High Country News

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Gustavo

The dark side of the sheepherding industry

Vol. 55 / October 2023
No. 10 • **hcn.org**

Studying snowmelt in Colorado

California's first dates

Wildfire dispatchers are burning out

HIGH COUNTRY NEWS

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Native flannelmouth suckers migrate up from the Colorado River to a small Grand Canyon tributary to spawn. **David Herasimtschuk/ Freshwaters Illustrated**

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EDITOR'S NOTE

The speed of life

THINGS ARE HAPPENING — fast. The climate is warming. The rivers are flooding. The fires are relentless, and the cost of housing has skyrocketed. Little by little, the places where we live are changing, and there seems to be only so much we as individuals can do about it. We can try to be part of the solution. Stand on the side of justice. But also pack our go-bags and be ready to run the minute the smoke or the flames or the floods come.

We live in a speeded-up world, and the pace of life cannot always be controlled. Minutes matter, more and more. Nevertheless, slowing down is essential if we are going to make it through the coming decades and, hopefully, survive beyond them to build something more stable and hospitable for all. We may have to go back to the manual way of doing certain things. We should already be flying less, driving less, walking and biking more and taking public transit. Many of the changes needed are systemic, of course, requiring the cooperation of local, national and international institutions and governmental bodies; we need to make adjustments to more than just the speed of life. But slowing down is something we can do right now, each of us, if only in stolen moments. And the benefits are extensive.

Wonder does not require traveling at the speed of light. Wonder can be found in the backyard, in a hammock, or under a flagstone, as Nina McConigley discovered with her two girls this summer *(see "Dino time," p. 48)*. Wonder is taking the time to be pensive, to be awed, to be caught in the thrall of the world around us. Savor the slowness of an ephemeral river, quiet for months but once again burbling in your ear *("What is a waterway?" p. 44)*. Indulge in the sweetness of a rare date from a farm that has cultivated unique varieties of date palms for over a century *("California's Middle Eastern Mirage," p. 36)*. There's already too much acceleration out there. Slow is how we grow, how we learn, how we feel and how we heal.

Jennifer Sahn, editor-in-chief

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Original illustration by Zeke Peña / HCN

Date palms, Coachella Valley, California.
Mette Lampcov

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EDIFYING READING, YEAR AFTER YEAR

We have been readers since the newsprint days of *HCN* and keep coming back! This September 2023 issue, however, is outstanding, particularly Ben Goldfarb's "The Blab of the Pave." I work trying to keep wild areas wild in my larger high Sierra Nevada community and so value his fine writing and observations. Also, "We don't need utopias" by Ruxandra Guidi has a potent message. Thank you for choosing these important stories for our continuing education.

Barbara and Donald Rivenes
Grass Valley, California

LAND FOR FARMS, NOT BILLIONAIRES

What I see is U.S. billionaires driving prices of land beyond the reach of family farms ("Who owns the West?" September 2023). There should be a price cap on agricultural land that will benefit smaller farmers against the likes of Bill Gates and Ted Turner. If some wealthy individual from Iran decides to buy 10,000 acres at 200% the value, what's to stop them?

Robert Campbell
Pueblo, Colorado

LEARNING FROM THE BIRDS

I thoroughly enjoyed "A naughty, queer little bird," in the September issue. Miles Griffis writes beautifully and brought forth wonderful thoughts about gender. We have Mexican jay down here in the deep southeast of Arizona that behave like his gray jay. The ravens talk as well. I swear they say good morning, flying low overhead as I enjoy my outdoor breakfast.

Katherine Brown
Cochise, Arizona

ABSURD WHINERS

I found the article "The Movement to Make Oregon Great Again" (August 2023) very informative. The people pushing the Greater Idaho movement are anti-government, disgruntled conservatives with an emphasis on white supremacy similar to the people involved in the Bundy takeover of Oregon's Malheur National Wildlife Refuge. The idea that the state of Oregon is going to allow a minority of people to take two-thirds of the state and make it Idaho is absurd. If these people are so enamored with the conservative policies of Idaho, why don't they just move to Idaho?

I spent 20 years teaching high school in Madras, Oregon, and many of my students were Indigenous kids from the Warm Springs Reservation. I was pleased to read the comments from Carina Miller, member of the Confederated Tribes of Warm Springs and chair of the Columbia River Gorge Commission, who was one of my students. Carina always knew what she wanted and was never shy in saying what she felt was right. She was always a leader. I am not surprised that Carina got the last word over Greater Idaho spokesman Matt McCaw when she asked if he thought his group was more disenfranchised than Native people. She is actively working to make things better instead of whining like the Greater Idaho discontents.

Chris Scranton
Stevensville, Montana

THE COST OF EAGLE KILLS

"People are shooting birds off power lines in the West" (hcn.org, Aug. 4, 2023) was a great article. Glad to see that it's being publicized; it may help readers possibly witness a shooting and lead to a prosecution.

We study several hundred golden eagles nest sites in Oregon, and on one Hawk Watch International roadkill deer/raptor study it was documented on study cameras that people are also shooting golden eagles off roadkill carcasses and taking the eagle.

If someone shoots an adult golden eagle, we lose almost 12 years of effective productivity, because of the time it requires a juvenile to become an adult (five years), and also smart, effective adults that can build a nest, hatch eggs and feed their young, and for those young surviving to breeding age.

Rick Vetter and Joan Suther
Fish and Wildlife Service and Bureau of Land Management wildlife biologists, retired
Hines, Oregon

BROADENING THE FOCUS

Reader Margaret J. Hayes deplores *HCN*'s straying from a primary focus on the Inner Basin West in the July issue, and I appreciate that. I deplored the change years back when Ed and Betsy Marston first merged their *Western Colorado Report* with Tom Bell's *High Country News* and made regional coverage their focus instead of Colorado's Western Slope. But *HCN*'s recent shift to highlighting Indigenous issues about and by Indigenous writers has been thrilling. I pair that important focus with the award-winning *Southern Ute Drum* to begin to better understand my place as a settler immigrant resident of the West.

And, on a personal note, thank you for bringing poetry back into the *HCN* mix, missing since the days of Chip Rawlins. A particularly moving poem by Jacqueline Balderrama in the August issue.

Art Goodtimes
Norwood, Colorado

HOPE IN HELD

Thank you for the powerful and moving article by Richard Forbes about the young plaintiffs in the *Held* lawsuit ("In the nation's first youth-led climate trial, a case for hope," hcn.org, June 26, 2023). With thoughtful young people who are committed to addressing climate change in order to protect the planet, there's hope. Congratulations to the plaintiffs for all of their efforts and to Our Children's Trust for representing them.

Laurie Albright
Boulder, Colorado

REPORTAGE

Dispatchers in disarray

A Forest Service survey details the consequences of wildland fire dispatcher burnout.

BY KYLIE MOHR | ILLUSTRATIONS BY ISRAEL VARGAS

Editor's note: This piece discusses suicide and mental health problems among wildland fire dispatchers.

LIGHTNING STRIKES in a dry forest and starts a wildfire. It's a hot, windy day, and the embers quickly spread. Smoke rises, and it's detected, sometimes by satellites, lookouts or people who call 911. Reports bombard an interagency dispatch center: There's a new start, and it needs firefighting resources, fast.

The wildland fire dispatchers who respond are a critical link in the fast-moving series of decisions needed to begin battling a blaze. When a fire sparks, they're the ones responsible for figuring out who's nearby to fight it, and sending resources where they need to be as quickly as possible. "A good dispatcher is make-or-break if you want to keep a small fire small," said Rachel Granberg, a wildland firefighter in Washington. (Granberg asked to keep her employer private because she could lose her job for identifying it in the media.)

When a new blaze needs air tankers and helicopters dropping retardant and water, aircraft-certified dispatchers coordinate what's flying where, so the aircraft don't collide. If firefighters get hurt, dispatchers send medical help to often-remote scenes. Once a fire is underway, dispatchers relay crucial information to and from the fire line, including wind, humidity and temperature forecasts that can determine fire behavior and influence planning and safety on the ground.

But the job is stressful, and sometimes traumatic, amid today's larger fires, longer fire seasons and too few colleagues. The U.S. Forest Service conducted a survey of dispatchers in Oregon and Washington — Region 6 in agency lingo — in the fall of 2022. The survey found that "dispatch is experiencing problems that compromise their own health and safety" as well as "the health and safety of other firefighters," according to internal presentation materials obtained by *High Country News* this spring. When dispatching resources are spread thin, it can impair everything from implementing and monitoring prescribed burns to suppressing active wildfires.

"You have to understand the problems before you can try and address solutions," said Matt Holmstrom, a regional risk management officer for the Forest Service who oversaw the survey. Holmstrom, a hotshot for nearly two decades, is the agency employee tasked with trying to reduce accidents and injuries in the Pacific Northwest and Alaska.

The survey included lengthy interviews with 104 of the 189 dispatchers at the 14 largest call centers in Region 6. Call centers are often staffed by dispatchers from different agencies, so the

survey included dispatchers from federal agencies, including the Bureau of Land Management and Bureau of Indian Affairs as well as the Forest Service, along with state agencies such as the Oregon Department of Forestry and Washington Department of Natural Resources.

HCN filed a Freedom of Information Act request for the presentation of the survey results and interview transcripts, but the Forest Service denied it, saying releasing them would compromise its decision-making ability and prematurely announce proposed policies. (*HCN* appealed the denial and is awaiting a response.) The agency did, however, share emails about the survey's planning, including one from Alex Robertson, the director of fire, fuels and aviation for the Forest Service in the Pacific Northwest and Alaska, to regional leaders from the Forest Service and other agencies. Robertson wrote, "We have long recognized that our margins for error are so slim now due to vacancies and increases in workload."

While some centers in the West are adequately staffed, the survey identified recruitment, retention and vacancies as major problems in Region 6. Over half of respondents said they had little to no work/life balance; many felt forced to take on overtime work, struggled to take time off and did not receive adequate breaks. A BLM dispatcher with more than 10 years of experience, who asked to remain anonymous for fear of retribution by his employer, said that experienced dispatchers are overworked and often quit, leading to heavy burdens on those who remain. "It's a vicious cycle," he said. Shifts can be up to 16 hours long or more — that dispatcher's personal record is over 24 — during fire season. "I don't know how long that pace is sustainable," Holmstrom said.

A source familiar with the survey said that it identified concrete problems stemming from staffing shortages. In one case, a dispatcher with known gallbladder issues didn't have enough time to step away to use the restroom and later needed emergency surgery. The survey also found at least one dispatch center on the verge of collapse, with dispatchers threatening to quit because they were short-staffed, overworked and overlooked.

The dispatcher shortage also impacted wildfire camps this summer. At times, managers send dispatchers out to fires to help with communications. During one large fire that threatened homes in western Oregon in August, however, there were no extra dispatchers to send into the field. A medical unit leader, who asked not to be named because they were not authorized to speak with the media, was pulled away from their duties and sent into the communications tent to operate radios instead.

THE MAJORITY OF SURVEY respondents also noted the mental health challenges prevalent among dispatchers, including burnout, substance abuse and suicide. A Forest Service dispatcher in California,

who asked to remain anonymous so that she could speak freely, said dispatchers aren't always included when mental health resources are offered to firefighters after traumatic incidents. Those times include instances when firefighters have died during her shift. "Dispatch is a lot of times overlooked," she said. Overhearing a firefighter fatality and a firefighter suicide are things that, she said, "I'll never forget."

Outside research confirms wildland fire dispatchers' struggles nationwide. Robin Verble, a professor and director of the Missouri University of Science and Technology Ozark Research Field Station, led a recent research report on dispatcher well-being, in collaboration with several others, including Granberg, the Washington firefighter. Of the 510 dispatchers who responded, 10% were considered at high risk for suicide — compared to .3% of the general population. "It's a shocking and very sad statistic that needs more examination," Verble wrote to *HCN* in an email. Seventy-three percent of the surveyed dispatchers had mild to severe depression, compared to 18.5% of the general population. Signs of post-traumatic stress disorder — 33% — were almost five times higher than for the general population.

Dispatchers work in a high-stress environment, Verble said in an interview, and "they're experiencing really high rates of emotional and mental strain as a result." One anonymous respondent told Verble's team, "Many of us are total train wrecks." Another said, "You listen to enough people dead or dying, it will never go away." Verble's study also found that dispatchers struggle with physical health problems — including eyestrain, headaches and backaches — from long, stressful shifts in confined quarters that often lack ergonomically appropriate equipment.

Dispatchers want adequately staffed centers so they don't have to repeatedly work 16 or more hours a day, missing family dinners in the short term and risking burnout in the long run. They say better pay would help recruit and retain more dispatchers. An average Forest Service dispatcher's base pay is roughly $15 to $20 an hour. "It's going to continue to be hard to recruit with the perception that we pay less than McDonalds," a slide from the Region 6 presentation reads.

The 2021 Infrastructure Law provided temporary pay raises for Forest Service wildland firefighters, but it only included dispatchers who have direct firefighting experience. And even those increases were set to expire at the end of September. According to the advocacy group Grassroots Wildland Firefighters, the recently introduced federal Wildland Firefighter Paycheck Protection Act would effectively result in dispatch center managers getting a pay cut, because it would preserve only a portion of the temporary raises. Other benefits are up in the air: Whether dispatchers are included in a new wildland fire job series that the Interior and Agriculture departments are developing will determine whether they have access to retirement benefits.

Being left out of conversations about pay exemplifies a larger problem — a lack of recognition and respect. Dispatchers said they feel undervalued. As one anonymous dispatcher told Verble's team, "We are dealing with just as much shit, if not more, than the folks on the line. Take care of us. That is all we ask."

73% of the surveyed dispatchers had mild to severe depression, compared to 18.5% of the general population.

Money alone can't fix cultural issues, Robertson acknowledged in one of the released emails. "We know this is not a funding issues (sic)," he wrote. "It is much deeper than that and will take years to build back our dispatch organizations."

Regional and national Forest Service leaders have been briefed on the survey results, Holmstrom said, and some small changes are already underway. Some dispatchers have received additional leadership training to help their teams during stressful situations, and more centers are now sharing training resources to bring dispatchers up to speed more quickly when they fill short-term roles.

But that may not be enough. The agency itself admits, in the survey results presentation, that the creation of stress first aid materials tailored for dispatchers — meant to help them understand and recover from stress — and a commitment to following existing stress management protocols after traumatic events are urgently needed. And over 60% of the dispatchers Verble surveyed said they'd consider quitting if they aren't included in a permanent pay bump or access to retirement benefits. The Forest Service dispatcher in California feels the same; despite receiving a recent raise, she feels the weight of her challenging job. "I kind of have a love-hate (relationship with it)," she said. "I love being a dispatcher, but there's also times when it's stressful. It's like, 'What am I doing? Is this worth it?'"

Editor's note: Are you a wildland fire dispatcher or wildland firefighter who wants to share your experience with High Country News*? Reporter Kylie Mohr is reachable for secure communication via the Signal app at 509-953-7883.*

REPORTAGE

Where the wild bees are

Before you can protect native bumblebees, you have to be able to find them.

BY SARAH TRENT
PHOTOS BY SAGE BROWN

IN A SUNNY MEADOW just beyond Portland, Oregon's western sprawl, mounds of white lupine buzzed in the late June heat. From bloom to bloom, bumblebees moved up and around the stalks of fading petals. A yellow-faced bumblebee — *Bombus vosnesenskii*, or "*voz*" for short — hugged the edges of one slipper-shaped bloom and bumped pollen dust onto its belly. On a nearby stalk, a giant *B. nevadensis* did the same. The B-52 bomber of bumbles — its yellow and black body half the size of a human thumb — rose and dropped on the breeze.

Kevin Schafer swung at the bomber, tenting his insect net over the lupine. On his bucket hat and vest pocket, two enamel bumblebee pins glinted in the sun. In his net, two real bees crawled upward. He looked closely at the hint of a rust-colored patch on one, and said, excited, "I think it's a brown-belted!" It would be the only *Bombus griseocollis* he'd caught all morning; they're not common in this area. He nudged each bee and a lupine bloom into a plastic tube, and dropped them, buzzing, into his pocket. "Let's ask the maestro."

For six summers, Schafer — a retired photographer — and hundreds of volunteers like him have wandered through meadows and mountains across the Northwest, documenting wild bumblebees and the plants they're foraging for the *Pacific Northwest Bumble Bee Atlas*. A quarter of North America's almost 50 bumblebee species are at risk of extinction due to human-caused habitat loss and climate change, and most of them live in the Northwest. Unlike honeybees, they buzz when they pollinate plants — a pollen-releasing method that some plants require, making it essential for whole ecosystems to function. Beyond that, scientists know very little about them.

"The data that we had prior to this project, it's basically just a bunch of collectors that have gone out and collected insects, killed them, and put them on pins," said Rich Hatfield, Schafer's bee "maestro" and the biologist who started the Atlas program at the nonprofit Xerces Society for Invertebrate Conservation. Dead specimens reveal few of the details that matter for conservation: What do they eat? Where do queens spend the winter? Why is this meadow full of *voz* and *nevadensis*, and yet the once-ubiquitous Western bumblebee — *Bombus*

From left: Volunteer Kevin Schafer. Schafer nets a bumblebee for the *Pacific Northwest Bumble Bee Atlas*. Rich Hatfield, the biologist who started the Atlas program, and Schafer in the field. Bumblebees are temporarily dazed for cataloguing but soon recover and fly away.

occidentalis — hasn't been seen here in two decades? There aren't enough scientists to capture the data, Hatfield said. Volunteers like Schafer help fill the gaps.

This year, the Atlas program hit a milestone: Washington's Department of Fish and Wildlife used its data to adopt a conservation strategy covering eight at-risk species in the state, including *occidentalis*, which many expect the federal government will add to the U.S. endangered species list next year. Washington is one of the few states that can prioritize wild bees: Unlike most, the state's laws allow officials to manage insects as wildlife, not just as pests.

"We collectively saw (those species) as a shared priority and wanted to identify things we could do," said Taylor Cotten, who manages conservation assessments for the state wildlife department and partnered with the Xerces Society and federal agencies to develop the strategy. The resulting document outlines regions of high priority for conservation — a horseshoe around the Columbia Plateau; the swath of lowlands from Portland to Puget Sound. It also outlines protective measures, like timing mowing and prescribed burns around nesting periods and planting the specific flowers that bees need.

Julie Combs, a state wildlife employee whose job is to prevent pollinator extinction, called the new conservation plan foundational. "I can't emphasize enough how many questions I get about: OK, now we know where the bees are, we know they're in decline, but what do we do?"

This year, when state officials sit down to hash out plans for burning and planting vegetation at any of their conservation sites, she'll come armed with more than 200 pages of best practices to help bees.

At the edge of the meadow, Hatfield unzipped a cooler half full of ice. He and Schafer pulled tubes from every bulging pocket, then pushed each into the ice to daze the bees, waiting until they were still enough to handle. Then, one by one, Hatfield gently prodded and photographed each motionless bee, examining its fur pattern and jaw length to confirm its ID while Schafer scratched tally marks and plant names onto a worksheet.

Voz on spirea, *nevadensis* on lupine, *voz* on wild rose: Between the two men, they'd netted 31 bees, including, Hatfield confirmed, Schafer's single *griseocollis*. Carefully placed on the table beside petal fragments and other dazed bees, the *griseocollis* slowly shivered back to life. For Hatfield, this program is about more than just the data. "We're building a community of people that now see these animals in a totally different way," he said: As beautiful, important, fragile.

The bee bobbed its rust-belted abdomen up and down, up and down, then stretched its wings, rubbed its pollen-laden legs against its body, and flew away.

REPORTAGE

River of bass

As Lake Powell shrinks, smallmouth bass are threatening the Grand Canyon's native fishes.

BY BEN GOLDFARB

ON JULY 1, 2022, a National Park Service biologist named Jeff Arnold was hauling nets through a slough off the Colorado River, several miles downstream from Glen Canyon Dam, when he captured three greenish fish lined with vertical black stripes. He texted photos of his catch to colleagues, who confirmed his fears: The fish were smallmouth bass, voracious predators that have invaded waters around the West. Worse, they were juveniles. Smallmouth weren't just living below the dam — they'd likely begun to breed.

It was a grim discovery. Smallmouth bass, whose native range encompasses rivers and lakes in much of the Eastern United States and Great Lakes, have long plagued the Colorado River. State agencies and anglers probably began stocking them in the watershed in the mid-1900s, and they've since conquered much of the basin, including Lake Powell, the reservoir that sloshes above Glen Canyon Dam. Downriver from the dam, however, lies the Grand Canyon, whose sandstone depths have historically provided a bass-free haven for native fish — most of all, the humpback chub, a federally threatened species endowed with an odd dorsal bulge. Now, biologists realized, neither the canyon nor its chub were safe.

Scientists have long dreaded this development. As Lake Powell has shrunk over the past two decades, drained by overallocation and chronic drought, its diminishment has created prime conditions for bass to infiltrate the Grand Canyon. But Brian Healy, a postdoctoral researcher at the U.S. Geological Survey and Grand Canyon National Park's former fish biologist, said that even though he and his colleagues expected the species to eventually become a problem, "we didn't realize it would be an issue so quickly."

Preventing a bass takeover won't be simple, biologically or politically. The Colorado's users expect it to simultaneously serve as a pipeline for water conveyance, a source of cheap electrons, a recreational playground, and, not least, suitable habitat for native fish. For decades, the river's human managers have uneasily balanced these often contradictory purposes — and now they must also work to exclude smallmouth bass, an immense challenge that may well compete with the river's many other functions. "The best way to think about this is that everything in the Colorado River is connected to everything else," said Jack Schmidt, a watershed scientist and emeritus professor at Utah State University's Center for Colorado River Studies. "Everything has a ramification."

FORTY MILLION PEOPLE rely on the Colorado River's largesse, from Wyoming ranchers to the residents of sprawling Arizona subdivisions to the lettuce farmers in California's Imperial Valley. Less visibly, the river is also a lifeline for 14 native species of fish. They are rarely seen by humans — the river they inhabit is as turbid as coffee and they're rarely fished for sport — yet they require a healthy Colorado as much as any Angeleno or Tucsonan.

Today, however, four of those fish — the humpback chub, the Colorado pikeminnow, the razorback sucker and the bonytail — are federally listed as threatened or endangered. Lake Powell commandeered the Colorado's payloads of silt and stymied natural floods, erasing channels and backwaters where chubs and suckers once spawned and reared. And smallmouth bass and other invasive species devastated native fish in tributaries like the Yampa River. ("Smallmouth" is a misnomer: Bass have maws so cavernous they can gulp down prey more than half their own size.) Bass arrived in Lake Powell in 1982, courtesy of a hatchery manager who, on a lark, dumped 500 spare smallmouth into the reservoir. The bass, he crowed decades later, "performed magnificently," adding, "Anglers have caught millions of smallmouth bass over the past 30 years."

Flannelmouth sucker and humpback chub in a small Grand Canyon tributary (*top*). A smallmouth bass in the Verde River, a tributary to the Colorado River *(facing).*
David Herasimtschuk/ Freshwaters Illustrated

Through it all, the Grand Canyon remained a bass-less sanctuary — thanks, paradoxically, to Glen Canyon Dam. Although smallmouth teemed in Lake Powell, they stayed in the reservoir's warm, sunlit upper strata, well above Glen Canyon Dam's penstocks, the massive tubes that convey water through its hydropower turbines and thence downriver. Bass never reached the Grand Canyon because they never swam deep enough to pass through the dam.

As Lake Powell withered, however, so did the Grand Canyon's defenses. By the spring of 2022, two decades of climate change-fueled drought had lowered the lake's surface by more than 150 feet, drawing its tepid, bass-filled top layer ever closer to the penstocks. At the same time, the warmer water flowing through the dam and downstream made the Grand Canyon more hospitable to bass. "The temperature was ideal for them," said Charles Yackulic, a research statistician at the U.S. Geological Survey.

Last summer, after bass swam through Glen Canyon Dam's penstocks, slipped past its whirling turbines, and apparently reproduced, managers hastened to control the incipient invasion, netting off the slough where Arnold discovered the juveniles as though it were a crime scene. The Park Service also doused the backwater with a fish-killing poison. When biologists electroshocked the river that fall and the following spring, though, they found hundreds more juveniles. The slough wasn't an isolated beachhead; it was merely a battleground

in a broader invasion.

If there is a saving grace, it is that the bass remain concentrated above the cold, clear stretch of river known as Lees Ferry. Humpback chub, by contrast, have their stronghold deep in the Grand Canyon, some 75 miles downriver from the dam, where bass haven't shown up — at least not yet. "The worry is that you got them in Lees Ferry and they're reproducing," Yackulic said. "And then suddenly, you've just got all these babies dispersing downstream."

THE COLORADO RIVER is at once in a state of crisis and rebirth. The decline of Lake Powell has revealed Glen Canyon, the gorgeous red-rock labyrinth that the reservoir drowned in the 1960s. Ironically, the forces behind this restoration are also imperiling native fish. "Last year was the closest we've had to a natural thermal regime in more than 50 years," Yackulic noted. But for the humpback chub, it was a catastrophe.

River managers thus face a conundrum: How do you preserve native species in a broken ecosystem? In February 2023, the Bureau of Reclamation, the federal agency that controls Glen Canyon Dam, released a draft environmental assessment evaluating four options for manipulating river flows to deter smallmouth bass. The plans are variations on a theme: When the Colorado gets dangerously warm, the agency releases cold water to lower its temperature below the threshold where bass spawn. Two options — favored by conservation groups like the Center for Biological Diversity — include high-intensity "flow spikes" designed to freeze bass out of sloughs and backwaters. "We need flows that are cold enough for long enough that it prevents smallmouth bass from spawning," said Taylor McKinnon, the center's Southwest director. "Not *disrupt* reproduction — *prevent* reproduction."

Managing the Colorado River to thwart bass, however, could conflict with Reclamation's other goals. For one thing, all four options would release water through Glen Canyon Dam's "bypass tubes," outlets closer to Lake Powell's frigid bottom. But the bypass tubes, as their name suggests, don't pump water through the dam's hydroelectric turbines — which, as the agency acknowledges, could lead to "a reduction in the revenue generated from power proceeds." That possibility doesn't thrill the Colorado River Energy Distributors Association, which represents electric utilities and co-ops and has warned of "measurable financial impacts" to ratepayers.

Some environmentalists may find themselves at odds with bass deterrence, too. For years, the Glen Canyon Institute has called on river managers to "Fill Mead First," letting Lake Powell shrivel while sending Colorado's water downstream to Lake Mead, the river's other massive reservoir. As scientists pointed out in a 2020 paper, however, this strategy could "lead to warmer water temperatures throughout Grand Canyon" and render invasive fish control "especially problematic." Indeed, if your sole goal were to protect humpback chub in the immediate term, Lake Powell — whose deep, chilly waters staved off bass for 40 years — might be the first reservoir you'd fill. "The decisions of where you store water in the system are going to determine the fate of native fish," said Utah State's Schmidt.

Although last winter's strong snowpack should ultimately raise Lake Powell's surface by around 70 feet, the invasion continues. Scientists have so far pulled 667 bass from the slough this year, along with thousands of carp and sunfish, two other warm-water nonnatives. The Park Service poisoned the slough again in late August, but that fix is clearly neither complete nor lasting. In February 2023, a group of researchers convened to study the bass problem by the Bureau of Reclamation and U.S. Geological Survey recommended outfitting Glen Canyon Dam with "fish exclusionary devices" — basically fancy nets — to keep bass from swimming through the penstocks. That's hardly a new idea — biologists first recommended that the Bureau "pursue means" of preventing invasive fish from passing through the dam in 2016 — but, at an August meeting of federal managers and researchers, one Reclamation official claimed that an effective screen design is still at least five years away.

Ultimately, staving off the bass crisis may call for even more ambitious fixes. In one paper, Schmidt and his colleagues raised the idea of drilling colossal diversion tunnels that would funnel water and sediment around Glen Canyon Dam and thus restore the silty, flood-prone conditions that favor native fish. Re-engineering the Colorado would be neither simple nor cheap, but, in recent comments to the Bureau, McKinnon and other conservationists claimed that the "climate-inevitable obsolescence" of Glen Canyon Dam calls for drastic measures. If bass take over an ever-warmer river, McKinnon said, "it's game over."

Biologists survey for larval fish in the Grand Canyon. **David Herasimtschuk/ Freshwaters Illustrated**

POEM

Statement of Purpose

By Erin Marie Lynch

I speak one language. I want another
English degree. Since childhood I haven't
settled anywhere due to poetry, in pursuit
of unread books unpacked again, stacked in
corners. Furniture left on a curb in the rain.
When Grandpa was young, he says, his father
sold their regalia so Esther could attend
secretary school. They lived in South Dakota.
Dakota, we call ourselves. *South*, positioning
one state below another, as I position myself
lifting a fringed shirt over my head, or in
a life typing what other people say. Next
paragraph.

Research interests, poetic lineage.
In the trunk of my car, a mildewed coat,
powder-green, for I live in a state with
damp air, where events begin with land
acknowledgements. That air interests me,
wetter than gray, and the austere silence
after thanking Indians broadly, as if none
were present. Fleeing a famine, he says,
they found here a one-room shack. And I,
seeking poetry, have found myself under
cheap bulbs, eschewing abstract words,
like *poetry*, for concrete ones, like *poem*.

Now a detail to pull the reader in,
teen me walking home in a red cardigan
stitched with the school crest, *Soli Deo
Gloria* on a banner, sleeves unraveling.
Life felt discretely mine and art, like love,
something perfect to be made in the future.
It interests me where things end up. Esther
was a typist for the Agency. Books become
Texts; Family becomes Provenance. I find
online, glass-cased, *Yankton Dakota Chief's
Outer Dress, Provenance Unknown*, draped on
a suggestion of human. I have, concretely.
My face in the mirror, settled light on itself.
Another poem opening with a first-person
declaration. I speak one language. I want
another English degree. In my car, that coat
I've left for months—how could I forget
to step into his house, Dakota land,
a piece the size of a placard. He rises from
a recliner—*Oh, it's going along*—squeezes my
hands, asks where I'm moving, never why.
To have lived through so many omissions.
To be a sleeve, no arm inside. Yet I've
worked hard for this 4.0 in concrete details,
e.g. he stands in his suspenders and pilled
polyester gray pants, eyes spotted with dark
pools I peer into and through to . . .
Did you like that? Did I please you? Do my
concerns reveal a clear thematic line? And
what do you think of my future? Is it bright?
Brain-bright like whip-smart or white-bright
proliferating sun, ray here, ray there, jagged
glare outside the glass case inside of which
I'm squinting, spores coating the surface of
my tongue and in the hollow of my mouth
I finally

WEB EXTRA Listen to Erin Marie Lynch recite her poem at **hcn.org/statement-of-purpose**

REPORTAGE

The case of the missing water

Researchers in the Colorado high country are trying to unravel the mystery.

STORY AND PHOTOS
BY BELLA BIONDINI

HIGH WINDS TORE AT GOTHIC MOUNTAIN as the sleeping giant watched over the cabins nestled in Gothic, Colorado, a remote outpost accessible only by skis during the valley's harsh alpine winters. The plumes of snow that lifted from the peak briefly appeared to form a cloud and then disappeared.

To many, the snow that seemed to vanish into thin air would go unnoticed. But in a region where water availability has slowly begun to diminish, every snowflake counts. Each winter, an unknown percentage of the Rocky Mountain West's snowpack disappears into the atmosphere, as was happening on Gothic Mountain, just outside the ski resort town of Crested Butte.

In the East River watershed, located at the highest reaches of the Colorado River Basin, a group of researchers at Gothic's Rocky Mountain Biological Laboratory (RMBL) were trying to solve the mystery by focusing on a process called sublimation. Snow in the high country sometimes skips the liquid phase entirely, turning straight from a solid into a vapor. The phenomenon is responsible for anywhere between 10% to 90% of snow loss. This margin of error is a major source of uncertainty for the water managers trying to predict how much water will enter river systems once the snow begins to melt.

Although scientists can measure how much snow falls onto the ground and how quickly it melts, in the field they have no precise way to calculate how much is lost to the atmosphere, said Jessica Lundquist, a researcher focused on spatial patterns of snow and weather in the mountains. With support from the National Science Foundation, Lundquist led the Sublimation of Snow project in Gothic over the 2022-'23 winter season, seeking to understand exactly how much snow goes missing and what environmental conditions drive that disappearance.

"It's one of those nasty, wicked problems that no one wants to touch," Lundquist said. "You can't see it, and very few instruments can measure it. And then people are asking,

what's going to happen with climate change? Are we going to have less water for the rivers? Is more of it going into the atmosphere or not? And we just don't know."

The snow that melts off Gothic will eventually refill streams and rivers that flow into the Colorado River. When runoff is lower than expected, it stresses a system already strained because of persistent drought, the changing climate and a growing demand. In 2021, for example, snowpack levels near the region's headwaters weren't too far below the historical average — not bad for a winter in the West these days. But the snowmelt that filled the Colorado River's tributaries was only 30% of average.

"You measure the snowpack and assume that the snow is just going to melt and show up in the stream," said Julie Vano, the research director at the Aspen Global Change Institute and partner on the project. "It just wasn't there. Where did the water go?" Vano's work with the project is aimed at helping water managers decode the science behind these processes.

As the West continues to dry up, water managers are increasingly pressed to accurately predict how much of the treasured resource will enter the system each spring. One of the greatest challenges federal water managers face — including officials at the Bureau of Reclamation, the gatekeeper of Lake Powell and Lake Mead — is deciding how much water to release from reservoirs to satisfy the needs of downstream users.

While transpiration and soil moisture levels may be some of the other culprits responsible for water loss, sublimation is one of the largest unknowns, said Ian Billick, the executive director of RMBL.

"We need to close that uncertainty in the water budget," Billick said.

The East River's tributaries eventually feed into the Colorado River, which supplies water to nearly 40 million people in seven Western states as well as Mexico. The East River watershed has become a place where nearly a hundred years of biological observations collide, many of these studies focused on understanding the life cycle of the water.

Lundquist's project is one of the latest. Due to the complexity of the intersecting processes that drive sublimation, the team set up more than 100 instruments in an alpine meadow just south of Gothic known as Kettle Ponds.

"No one's ever done it right before," Lundquist said. "And so we are trying our very best to measure absolutely everything."

Throughout the winter, the menagerie of equipment quietly recorded data every second of the day — measurements that would give the team a snapshot of the snow's history. A device called a sonic anemometer measured wind speed, while others recorded the temperature and humidity at various altitudes. Instruments known as snow pillows measured moisture content, and a laser imaging system called "LiDAR" created a detailed map of the snow's surface.

From January to March, three of the coldest months of the year, Daniel Hogan and Eli Schwat, graduate students who work under Lundquist at the University of Washington, skied from their snow-covered cabin in Gothic to Kettle Ponds to monitor the ever-changing snowpack.

The two men crunched against the ground as they made their near-daily trek out to the site, sleds full of gear in tow. Their skis were fitted with skins, a fabric that sticks to skis so they can better grip the snow. It was a chilly day in March, but the searing reflection of the snow made it seem warmer than it was. When Hogan and Schwat arrived, they dug a pit into the snow's surface, right outside the canopy of humming instrumentation.

The pair carefully recorded the temperature and density of the snow inside. A magnifying glass revealed the structure of individual snowflakes, some of them from recent storms and others, found deeper in the pit, from weeks or even months before. All the factors they measure can contribute to how vulnerable the snowpack is to sublimation.

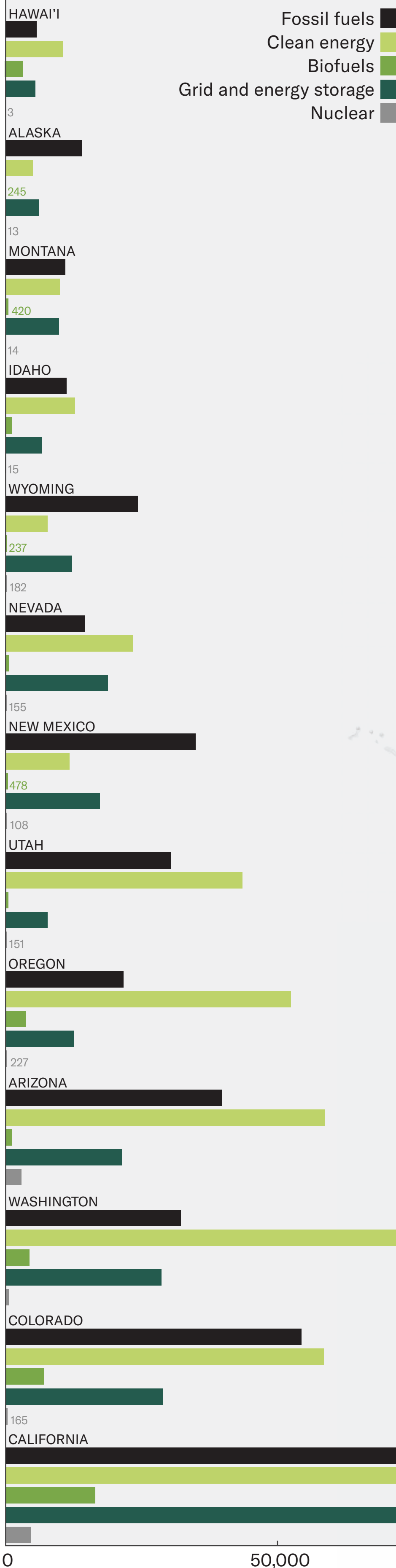
This would be just one of many pits dug as snow continued to blanket the valley. If all of the measurements the team takes over a winter are like a book, a snow pit is just a single page, Hogan said.

"Together, that gives you the whole winter story," he said, standing inside one of the pits he was studying. Just the top of his head stuck out of the snowpit as he examined its layers.

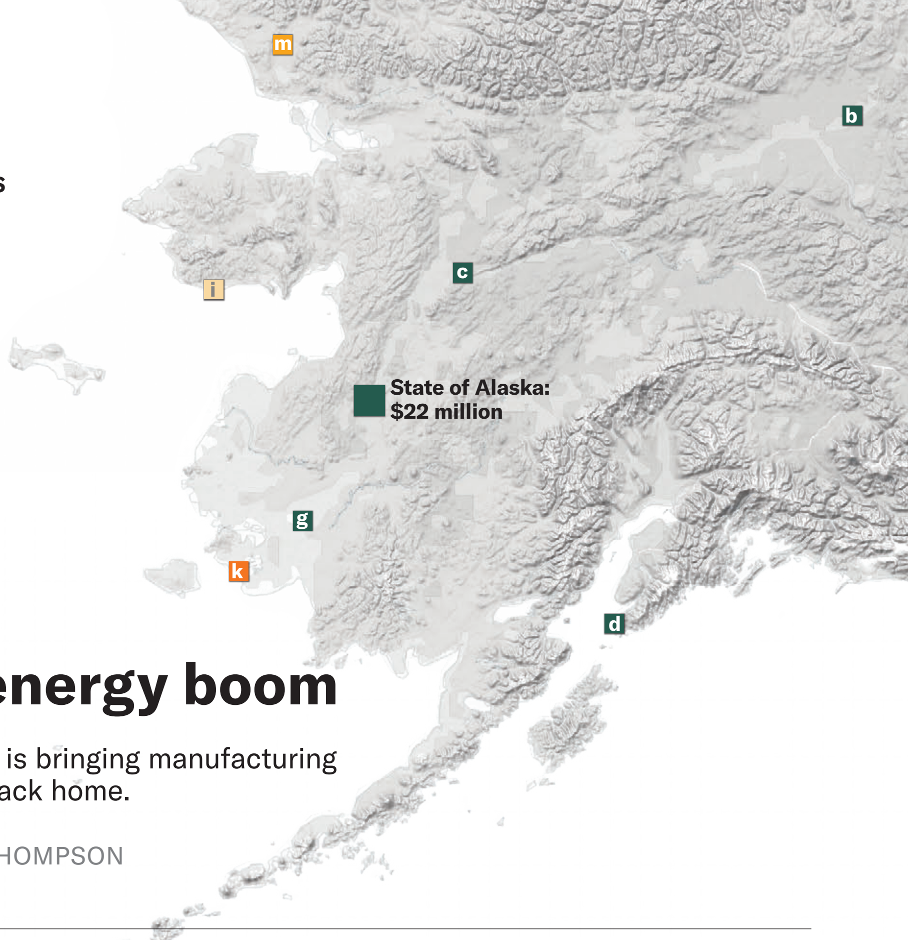
Lundquist's team began analyzing the data they collected long before the snow began to melt.

They hope it will one day give water managers a better understanding of how much sublimation eats into the region's water budget — helping them make more accurate predictions for what is likely to be an even hotter, and drier, future.

The wind tears snow from the top of Gothic Mountain near Gothic's Rocky Mountain Biological Laboratory outside of Crested Butte, Colorado. Wind is one of many factors driving snow sublimation (*left*). Daniel Hogan and Eli Schwat, graduate students who work under Jessica Lundquist at the University of Washington, tow a sled of gear out to the Kettle Ponds study site this March (*below*).



FACTS & FIGURES



Clean energy boom

New legislation is bringing manufacturing — and jobs — back home.

BY JONATHAN THOMPSON

IN EARLY AUGUST, Singapore-based Maxeon Solar Technologies announced plans to build a $1 billion, 1,800-employee silicon solar cell and module factory in Albuquerque, New Mexico. The company wasn't enticed by the cheap labor or even the fine climate, but by the generous tax credits offered by the Inflation Reduction Act, which President Biden signed into law almost exactly a year ago. The massive Albuquerque factory is just one of dozens of new clean energy projects that have sprouted nationwide, thanks in part to recent legislation.

When, after months of wrangling, Congress finally passed the compromise law, it wasn't generally seen as an inflation-reducing tool, despite its name. Rather, advocates hailed it as the first meaningful climate legislation to make it through a chronically dysfunctional Congress, even though it neither mandated emissions cuts nor established new regulations. Instead, supporters argued that encouraging clean technology development with some $369 billion in spending and incentives would displace fossil fuels and cut pollution. It's a carrot as opposed to a stick approach.

Whether emissions reductions materialize remains to be seen. But one thing is clear: The Inflation Reduction Act, in tandem with the Infrastructure and Jobs Act and the CHIPS and Science Act, is sparking a clean energy manufacturing and jobs renaissance in the West and nationwide, something previous administrations had tried — and failed — to achieve by wiping out "regulatory burdens" and cutting taxes on corporations.

Republican lawmakers weren't exactly keen on any of the bills: Colorado Rep. Lauren Boebert called the Infrastructure Act a "socialist wish list" and said the Inflation Reduction Act was "insane" and would sacrifice "American families at the altar of climate change." Meanwhile, one of the biggest projects inspired by the legislation is in Boebert's congressional district: CS Wind's expansion of its Pueblo, Colorado, turbine manufacturing plant, soon to be the world's largest.

SOURCES: U.S. Department of Energy, U.S. Interior Department, U.S. Department of Agriculture, Sabin Center for Climate Change Law at Columbia Law School, Environmental Defense Fund, Environmental Protection Agency, Climate Power, E2, Science, Bipartisan Policy Center, Jack Conness, Maxeon. **Infographic by Luna Anna Archey / HCN**

THE FEDS GO ALL-IN ON CLEAN ENERGY

The following federal grants, loans and investments for grid resilience and clean energy projects have been awarded during the last two years, with many of the funds coming directly from the Infrastructure Act or the Inflation Reduction Act. This is just a sampling of the funded projects and programs.

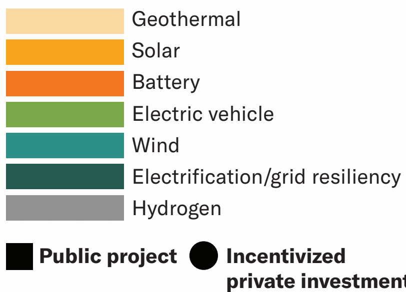
Public projects:

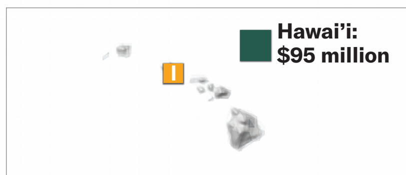
- **a.** Blackfeet Tribe of the Blackfeet Indian Reservation: $458,123
- **b.** Chalkyitsik Village (Gwich'in): $112,439
- **c.** Galena Village (Louden Tribal Council), Alaska: $112,894
- **d.** Native Village of Port Graham, Alaska: $181,493
- **e.** Summit Lake Paiute Tribe, Nevada: $115,833
- **f.** Kayenta Chapter of the Navajo Nation, Arizona: $1.35 million
- **g.** Akiachak Native Community, Alaska: $123,220
- **h.** Dry Creek Rancheria Band of Pomo Indians, California: $626,236
- **i.** Kawerak Inc., Alaska: $1.7 million
- **j.** Karuk Tribe, California: $2 million
- **k.** Kipnuk Light Plant, Alaska: $855,978
- **l.** Kapalama Container Terminal Project, Hawai'i: $47.3 million
- **m.** Northwest Arctic Borough and Noatak, Alaska: $2 million
- **n.** Pala Band of Mission Indians, California: $3 million
- **o.** Quinault Indian Nation, Washington: $200,000
- **p.** San Pasqual Band of Mission Indians, California: $401,000
- **q.** Ute Mountain Ute Tribe, White Mesa, Utah: $432,661
- **r.** Port of Long Beach, California

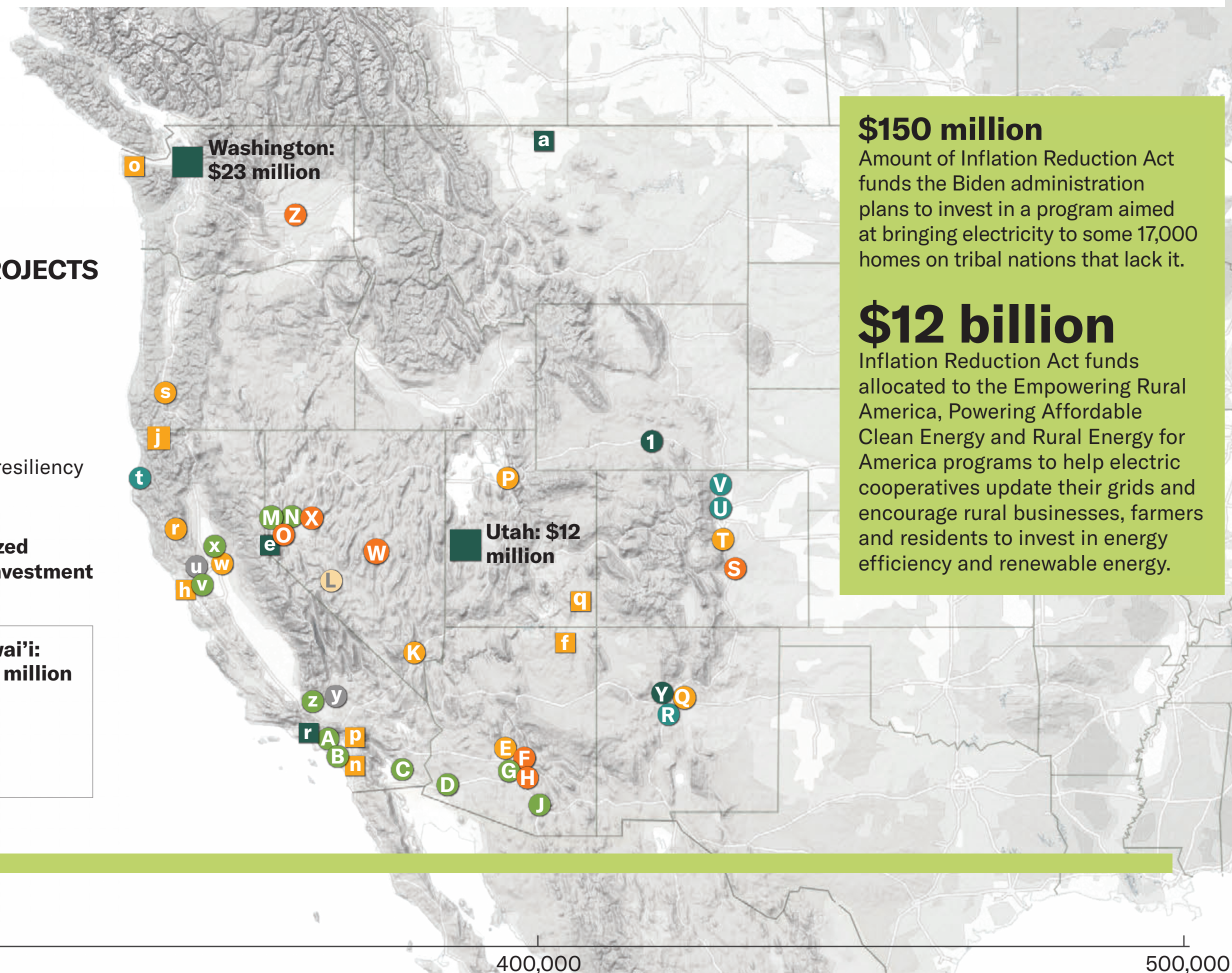
Incentivized private investments:

- **s.** SolRiver Capital, Oregon
- **t.** Crowley Wind Services, California
- **u.** Raven SR, California
- **v.** Evercharge, California
- **w.** SPI Energy, California
- **x.** Bosch, California
- **y.** Heliogen, California
- **z.** Cenntro Electric Group, California
- **A.** Harbinger Motors, California
- **B.** StoreDot, California
- **C.** Stellantis, California
- **D.** EVelution Energy, Arizona
- **E.** JA Solar, Arizona
- **F.** LG Energy Solution, Arizona
- **G.** Ecobat, Arizona
- **H.** Cirba Solutions, Arizona
- **J.** Sion Power, Arizona
- **K.** Unimacts, Nevada
- **L.** Chevron, Nevada
- **M.** Tesla, Nevada
- **N, O.** Redwood Materials, Nevada
- **P.** Revkor, H2Gemini, Utah
- **Q.** Maxeon, New Mexico
- **R.** Arcosa, New Mexico
- **S.** Form Energy, Colorado
- **T.** Meyer Burger, Colorado
- **U, V.** Vestas, Colorado
- **W.** American Battery Technology Company, Nevada
- **X.** Lilac Solutions, Nevada
- **Y.** ABB, New Mexico
- **Z.** Sila Nanotechnologies, Washington
- **1.** TransWest Express transmission line, Wyoming

NEW CLEAN ENERGY PROJECTS







$150 million
Amount of Inflation Reduction Act funds the Biden administration plans to invest in a program aimed at bringing electricity to some 17,000 homes on tribal nations that lack it.

$12 billion
Inflation Reduction Act funds allocated to the Empowering Rural America, Powering Affordable Clean Energy and Rural Energy for America programs to help electric cooperatives update their grids and encourage rural businesses, farmers and residents to invest in energy efficiency and renewable energy.

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George Sanker

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Thank you, readers, for making our work possible!

— The staff and board of *High Country News*

The Colorado River and Lake Havasu Delta, with Lake Havasu City in the background, from *Unfair Share*, July 2023.
Russel Albert Daniels / HCN

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"I trust everything I read in HCN *to be factual and appreciate your understanding and support of tribal nations."*

–Janette Rosman, Charlo, Montana

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We'd love to hear from you! If you'd like to tell us why you support *HCN*, please drop us a line. If you have a favorite story or a suggestion for our fundraising team, feel free to reach out: **fundraising@hcn.org**

"I want to thank everyone at HCN *for always being there for us with journalism that is intelligent, animated, encouraging and good-natured as we fight for this dear, old planet and its denizens."*

–Erin Moore, Bellingham, Washington

DEAR FRIENDS

Thanks for reading

I've enjoyed reading along with you this summer, but by the time this issue of *High Country News* hits your mailbox, our summer reading challenge — along with the season itself — will have officially come to a close.

Readers have already submitted nearly 150 different titles for this year's nine reading prompts — well, eight prompts, if you don't count Step 7, which calls for a historical marker. Hundreds of folks watched our live reading events with authors. And a few of you even managed to traverse the entire summer reading path start to finish — congratulations!

The most popular prompt was Step 9: "Read a book that challenges your assumptions about Western history." Your selections were wonderfully varied: travel collections, fiction set in various Western locales, history and nonfiction about everything from chocolate, housing, time and microchips to disasters and climate and more! I was especially intrigued by the submissions that centered Indigenous narratives: *The Lost Journals of Sacajewea* by Debra Magpie Earling, *An Indigenous Peoples' History of the United States* by Roxanne Dunbar-Ortiz, *The Bear River Massacre: A Shoshone History* by Darren Parry, *Dispossessing the Wilderness: Indian Removal and the Making of the National Parks* by Mark David Spence, *Yellow Dirt: A Poisoned Land and the Betrayal of the Navajos* by Judy Pasternak and this summer's most popular pick: *Braiding Sweetgrass* by Robin Wall Kimmerer.

As for Step 7, which asked you to read a historical marker and send in your alternative version for bonus points — I'd consider it this summer's sleeper hit. Readers sent in well-researched reinterpretations from across the West, showing falsehoods, errors of omission, shocking language and even entirely misplaced markers! We also heard from folks involved with state efforts to update historical markers and readers who've pursued the topic on their own. Stephen Benz shared a chapter of his book, *Reading the Signs*, while Jonah Das edits a project, Illahee Rising, about neglected Indigenous historical sites. Bonus points all around!

I want to thank *HCN* editors **Melissa Chadburn**, **Paisley Rekdal** and **Michelle Nijhuis** for coming up with the excellent reading prompts, and staffers **Marissa Garcia**, **Michael Leveton**, **Emily Benson** and **Jennifer Sahn** for helping out behind the scenes or in front of the webcam. (You can still view this summer's author events online at **youtube.com/highcountrynews/streams**.) And thank you to everyone who submitted a book this year! Browse a collective summer of good reads at **reading.hcn.org**.

So what should we do next year? Let me know what you're looking forward to at **dearfriends@hcn.org**.

Your favorite books, ranked by total of submissions and votes:

Braiding Sweetgrass by Robin Wall Kimmerer
The Overstory by Richard Powers
Brave the Wild River by Melissa L. Sevigny
The Lost Journals of Sacajewea by Debra Magpie Earling
Zone One by Colson Whitehead

Michael Schrantz,
marketing communications manager

Marissa Garcia/HCN

Question of the month

What does the Endangered Species Act mean for the species you coexist with?

This landmark law turns 50 this year. Beyond marquee success stories like bald eagles and peregrine falcons, the Endangered Species Act and its predecessors have extended protections to thousands of species large and small, some of them charismatic and others less obviously photogenic. Have you encountered, or do you know about, any species in your area that have been impacted by the law? Let us know at **dearfriends@hcn.org**.

A list of listed species by state is available at **fws.gov/program/endangered-species/species**

Alone on the Range

The West's sheepherding industry relies on temporary visas and exposes workers to often brutal conditions.

By Teresa Cotsirilos
Illustrations by Zeke Peña

THE JOB WAS GUSTAVO'S IDEA, and the escape was his idea, too. "If he kills us, he kills us," he told his kid brother, Iván, one night after work in October 2019. They had spent the day in the ranch's corrals, selecting the best lambs for slaughter. Their boss, they said, carried a gun at all times.

"How are we going to get out of this?" Iván remembered thinking. He tried to come up with someone who could help them, then dismissed the idea. He and Gustavo were on their own.

Originally from Peru, the brothers had been recruited to work as sheepherders in the United States under a temporary work visa. For the past few years, they'd split their time between a ranch outside Cokeville, Wyoming — where they helped wrangle sheep for shearing and selected lambs for meat production — and the state's remote deserts

and mountains, where they grazed the sheep on the open range.

The hours were long and conditions were brutal, but they couldn't see how to just leave. Their employers, Jon and Vickie Child, took his passport, Gustavo said, and the brothers had limited cellphone access; he said they also lacked access to a car, or even a map. If Child flew into a rage, "we were afraid he'd kill us, throw us somewhere, and no one would find us," said Iván. "Our families would have no idea what happened." (Iván and Gustavo asked to use pseudonyms, citing fear of retaliation.)

The next evening after sunset, Iván made sure that the sheep were secure in their corral, then he and Gustavo started walking along the shoulder of the county road. Cokeville is an old pioneer town, best known for a hostage crisis in the 1980s, and Gustavo and Iván wanted to get as far away from it as possible. They thought the next town over, Kemmerer, was just a 30- or 40-minute walk away; it's actually closer to 15 hours.

"This was the only decision (we could make), and we accepted it," said Iván. "If he catches us, he catches us." Still, he said, "you get these ideas." *Maybe Child's set up cameras,* he thought. The highway was dark and getting colder. *Maybe he already knows we're gone.*

They weren't the only sheepherders who had tried to escape their employers. Another sheepherder, Simeón, caught a ride with a friend of a friend, while Gilmer ran to the highway and flagged down a car. Then he called the cops on his boss. "I was born to succeed, not to be humiliated," he wrote in a statement to police. (Both men asked to use pseudonyms, fearing retaliation from their employers.) In Idaho, a sheepherder managed to get away from his employer's ranch but froze to death as he was making his escape, according to a 2017 civil complaint filed by one of his co-workers. (The charges were dismissed after the case was settled out of court.) Herders have flagged down long-haul truckers and big-game hunters, sometimes sporting "horrendous injuries," said Jenifer Rodriguez, the managing attorney for Colorado Legal Services' migrant farmworker division, a nonprofit that represents these workers.

"In the United States, we live in enslavement or semi-enslavement," said Jorge, who worked as a sheepherder in Colorado in 2008. (Jorge is not his real name.)

Sheepherders are a fixture in the West's remote corners, working long, lonely hours on the open range. The nation's small sheep industry relies on immigrant workers who enter the country under the federal H-2A program for seasonal guest workers; at any given time, there are anywhere from 1,500 to 2,500 H-2A herders in the U.S. While ranchers acknowledge the job can be difficult, many insist that abuse allegations are overblown.

But the industry is beset by a level of abuse that even seasoned farmworker attorneys, government officials and human-trafficking experts find extreme. "These are actually the most scared workers I've ever encountered," said David Seligman, the executive director of the labor rights nonprofit Towards Justice, which has sued herding-industry trade groups on workers' behalf.

For years, a group of Peruvian diplomats, U.S. government officials, public interest attorneys, labor advocates and former herders have documented the abuse and pushed for reform. But in interviews with members of that community for this story — including eight former herders — some said it has been virtually impossible to hold abusive ranchers accountable. The abuse, they said, is deeply rooted in government policies and bureaucracy. For decades, the sheep industry has maintained outsized influence over its own regulations, and the Department of Labor has struggled to enforce them. The federal government has even acknowledged that some ranches participated in human trafficking, even as those same ranchers have continued bringing in workers under the H-2A program.

BEFORE TAKING A JOB in Wyoming, Iván was curious about the United States. He and Gustavo grew up in the Peruvian Andes between two green mountains, in a Quechua village. As a kid, Iván played on the family soccer team and spent a lot of time sprinting after Gustavo, a pretty decent older brother who made a point to play with him and share.

Their family survived on the stepped rows of corn and potatoes they grew and the cows and sheep they grazed in the mountains, but there was never enough food to go around. Community members were occasionally carjacked and killed by guerillas from the Shining Path, a leftist terrorist group that has declined since the 1990s but still victimizes rural residents; Iván made a point to never go out at night. Some neighbors left the village for the nearest city, Huancayo, a treacherous three-hour drive away, but the jobs they managed to get paid so little that the move was rarely worth it.

Other neighbors relied on relatives — herders, who sent home remittances from the U.S. They tended to do better: They were the ones who ate fruit — mangos or bananas — that other people couldn't always afford. Their kids went to school in Huancayo. The herders paid local residents to build or renovate houses for their families in their absence, though they rarely came home to live in these houses themselves.

The sheep industry where the herders worked has long seen itself as the West's scrappy underdog, a less-glamorous version of the iconic cowboy. "It's a hidden history," said Andrew Gulliford, a professor of history and environmental studies at Fort Lewis College and the author of *The Woolly West*. In the 19th and early 20th centuries, "sheep men were hated, despised and of very low status." They died alone on mountain plateaus from lightning strikes and got into shootouts with cowboys, usually over grazing rights. Successful sheepherders often worked in the West's most dangerous mountains and canyons, "where cattle couldn't go," Gulliford said. Some of them managed to buy land. "Their grandchildren and great-grandchildren now control fiefdoms," Gulliford said. "They charge $10,000 and more for elk hunts. They own oil and gas wells."

The industry peaked during World War II, when American GIs were subjected to canned mutton rations, and has been in decline ever since. American woolgrowers are outcompeted by producers in Australia and New Zealand, and the industry as a whole is losing out to inexpensive synthetic fibers. Americans eat less lamb than they used to, and the consolidation of meatpacking companies has kept meat prices problematically low for ranchers. Today, the U.S. sheep industry is half the size it was 30 years ago. Ranchers with lucrative landholdings can fall back on other revenue streams, but others said they're

This story was produced in collaboration with the Food & Environment Reporting Network, an independent, nonprofit news organization.

struggling to survive.

"It's really hard to negotiate with a desperate man — (and) at this point, everybody's desperate," said Robert Irwin, a sheep rancher and a co-owner of Kaos Sheep Outfit in California. His family ranch, he said, is barely getting by.

The industry has long struggled to find workers. "You're trying to run an ancient form of pastoralism in a modern society," Irwin said. Herders typically live in remote mobile campers, usually on public lands where their employers have grazing permits. They're on call 24 hours a day, seven days a week, and can go long stretches without seeing another person. It's difficult work, and few Americans will do it.

The sheep industry used to recruit its workforce from rocky Greek islands and Spain's Basque country. Then, as now, it was dangerous work. "There are ghost stories," Gulliford said, "herders who wanted to go home, hadn't been paid, wanted to be paid, and then disappeared."

"There are ghost stories, herders who wanted to go home, hadn't been paid, wanted to be paid, and then disappeared."

Since the 1980s, most herders have come from Latin America. Today, about 80% of them come from Peru; according to Peruvian diplomatic officials, the majority are from Indigenous communities like Iván and Gustavo's, which have their own centuries-old tradition of sheepherding. "The herder problem is well-known in our country and has been a constant concern," said Luis Felipe Solari Otero, the general consul at Denver's Peruvian consulate. "Feudalism — as I see it — is still practiced by some ranchers here."

Herders' visas used to give them a path to permanent residency, but in the 1950s, the sheep industry complained to Congress,

because too many herders were quitting to seek better jobs. Today, herders rely on the H-2A program, which provides temporary visas to agricultural workers from other countries. Last fiscal year, the U.S. State Department issued nearly 300,000 H-2A visas — more than four times as many as a decade ago — and the agricultural lobby has urged Congress to expand the program. Immigration experts, meanwhile, have compared the program to indentured servitude.

H-2A workers are allowed to work only for the employer who sponsors their visa, and it can be prohibitively difficult to switch jobs if that employer mistreats them; if they quit, they're sent back to their home countries. The industry associations that hire many of the workers, meanwhile, can transfer them from one member farm or ranch to another. The workers "don't have any say in the whole process," Rafael Flores, a director of bilingual communications at Polaris, an anti-trafficking nonprofit, said. "People are being transferred to different places, and they don't know where they are."

Polaris and other organizations have connected the H-2A program to rampant human trafficking and wage theft, and experts have called for major reform. Today, the Department of Labor must determine which employers can use the program, and then make sure that they follow the rules. In an emailed statement, agency spokesperson Monica Vereen said that the Department of Labor was aware of the "serious concerns" about the program, and that it had "identified a need to strengthen and clarify protections" for agricultural workers.

The Department of Labor has adopted a unique set of regulations for livestock herders that excludes them from some of the few rights and protections H-2A workers have. Many of the rules are the result of generations of lobbying by the sheep industry. Today, much of that advocacy is done by trade groups such as the Western Range Association. The group has amassed considerable influence over the industry and how it operates, at least according to the herders suing them. In lawsuits, herders' attorneys claim Western Range represents over 200 sheep and goat ranches across the country. (Western Range said it's less than that in a recent statement, adding that its membership fluctuates.) In recent years, attorneys said, the organization has hired over two-thirds of the industry's H-2A herders on ranchers' behalf. As of 2014, the trade group Iván and Gustavo's boss worked with, Mountain Plains Agricultural Service, hired many of the rest. (Mountain Plains did not respond to multiple requests for comment.)

In employment materials obtained in the course of reporting, Western Range assures workers that it's "committed to helping you resolve any questions or concerns you have about your employment." But the group's many critics accuse it of perpetuating abuse instead. In two recent lawsuits, herders have accused employees in Western Range's Lima office of illegally charging them fees for their H-2A visas (one of the lawsuits was dismissed; the other is still pending), and in a recent interview, a Peruvian diplomatic official said this was a common practice. In at least three different lawsuits in the past 10 years, herders have also sued the group for artificially depressing wages, accusing it of creating a "wage-fixing cartel" to keep herders' pay down. (Two of those lawsuits are still working their way through the courts; a third was dismissed.) In an emailed statement, Western Range Executive Director Monica Youree stressed the group's commitment to

The Department of Labor has adopted a unique set of regulations for livestock herders that excludes them from some of the few rights and protections H-2A workers have.

herders' "safety and well-being" and vehemently denied any wage-fixing allegations. The lawyers who represent herders "appear more interested in exploiting isolated incidents to make broad assessments about the industry," she said, and "often attempt to recover millions of dollars for themselves."

Western Range has reported herders who break their contracts to immigration enforcement, which Youree said it is required to do under federal law. According to their critics, trade groups like Western Range and Mountain Plains have been notably zealous about tracking herders down. In a 2014 blog post, Western Range's former president, Lane Jensen, wrote that the two groups had launched their own "significant effort" to locate and deport "herder runaways" — and to "penalize" people who had helped these "known jumpers" find other jobs. Jensen went on to complain that immigration officials had not assisted Western Range in its deportation effort. In a diplomatic message to U.S. government agencies, Peruvian officials wrote that many of the herders who break their contracts are trying to escape abuse.

In contrast to other H-2A employers, ranchers don't have to pay herders an hourly wage, and regulations for providing them with running water, a toilet or refrigeration are porous. The short-term, seasonal nature of H-2A visas actually helps some workers — an employer might be abusive, but at least the job will be over soon — but until recently, the sheep industry was exempt from that limitation as well. The visas herders received were good for 364 days and in practice could be renewed automatically up to three times, effectively extending the "temporary or seasonal" work period to three years before herders could return home.

String all these policies together, critics say, and the industry has essentially created a workforce profoundly vulnerable to abuse. "The ranchers have so much control," said Erik Johnson, the director of Idaho Legal Aid Services' Migrant Farmworker Law Unit. "Maybe that just brings out the worst in them."

"IT'S U.S. DOLLARS, so you'll make good money," Gustavo remembered his friends and neighbors saying, when they talked about the herders who'd left. "'One day,' we kept saying to each other, 'I'll go there, too.'"

Gustavo left first. A former neighbor who had left for the U.S. years before had gotten in touch; there was a spot available at his boss's sheep ranch, he said, and he could recommend Gustavo for the job. Gustavo was in his early 30s, married, with two little kids. "I wanted a better life for my children," he said.

The job referral, the neighbor explained, would cost Gustavo $3,500. "Who's going to bring you here for free?" he said. To Gustavo, $3,500 was a fortune, so he took out loans to pay for some of it. He said he flew to Wyoming in 2014 and, for the next few months, Iván and the family rarely heard from him. "I'll never see my son again," Iván remembered their mother saying. She died of a stroke a few months after Gustavo left, and it took the family several tries to get in touch with him, calling him repeatedly from the one public phone in their town. But the money Gustavo sent was a lifeline, and the family used it to buy food, clothes and medications.

A few years later, Gustavo called Iván and told him there was a job opening up at the Wyoming sheep ranch where he worked, though if Iván took it, he would have to pay their former neighbor a fee. Iván was in his late 20s. He talked it over with his wife. "If I go work there, I can at least build a house for us," he remembered telling her.

"I decided to go because they didn't tell me what it was really like," he said.

It was Iván's first time on an airplane, and he spent a lot of the trip feeling sick. He landed in Wyoming and was picked up at the airport and driven out to Child Ranch. There, on a stretch of scrubby grassland north of Cokeville, he met Jon Child, a former bull-rider who often wore a ten-gallon hat. Neither Jon Child nor his wife, Vickie, responded to repeated phone calls, emails and a certified letter requesting comment about the assertions made in this story. But in an interview with *Outside Business Journal* published shortly after Iván's arrival, Child said that he started out in the 1980s, shuttling his sheep between seasonal allotments as he grew his business. He also said that workers on sheep ranches regularly "jumped" from the job, once they "figured out the American system."

"Go have your breakfast," Iván remembered Child saying, the morning after he arrived. Iván was given a small hamburger. He ate it, then waited for what he assumed was the rest of his breakfast. He laughs about that assumption now.

Gustavo told Iván the truth about the job in bits and pieces. The former neighbor who had reached out to Gustavo had turned out to be untrustworthy. The fees he charged the brothers for suggesting that Jon Child sponsor their visas were illegal. (Other herders employed at Child Ranch at the time had also been illegally charged for job referrals, the brothers said.) The brothers struggled to pay off the debt; it took Gustavo about a year and a half, he said.

In a 2020 survey by the advocacy group Centro de los Derechos del Migrante, over a quarter of responding H-2A workers said they'd paid recruitment fees to secure their jobs, even though the practice is illegal. Both sheepherders and Peruvian officials said that illegal recruitment, including charging fees for visas and travel expenses, is prevalent in the sheepherding industry as well, at times with the participation of U.S. employers.

Gustavo said that Vickie Child took his passport, something she denied several years later when he filed a wage claim against the ranch. ("He has misplaced it or lost it," she wrote in a letter to Wyoming's Department of Workforce Services.) And while Jon Child would occasionally give workers their pay stubs, the brothers said they couldn't directly access the money they earned themselves. If they wanted to send money home to Peru, they had to ask Child to do it. "We never sent it — he did," Gustavo said. "(Because) he never paid us."

The herders worked relentlessly long hours, and Child swore and screamed at them. "Son of a bitch! Shit!" Gustavo remembered him shouting. "Get out of here, I don't need you — I'll fire you and send you back to Peru!"

Asked later if he was angry with his brother for keeping quiet about the realities of the work, Iván said he wasn't. He understood why Gustavo had kept it to himself. "If he had told me, I would have told our parents," he said. Their family would have been devastated, then urged Gustavo to quit his job and come home. In spite of everything, Iván admired his bravery in helping his family.

"Whatever this turns out to be, I'm going to work for the lives of my family — I'm going to keep fighting (for them)," he remembered thinking.

From roughly July through October each year, the herders who worked for Jon Child lived in groups of two in far-flung corners

of the open range. Gustavo and Iván grazed sheep in a few different places — sometimes together, sometimes apart — but the terrain that sticks with them was a place they just call "the mountain." It was craggy with dense, rocky pine forests, and the forests gave way to patches of sagebrush. Some of the grass had dried out in the summer heat.

"*This* mountain?" Gustavo remembered saying to another herder in disbelief, when he first saw it. "We'll lose all the sheep here."

The brothers said they tended to up to 2,000 sheep there at a time. Child brought the sheep to the mountain in seven tightly packed trucks. Gustavo and Iván said they were given a few horses and sheep dogs, a tent to sleep in, a cellphone with a few dollars' worth of data on it, and a rifle to protect the sheep from bears. The food Child gave them was mostly canned goods, and some of the cans were expired. He didn't give them enough water, or a map, or access to a car. They watched as he drove away. He wouldn't return for another 15 days.

The herders' isolation makes them exceptionally vulnerable. "Some of these workers don't know where they are or what state they're in," attorney David Seligman said. Many herders live on the range alone. "When you don't talk to anyone but yourself, your mind thinks a thousand different things, all painful," said Nestor, who arrived in the late '90s and worked alone as a herder. He has since formed an association to support former herders. "When we felt too much pain, we talked with the dogs, and when you cry, they start to cry with you." Nestor lacked access to a phone. However even herders like Gustavo and Iván with phones often struggle to get reception. If there's an emergency, said Nestor, "you die, and your boss finds you whenever he gets back." (Nestor asked to remain anonymous out of fear that his former employer would retaliate against him, even decades later.)

Because of their isolation, herders must rely on their employers for all their basic needs. For ranchers, that can get tedious. Robert Irwin, the California rancher, said he spends a lot of his time running errands for employees, while his wife and foremen do their laundry. "You drive the food out there," he said, "and he (the herder) says, 'I need propane, too.' Well, I can't get you that today — I've got three more stops." Some ranchers, he said, get bitter and burnt out. "You say, 'Screw it,' and you don't take the guys groceries for three days," said Irwin. He added that the practice wasn't right.

Rodriguez, the attorney, said that this system gives ranchers an enormous amount of control. "From the very beginning, it's just like, 'I'm the way that you can communicate with the outside world,'" she said. "'I'm the only one who knows where you are.'"

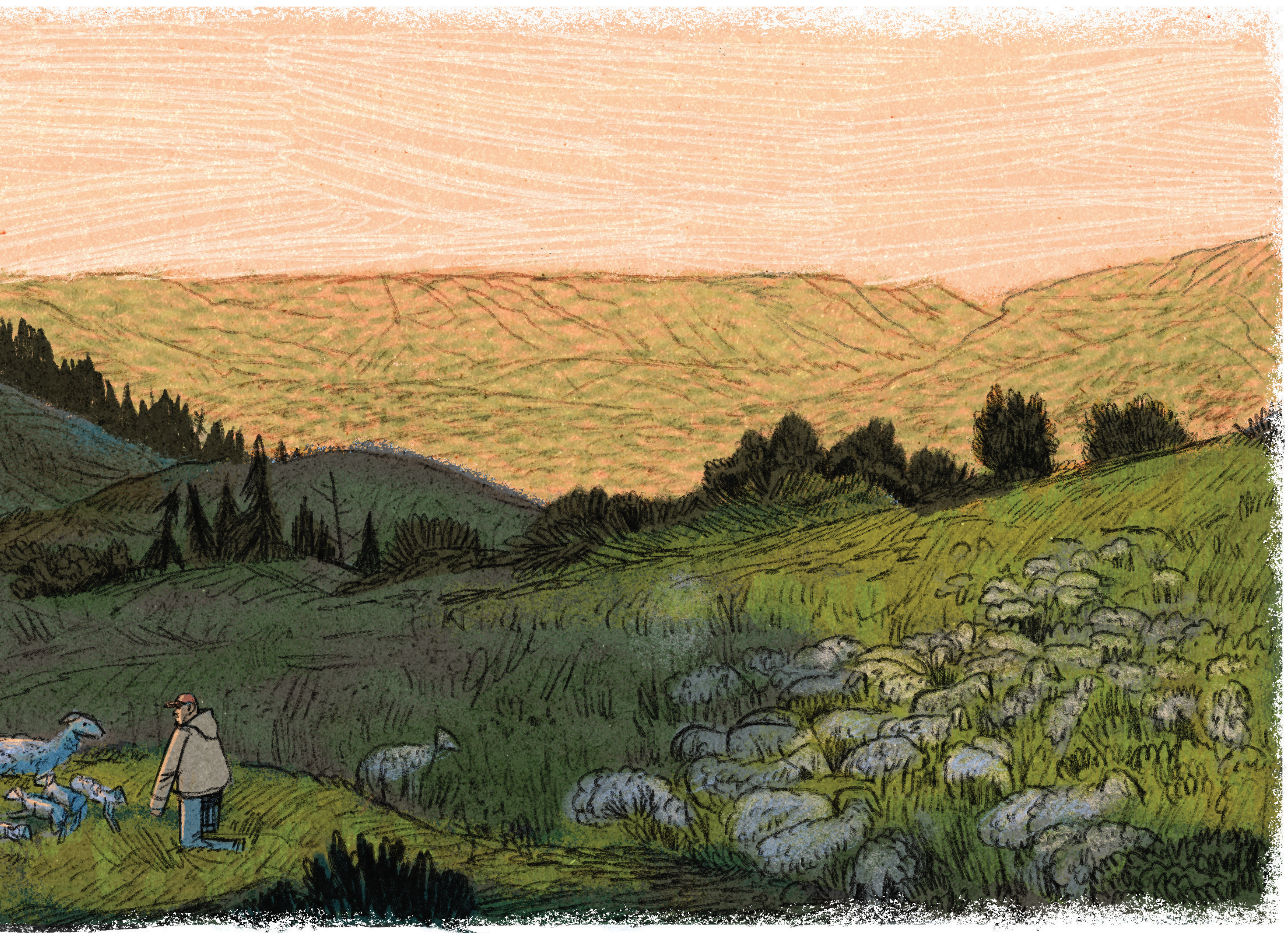
The H-2A program requires employers to provide their workers with food, but some ranchers cut corners, presumably to save money. In labor investigations, interviews and a half-dozen lawsuits, herders constantly talk about going hungry. "Could you bring me fruit, or a chicken?" Nestor remembered asking his boss. "He said, 'OK, but that's extra.'" At one point, he said, he grew so hungry that he devoted a day to traveling toward a light he'd seen in the distance, so he could beg the people who might be there for food. When he got there, a group of Mexican farmworkers gave him the food they had on hand.

"A lot of times, we've seen these situations where food and water is withheld, like as a form of punishment," Rodriguez said, "if (the employers) were mad because a couple of sheep got lost." In many cases, ranchers don't provide herders with safe drinking water, either. Some herders melt snow in the winter, or risk drinking untreated water from creeks and rivers. Several years ago, a herder in Idaho became paralyzed and lost the ability to speak due to ingesting bacteria from a mountain stream.

SOME HERDERS LET THEIR FLOCKS get sick and grow weak, Iván said, but "that never happened with us." He took pride in hand-feeding the lambs when they were sick; when they were too tired to walk, he sometimes carried them. "Our goal was to make sure all the sheep made it," he said. If they didn't, they said, Child would scream at them and get in their faces, as if he was going to hit them. Since much of the grass was sparse and dry, the sheep moved quickly through the mountain's forests, foraging for all of the grass they could find. The brothers struggled to keep up with the animals. Iván had brought several pairs of shoes with him, but within two months he had worn through them all. The sheep traveled so quickly that it made little sense to put up the tent every night, so the brothers got into the habit of sleeping under the stars with the flock. Eventually, they picked up the sheep's ticks, but Child refused to buy them medication, they said.

Most of the sheep survived, but not all of them. Some were crushed in rockslides. Others were eaten by bears. The brothers weren't particularly afraid the first time they saw a bear: "It wanted to kill us, but it couldn't," said Gustavo. "We *did* have a gun." A common hazard on the range, coyotes and bears frequently attack sheep. Occasionally they attack herders, too; one was severely mauled by a bear outside of Durango, Colorado, earlier this year.

Every two weeks, Iván and Gustavo said, one of them would take a horse and ride more



> **“When we felt too much pain, we talked with the dogs, and when you cry, they start to cry with you.”**

than an hour to the nearest highway, where Child would meet them and drop off supplies. Sometimes, they said, Child didn’t show up, and they returned to their camp with nothing. When he did show up, the food he brought them was never enough, or it was expired and made them ill. “I want skinny sheepherders,” the brothers remembered Child often saying, “not skinny sheep.”

The brothers were forced to get creative. Sometimes they ate their dogs’ food. Sometimes they ate the sheep that were crushed in the mountain’s rockslides. Other times, they ate the remnants of the deer and elk that hunters had killed in the mountain’s forests. “Sometimes our white sheep dogs were already eating it, and we had to move them out of the way to eat it ourselves,” Gustavo said. “So that’s how we lived.”

Child never brought enough water either, they said. So the brothers hauled water from a large blue lake at the bottom of the mountain, an hour’s hike away. It was teeming with tourists and fishermen, trying to catch trout. They didn’t speak Spanish, but they liked the elk antlers the brothers found on the mountain, and Iván and Gustavo occasionally traded them for fish and soda.

About six months into the job, toward the end of 2017, Iván managed to call his wife for the first time. “What happened?” she asked, sounding frantic. She thought that he’d died in an accident, or left her for somebody else. Iván and Gustavo took to carving their names on the trees in the forest, so that the next herders who came there wouldn’t lose hope.

Twice a year, the brothers left the open range and returned to Child's ranch, where the herders helped with the shearing process, delivered lambs, and selected sheep for slaughter. In the two years they spent working for Child together, they rarely went anywhere else. During lambing season, they woke up before 5 in the morning, stopped work on the ranch around 10 in the evening, and didn't eat breakfast or lunch, Iván said. They drank water every morning, and stopped for water again around noon. "If we're working well, why don't you bring us something to eat around noon or 1 o'clock, maybe a burger or a pizza or something?" Iván remembered asking Child. But Child never did, he said.

Child had always been a tough character, Iván said, but as the months dragged on, Iván grew more afraid of him. Once, the herders were selecting the best lambs for slaughter when a small sheep stepped on a sleeping white dog, which was curled up inside the corral. The dog snapped at it. "I don't need that dog," the brothers heard Child say.

"I want skinny sheepherders, not skinny sheep."

He shot the dog at point-blank range, then demanded that Iván throw its body away. It wasn't the only time he killed a dog in front of them, they said.

"At any moment, he could kill us," Iván remembered thinking. "He'll kill us like our dogs."

Within the sheep industry, there's a small handful of ranchers that attorney Jenifer Rodriguez considers "frequent flyers" — employers who abuse their workers repeatedly, and whose mistreatment of herders can be particularly extreme. Attorneys in her network said they have handled cases in which ranchers hit herders, shocked them with cattle prods, or beat them with sticks to make them work faster. In the past two years, at least one herder reported being sexually assaulted. These employers tend to use similar intimidation tactics, Rodriguez said, and killing animals is one of them. "It's actually not unusual," said fellow attorney Alex McBean, "making a herder watch their dog get shot."

Rodriguez has handled dozens of herders' cases in the past 16 years, and her fellow farmworker attorneys consider her the preeminent expert on the industry. Today, she's one of about a half-dozen attorneys across seven Western states who pursue litigation on herders' behalf. A lot of the cases involve the same players, she said. "We try to share information." Their work is supported by a constellation of sympathetic federal officials, alarmed Peruvian diplomats, the occasional rural police chief and a handful of big-game hunters; "*they* run into herders all the time," Rodriguez said.

The attorneys have diligently tracked different levels of abuse, Rodriguez said, and Iván and Gustavo's experience exemplifies many of them. Under the laws and regulations that govern H-2A herders, some of the hardships the brothers suffered are legal.

The grueling work hours they described are widespread, for example. In a 2010 survey, Colorado Legal Services found that 62% of herders reported working over 80 hours a week, and several of the herders we interviewed described similar hours, as have recent lawsuits against the industry. (Irwin and other sheep ranchers have strongly disputed this characterization.) But under the Department of Labor's special regulations, ranchers are exempt from paying herders an

hourly wage or overtime. Instead, the agency requires ranchers to pay a minimum federal flat rate of $1,901.21 a month. Legislators have raised the wage floor in some states, but in practice, herders and their advocates said, many herders' take-home pay can come out to as little as $4-$5 an hour.

Other common forms of mistreatment are illegal, though. Six of the eight former herders interviewed for this story said their employers took their passports or Social Security cards, and all of them said their employers didn't pay them properly. "Some employers will hold onto the pay and say, 'You'll get it on the way to the airport,'" Rodriguez said. "'We're putting all your pay in the bank, and you'll get it when you're on your way back home.'" In comments sent to U.S. federal agencies, the Peruvian consulate noted some herders never get the Social Security numbers they're entitled to, which means they're unable to open bank accounts or receive certain services.

Then there's the extreme mistreatment: the denied medical care, the injuries and the deaths. Herders have died in blizzards and ATV accidents, and they've been trampled by their own horses. The Occupational Safety and Health Administration (OSHA) has investigated six such incidents in the past 10 years, and investigators found employers negligent in five cases. Four of those negligent employers are still in operation. In California, a herder was found dead, lying in the fetal position, in 2017. According to details from OSHA's inspection, investigators determined that he appeared to have died from heat-related illness and that his employer, Joe Paesano, hadn't given him enough water. OSHA fined Paesano $9,750 in 2019, but he hired three more H-2A workers later that year. In 2021, in Wyoming, a herder was run over by his own dilapidated camper. Wyoming's Department of Workforce Services OSHA Division declined to investigate the death because they said it was outside their jurisdiction. His employer, a rancher named Bart Argyle, did not return requests for comment. Argyle brought nine more herders into the country on H-2A visas this year.

IN THE END, it wasn't the dog shootings that compelled Gustavo and Iván to escape Child Ranch. It was the money. In 2019, after working for Child for about five years, Gustavo hired a construction crew back home in Peru to build his family a house. He asked Child to wire them $5,000. "I need to talk with my wife," he remembered Child saying. A few days passed. Gustavo approached Child again. He couldn't send the money yet, Child explained. His wife was too busy. He could only transfer so much money to Peru at a time. In the end, he only transferred about $1,000 to Gustavo's family. That's when Gustavo said

he realized that Child was never going to pay him the money he'd earned.

"I'm going to win this one — they *have* to pay me," Gustavo remembered thinking. "We're suffering so much here," he told Iván. Iván thought about the constant fear he carried with him, how little he'd eaten and slept, and they agreed to leave.

Herders in situations like this can appeal to the Department of Labor, which enforces H-2A work regulations, but the agency often lacks the resources to investigate employers. Underfunded and understaffed, the department's Wage and Hour Division (WHD) is tasked with regulating more than 11 million employers nationwide — including those that employ H-2A workers — with only about 750 investigators. "They're doing a Herculean task," said H-2A expert Daniel Costa, "with two hands tied behind their back."

Despite the lack of resources, the WHD has managed to investigate some ranchers. According to the agency's publicly available data, at least 80 sheep industry employers have violated their workers' H-2A contracts in the past decade. But, like most abusive H-2A employers, the ranchers who committed these violations are almost always allowed to continue operating. An analysis of WHD and U.S. Citizenship and Immigration Services (USCIS) data found that about 80% of the sheep industry employers that investigators caught violating their workers' rights in the past 10 years were allowed to continue bringing H-2A workers into the country.

Iván and Gustavo didn't call the Department of Labor when they decided to escape; they assumed they were on their own. After they had walked for hours down the cold, endless highway, a pickup truck pulled up alongside them. "It's (either) the police or our boss," Iván thought. He tried to find a place to hide, but the driver had already caught them in his headlights.

"Where are you headed?" the driver asked them, in Spanish. He was a Mexican immigrant; the brothers never learned much about him. "Do you work around here?"

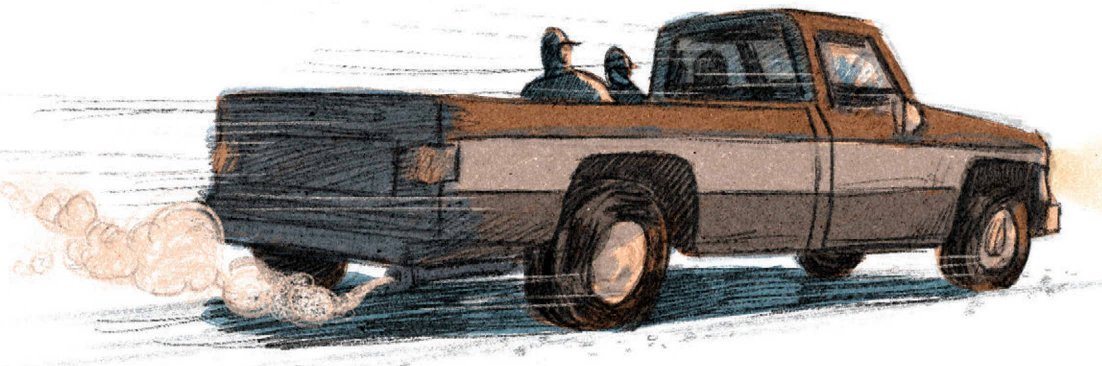
"We used to work on the ranches," the brothers told him. "But we don't want to keep working there."

"Have you eaten?" the driver asked, and then bought them burgers at a gas station. He offered to take them to a city he knew in Colorado and drove through the night. Around 3 or 4 in the morning, he dropped them off at a laundromat. It was a Sunday, and the brothers eventually found a group of Peruvian immigrants playing soccer in a nearby park.

"'Is this Colorado?'" Iván remembered asking them. A few soccer players offered the brothers a place to stay.

Today, the brothers work in construction, eat as much *arroz con pollo* as they want, and devote their spare time to their recreational soccer team. Their team, Gustavo said, is the best; it's made up of Peruvian immigrants and has a fierce but friendly rivalry with the Mexican and Guatemalan teams in town. The brothers' many trophies are the most prominent pieces of furniture in their sparse living room.

Iván and Gustavo have also been trying to get a modicum of justice from Child, although the process has been arduous. In September 2020, the brothers filed wage theft complaints against the ranch. In a letter to a Wyoming Department of Workforce Services officer reviewed for this story, Vickie Child called the brothers' accusations "totally false," but acknowledged that Iván and Gustavo "do have some money coming." She paid Iván $4,260 in back wages, but then disputed Gustavo's claim, which was considerably larger. In December 2020, a Wyoming Department of Workforce Services investigation determined that Child did, in fact, owe Gustavo over $7,300 in back pay, and that he had illegally deducted work-related gear, like boots and binoculars, from Gustavo's paycheck. But because Wyoming state law limits the amount of back wages that workers can ask for, Gustavo was ultimately awarded less than half of what he was owed.



With the help of Colorado Legal Services, the brothers also applied for T visas, which are reserved for human trafficking victims and are particularly hard to come by. USCIS grants fewer than 2,000 of them to survivors every year; in 2020, over 40% of those who applied were denied. Iván and Gustavo submitted detailed testimonials about their experience, along with pictures of their working conditions and the food they were given. After months of paperwork and background checks, the brothers were awarded T visas in October 2022. The new visas allow them to legally remain in the United States and can put them on the path to permanent residency. Meanwhile, the Department of Labor allowed Jon Child to bring nine more herders into the country earlier this year, even after USCIS acknowledged he had previously hired trafficked workers.

According to a senior WHD official, that's most likely because the Department of Labor didn't know about the brothers' T visa; the H-2A program is managed by a dizzying maze of government agencies that can struggle to communicate with each other. For instance, the WHD does not receive detailed information about T visas, the official said, "in part because that's just extraordinarily privileged and sensitive information." The department does receive intelligence from other government agencies about, say, criminal allegations against employers, but there's little order to how and when it's done. "They'll let us know, you know, when they decide to," the WHD official said. Sometimes his agency is never notified at all.

Even if the Department of Labor had

About 80% of the sheep industry employers that investigators caught violating their workers' rights in the past 10 years were allowed to continue bringing H-2A workers into the country.

investigated and validated the brothers' allegations against Child, he may not have faced any consequences. According to multiple government audits, the agency rarely bans abusive employers from the H-2A program. The WHD only has the authority to ban employers for violations committed within the last two years, but many WHD investigations take longer than that to complete. When H-2A employers are debarred from the program, they have the right to appeal, the senior WHD official said. The ensuing litigation can take months, if not years, and can be particularly intense when trade groups like Western Range get involved. "Their interests are very much bound up in those cases, right?" said the official. "So they defend them vigorously." Employers are allowed to continue hiring H-2A workers even if they're in the process of getting banned from the program, and if they are debarred, the ban is brief — three years. In a recent statement, WHD noted that it has nonetheless debarred 14 H-2A employers in 2023 so far.

As a result, advocates said, many abusive employers have continued operating. "Although we have assisted herders in reporting these highly credible reports of violations to the U.S. Department of Labor Wage and Hour Division, nothing ever seems to change and their applications for more H-2A workers continue to be approved year after year," said Rodriguez.

Iván and Gustavo talk to their families more often now. Iván has told his wife bits and pieces of what working for Jon Child was like, but when Gustavo calls their father, he doesn't share any details with him. "He's old," he said. "You have to tell him, 'No, it's beautiful here, the work is good,' so that he won't be sad." Eventually, the brothers hope their entire family will immigrate here.

In the meantime, they're putting down roots. Occasionally, they share stories of their time on the range with their new friends. Often, the brothers' soccer teammates invite them to go camping in the mountains. *It's fun,* they say.

"We know what that's like," Iván said. "It's better if we stay right here."

California's Middle Eastern Mirage

How the Coachella Valley created an image and an industry for dates.

By Sarah Lohman

IN FEBRUARY 2019, I visited the date gardens of the Coachella Valley and chewed the sweet flesh of dates found nowhere else in the world: Empress, Abada, Blonde Beauties, Brunette Beauties, Honey, McGill's, Tarbazal and Triumph. I had always thought of American cuisine as ever-expanding. Then I realized there are hundreds of plants, animals and food traditions that are *disappearing* from my country's food repertoire, including many rare California varieties.

Dates are the edible fruit of a palm tree: wrinkled, generally brown and about 1.5 to 2 inches long. They belong to a category of fleshy fruits known as drupes, which have a single seed or pit. Drupes include coconuts, olives, black pepper, various nuts and stone fruits like peaches. Dates are very sweet, usually about 60%-70% sugars, including sucrose and fructose, but they also contain about 1.5 grams of fiber, a decent amount of potassium and a little bit of protein.

To propagate dates, you can't plant a date seed. Well, you can, but like many tree fruits, what grows out of that seed is genetically different from the parent. This is one way a plant ensures survival; genetically diverse offspring have a better chance of continuing to grow, adapt and propagate. Most of the trees grown in this way do not produce edible, or at least desirable, fruit. So if you like attributes of one date palm — say, the dates are particularly plump and sweet — you want to plant a sucker instead. Suckers are tiny palm trees that grow out of the base of the parent tree in the first 10 to 15 years of its life. They are chiseled off the base of the palm and planted, and will begin to produce dates in about 10 to 15 years.

The date palm originated in the area that encompasses the Arabian Peninsula as well as what is today Iran, Afghanistan and Pakistan. They grow specifically in places where there is very little rain but access to water in rivers or underground aquifers. Dates were a part of the human diet thousands of years before agriculture. Dental calculus — that's plaque — recovered from Neanderthal skeletons in Shanidar Cave, Iraq, revealed minute fossilized plant particles from dates. But dates are also some of the world's oldest cultivated fruit. In fact, no wild varieties exist today; dates *only* exist within cultivation.

Dates have been grown in the Coachella Valley in Southern California for over 120 years, originally from imported seeds and suckers from Baghdad and Algiers, Pakistan and Egypt. The Coachella Valley and surrounding area resembles the climate and terrain of the Middle East so much that the town where I rented an Airbnb is the site of the Twentynine Palms Marine Corps Air Ground Combat Center, a setup of mock villages designed to train soldiers for deployment in the Middle East. A friend of mine who trained there called it "a damn near carbon copy of Iraq and most parts of Afghanistan." It's not uncommon to have more than 100 days a year over 100 degrees. But aquifers run deep underground, filling springs and oases. The hot temperatures, and access to plentiful water, make the area ideal for growing dates.

There are hundreds, potentially thousands, of varieties of dates worldwide. Today, it's estimated that over 90% of the dates grown in the U.S. come from the Coachella Valley, about 35,000 tons annually. Some dates, like the Medjool, are particularly plump, sweet and fruity. Other dates are very fleshy, like the Barhi; some, like Halawi dates, are chewy. Still others are dry, like the Thoory date. Although the valley primarily grows commercial date varieties like Medjools and Deglet Noors, several small farmers still carry on the tradition of growing unique date varieties that were developed in the area a century ago.

Many of the valley's earliest farms — called "date gardens" to evoke the biblical Garden of Eden — wouldn't last more than a decade or two: Imported suckers died in transit after the multi-week journey from Africa or the Middle East, locals sold inferior shoots from ornamental date plantings, insect infestations. But farmers who did succeed sold dates directly to customers, and by the 1950s they had created a tourist destination. California Highway 111 cut through the valley and was lined with date shops. Each shop had its own gimmick to attract customers: The Pyramid date shop was in the shape of a pyramid, and Sniff's Exotic Date Garden had set up a tent like the ones used by nomadic tribes in the Sahara. Other shops sprang up with architectural elements copied from India, Egypt and the Arabian

Peninsula. The proprietors felt the visual aesthetic should play off the desert surroundings and the date palm's history to create an exotic destination a tourist could reach without leaving the U.S.

To get some perspective on the culture surrounding dates in the Coachella Valley, I spoke to my friend, the scholar Sarah Seekatz. Seekatz is the world's foremost expert on Coachella Valley dates and grew up in the area. She explained that California has a way of "stealing the history, remaking the history in their own way, and then using it to profit." Hollywood does it; Disneyland does it; and if you've spent any time in the state, you've probably come across a historical site related to "mission history." The interpretation of the latter is often referred to as the "Spanish fantasy past," a made-up world where Spanish colonialism benefited the Native Americans; new white migrants could connect their history back to these European settlers. Through these mission sites, California sold time travel back to an imaginary and romanticized Mexico and a nostalgic "old Southwest" so effectively that there were Americans in the 1890s writing to different tourist bureaus asking, "Do I need a passport to come to California?"

So, too, the Coachella Valley began to manufacture its own creative history, based not on Spanish missions but on the valley's connection to the Middle East via the date palms.

This Arabian fantasy — monolithic, oversimplified, fetishized — brought people to the valley and into the date shops. The travelers would then taste date varieties from the Middle East that had never been available in America before, and special dates that could only be found in the Coachella Valley. Customers would buy a few boxes of dates, and get on the mailing lists for their favorite shops. Every November, after the date harvest, a catalog would arrive at their home address, and it would become a tradition to order dates from Coachella annually for Christmas.

I SET MY MAPS destination for Shields Date Gardens and took the highway through the Morongo Valley, the mountaintops of the pass peaked in snow. Before the Shields family settled in Coachella, this road was unpaved, and the trip from Twentynine Palms to Indio would have taken two days. But by the 1950s, the roads had been improved. The creation of these highways, and the mid-century obsession with driving, were imperative to the formation of the date industry.

Floyd Shields was perhaps the most innovative of the date shop owners in terms of gimmicks. A passerby can't miss the knight: a cutout at least 25 feet high, painted in full armor, his shield decorated with shields and the name "Shields," points from the road to the storefront. The roadside knight was built in 1954; the store he gestures to, in 1950.

Historically, another eye-catcher would have enticed tourists: roadside signs boasting of Shields' educational slideshow, "The Romance and Sex Life of the Date." Originally a live talk given by Shields himself, it's not as lascivious as it sounds. The presentation explained date propagation and farming, to impress upon Shields' visitors how difficult and costly it was to produce a high-quality date.

When I pulled into the parking lot, there were towering date palms everywhere. It was unlike anything I'd seen before, and there was definitely a biblical feel about it. And the current owners have decided to push the biblical connection. Behind the store is a garden made up of rosebushes and date trees too old and tall to be good fruit producers; for a few dollars' admission, you can stroll through this garden and see silver fiberglass Jesus statues portraying moments from the Bible. Sarah Seekatz later pointed out that there were two sides to creating this tourist mirage of visiting fantastical Arabia. One aspect is religion, Christianity specifically, even though Jerusalem is attached to many faiths.

When these date palms were planted, many Americans believed that those living in the Holy Land were still living the lives of those in the Bible, virtually unchanged in the last 2,000 years. The date industry has long played off that imagery; the advertisement for the very first Date Festival in 1921 was a Nativity scene. A bright star over a desert landscape leads the way for a caravan of camels and men in traditional head coverings. The catchphrase below the image is "All 'The Wise Men' Are Going."

Shields' religious statues might seem a strange juxtaposition to the "Sex Life of the Date" signs in the gift shop. But the other way that Americans have largely understood the culture of the Middle East is through the stories of *The Thousand and One Nights*, or the *Arabian Nights*, a collection of medieval, or perhaps even ancient, stories told by the main character, Scheherazade, to a king.

The first translated version of this work was available in English in the early 18th century. These stories include the famous tale of Aladdin, but feature many other thrilling adventures with ghosts, monsters and sex. So, Shields embraces both aspects of the traditional American understanding of the Middle East: Jesus is out back, but come learn about (date) sex in the front.

Back at the visitor center, Shields' date showroom awaited me, featuring free samples of all their date varieties. I tasted the Blonde Beauty date first, and after that, nothing could compare. I was in love. Blonde Beauties are a butterscotch color with a heavenly texture; drier than many commercial dates, with a papery skin, chewy flesh, and a satisfying bit of crunch from crystallized sugar. And the flavor? Every bite is buttery brown sugar caramel.

Shields makes date milkshakes from the Blonde Beauties. The Shieldses didn't invent date shakes; that honor has been credited to Russ Nicoll, the owner of the now-closed Valerie Jean Date Shop. The story goes that he heard "that some Middle Easterners existed solely on goat milk and dates." Dates and goat or camel milk are a popular breakfast, dinner or snack throughout the Middle East, and a staple of nomadic peoples.

Nicoll was first credited for the invention in print in 1938, but the date shakes were already nationally known by then. Milkshakes were having a moment, as soda fountains boomed in the wake of Prohibition. The "drink mixer" and "liquefier blender" were both released in 1922. So, the date shake was born. The shakes became broadly popular in the Coachella Valley, and to this day are still considered an important part of the tourist experience in the area. "There was a time when date shakes were very easy to find in local restaurants," Seekatz told me. "In fact, I remember the Del Taco in Indio selling date shakes too."

Shields blends vanilla ice milk with their Date Crystals — dried, shattered Blonde Beauties that Floyd Shields, ever the innovator, created to use up dates that didn't make the grade. My first slurp was cooling, necessary after a walk in the sunny date garden. Then the texture hit me: creamy, with a little crunch from the ice. Then the flavor: caramel. Pure liquid caramel with a little fruitiness at the end.

In addition to the Blonde Beauties, Shields sells several other rare dates: deep brown Brunette Beauties, the other Shields original date; Honey dates, one of the Davall seedlings; and Abada dates, a deep black, very sweet date originally found growing feral by date farmer D.G. Sniff in 1936. They're so dark and shiny, they reminded me of scarab beetles.

I asked the operations manager, Jessica Duenow, why they bothered to grow these rare, niche dates. "For the history and the legacy," she answered immediately. "And for someone that might think there are only Medjool dates out there, we want to show them something different."

IN 1947, the annual Riverside County Fair and National Date Festival was officially launched. It adapted the valley's Middle Eastern theme, with the fairgrounds surrounded by a wall that is a mishmash of Islamic architecture: domes and cupolas, stripes of light and dark brick, and scalloped arches.

The fair architecture was designed by Harry Oliver, a Hollywood production designer known for his whimsical sets. In 1949, two years after the festival started, Oliver completed the Old Baghdad Stage. Designed to look like a "caliph's palace in medieval Baghdad," with a minaret, keyhole arches, and windows with carved wood latticework, it evokes the movie magic of Rudolph Valentino's *The Sheik* and Douglas Fairbanks in *The Thief of Baghdad* more than it does an actual street in Baghdad.

Scenes from Shields Date Gardens in Indio, California, including a pond and water feature *(opening)*, the roadside knight that points the way to the gardens (facing) and the retro counter where the employees use date crystals made from Blonde Beauties to flavor their date shakes *(above)*. **Kelly Puleio**

The stage became home to the Annual Arabian Nights Pageant. Floyd Shields wrote in 1957, "The presentation of the Arabian Nights Pageant has a cast of more than 150 people taking part either in the cast or the production staff of this civic endeavor. ... Nowhere else will visitors be able to witness such a spectacle as this — a pageant that will thrill young and old alike with its drama and beauty."

Each year, the pageant boasts a new script based on one of the *Arabian Nights* stories, and a story wasn't repeated until 1984. "They always had a genie, elephants and camels," a witness remembered of the early years. "Lots of chiffon, sequins, and the costumes showed quite a bit of flesh."

The costumes were also original, created every year. Not just for the pageant, but also for Scheherazade's court, a beauty contest featuring 10 or more teenage girls. The pageant winners donned feathered headpieces, sequined bras, sheer harem pants, and showed bare midriffs — like the costumes in the television show *I Dream of Jeannie*.

The high school girls in Scheherazade's courts appeared at events and in press photos locally and nationally to entice tourists; they are often posed adoringly around a single man, alluding to a shah and his harem. "They were literally selling dates with the bodies of women," Seekatz said.

The festival, and pageant, continue to this day. I attended them on a Saturday in February; it was sunny and the temperatures would hit the mid-60s during the day. Seekatz met a friend and me to act as our guide. Her grandmother had danced in a harem girl outfit in the Arabian Nights Pageant long ago, and Seekatz herself went on her first date to the festival.

At the fair, I rode a camel (slowly, in a circle). We toured a large building featuring prizewinning produce and a single date vendor, as well as displays of date memorabilia and a pavilion explaining the date-growing process. We watched a date-cooking contest with prize money funded by the California Date Board. But for the most part, the event was a normal county fair: A 4-H barn was filled with sheep awaiting judgment, Quonset huts housed prizewinning baked goods and a gem show, and, in the stadium, there would be drag races and a Salt-N-Pepa concert the following weekend.

As the sun set and the carnival rides began to glow, it was time to take our seats for the pageant. The stage was illuminated in fuchsia and indigo as over 40 performers, ranging from children not more than 10 to seasoned community theater legends, marched out. They were dressed in classically fantastical Middle Eastern costumes in a rainbow of colored polyesters and sequins. The pageant was two hours long and featured an extraordinary amount of musical numbers and a dedicated dance troupe of local teens. My favorite moment of the show was a rendition of "True Colors" by Cyndi Lauper, rearranged over a rapid drumbeat.

By the end, most of the audience seats were empty. The show's length and the falling temperatures had driven people away.

And there was the discordance of appropriating historical Islamic culture to celebrate the American date industry: When I visited, the U.S. was enforcing a travel ban against citizens of many of the countries the pageant allegedly celebrated.

The festival went through big changes when a version of the Middle East different from *I Dream of Jeannie* began to appear on the news: the kidnapping and murder of Israeli athletes at the 1972 Munich Olympics by Palestinians, the 1973 oil crisis, and the 1979 Iranian hostage crisis. While Americans had previously viewed the Middle East through the stereotypes of harem girls and wealthy sheiks, in the 1970s, different Muslim stereotypes took over: oil barons and religious extremists. Then the U.S. entered the first Gulf War in 1990, and the country was changed forever on Sept. 11, 2001. "And then in the larger popular culture," Seekatz told me, "it was not OK to celebrate the Middle East."

As demographics changed and fewer residents were directly involved in date farming, the fair became less of a tourist destination and more a local county fair. French fries and a monster truck show fit the needs of the Coachella Valley population in the 21st century more than dates and camel races.

For many, the remaining Orientalist elements are "less about creating this idea of Arabia," Seekatz clarified, "and more about carrying on this nostalgia and the legacy of what this area was in the '60s."

But they could celebrate dates without a pageant, my friend offered. It could be about the food and the agriculture. There weren't many date-themed eats and activities, and we were left wanting a food festival on par with Gilroy, California's garlic festival. Gilroy's festival draws 100,000 people over a single weekend.

It turned out that my friend's comment was prophetic. The fall after my visit, a new date festival was founded.

AFTER DECADES of U.S. military engagement in the Middle East and North Africa, many new Americans have emigrated from that part of the world. As more people come, Middle Eastern foodways have become a part of American food. Most grocery stores carry hummus, for example, and many popular cookbooks reflect this shift.

The growing Middle Eastern population has brought more variations of fresh dates and date products to markets across the country. Ramadan now represents a spike in sales second only to the traditional Christmas season. When I first interviewed Seekatz, she mentioned seeing fresh Barhi dates for sale for the first time — a treat only available in date-growing regions, well known by people from the Arabian Peninsula. Most dates are harvested after they've dried on the tree and become fully sweet, but Barhis can be harvested at several stages of ripeness. When they're yellow and underripe, they have the texture of a raw potato and the astringency of a dry wine. A little riper, and they have the soft juiciness of a plum. Shields sells fresh Barhis in season,

Date palms, Coachella Valley, California. **Mette Lampcov**

and the summer following my Coachella trip, I tried some from a local grocery store in Portland, Oregon.

In November 2019, Mark Tadros launched the Date Harvest Festival. Tadros is the president of Aziz Farms, a small date garden his father, an Egyptian immigrant, founded in the 1980s. The single-day festival attracted almost 5,000 attendees and sold over $10,000 worth of dates.

It was the senior Tadros who first began buying fresh Barhi dates from farmers and driving into Los Angeles to sell them to the Egyptian community, literally out of the trunk of his car. Today, the Tadros farm specializes in Barhis. Tadros returned to help manage the family farm nine years ago after a career as a chef. Aziz Farms was the only vendor selling dates at the Riverside County Fair in 2019, and Tadros participated out of an interest in preserving the festival's connection to small date farms. But while he was there, he had a revelation: The National Date Festival was originally held in February to sustain an interest in dates outside of the traditional Christmas season. But over the 20th century, many date growers began selling their dates to packing houses at harvest time; by February, there was no economic incentive for date growers to participate. Tadros thought that a refocused festival, scheduled in the fall, might shine a fresh light on Coachella's date industry.

The Date Harvest Festival featured "dates that you've never heard of," including his own family farm's Red Barhis, incredibly rare in America; food vendors selling date-focused foods like date cotton candy and date-chicken sausage; samples of date-based products like date syrup and date vodka; cooking demos; live bands; a Ferris wheel; and a "family zone with tractors to climb on."

Tadros "wants consumers to associate dates with the Coachella Valley, the same way they know Idaho's russet potato and Napa Valley's wine." He wants the Coachella Valley to be known as the place that grows the best dates money can buy.

Tadros said he's a proponent of a rising-tide-lifts-all-ships mentality. "I believe that we raised awareness. I believe that people really enjoyed it," Tadros told me of the festival. He's already thinking about the festival in year two, and how agro-tourism can be brought back to the Valley. Unfortunately, the global pandemic stopped the gathering in 2020, and it remains to be seen if it will continue. The Riverside County Fair and National Date Festival, in the meantime, has fallen under new management that has begun to enforce changes—including requiring all food vendors to feature a date-themed item.

A big part of bringing attention to Coachella's rare dates is education. The American public would need to not just ask for "a date," but to seek out a California-grown Medjool or, even better, a Blonde Beauty. There's nothing a small farm wants more than to plant a crop they know will sell out. And that kind of demand means unique dates will continue to be propagated in Coachella.

Even so, the date industry in the U.S. today is still niche. In California, the domestic industry is made up of fewer than 100 growers, who employ about 1,400 people and produce about 35,000 tons — equivalent to the same amount of dates as we import. Although a few of the old date farms remain, most of the date farms aren't the small family-run businesses that existed when the Date Festival started. When the first generations of Coachella farmers began to pass away, their children didn't want to take on the difficult labor and financial risk of date growing, especially specialty strains. Only a dozen producing palms are left of the TR date, and only three McGill date palms are known to exist. I was not able to locate dates of either variety on my trip.

The date industry has shifted to wholesale, with massive farms producing one or two standardized varieties for companies like Dole. As consumers, what we expect from food is consistency. We have an expectation that every package of dates (or craisins, or red seedless grapes, or whatever) we buy from the grocery store will taste the same.

In 1955, the USDA published a report of 39 different unique American varieties of dates. Some of these still exist, only in the Coachella Valley. Like the Empress dates, which hang like chandeliers of dark red rubies between the palm fronds and taste of sweet spice and caramel. But then there are also lost dates like the rich Desert Dew and the foggy-skinned Smoky. Where are these dates now? Were they not worth propagating, or are they treasures waiting to be rediscovered?

Excerpted from the forthcoming Endangered Eating: America's Vanishing Foods. *Copyright (C) 2023 by Sarah Lohman. With permission of the publisher, W. W. Norton & Company, Inc. All rights reserved.*

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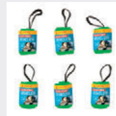

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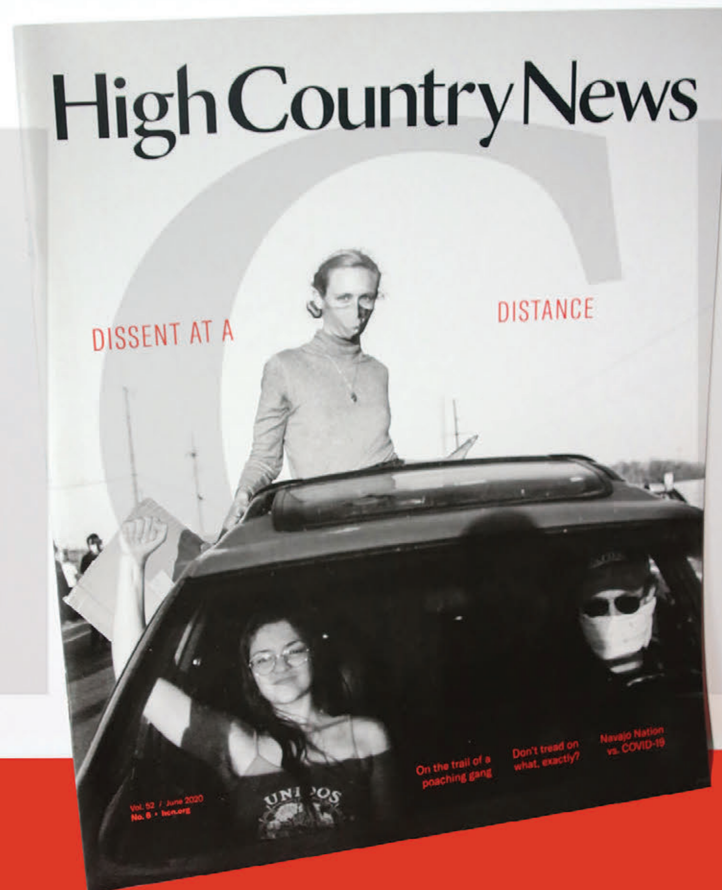

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A section of the Santa Fe River, a 46-mile-long waterway in New Mexico that begins in the Sangre de Cristo Mountains and passes through the city of Santa Fe. **Zach Chambers**

ESSAY

What is a waterway?

Notes on what is fluid and flowing, even if emphemeral.

BY KATE SCHIMEL

ON A LATE SUMMER EVENING, I stood in the rain in the park near my house, waiting for the dog to pee and watching the waters uncharacteristically fill the riprap-laden ditch that runs through the center of the park. They pushed the leaves and trash downstream, flowing around shopping carts and discarded appliances and nudging discarded clothes and garbage bags toward the river. I saw a coyote, patchy with mange, run along the edge of the waterway. Maybe, I thought, the waters disturbed its usual haunts in the ditch and forced it on to the banks.

Later that evening, my husband called to say the Santa Fe River was running.

Although its dammed upstream reaches provide the city with water, the river here is elusive. Downtown, it takes the form of a widely ignored ditch, a dozen feet below street level and a few feet wide. Hundreds of tourists likely walk beside it or drive above it without ever realizing they've forded the Santa Fe River. It's usually damp, sometimes trickling.

On our side of town, out where the trees fade and the small farms and working-class suburbs begin, the river is just a dry sandy cut between neighborhoods. But during the spring melt and the summer monsoons, officials sometimes let water slip past its two dams in the hills above the city, and the river rises from its subterranean groundwaters and flows. I've never seen it make it all the way to the Rio Grande, its final destination; it always fades back underground before then. But when it runs, we go see it; we say hello and touch the water. It's hard to capture the

thrill of watching a few inches of water push its way down the sand, around the occasional boulders and past the suddenly shockingly green bushes that line its path.

We mark the seasons by its rare appearances and more common disappearances — its high summer form as a hot, dry strip of sand or its fall form, covered in branches and dead leaves. My husband found records of it once carrying enough water in winter to ice skate on, but not anymore. To us, it's The River. However, legally, mercurial waterways like this one sit in a liminal space.

What is a waterway? Can that term encompass paths across the landscape that are only occasionally wet? For decades federal courts and presidential administrations have decided yes and then no and then yes again.

No one, not the courts or federal agencies like the U.S. Environmental Protection Agency or the Army Corps of Engineers, can seem to resolve the question for good. In 2006, the late Justice Antonin Scalia, writing the court's decision to limit the definition of a waterway, famously mocked the idea of water in the desert, detailing all the instances of lower courts upholding seemingly ludicrous water bodies. "Most implausibly," he wrote, they'd supported treating as waterways "'washes and arroyos' of an 'arid development site,' located in the middle of the desert, through which 'water courses ... during periods of heavy rain.'"

If you think legal opinions need to be sober and even-keeled, Scalia's shows the possibility for sarcastic, even scornful legal analysis. It also showed the possibility for two people to have incredibly different life experiences: East Coast born and bred, Justice Scalia clearly knew a kind of waterbody I had rarely encountered. And he never seemed to have met any of the rivers and creeks and arroyos I knew. His definition excluded my local ditch, of course, but likely also the Santa Fe River and much of the Los Angeles River watershed. It would also exclude about 90% of the water bodies in New Mexico, including ones that feed the state's agriculture, act as sites of worship and offer a chance for a quick dunk during June hot spells.

One winter, when I lived in a small, dry farm town in western Colorado, my friend and I made a pact: We were going to swim in a wild body of water and ski every month of the year. But we were busy and our standards were low and we lived at the edge of the desert. Very quickly we began to interpret all the terms of our promise far more loosely than Justice Scalia would have liked. We skied a lovely finger of snow in the mountains above town and then stripped in order to lie down in the 4-inch-deep river — "wild" — that flowed out of it. If we could get our faces under, my friend reasoned, it counted. We accomplished this by lying face-down until we ran out of breath — "swimming." Once we were dressed and warm, we drove back to town, where the river tapered to a small sliver of frozen water that wound between mud and rocks.

By the end of the year, I'd mostly skied a dirty patch of snow 30 minutes outside of town and 100 yards long. And we'd done most of our swimming in an agricultural ditch that ran behind my friend's house. When I read Scalia's scorn for the now-you-see-them-now-you-don't nature of arid waterways, I considered how those two unimpressive, ephemeral bodies of water had transformed the way I think about connecting with the places we live.

The ditch we relied on for our summer swims feeds roughly 15,000 acres of farms and ranches. It was carved into the hillside relatively recently, first as a small conduit for river water and later as one for water from Paonia Reservoir, built upstream in the 1950s. When it eventually dries up from the sedimentation filling the reservoir or a nasty fight over water rights, its lineage will have existed for only a few decades, a bit more than a century. Each fall, we'd watch it fade into a corridor of mud and dead plants when the water from the reservoir stopped flowing. Then, each spring, we'd see the same mud-laden creature return, its murky waters flowing the same slow-moving path each year, with the same concrete-channeled patterns.

The dirty snow patch, however, seemed like a new creature every year. It grew, lived, and died in the same ecosystem where it was born, the same ecosystem where every one of its ancestors had been born since long before the ditch was ever built. Its borders changed slightly from year to year and month to month. Sometimes it became a hard, icy rhombus tucked against the base of the cliff. Other times it softened, warmed by the sun, and sprawled across the meadow, pockmarked with grasses pushing through. And in the high months of summer, it left an indentation filled with an unusually verdant swath of wildflowers. Each time I got ready to ski it, I felt a little nervous buzz. What surprises did it hold? What would it be like? Would it even still be there, or would it have migrated downstream into the reservoir, to rest for the winter, before flowing through the concrete-lined ditch?

In his opinion, Justice Scalia argued that his definition of a body of water — flowing, big, always wet, never dry — was, ultimately, the only natural one, the one any reasonable thinking person could agree on. It was simple, he seemed to say; this category is clear. It casts the world's topography as bounded things. A geographic feature — water — is one thing and not another: land. It's certainly not two things at once: wet and dry, there and not. And there's certainly a compelling human logic to it. Daily life is full of messy decisions; wouldn't it be nice if someone out there had a clear explanation and some order to impose on it?

But this logic is a kind of intellectual cheat code: It attempts to cut a straight path through what is, in fact, a labyrinth you just have to steadily make your way through. This applies to more than just water; most aspects of geography defy straightforward categorization. Don't think too long, for example, about what constitutes a mountain. And certainly don't raise that question with someone from another part of the country, unless you are looking for hours of debate. A category that includes the Appalachians and the Rockies, but excludes the Black Hills, is certainly not one with clear boundaries any reasonable person can easily define. I'm not saying you can't define these things, just that you might have to put up with a little more shiftiness than Justice Scalia seemed comfortable with.

I am trying out a wobbly definition of water these days. To me, a body of water is one that changes, that moves around and adapts to the weather, that has a life and a force of its own. It's the snow patch, adapting its shape to temperature and sun angle and precipitation. It's the Santa Fe River, unexpectedly flowing in February when the snows melt too quickly, or in August when the monsoons come, or like this spring, during a big snow year and a wet spring and the whole town comments on it: The river is flowing.

This essay is from a chapter in a forthcoming book from Torrey House Press edited by Laura Paskus.

ESSAY

A Hxstory of Renting

Using art to preserve what gets lost when a community gentrifies.

TEXT AND PHOTOS BY ERINA ALEJO

AFTER COLLEGE, I moved back to SOMA, the South of Market district in San Francisco, with no plans except to be home with my mom and Lolo Jesus, my grandfather, while my brother was away finishing college. Lolo's health declined rapidly; my mom and I would head straight to the hospital after work to be with him. Then I'd spend late nights doing our family's laundry across the street from our apartment at the Clean Wash Center. My weekly 11 p.m.- 2 a.m. routine at the laundromat provided solace and contemplation. I formed friendships with the elderly Filipino attendants in ways I wished I could have done with my own reticent grandfather, especially after his passing.

Creating the body of work that forms "A Hxstory of Renting" (AHOR) was my way to grieve and honor my shifting world and city. Moving back home after college humbled me. I was confronted with the ironies of tradition and change as a San Francisco third-generation renter.

As my 87-year-old maternal grandfather's health declined after a bad fall, the luxury city buildings rose higher around us, eclipsing the lives of families like mine, who remained vulnerable to the affordable housing crisis. AHOR's body of work spans photography, archival research, site-specific performance work and installations, poetry, investigative journalism and public activities, such as neighborhood alternative tours and tenant rights workshops.

In one performance, "Scatter Piece," I routinely strewed poetry addressing the ongoing displacement and gentrification around my working-class neighborhood, Excelsior. This first iteration focused on a contested lot that was supposed to be redeveloped into luxury housing, something the poem addressed through the grief of an eviction and the erasure of a tenant's history. The poem was translated into languages spoken in Excelsior, including Tagalog, Vietnamese and Spanish, by artists and community organizers — all renters, from Excelsior to Hanoi.

AHOR is my *anting-anting,* a talisman to combat my city's complicity and cultural amnesia in gentrification and displacement. But beyond these abstract ideas, AHOR, at its core, is my way of showing my love for my late grandfather.

I mourned Lolo Jesus through AHOR. My grief fueled my relentless drive to attend as many community gatherings as possible to document our community's cultural wealth. AHOR celebrates and is inspired by the multitude of voices of those who do this quiet, and at times lonely, work of remembering. AHOR embodies our actions, stories and shared responsibilities. We further our existences through collective action.

My family's hxstory of renting began Dec. 31, 1959, on unceded Bay Miwok Land. That evening, my maternal grandaunt, "Lola" Marina Chioco Peña, began her new life in America as a renter with her husband and five children. She left our ancestral property in Nueva Ecija, Philippines, and compacted her life and dreams within a two-bedroom apartment in the Pittsburg Marina district of Northern California.

As a young person and organizer, my mother traveled between the U.S. and the Philippines from 1983 to 1991. Her work shaped AHOR's community-engaged framework.

During the 1986 People Power Revolution in Metro Manila, Philippines, my mom carried calamansi-doused handkerchiefs to flush out the tear gas the military threw at demonstrators at Liwasang Bonifacio, the Mendiola Bridge and Welcome Rotonda. She protected ballot boxes before the votes were tallied by sitting on them at voting precincts during the Feb. 7, 1986, Snap Election and the Feb. 2, 1987, Constitution Referendum. While our family's immigration papers were being processed, my mom, then 16, lived with Lola Marina in Pittsburg, California, getting up at 3 a.m. to walk to McDonald's for her opening shift.

Today, my mom, affectionately known as "Tita Tina," serves the South of Market community as a kindergarten teacher at my own alma mater, Bessie Carmichael Filipino Education Center Pre-K-8. AHOR thrives because of mxntors like my mom, who taught my brother and me to look back to our origins and build the kind of genuine relationships with people that begin when one simply starts showing up.

AHOR accompanies me on my BMW (bus, muni, walking) commute on our local train and bus systems and on my walks, especially along Mission Street, which threads my home districts, rooted in anti-displacement organizing. In its core, Frisco, The City, SCO, Sucka Free, 4-15 — you name it — still remembers who it is, who it was and who it will be through voices like mine that persevere to recollect, contextualize, remember. These are my field notes as an ethnographer on unearthing a facet of my city's memories: "A Hxstory of Renting."

As my 87-year-old grandfather's health declined, the luxury city buildings rose higher around us, eclipsing the lives of families like mine.

After-school hours at Bessie Carmichael FEC Middle School Campus, SOMA, spring 2017 *(left)*.

Ephraim Basco, Ivan Yu, Kimberly Bustos and Rico Remedio at the Save Little Masantol action, SOMA, 2018 *(below, right)*.

Andrew greets the camera at Natoma Block Party, SOMA, 2019 *(bottom, right)*.

Tina Alejo, teacher, Bessie Carmichael FEC Elementary School, SOMA, 2019 *(bottom, left)*.
Janet Delaney

TOWNSHIP AND RANGE

Exploring the intersection of race and family in the interior rural West.

Dino time

Teaching kids to appreciate slowness in a speeded-up world.

BY NINA MCCONIGLEY
ILLUSTRATION BY TARA ANAND

MY FATHER, a geologist, spent the summer helping to unearth a triceratops. He's been volunteering on and off at an active excavation in central Wyoming ever since he retired from the oil and gas fields. My dad is a man of few words, even in our very active family group texts. But starting in July, a wave of messages started to roll in.

Today I found a sacrum bone.

In the mesaverde foundation.

Found and excavated this rib bone from a Triceratops.

Here's part of the skull of a triceratops I found.

Sometimes there was a photo. Most of them just looked like dirt with something sharp jutting out, or a shallow pit full of rocks. Occasionally I could make out a bone, its outline in stark relief to the ground around it.

Throughout the summer, my daughters, Juniper and Marigold, did their own excavations. Every day after daycare, we'd march out to the garden and turn over a large flagstone wedged between some mint and penstemon, looking for roly-polies. Startled by sunlight, the bugs coiled into spheres and froze on the cool ground. If we were lucky, there'd be a fat worm under the rock as well. We'd sit and watch worms wriggle and roly-polies digging in the cool earth, their tiny worlds invaded. Roly-poly bugs roll up fast, but otherwise they are slow little beings. They are miniature crustaceans, their own little compost bins.

Juniper, age 3, burrowed in the packed dirt and put roly-polies in her hands, delighted when they rolled up like small pebbles. It was a summer of learning, teaching her how to cradle the roly-poly or how to pick up a ladybug without doing damage. Sometimes she got over-excited and accidentally crushed a bug in her hands. I tell her that we must be gentle. To dig slowly. Or to not dig, to lift the rock and just observe. To watch and wait while this little ecosystem in our yard goes on about its merry way.

Today we found part of the hip bone, the ilium.

TO JUNIPER AND HER SISTER, everything is fast. At Halloween, she wanted to watch *It's the Great Pumpkin, Charlie Brown,* and within minutes I was streaming it for her. I still remember, when I was 8, waiting to watch it the *one* night it came on TV, and then getting the time wrong. Crushed, I had to wait a whole year to see it again. If Juniper wants macaroni and cheese, it's cooked within three minutes in the microwave. Her new ballet shoes arrived overnight from a big-box store. I can download music for her to listen to on our drives in an instant. She waits for very little. And so, our garden poses a conundrum.

We moved to Colorado several months ago and inherited an amazing garden. When we first went to look at the house, the real estate agent had trouble opening the door. So my husband and I went around back and saw the garden first. A ditch banked with tall grass flows through it, and I marveled at this wild yard in suburban Colorado. The people who lived here before us were impeccable with their garden. They left us, on the counter with the keys, a list of all the birds that could be seen in the neighborhood and a pole for catching crawdads from the ditch. My first thought after we bought the house was: *How could we keep such a big garden?* But we moved in December, and I didn't think about the garden for months.

> *She is beginning to understand that, in the natural world, things take time.*

Once the weather got warm, it felt like Christmas every day. We'd go outside and see all the different flowers blooming. We felt joy in finding each new plant, gratitude that we had oregano, clematis, mint and a peach tree. And then there were the peonies. Juniper was impatient with the tight balls of pink that didn't seem to change for days on end.

"Where are the flowers?" she asked.

"We have to wait, Junebug."

We jumped for joy when the peonies finally bloomed, their petals dancing in the wind like ballerinas' tutus.

The summer was spent making hollyhock dolls with toothpicks and watching everything slowly, slowly morph. Juniper watched our raspberry bush like a hawk, waiting for the berries to ripen. She learned that green tomatoes are yucky and that the early peas aren't very sweet. She is beginning to understand that, in the natural world, things take time.

This is the bone I excavated today, part of the pelvis we think. Most of it is probably still buried.

I TELL HER that grandfather is helping to dig up a dinosaur.

"Let me see," she says.

When I show her the mounds of earth, the photos of one lone bone, she is confused.

"That's not a dinosaur!"

I assure her that it is, that the bones are under the earth. That you don't have to see all of something to believe it. That things take time. And that bone by bone, that dinosaur will come up and be put whole again.

"I want it now!" she exclaims.

It's hard to explain patience to a 3-year-old. Her sister, at 1, is even worse. She cries as I warm her milk in the morning. I tell her it can't warm any faster. I want to explain to them both that the best way isn't always the fastest way. How do I teach my girls garden time? And, even slower, geologic time?

Today's find, part of the frill.

WHEN I ASK my 83-year-old dad why he wants to go out and volunteer in almost 100-degree weather with no shade to do painstakingly slow work, he takes a minute to answer.

"It gives me a thrill to find a 70 million-year-old bone. And to think it's the first time it's seen the light of day in millions of years? How amazing is that!" His eyes light up with wonder, like Juniper's.

For months, I've been asking her what she wants to be when she grows up.

"A dinosaur!" she replies.

What kind, I ask?

"A big one!" and then she roars at me.

Last week, her answer changed.

"A roly-poly!" She folded her body into a tiny ball, shrieking with laughter.

She may not understand time, but she appears to have the wonder part down just fine.

Heard Around the West

Tips about Western oddities are appreciated and often shared in this column. Write heard@hcn.org.

BY TIFFANY MIDGE | ILLUSTRATION BY ARMANDO VEVE

MONTANA

What's a homeowner supposed to do when a grizzly bear takes a shine to their 6-foot-tall shed and starts using it as a combination scent post/back scratcher/claw-sharpening-and-nail-polishing device? Jamie Goguen realized she had a *beary* big problem indeed when a very large grizzly — estimated at between 700 and 800 pounds — began enthusiastically tearing up the generator shed on her property. Fortunately, the folks at Montana Fish, Wildlife and Parks know a thing or two about bruins, and they came up with a fur-raising solution to the problem, *Field & Stream* reported, teaming up with Goguen to install electric fencing that should discourage future visits and "prevent further conflicts with humans and structures." We just hope the grizzly finds a decent replacement. You know how it is when you get an itch; you've just got to scratch it, no matter where you are.

WASHINGTON

Taylor Swift's "Eras Tour" is not just breaking records; it's keeping local seismologists busy. *The Seattle Times* reported that all the singing, dancing and screaming during Swift's back-to-back, sold-out shows at Seattle's Lumen Field in July generated seismic activity comparable to a 2.3 magnitude earthquake. A reported 72,171 fans were rocking out, and that's a lot of Swifties. Scientists have been warning us that "The Big One" is due to hit the Pacific Northwest any day now. We just hadn't realized they were talking about a pop star.

MONTANA

When the newspaper's front page features an above-the-fold story about an "unidentified electric vehicle" siphoning power from the local electric utility, chances are it's either a slow news day or a very small town. The vehicle in question, a Tesla Model Y, belonged to Chad Lauterbach, who drove from Los Angeles with his girlfriend, Allis Markham, a well-known taxidermist, to Ekalaka to volunteer at the county museum's annual dinosaur festival, the *Montana Free Press* reported. Unfortunately, Ekalaka, population 400, is located in a vehicle-charging wasteland two hours from the nearest Walmart. The car's navigation system began "throwing out warnings" during the long drive, but if worse came to worst, Lauterbach hoped that a good Samaritan would rescue them — though it might take days to recharge a vehicle using a 120-volt outlet tucked away in someone's garage. However, they got lucky; there was an unlocked outlet connected to a utility pole on Ekalaka's main street. Markham hesitated to use it, but Lauterbach said that if anyone noticed his car and got worried, they could get in touch with the museum director, whom he'd previously notified. Surprise, someone did notice it: The next day, Lauterback's Tesla appeared on the *Ekalaka Eagle's* front page, described as a "UEV: Unidentified electric vehicle," and the article questioned whether the car's owner had actually paid for what it dubbed the "stolen volts." Markham hurried over to the power company, the Southeast Electric Cooperative, and told the front desk that she was "here to pay for the crimes of the UEV," causing the staff to howl with laughter. The couple ended up paying $60 for the electricity, enough to cover the band that used the outlet during the dinosaur festival's street dance. Asked about whether the utility co-op has plans to install an electric charging station, manager Tye Williams replied that they'd been "kicking around the idea," but Ekalaka is so remote it isn't on the state's priority list, though Williams agreed that they'd need to do something within the next decade, "or some amount of time." Markham, who had warned Lauterbach about charging his car without permission, clearly got a charge out of the whole situation: "Having an 'I told you so' on the front page of the paper is very validating for a woman," she quipped.

WASHINGTON

"Happy birthday" to Herman the Sturgeon, a renowned 10-foot-long, over 500-pound fish who recently turned 88, KGW8 News reports. The stately birthday dame — this particular Herman is actually female, not male — resides at the Bonneville Dam Fish Hatchery, a popular site for folks to visit and learn about fish hatcheries, conservation and really big fish like Herman. "It's the perfect place to have an interpretative center for sturgeons and talk about conservation of the species and then just enjoy a really wonderful day on grounds that are beautifully manicured and landscaped," said Tim Greseth, executive director of the Oregon Wildlife Foundation. Fun fact: Sturgeons have been around since Jurassic times, though, as we all know, a lady — even if she's a fish named Herman — seldom reveals her true age.

HISTORIC CLIMATE VICTORY

We represented 16 young people in the first ever U.S. climate trial alongside our partners at Our Children's Trust and McGarvey Law, aiming to hold Montana's government accountable for worsening the climate crisis through a misguided devotion to all forms of fossil fuels.

During that trial, the youth plaintiffs bravely testified about how climate change has harmed their health, livelihoods, cultural practices, psychological well-being, and the state they call home.

World-renowned climate experts testified that Montana's promotion of fossil fuels and suppression of renewable energy have aggravated drought, fueled megafires, and depleted natural resources.

The state constitution guarantees Montanans the right to a clean and healthful environment, equal protection under the law, and more. Unfortunately, the state's laws and policies favoring fossil fuels infringed on those rights.

In August, the court issued a historic ruling in the plaintiffs' favor, recognizing that the right to a clean and healthful environment is meaningless without a livable climate.

One expert called this "the strongest decision on climate change ever issued by any court." Let us celebrate this hard-fought victory, and the bravery of these young people fighting for their future.

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#IAM THE WEST

ANTHONY HUDSON / CARLA ROSSI (CONFEDERATED TRIBES OF GRAND RONDE, SILETZ}
Drag clown, artist and writer
Portland, Oregon

I usually get my photo taken when I'm in fresh makeup, but never after the show, when I look like garbage with a gleeful glow. This is when I feel the most alive — the most me. Whether it's after my solo show, *Looking for Tiger Lily*, my drag horror series, *Queer Horror*, teaching drag and gender performance with youth, or reading from my memoir in progress, this is what it feels like to share my dreams, anxieties, imagination and laughter with a room full of people. I write and perform for that weird queer Native kid in a small town who longed to see this work when they were growing up — for kids like me. But even when I'm selfishly sharing an image or idea that makes me giggle hysterically on my own, I try to make the personal universal. And in those moments of recognition, I hope we all feel a little more alive, and a little less alone.

Evan Benally Atwood / HCN

Do you know a Westerner with a great story?
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