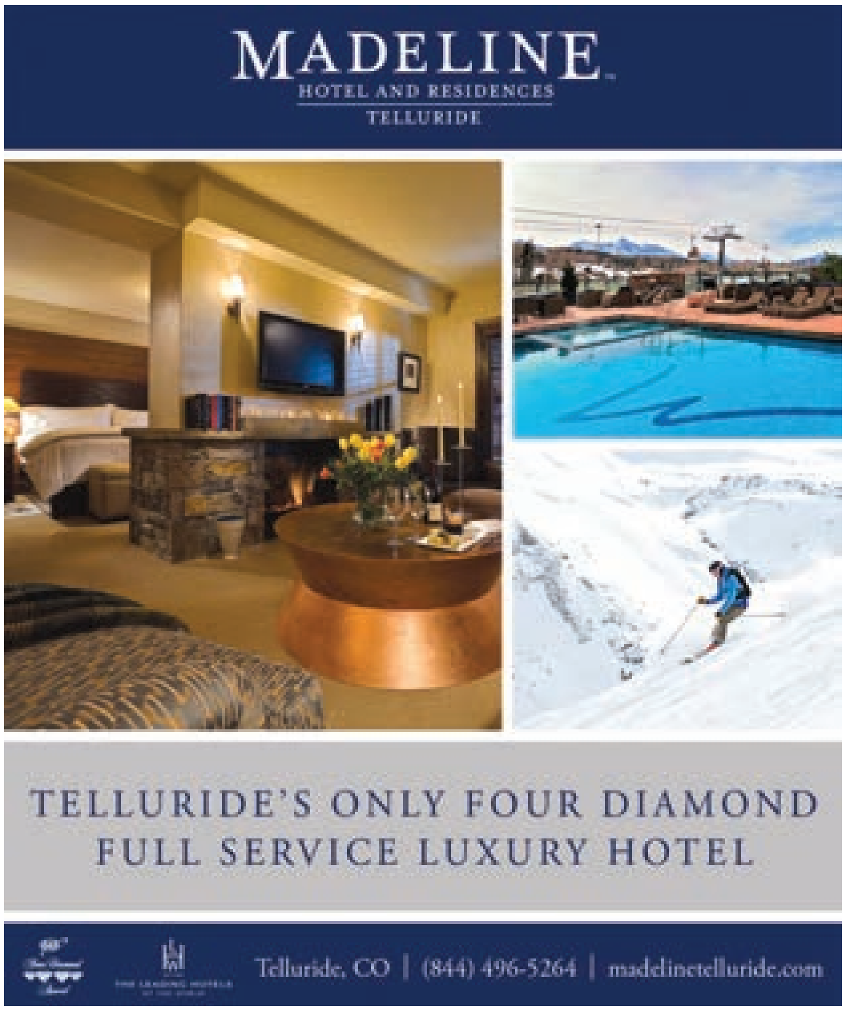
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The compromise between convenience and consequence

When 26-year-old Megan Kimble became intrigued by the idea of unprocessed eating, she wasn't entirely sure what the term meant. After all, she writes, nearly all food is processed by the time we eat it — chopped, sautéed, fermented or folded into batter — "and often it is the better for it." But she also knew that some of our food is too processed, organic or not, and so she set out to discover where, exactly, the line should be drawn.

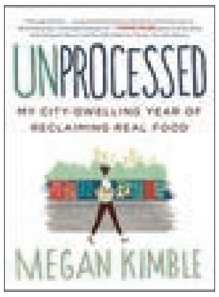
It took her all year. Her debut book, *Unprocessed: My City-Dwelling Year of Reclaiming Food*, documents Kimble's shifting definitions, as she grinds wheat berries into flour, brews mead in a bucket, harvests salt from the ocean, and tries her hand at slaughtering sheep. Along the way, she explores all kinds of topics: from the preservatives that give industrially produced food a longer shelf life to the planned obsolescence of our food gadgets, from the tension between convenience and consequences, to the power of dollars spent locally.

Megan Kimble picks zucchini at her plot in the University of Arizona Community Garden. COURTNEY TRINE

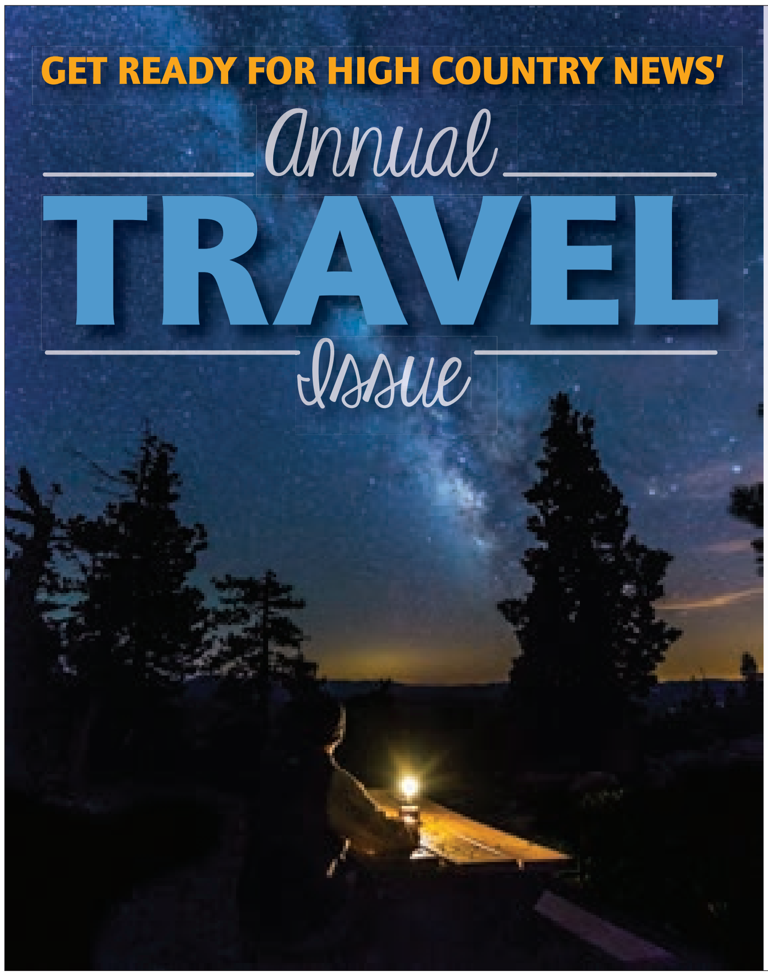
What sets *Unprocessed* apart from the last decade's rash of books about the shortcomings of our food system is Kimble's status as a broke, busy graduate student living in arid Tucson, Arizona, on an income of less than $20,000 a year. In a cheerful, clear voice, she admits her struggles and compromises. Her garden plot, for example, is largely a failure. Like many of her generation, her social life unfolds largely in restaurants and bars, and the book smartly tackles how to navigate mostly processed menus, what makes alcohol processed (or not), and how a commitment to eating real food can either intersect or clash with the desire to be a part of community. "If I didn't … engage in the messiness, of eating out and eating with another, then even if I ate perfectly unprocessed, I wouldn't have really lived unprocessed," Kimble writes. "Abstain though we try, today's world is one of moderation. Of trying and failing, and then trying and half-succeeding."

The book is full of fresh insights about the way communities are tied to food systems. Eating processed food, Kimble discovers, is a natural consequence of our move-wherever-the-jobs-exist economy. Yet she questions the tendency to "(outsource) to others those key activities that define the day-to-day. … What is life if not the day to day? ... The tasks we have decided to label mundane … are (those that) accumulate into relationships and memories."

BY KATHERINE E. STANDEFER



Unprocessed: My City-Dwelling Year of Reclaiming Real Food
Megan Kimble
326 pages, softcover: $15.99.
William Morrow/Harper Collins, 2015.



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Modern sagebrush rebels recycle old Western fantasies

OPINION BY
PAUL LARMER

Ammon and Ryan Bundy, sons of scofflaw Nevada rancher Cliven Bundy, made an ambitious New Year's resolution: Force the federal government, which has managed more than half of the American West's lands for the past century, to relinquish them, at gunpoint if necessary, to the nearest ranchers.

Over the first weekend of 2016, the Bundy brothers and a few dozen or so militiamen and their sympathizers took over the headquarters of the Malheur National Wildlife Refuge in eastern Oregon and declared it a safe haven for well-armed "patriots" who oppose federal land management.

The group demanded that the federal government release local ranchers Dwight Hammond and his son, Stephen, who reported to federal prison just as the occupation started to finish serving time for intentionally setting fires in 2001 and 2006, burning up more than a hundred acres of public lands in what prosecutors described as an attempt to cover up poaching. They also wanted the government to hand over control of the refuge and surrounding public lands to local ranchers. According to OregonLive, Ryan Bundy said, "Many would be willing to fight — and die, if necessary — to defend what they see as constitutionally protected rights for states, counties and individuals to manage local lands."

Ammon Bundy, Ryan Bundy and LaVoy Finicum, men who have led the occupation in Oregon, speak to the press. BROOKE WARREN

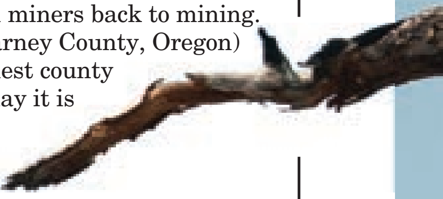
This latest action, like the Bundy affair of 2014, recycles old gripes from a small cadre of ranchers and miners. Their main complaint: They don't want to play by the rules that tens of thousands of other public-land ranchers and miners abide by every day of the year, mostly involving minimal fees for the right to use some of the federal lands that are owned by the American public. Cliven Bundy started refusing to pay grazing fees in 1993, and the Hammonds began their "rebellion" against the feds in the early 1990s, when the U.S. Fish and Wildlife Service built a fence to keep their cattle from trespassing on the Malheur National Wildlife Refuge, the area now occupied.

Though the militia folks drawn by the Bundy and Hammond families' tales of woe may not know it, the Sagebrush Rebellion is really the latest pout in a century-long tantrum over the end of the open and unregulated frontier. Its modern incarnations began in the 1960s and 1970s, when Congress passed a slew of environmental laws, including the Endangered Species Act, the Wilderness Act and the National Environmental Policy Act, and the agencies reluctantly began to implement them. By the early 1980s, disgruntled ranchers, who largely ran local and state politics, had formed the "wise use" movement. Backed by opportunistic mining and logging companies, they fought against environmental regulation and for increased resource extraction. For a while, they found a sympathetic ear in the Reagan administration, but their dream of wresting the public lands from the federal government never gained national traction.

The rebellion flared again in the 1990s, when President Bill Clinton and Interior Secretary Bruce Babbitt tried to increase grazing and mining fees, brokered a plan to protect the northern spotted owl and thereby end the Pacific Northwest's logging spree, and used executive orders to protect tens of millions of acres from development. The "rebels," led by ranchers from New Mexico, Oregon, Utah and Nevada, pushed back with a "county supremacy" movement. Dozens of Western county commissions approved cookie-cutter ordinances declaring that the federal government had no authority within their borders, and they enlisted lawyers who thought they could, on constitutional grounds, "take back" the federal lands. The courts repeatedly rejected their arguments.

Now the rural West is going through yet another wave of rebellion, driven by the anxieties produced by a recession-scrambled, increasingly multicultural world, one that has left places like eastern Oregon grasping for a future. The rhetoric the Bundys are serving up now might sound exciting, yet it is merely a rerun of the past.

In a press conference, Ammon Bundy said the refuge takeover aimed to get "loggers back to logging, ranchers back to ranching and miners back to mining. At one time (Harney County, Oregon) was the wealthiest county in the state; today it is one of the poorest," he said. "We're going to be reversing this in just a few years by freeing up these lands and resources … by getting them back to where they belong."



A new and noble New Year's resolution? No. Just a tired fantasy that has long been rejected by most Westerners. The public lands continue to provide a stream of wealth to locals, in the form of not just timber, minerals and grass, but also recreation, tourism and clean water. And locals, for the most part, remain partners with the increasingly collaborative agencies that manage them.

As one local rancher, who runs cattle near the Malheur Wildlife Refuge, told OregonLive, "The last 10 or 15 years, the refuge and the ranchers who use the refuge have been getting along famously. I think if they (the occupiers) had showed up in 1950 or something, that'd have made more sense."

Paul Larmer is executive director and publisher of High Country News.

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.

WEB EXTRA
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ESSAY | BY ANA MARIA SPAGNA

The tree in the river

Osprey nest in a snag in the Middle Fork of the Salmon River, Idaho.
MARJORIE MCBRIDE

THE TREE STANDS in the middle of the river. Not in a shallow side channel, but smack in the middle of the current, barkless, the trunk battered and discolored, like an ill and splotchy patient, or worse. Technically, the tree is a snag. But still it stands, a hundred feet tall or more, with limbs that elbow toward the sky. An osprey nests near the top.

The tree used to stand on dry ground, of course, a massive ponderosa pine, orange-barked and majestic, beside a trail through the woods. When the flood came to our valley 12 years ago, the river broadened and chiseled away at the bank, claiming the entire trail and a large chunk of road to boot.

We never saw it coming.

We should have seen it coming.

But the tree still stands. We pass by it in cars or on bikes or, most often, on skis. The rerouted road isn't plowed that far, so in winter a ragtag group of friends skis past regularly, in wool shirts and blue jeans and mismatched gear. Every time we do, we stop by the place in the river where it stands, to sip water or to peel off an extra layer of clothing, and mostly to marvel: It's still there!

Sometimes I wonder why we love it so much. Is it nostalgia? Do we love it because it's a remnant of the way things used to be? Or is it because of its stubborn endurance — like a boxer leaning hard against the ropes, one that will not go down, no matter what. Maybe, by now, it's just familiarity. The snag is one of us. We try to impress others, people from outside the valley, try to get them to whistle through their teeth — would you look at that? Instead, they look at us pityingly: So *this* is what passes as entertainment up here. They're right, of course. They're also missing the point.

The tree still stands! Who could've known? How is it even possible?

We know that, someday, it will topple. We've even considered taking bets on when, but if we'd started taking bets back when we first started talking about it, by now everyone would've lost.

People like to predict when trees will fall. When I worked on trail crew, people did it all the time. The year after a big wildfire, they'd tell us: Better bring a lot of saw gas. But the roots of the blackened trees took years to loosen, and sometimes never loosened at all. Elsewhere, seemingly healthy trees snapped by the dozen. Trees fell for unexpected reasons — a pestilence in the willows, a freak snowstorm in the spring — or for no reason at all. We gave up trying to guess.

But it's a hard habit to break, speculation. We must be hard-wired for it.

Lately, there's been a glut of apocalyptic books. The end is caused by a pandemic flu or a war or a natural disaster. The fascination lies in predicting who will survive and where and how, and for how long they'll survive. Some people bet on food production, some on weaponry; some on self-reliance, some on cooperation. A few outliers put faith in art. The truth is, we don't know what will happen or when. Even while we try to hold it together, to prep and plan, we don't know.

Meanwhile, remnants surround us: the meadow that didn't burn, the sandy ocean bluff sloughing but not yet slid, the blackened toenail after a too-long hike, right before it peels off, the eerie glowing coals in a campfire in the rain. Something to cherish, something that can't last. You come around one last bend before the view opens wide. An osprey swoops close. You look up and catch your breath. There it is, still standing, silhouetted white against the cloudless blue. □

Ana Maria Spagna lives and writes in Stehekin, Washington. Her most recent book is Reclaimers.

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HEARD AROUND THE WEST | BY BETSY MARSTON

THE WEST

Ball caps off to the feisty writer Ted Williams, called a "national treasure" and "Rachel Carson for sportsmen," by *Forbes* magazine for his decades of environmental and outdoor writing. Williams didn't pull his punches in a December interview with contributing editor Monte Burke. He called most sportsmen "easily manipulated by their worst enemies," and blasted the National Rifle Association, saying it "can now be counted on to be on the wrong side of every environmental issue." And he still has it in for feral cats, those domestic feline marauders estimated to gorge on up to 4 billion birds a year: "Feral cats learn to avoid traps and guns. The only solution is selective poisoning — again by wildlife professionals, not the public. The Aussies do it; we don't."

IDAHO

One of the hottest potatoes in the West is the question of whether open range laws are outmoded. The way it is now, if you're driving and a two-ton cow materializes in front of you in an area that is designated open range, it's your responsibility to avoid hitting that animal; if you hit it, you're liable for its loss. You're also required to fence out cattle if they annoy you by trooping into your garden. A tragic accident last November has led some people to question this long-enshrined code of the Old West. After a vehicle hit a bull on a remote highway near Council, Idaho, the police arrived, gunfire erupted, and rancher Jack Yantis "ended up dead." Nonetheless, the Idaho Farm Bureau, which has some 12,000 fulltime ranchers and farmers among its membership, resolutely backs the open range law. Idaho Lt. Gov. Brad Little, a rancher, told MagicValley.com that it might be time to reconsider. "I tell my cattleman friends, 'You have a school bus hit a bull, you're not going to like the way the open range laws in Idaho are changed.' "

WINE Tasting
Bring Some

COLORADO **... and snacks, too. Also a snow shovel.** BROOKE WARREN

MONTANA

Magazine editor Amanda Fortini didn't move from Los Angeles to Livingston, Montana, to get closer to nature, but rather to make a relationship work. Once she entered this new and rugged way of life, she tells *Good* magazine, she suddenly found herself living in a still "feral" place that was prone to violence and blizzards — a place where "nature becomes part of every decision." Perhaps the biggest surprise, she says with humility, was that nature called the shots. If you choose to adopt a place like Montana, she advises, "You will be reminded that the moon is running you. The sun is running you. The light or lack of light is running you. You are the full moon. You are the rushing river. You are the animal, moving and being moved."

NORTH DAKOTA

After five years of a frantic building boom fueled by horizontal drilling for oil in the Bakkan area of North Dakota, the bust has settled in, big time. Although permanent dwellings continue to go up in towns like Williston — thanks to borrowed money — oil prices have plummeted, rigs have been pulled out, man camps closed, and the upshot, as Williams County Commissioner Dan Kalil puts it: "We are overbuilt." As thousands of laid-off oilfield workers depart, many have adopted a routine that involves TJ's Autobody & Salvage, reports *Bloomberg Business*. TJ's is where former workers dump their pickups and recreational vehicles — not even stopping to collect some money for a vehicle's scrap value. "I wake up and RVs are in my driveway," said owner Tom Novak. "It's insane, there are empty campers everywhere."

COLORADO

A paid obituary in western Colorado's *Delta County Independent* caught our eye because of the family's willingness to talk about their father's long battle with mental illness. Randolph "Randy" Park, born in 1952, owned a grocery store in Rifle when his daughters, Jessica and Katie, were growing up. There, he "knew and extended a hand for anyone who needed it," they write. During the last half of his life, however, Randy Park realized that he needed help for himself; he could not outrun his "demons." Mental illness, his daughters report from experience, "is one of the most debilitating things that can happen in a family." Shame and guilt are associated with trying to deal with it, they say, and many people may feel they never did enough to help. "If you feel that way at all, I ask you to treat yourself with the same compassion you would offer a good friend, and forgive yourself. My dad would want you to do that." Randy Park, who loved to hunt, fish and hang out with friends when he was younger, spent his last years in a caring place called Delta House. The town's growing recognition that people like Randy need help has also encouraged local support for Delta's homeless shelter. As his daughters say, "We are thankful for that."

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.

"The saying is that **any press is good press**, but in small towns, locals know this isn't true."

Gina Knudson, in her essay, "Bullies must not be allowed to hijack our story," from Writers on the Range, hcn.org/wotr

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