

High Country News

A FESTIVE PLANT RUNS AMOK



The Endangered
Species Act turns 50

Lesbian lizards
and queer biology

The industrialization
of the Great
Salt Lake

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HIGH COUNTRY NEWS

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A subdivision in Bozeman, Montana, last winter. **Louise Johns**

Know the West.

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For the love of a species

A JOSHUA TREE is a funny thing to behold. With their green spiky new growth at each arm's end and the shaggy yellow remnants of older growth lower down, they're like a cross between a palm tree and an agave. (They're actually a yucca.) Sometimes they seem almost human, especially at dusk, in the wake of a blue, pink and orange high-desert sunset, when they appear to dance joyously, arms all akimbo, like an eruption of shrug emojis. But all is not well for this quirky plant. Of its two species, the western Joshua tree, *Yucca brevifolia*, is more endangered than the eastern Joshua tree, *Yucca jaegeriana*. In recent years, millions of both have been lost, killed by fire — the York Fire in 2023 and the Dome Fire in 2020 — and to make way for housing and for solar farms, which are popping up across the Mojave Desert.

Joshua trees were considered twice by the U.S. Fish and Wildlife Service for listing under the Endangered Species Act, but were denied both times. In 2020, the California Fish and Game Commission accepted the western Joshua tree as a candidate for listing under the state's own Endangered Species Act. Would that protection be enough? The tree's habitat largely overlaps with the Mojave, a desert that is experiencing rapid aridification. The annual precipitation in Joshua Tree National Park dropped by 39% from 1895 to 2016, while the average temperature increased by 3 degrees Fahrenheit. By the end of the century, studies show, Joshua trees may no longer be able to survive in their namesake park. Has the speed of change outpaced the ability of environmental laws to make a difference?

The Endangered Species Act was written half a century ago, when the primary cause of species endangerment was human interference with ecological systems — dams, development, pesticides, industrial effluent. And while these are still factors, the most momentous human interference — our warming of the atmosphere on a planetary scale — is now a leading cause of ecological harm. As the climate morphs into an angrier and more intense version of its previous self, there are limits to what the ESA can do to save a species — and yet it's still one of the best tools we have. On the 50th anniversary of the law's passing, we bring you *ESA@50* (p. 16-23), a collection of stories about what the Endangered Species Act was designed to do, what it does well, and what might make it more effective over the next 50 years. As for Joshua trees? My advice is to enjoy their company while you can.

Jennifer Sahn, editor-in-chief

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ON THE COVER

English holly.
Peter Bohler / HCN

Angel Velasquez, left, and her husband, Delbert Velasquez, and their children, Delyana and DJ, pose for a photo with the Colorado Rockies mascot at the new park built over Interstate 70 in Denver's Globeville Elyria-Swansea neighborhood.

Amanda Lopez / HCN



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LETTERS

High Country News is dedicated to independent journalism, informed debate and discourse in the public interest. We welcome letters through digital media and the post. Send us a letter, find us on social media, or email us at editor@hcn.org.

HOUSING AND HEALTH

Referring to the awesome concept of turning Eureka, California's inner-town parking lots into affordable housing ("Green-washed efforts to block affordable housing," November 2023), I can't think of a better idea than repurposing those for people who really need housing. The pushback — increasing walking distance of customers to stores to avoid alleged personal attacks — might be the lamest, least well-conceived argument I've ever seen. At a time when health problems linked to lack of exercise are running rampant, the best thing we can do is walk outdoors more — even if it's a longer distance to the store from the car.

Emma Lea Shoop
Elected city council member
Yuma, Arizona

CO-OP POWER

I read your recent ranching article, "Meat to market" (November 2023), with great interest. I am part of a ranching family in Oregon, and I run the Regenerative Ranching Program for Sustainable Northwest. We're helping ranchers raise beef in harmony with nature.

One of our most significant partners in this is Country Natural Beef (CNB), a cooperative of ranchers since 1987. All of their 100-plus ranches, including my family ranch, are enrolled in our regenerative ranching program. This co-op model allows ranchers like the ones featured in your article to focus on what they do

best — ranching. By banding together, they can better manage sales, marketing and other business activities as a group.

CNB has had a lot of success with this model and broken through to retail chains. The co-op structure allows ranchers to tap into partnerships like the one with Sustainable Northwest, which secured federal funding from the USDA's Climate-Smart Commodities program for a five-year program to help expand its regenerative ranching practices and reach more consumers.

The benefits of the co-op model are great, as are the opportunities and the challenges. Co-ops offer a counterpoint to industrial agriculture that has yet to be fully tapped.

Dallas Hall Defrees
Sustainable Northwest and
Defrees Ranch
Baker City, Oregon

Thank you for the awesome article "Meat to Market." At this point, big corporate monopolies control 90% of our food, squeezing out the small farmer and rancher 1% at a time, while most of us lemmings march to the nearest big box, where we can conveniently get all our groceries in the same place and spend less. Problem is, when something seems too good to be true, it probably is. If we don't change our buying habits, our planet doesn't have a chance, much less local meat.

Julie Smith
Golden, Colorado

MEANINGFUL MENTORS

I wanted to commend Sterling HolyWhiteMountain's piece ("We must go beyond it," November 2023). I, too, was lucky enough to have a teacher like HRH. SAB began as my professor, but became an ally, friend and eventually my Ph.D. advisor. He was a complicated man, capable of both generosity and cruelty.

When he died, I, too, thought I knew something of grief. However, his absence lingers through the years. I also find myself wishing I could talk with him about one more idea. One more paper.

Thank you for making space for such a wonderful piece, and thank you to HolyWhiteMountain for putting such complex feelings into words.

Erin Gilpin
Bishop, California

AGRICULTURAL EXPLOITATION

Kudos on your October 2023 article exposing the abuse of herders in the sheep-ranching industry ("Alone on the Range").

The plight of poor immigrant sheepherders and their callous treatment by greedy, uncaring ranchers deserves our attention. But we've learned more: The government agencies that exist to prevent abuse and redress wrongdoing are either insufficiently resourced or working within a regulatory environment where the laws are inadequate to protect victims of abuse, or they lack the leadership and energy to pursue wrongdoing and the ability to coordinate with sister agencies. Your article makes clear that rural legal services programs are vitally important to secure the rights of poor agricultural workers. If we care about helping workers, we need to push to

get more funding and staff for free legal services.

That change will be a slow uphill climb. Meanwhile, I'll decline to buy lamb or its byproducts. If others do the same, maybe the sheep industry trade groups will get the message.

Fred Krasner
Ashland, Oregon

GOOD STORY ON GOOD FIRE

Thank you for the hard-hitting article on cultural fire in California "Cultural fire is good fire, and California needs more of it" (hcn.org, Oct. 23, 2023). I am now a new subscriber and look forward to more excellent work.

Roger Carroll
Omaha, Nebraska

LOVE WHAT'S LOCAL

As someone who makes a conscious effort to appreciate the landscapes closest to my home, I especially enjoyed Ruxandra Guidi's excellent piece "We don't need utopias" (September 2023) and its focus on the local and the here-and-now. When I read that the inspiring project Guidi covered was called "Drutopia," I couldn't help but smile. I was reading it the day before I began a two-week vacation to appreciate the unique natural beauty in the region I live. The first week I had dubbed "Larchapalooza," as it focused on backpacking trips to appreciate the splendor of alpine larch at peak fall color, and the second was "Soaktober," which focused on appreciating the geothermal wonders of natural hot springs. I think having a bit of levity and hype around exploring our natural environments is a beautiful and important thing, and I was glad to read about kindred spirits in other parts of the West.

Mark Wetherington
Hamilton, Montana

Bridger View, a development in Bozeman, Montana, is a new neighborhood meant to provide affordable housing.



REPORTAGE

Montana's half-hearted housing miracle

The state's new housing laws will boost development. What about affordability?

BY SUSAN SHAIN | PHOTOS BY LOUISE JOHNS

CONNIE HOWELL has lived in Montana for 40 years, nearly half that time in a tan-and-brick apartment complex in Bozeman. It's always been a pleasant place, with a small courtyard and distant views of the Bridger Mountains. But since 2015, the rent for the one-bedroom unit that she shares with her husband, Chris, has nearly doubled.

The couple, who depend on Social Security and disability payments, now put about half of their monthly gross income

toward rent. Affordable housing, in contrast, is generally defined as costing no more than 30% of a household's gross income.

Howell has seen friends leave Bozeman because they could no longer afford housing, and her daughter hasn't been able to move back here for the same reason. Compared to them, she considers herself lucky. But at age 65, she is "scared to death" of that luck running out — of something happening to her or Chris, since neither could make

rent on their own.

"I get this thought in the pit of my stomach that just sometimes won't go away," she said. "I don't know how I would survive, and I don't know how he would survive."

Montana, like much of the country, is experiencing a housing crisis. At the start of 2020, the value of a typical home here was \$282,277, according to Zillow; now it's \$453,567, a leap of 60%. Renters suffered, too: In Lewis and Clark County, which includes the state capital, Helena, rents jumped 37% in two years, ranking it fifth among all U.S. counties for rent growth. Across the state, the rental vacancy rate plunged from a healthy 6.9% in 2017 to just 3.2% in 2022.

These rapid changes prompted Gov. Greg Gianforte, a Republican, to appoint a bipartisan housing task force in summer 2022. The group's recommendations led the state Legislature to pass a raft of housing-related bills

in its 2023 session. The speed and breadth of the changes garnered national attention, with some even dubbing the reforms "the Montana miracle."

Yet many Montanans, who find themselves and their neighbors unhoused, insecurely housed or fiscally imprisoned in dilapidated digs, deride this characterization. They say they're not feeling any miracles — and that, even if the recent bills boost the housing supply, many people will be left in the lurch because lawmakers failed to adequately address affordability.

Even experts aren't sure how Montana's strategy will fare. Martha Galvez, executive director of New York University's Housing Solutions Lab, was heartened by the state's progress, calling it a "pretty impressive change in a pretty short amount of time," but she wasn't ready to declare victory yet. "It'll be interesting to watch how these new changes play out," she said.

BETWEEN 2020 AND 2022, with many people eager to flee cities and live out their *Yellowstone* fantasies, Montana added more than 40,000 new residents. And just 8,700 new homes. Some of these newcomers were remote workers, who brought their incomes with them: The share of Montana households earning more than \$200,000 annually rose by more than a third in recent years, the largest surge of any state by far. As these high earners sought housing, and as the costs of materials and labor went up, prices ballooned.

“A decade ago, (Montanans) could get into a rental, get a job that paid a wage that covered their needs, save up for a down payment and reasonably buy a home,” said Kaia Peterson, executive director of NeighborWorks Montana, a nonprofit housing organization. “That formula really doesn’t exist in most places anymore.”

As similar scenes unfurl throughout the West, some say there’s a relatively simple solution: Build more housing. Though this approach has its skeptics — those who argue that more development merely leads to more luxury condos and gentrification — Galvez’s NYU colleagues have found otherwise. In two reports that analyzed dozens of academic studies, the authors concluded that building more housing can, eventually, lower prices for low- and middle-income families, through several different mechanisms.

One is by sparking so-called “chains of mobility”: As wealthy people move into brand-new granite-countered, stainless-steel-applianced developments, their former, slightly less shiny housing becomes available to those with slightly

lower incomes, and so on down the line. Plus, housing units often grow less desirable with age, which means that today’s new builds could, decades down the road, become tomorrow’s bargains.

The build-more solution “is just basic economics,” said Eugene Graf IV, a fourth-generation Bozeman homebuilder and member of the state’s housing task force. “Prices are going to go up if there’s not supply.” The task force embraced this theory, and Montana’s Legislature followed suit.

It passed a slew of measures intended to promote greater and denser development, such as requiring cities to allow duplexes and accessory dwelling units and eliminating minimum lot sizes and parking requirements. Legislators also increased funding for a trades education credit to address the state’s shortage of skilled laborers, and for infrastructure like sewers and roads.

The state front-loaded its public review process for certain subdivisions, too. Under the old system, residents could comment on developments as they arose; now, Montanans must voice their concerns when cities are creating land-use plans. Once those plans are completed, any conforming developments will proceed by right. Combined with other red-tape-cutting measures, Graf, the builder, estimated the changes could halve the time needed to construct a new subdivision: from roughly four years to two.

MORE SUBDIVISIONS, however, are only half the equation. The other half is making sure that people can afford to live in them. As the NYU researchers wrote: “New market rate housing is necessary but not sufficient. Government intervention is



Members of Bozeman Tenants United gather for their weekly meeting in October (above). Left, Connie and Chris Howell in their apartment in Bozeman, Montana. Rental payments consume about half of the couple’s monthly income.



critical to ensure that supply is added at prices affordable to a range of incomes.”

And despite a \$2.5 billion surplus in the state budget, Montana lawmakers chose not to pass several affordable housing measures during the 2023 session, instead spending nearly half of it on tax cuts and rebates. Just \$106 million was devoted to down-payment assistance for middle-income homebuyers and low-interest loans to developers of affordable multi-family housing.

Benjamin Patrick Finegan, co-founder of Bozeman Tenants United, sees this as a major misstep. “Unregulated building of more housing isn’t going to ensure that people who live

and work in Montana and are trying to build lives here and start families will actually be able to do that,” said Finegan, a 26-year-old whose own parents have been priced out of the city. “The creation of new housing and ensuring that it’s affordable, I think, have to go hand-in-hand.”

The Republican-controlled Legislature voted down several affordable housing proposals, including a housing tax credit, which would have incentivized affordable rental development, and a housing trust fund, which could have subsidized the construction of roughly 500 additional low-income apartments every year. (Gianforte’s office declined to answer questions about the importance of affordability.)

Finegan is frustrated that the housing task force, which is mostly composed of developers, politicians and government officials, doesn’t include anyone who is, to his knowledge, housing insecure. (It does include representatives from Shelter

Industry on the Great Salt Lake

- ▼ Industrial site
- Proportional acreage footprint, 2,000 acres
- Department of Defense
- Wetland habitat
- National Wildlife Refuge
- Approved inland port site
- Proposed inland port site

- a. Utah Inland Port Authority (UIPA) Golden Spike Project Area
- b. Compass Minerals
- c. Little Mountain Test Facility
- d. Moulding & Sons Landfill
- e. UIPA Proposed Weber County Project Area
- f. Promontory Point Resources Landfill
- g. Waterleaf Resources Proposed Lithium Mine
- h. Union Pacific Railroad Causeway
- i. HF Sinclair Refinery
- j. Silver Eagle Refinery
- k. Big West Oil Refinery
- l. Chevron Refinery
- m. Marathon Refinery
- n. Salt Lake City International Airport
- o. Utah State Correctional Facility
- p. UIPA Northwest Quadrant Area
- q. Kennecott Tailings Ponds
- r. Kennecott Refinery
- s. Kennecott Smelter
- t. Kennecott/Bingham Copper Mine (acreage bubble includes q, r, s, t)
- u. UIPA Verk Industrial Park Project Area
- v. UIPA Grantsville Proposed Project Area
- w. UIPA Tooele County Proposed Project Area
- x. Morton Salt
- y. Cargill Salt
- z. Wasatch Regional Landfill
- 1. Hill Brothers Chemical (acreage unknown)
- 2. US Magnesium
- 3. Utah Test and Training Range
- 4. Global Battery Metals Lithium King Project
- 5. Rozel Point Oil Field



10 miles

A toxic tour of the Great Salt Lake

Utah grapples with its future of industry around its dying inland sea.

BY BROOKE LARSEN
MAP BY LUNA ANNA ARCHY

FLYING ABOVE the Great Salt Lake, you'll see a patchwork of colors. Evaporation ponds for potash production glow neon-green and fuchsia. The lake's North Arm, separated from freshwater instream flows by a railroad causeway, radiates a bright pink from microorganisms that survive high salinity. The south half is a deep blue, punctuated by red streaks from brine shrimp cysts, which 21 companies harvest. Often there's a brownish-gray smog, caused by emissions from magnesium producers and oil refineries or toxic dust clouds from the dried-up lakebed.

The peculiar colors of Utah's inland sea — the largest saline lake in the Western Hemisphere — are largely from industrial development. After all, “the state's motto is ‘industry,’” said Chandler Rosenberg, deputy director of the Great Basin Water Network. Mormon settlers dubbed Utah the Beehive State because bees symbolized hard work. Despite scientists' warnings that drought and unsustainable water use could make the lake disappear in five years, extraction and pollution continue. On Sept. 6, five environmental groups, including the Utah Rivers Council and the Center for Biological Diversity, sued Utah for failing to protect the Great Salt Lake. If they win, Utah may have to reconsider its motto.

A tour around the lake reveals what environmentalists are up against: the cumulative impacts of more than a century of unchecked development.

This satellite image of the lake in July 2022 has been digitally altered to reflect the colors of the lake seen from the air by EcoFlight. **Joshua Stevens / NASA**

Starting on the west edge just below the railroad causeway that divides the lake in two, the U.S. Air Force practices bombing and gunnery at the Utah Test and Training Range, the largest special-use airspace in the continental U.S. and a hazardous waste storage site that has contaminated groundwater.

Nearby, on the lake's North Arm, is the site of Waterleaf Resources' proposed lithium mine. The lake's brine contains lithium, and new prospectors and longtime local companies are eager to cash in on the battery metals boom. Earlier this year, the state updated its lithium-mining royalty standards, which include new water conservation measures for the lake, but it's unclear when they'll go into effect. In July, Waterleaf Resources submitted an application to the Utah Division of Water Rights for 225,000 acre-feet of water from the lake, claiming they'll return it all once the lithium is removed.

Farther east beyond the causeway, avocets, pelicans, phalaropes and over 200 other bird species nest and feast at the Bear River Migratory Bird Refuge on their journey between Canada and South America. In August, the Utah Inland Port Authority (UIPA), a state agency, approved a new project area a half-mile away. As of mid-November, UIPA has three approved and three pending inland port projects — manufacturing, transportation and warehouse logistics centers — on or near the lake's wetlands. Meanwhile, the Utah Legislature established a water trust in January 2023 that includes \$10 million for wetland protection. Ben Abbott, an ecologist at Brigham Young University, called the lake, which provides critical habitat for millions of migratory birds along the Pacific Flyway, “the center of wetland conservation, not only for Utah, but the Western U.S.”

Southwest of the refuge, technicolor evaporation ponds have produced potash for fertilizer for nearly 60 years. Last year, Compass Minerals announced plans to mine lithium from the ponds but has since put those aspirations on hold as the state finalizes its new mining regulations.

A short distance away is a landfill. South toward Salt Lake City, you can see Antelope Island, the site of the Northwestern Band of the Shoshone Nation's creation story. On the city's west edge, oil refineries disproportionately pollute communities of color. At the southeastern corner, the new Utah state prison

abuts sensitive wetlands, where corrections staff apply larvicide to control the mosquitoes that swarm incarcerated people. Farther along warehouses and semi-trucks fill UIPA's first inland port site. A 2016 Market Assessment by the University of Utah's Kem C. Gardner Policy Institute found that prison infrastructure made building the port easier. “In many ways,” the report said, “the development of a prison and inland port are complementary.”

Farther down the south shore, tailing ponds and the smelter of Bingham Canyon Mine, one of the world's largest open-pit mines that's been producing copper since 1903, rise behind the Great Salt Lake State Marina where crew teams and sailors recreate. At the lake's southwestern edge, the Bonneville Salt Flats, a famous speedway and recreation area managed by the Bureau of Land Management, glitter next to a Morton Salt plant.

Completing the tour, a smokestack emits chlorine gas from U.S. Magnesium, which causes 10-25% of northern Utah's air pollution, according to the National Oceanic and Atmospheric Administration. The plant also illegally disposed of highly acidic hazardous waste for years, and the resulting Superfund site's cleanup plan relies on pumping water from the Great Salt Lake and letting it evaporate, leaving a foot-deep salt cap on top of the waste ponds. Last year, the Utah Department of Environmental Quality denied U.S. Magnesium a permit to dredge further into the lake. The plant is North America's largest producer of primary magnesium, which it removes from the lake's salt water. The company also hopes to profit from the lithium demand; it already has an agreement with the state to extract the soft, white battery metal from its waste ponds.

“At what point do we draw the line with extraction?” Rosenberg said. “Especially at Great Salt Lake when our public health is at stake, and the health of the lake is like hanging on by a thread.”

Rosenberg senses a shift in Utah's relationship to industry, noting the more restrictive mineral policies passed earlier this year, the unexpected denial of US Magnesium's dredging permit and rising public concern. “I think as awareness of the crisis at Great Salt Lake has become widespread,” she said, “people are really tuned into the fact that we can't allow further exploitation on the lake.” ✨

Can't stop Won't stop

HighCountryNews

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~ The staff and board of *High Country News*

Elliot Ross

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HCN

Jalen Bazile and Rachel Olizer at Elevenmile Reservoir near Deckers, Colorado. Adam Andres Pawlikiewicz Mesa

DEAR FRIENDS

Home for the holidays

I hope you and yours are having a happy holiday season. I'm relishing being settled with family and friends. The past few months have been a whirlwind, visiting donors, hanging out with readers, spending some quality time with *High Country News* staffers in Paonia, Colorado, and making a special side trip to Laramie, Wyoming.

When we sold our building at the end of last year and leased a cozy corner of it instead, it meant we had to sift through and clean up decades' worth of papers, artifacts and memories. In January, I put the question directly to you in Dear Friends: What should we do with *HCN's* archives? I had a few ideas about museums or educational institutions that might be willing to house more than 50 years of Western history, but no solid leads.

As it turns out, that column was pivotal in finding the new home for our papers: the American Heritage Center at the University of Wyoming. Public history educator and *HCN* subscriber Brigida Blasi reached out to float the idea, and it ended up being a wonderful fit. One day, you'll be able to visit *HCN's* archives in the heart of a five-story black copper-clad pyramid, whose design was inspired by John McPhee's geological history of Wyoming, *Rising from the Plains*.

I say "one day," because the boxes we shipped north apparently had some, er, creepy crawlies in them, which would come as no surprise to anyone who ever poked their head into the old storage annex. The boxes were still undergoing a freezing and bug-checking process when I visited.

Once integrated into the center's collections, *HCN's* papers will be available to researchers from across the globe, along with the papers of our founder, Tom Bell, and a vast trove of other information. Those who can't make the trek to Laramie can hop on a video call with research assistants who will help them rifle through boxes from afar.

In other news, the *HCN* Board of Directors approved our budget for fiscal year 2023/2024. As someone who worked at *HCN* during its



High Country News's archives landed at the American Heritage Center in the Centennial Complex on the University of Wyoming's campus. Brigida R. Blasi, a public history educator, above right, reached out to us after learning that our archives needed a home. She put us in touch with Paul Flesher, center, the director of the American Heritage Center, and Bill Hopkins, left, the center's assistant director and collections manager. Marissa Garcia / *High Country News*

scrappier days, \$4.6 million in planned spending is a bit mind-boggling, but even by nonprofit news standards, we're still relatively small. Grist, founded by *HCN* alum Chip Giller, has a budget about twice the size of ours, as does *The Marshall Project*, a national news outlet covering the criminal justice system.

We're lucky, though, because we have you, our stalwart community of readers, who provide roughly three-fourths of our annual operating revenue via your subscription dues and donations. And we put that money to good use: Roughly 60% of our revenue goes to staff salaries, benefits and employment taxes. Add contract and freelance editors and writers, and 75% of *HCN's* budget goes directly to the people who create this publication and get it delivered to your doorsteps and inboxes.

High Country News still has room to grow. Our work over the next two years is focused

on expanding the constellation of smart, thoughtful people who read and support this publication. It's not just about sustaining *HCN* and continuing this amazing 53-year legacy; it's about drawing more people into the critical conversation about what the West is — and should be.

We couldn't do any of this without you, of course. So, thank you! I feel lucky to be here, caretaking an institution that is near and dear to my heart, and one that has played such an important role in shaping this region we all love.

Sending best wishes from the whole *HCN* family,

Greg Hanscom,
executive director and publisher

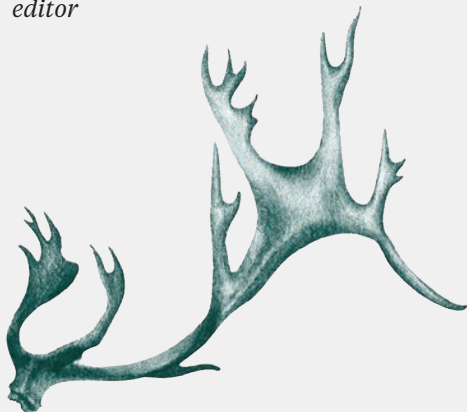
ESA@50

This month, the Endangered Species Act marks its 50th anniversary.

In the following pages, *High Country News* writers consider how this powerful law has shaped Western politics and landscapes — and how it will continue to do so in the decades to come.

These stories inaugurate our Conservation Beyond Boundaries series, which will examine how Westerners are protecting and coexisting with ecosystems outside conventional parks and reserves. We're looking forward to a sustained conversation with readers about this crucial and under-covered terrain, and we'd like to thank the BAND Foundation for its generous support of the series. Look for more Conservation Beyond Boundaries stories in future issues of the magazine and online at hcn.org.

—Michelle Nijhuis, contributing editor



ILLUSTRATIONS
BY DARYN RAY

ESA@50

Staving off endangerment

Can voluntary conservation save the last native population of Arctic grayling in the Lower 48?

BY KYLIE MOHR

SNOW FROM THE BEAVERHEAD Mountains feeds the Big Hole River in southwestern Montana, which snakes through forested mountains, grasslands and sagebrush steppe. But in 1988, drought hit the watershed hard. Water ceased flowing through the town of Wisdom for more than three weeks. The drought was bad for ranchers, bad for anglers and bad for fish — including the Arctic grayling, an iridescent silvery blue salmonid with a sail-like dorsal fin.

Hot and dry conditions returned in the summer of 2021. But this time, the river didn't run dry. To Big Hole rancher Cal Erb, the improved conditions were “a win” — and a sign that voluntary efforts to keep more water in the river for the grayling are working.

The Montana population of the Arctic grayling was designated as a candidate for protection under the Endangered Species Act (ESA) in 1994. Today, Erb and about 30 of his neighbors are committed to improving grayling habitat under the Big Hole Arctic Grayling Candidate Conservation Agreement with Assurances, or CCAA. CCAs incentivize conservation work by promising participating landowners that if a candidate species eventually requires ESA protection, they will be exempt from additional regulation. If the Arctic grayling is listed under the ESA, for example, landowners who are part of the CCAA may not have to curtail the amount of river water they use for irrigation.

The U.S. Fish and Wildlife Service created CCAs as a policy option in 1999. Today, 63 CCAs are active nationwide, designed to benefit species from the black-tailed prairie dog in Wyoming to the spotted frog in Idaho

and the Sonoran Desert tortoise in Arizona. When successful, they can protect species from endangerment. But there's a risk: If they fail and listing becomes necessary, the agreement may make recovery even harder.

ARCTIC GRAYLING WERE ONCE found throughout the Upper Missouri River drainage, but due to habitat degradation, overfishing and competitive nonnative species, southwestern Montana is now home to the only native population in the Lower 48. (The Arctic grayling that are plentiful in Canada and Alaska are genetically distinct from those in Montana.)

The Biodiversity Legal Foundation, now part of the Center for Biological Diversity, petitioned to list the Montana grayling population under the Endangered Species Act in 1991. Since then, the U.S. Fish and Wildlife Service has periodically reconsidered the grayling for listing, most recently after a 2018 ruling by the 9th Circuit Court of Appeals ordered it to do so.

The grayling's chronically uncertain legal status led state and federal agencies to work with landowners to develop the Big Hole Arctic Grayling CCAA, which took effect in the summer of 2006. More than 165,000 acres and at least 258 stream miles are currently covered by it, and participants have partnered with nonprofits and state and federal agencies on some 500 projects designed to improve stream flows, protect and enhance riparian habitat, and reduce barriers to fish migration.

Projects have included drilling wells for stock tanks as an alternative water source for cattle and planting willows on streambanks to stabilize the soil and shade the water. Most benefit landowners as well as fish. “It's not just something we want,” said Katelin Killooy, a Montana Fish, Wildlife and Parks riparian ecologist. She monitors riparian zones in the agreement and plans and manages projects and permitting, among other things. “It's often something they want as well.” While participation is voluntary, those who join agree to water-use monitoring and compliance checks by state agency staffers.

Rancher Erb was one of the first to participate. “Doing what you can without breaking the bank will always be a high priority,” he said. “There's other generations that are going to be coming up, and that river means a lot.” He's never considered dropping out, even when meeting CCAA flow targets during the 2021 drought cost him over \$100,000 in hay.



“It was horrible,” Erb said. “But we survived.”

Dean Peterson, who runs a ranch in the Big Hole with his brother, joined the agreement but left after about a decade. “To us, the cost wasn’t worth the assurance they were giving us,” Peterson said. If the grayling is ever listed, he may face regulations more stringent than those in the conservation agreement. “From anybody’s perspective, that’s a gamble,” he said. “And in a sense, I’m rolling the dice.”

WHILE THE NUMBERS FLUCTUATE from year to year, the average number of breeding grayling that live in the Big Hole has increased slightly since the CCAA went into effect. Matt Jaeger, a Montana Fish, Wildlife and Parks fisheries biologist, calls the program “unquestionably a success.” Genetic studies indicate that the population has enough diversity to remain viable for the long term, he said, a concern given the downward trend at the onset.

But as climate change increases the frequency of drought, shrinks summer river flows, and raises water temperatures, that viability isn’t guaranteed. Western Watersheds Project, the Center for Biological Diversity and a Butte resident filed a lawsuit against the Fish and Wildlife Service in early 2023 challenging

the agency’s decision not to list the grayling, arguing that the voluntary approach doesn’t compel sufficient reductions in water use by private owners or address the management of public lands in the watershed’s upper reaches. “We need a more comprehensive look,” said Josh Osher, Western Watersheds Project’s public policy director. “Voluntary conservation on private lands is one component, but it’s not the whole story.”

No CCAA has restored a species to its former abundance, but several have kept species off the endangered and threatened list, including the lesser and greater Adams Cave beetle in Kentucky and the fisher in Oregon. On the other hand, some species with conservation agreements have continued to decline and are now either listed or proposed for listing, including the dunes sagebrush lizard, the yellowcheek darter, the spring pygmy sunfish and the lesser prairie chicken. In some cases, the no-further-regulation guarantees given to private landowners with CCAAs may limit the federal government’s power to protect and recover a species after listing.

Some agreements need more vigorous oversight to ensure compliance: Defenders of Wildlife found in 2013 that the oil and

gas company ConocoPhillips disturbed the habitat of the dune sagebrush lizard while enrolled in a CCAA in Texas — despite claiming otherwise on monthly monitoring reports administered by a third party. Other conservation agreements lack the state and federal funding and staff needed to enroll all the landowners interested in participating. Tim Male, executive director of the Environmental Policy Innovation Center, said voluntary conservation efforts are often the first thing to lose funding in thin times. They could be more effective, he said, “if the agency would let them.”

Jonathan Wood, vice president of law and policy at the Property and Environment Research Center, called proactive agreements like CCAAs “absolutely critical and one of the most valuable innovations for the Endangered Species Act,” but said the process for entering into a CCAA can burden landowners.

In the Big Hole watershed, the difficulties may increase with climate change; declining snowpacks and stream flows could make it even tougher for landowners to meet a CCAA’s requirements. As the future becomes less predictable, assurances of any kind may be harder to offer. ✨



ESA@50

Both sword and shield

The Endangered Species Act's complicated legacy in Indian Country.

BY ANNA V. SMITH

IN 2016, NOT LONG after the catastrophic North Star Fire ripped through north-central Washington, Confederated Colville Tribes wildlife biologist Jarred-Michael Erickson was walking through a burned forest on Colville lands when he found an unusual paw print in the snow: A lynx was on the move. "It's lynx habitat historically," said Erickson, who is now the tribes' chairman. "It's just there hasn't been many lynx in the state since they've been hunted down." Long threatened

by hunting and habitat destruction, only a few hundred lynx are believed to remain in the continental United States, but with the help of federal funding through the Endangered Species Act, the Colville Tribes have released 25 animals on their 1.4 million acres and plan to release another 24.

Tribal nations have a complicated relationship with the 1973 Endangered Species Act. Tribal governments have used the ESA on behalf of imperiled, culturally important species, litigating over dams that block salmon migration

and securing funding to reintroduce protected species on their lands. But beyond Alaskan Native subsistence hunting rights, the law does not acknowledge tribal sovereignty. How, or even if, it affects treaty hunting rights and other aspects of sovereignty remains a disputed question.

The Endangered Species Act can be "both sword and shield for tribes," said Monte Mills, director of the Native American Law Center at the University of Washington. "The limited way in which the ESA views wildlife

resources, which I think is great in terms of protecting those threatened, endangered species, also doesn't really account for ... tribal sovereignty."

IN 1997, INTERIOR SECRETARY Bruce Babbitt and Commerce Secretary William Daley sought to remedy the law's silence on tribal rights with an order acknowledging that tribal lands are not the same as federal lands. It directed federal agencies to defer to tribal management plans for plants and wildlife and to consult with tribal governments whenever a species found on tribal lands gained protected status. A spokesperson for the U.S. Fish and Wildlife Service said the agency now "routinely considers and uses tribal expertise and knowledge" in determining when to list a species and how to designate its critical habitat. (By law, federal agencies and federally funded activities must avoid "adverse modification" of critical habitat.)

In some cases, the federal government has chosen to exclude tribal lands when it designates critical habitat, citing possible negative impacts on tribal sovereignty or political relations. In 2011, the Fish and Wildlife Service did so when it identified critical habitat for the endangered arroyo toad, a bumpy, 2-inch-long Southern California amphibian with a melodious trill. Two years later, the agency made a similar decision concerning the southwestern willow flycatcher after a number of tribal nations objected to the inclusion of their lands. The Southern Ute Indian Tribe wrote that a critical habitat designation on tribal lands would require an "onerous, time-consuming bureaucratic process that infringes on tribal sovereignty and treaty rights and frustrates the ability of the Tribe to provide

basic government services.”

The federal government doesn't always make exceptions when conflicts occur. On the Uintah and Ouray Reservation in northeastern Utah, the law's protections for two endemic cactus species clashed with the Ute Indian Tribe's ability to develop its energy resources, its largest source of revenue.

Ataya Cesspooch, an enrolled citizen of the Fort Peck Sioux and Assiniboine Tribes and Northern Ute descendant, worked for the Ute Tribe and the Bureau of Indian Affairs as an environmental protection specialist when the tribe was developing its own management plan for the cactus in 2015. The Endangered Species Act doesn't apply to listed plants on private lands, but it does apply to those on tribal lands when activities that need federal permitting, including oil and gas, are involved. Federal protections for the two species, she said, often fell into a “gray area” between recommendations and requirements, increasing the already lengthy federal approval process for oil and gas drilling on tribal lands. “Overall, the Fish and Wildlife Service did a really bad job of consulting with the tribe, of keeping them in the loop around a lot of this decision-making,” Cesspooch said. “That then led to a lot of antagonistic feelings.”

Cesspooch, now a doctoral student at the University of California, Berkeley, plans to interview Ute tribal members about their perceptions of energy development on the reservation for her dissertation research. Compounding the frustration around the cactus is the tribe's own history of land dispossession: The U.S. forcibly removed Ute bands from their homelands in Colorado in 1880, separating them from culturally significant

plants and wildlife, which do not include the cactus. “It's caused a lot of tribal members to say the U.S. government cares more about this cactus than it does about Ute people,” Cesspooch said.

SOME OF THE TENSION

around the Endangered Species Act concerns tribal nations' right to fish, hunt and gather on their homelands, as recognized by treaties with the U.S. government and by the U.N. Declaration of the Rights of Indigenous People. The Colville Tribes have reintroduced not only lynx but salmon, pronghorn, bison and bighorn sheep, hoping to establish healthy populations of these species and resume a hunting relationship with them, just as they have with gray wolves, says Chairman Erickson. Gray wolves remain federally protected in much of the U.S., but at least seven packs overlap with Colville lands, and the tribe has allowed its members to hunt since 2012. Earlier this year, the state of Colorado even approached the tribe about transplanting some wolves from the area for reintroduction, a possibility that remains under discussion.

When it comes to restoring wildlife on tribal lands, Erickson explained, “it's not just to get them on the landscape, which is important. We want to make sure they're there for future generations, because we have a lot of cultural ties to all these species as well.”

The impacts of off-reservation development and environmental degradation have forced some tribes to scale back subsistence activities. The Klamath Tribes in southwest Oregon once fished for c'waam and koptu, two species of suckerfish that live only in the Upper Klamath River Basin, but they stopped in 1986 because polluted waters and altered hydrology had caused both species' rapid decline. Today, both species are

listed as endangered, and there are only a few thousand koptu left. In Canada, West Moberly First Nations ceased hunting Klinse-Za caribou despite their importance to tribal lifeways; in 2013, there were just 38 caribou left. By 2022, after an Indigenous-led recovery effort, there were 114, a number that meets a recovery target set by the Canadian government under the Species at Risk Act, the ESA's Canadian counterpart, but still falls well below a sustainable hunting population.

Laws like the ESA and the Species at Risk Act “were designed to make sure species weren't lost, but they were not designed to be able to cultivate abundance or sustain abundant populations. Their job is to make sure things don't go to zero,” said Clayton Lamb, a wildlife biologist who co-wrote a paper with West Moberly Chief Roland Willson on the need to include tribal priorities in species recovery plans. Instead of aiming for the minimum number required for species survival, recovery goals could reflect the historic abundance — the number of caribou or salmon that would support regular hunting and fishing and the reconnection of culturally meaningful foodways.

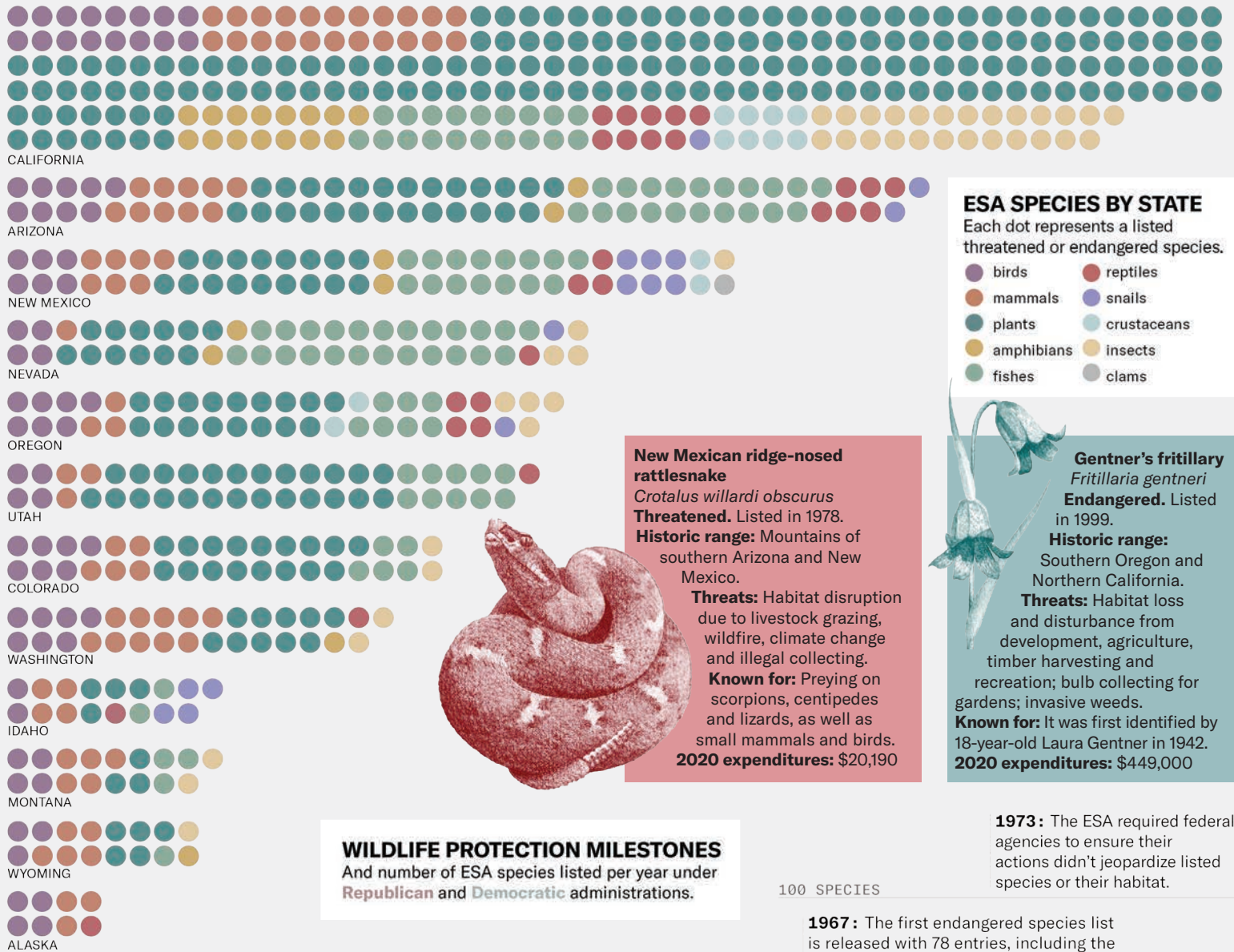
As Erickson pointed out, many of the government actions and policies that initially reduced wildlife abundance also displaced and diminished tribal people and power. “A lot of the native species that have been extirpated are similar to us as tribes, Native Americans, and what they tried to do to us,” he said. The Endangered Species Act was passed to help recover imperiled species, but tribes want to do more than that: They want to restore their own relationship with those plants and animals. As Erickson put it, they want endangered species to “not just recover, but flourish.” ☀

“It's caused a lot of tribal members to say the U.S. government cares more about this cactus than it does about Ute people.”

The Endangered Species Act by the numbers

Half a century of wins and losses.

BY JONATHAN THOMPSON | DATA VISUALIZATION BY LUNA ANNA ARCHEY



ESA SPECIES BY STATE
Each dot represents a listed threatened or endangered species.

- birds
- mammals
- plants
- amphibians
- fishes
- reptiles
- snails
- crustaceans
- insects
- clams

New Mexican ridge-nosed rattlesnake
Crotalus willardi obscurus
Threatened. Listed in 1978.
Historic range: Mountains of southern Arizona and New Mexico.
Threats: Habitat disruption due to livestock grazing, wildfire, climate change and illegal collecting.
Known for: Preying on scorpions, centipedes and lizards, as well as small mammals and birds.
2020 expenditures: \$20,190

Gentner's fritillary
Fritillaria gentneri
Endangered. Listed in 1999.
Historic range: Southern Oregon and Northern California.
Threats: Habitat loss and disturbance from development, agriculture, timber harvesting and recreation; bulb collecting for gardens; invasive weeds.
Known for: It was first identified by 18-year-old Laura Gentner in 1942.
2020 expenditures: \$449,000

WILDLIFE PROTECTION MILESTONES
And number of ESA species listed per year under Republican and Democratic administrations.

1900: The Lacey Act prohibited trafficking of illegally taken wildlife, fish or plants.

1937: The Pittman-Robertson Wildlife Restoration Act reallocated proceeds from firearm excise taxes to wildlife restoration projects, usually for game animals.

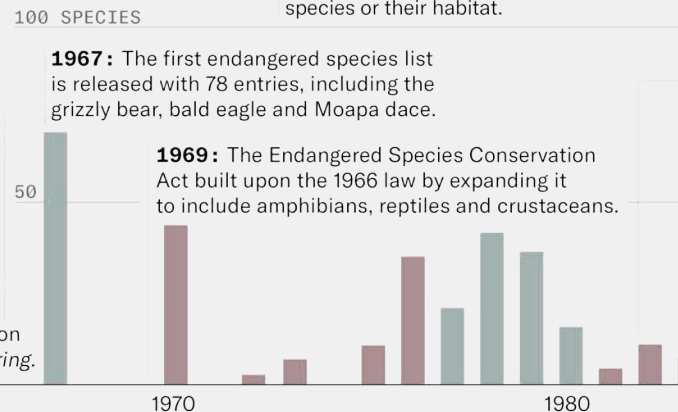
1966: The Endangered Species Preservation Act was the first federal law aimed at endangered species protection.

1944: Whooping crane population declines to just 21 birds.

1950: Dingell-Johnson Sport Fish Restoration Act

1962: Rachel Carson publishes *Silent Spring*.

1973: The ESA required federal agencies to ensure their actions didn't jeopardize listed species or their habitat.



1967: The first endangered species list is released with 78 entries, including the grizzly bear, bald eagle and Moapa dace.

1969: The Endangered Species Conservation Act built upon the 1966 law by expanding it to include amphibians, reptiles and crustaceans.



Southwestern willow flycatcher

Empidonax traillii extimus

Endangered. Listed in 1995.

Historic range: Across the Southwestern U.S.

Threats: Habitat loss due to livestock grazing, urban development, dams and water withdrawals.

Known for: Eating mosquitoes and other pesky insects and building dainty 3-by-3-inch nests.

2020 expenditures: \$3.6 million

Black-footed ferret

Mustela nigripes

Endangered. Listed in 1967.

Historic range: The semi-arid grasslands and basins of the Interior West and Great Plains.

Threats: Habitat loss from urban and agricultural development; loss of its main food source, prairie dogs, to plague and human eradication.

Known for: Returning like Lazarus from presumed extinction by appearing on a Wyoming ranch in 1981; eating prairie dogs; being cute as all get out.

2020 expenditures: \$403,000



291: Estimated number of extinctions the ESA has prevented since the law was passed in 1973.

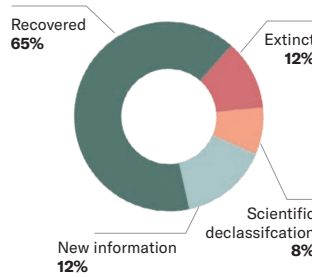
71: Number of U.S. species known to have gone extinct prior to the ESA's passage.

47: Estimated number of species that have gone extinct while being considered for ESA listing.

26: Estimated number of species that went extinct after ESA listing, including the Oahu creeper and Morro Bay kangaroo rat.

12 years: Average time an imperiled species must wait for an ESA listing decision.

91: Number of species delisted under ESA between its passage and 2020. Of those species:



30.6 years: Average amount of time after listing for a species to be delisted, owing to recovery; the time ranges from 8.2 years to 52.9 years.

23: Number of species the U.S. Fish and Wildlife Service delisted in 2021 due to extinction, including a dozen bird species from Hawai'i.

4%: Estimated rate by which U.S. amphibian populations are declining annually, according to the U.S. Geological Survey.



Colorado pikeminnow

Ptychocheilus lucius

Endangered. Listed in 1967.

Historic range: The Colorado and Green Rivers and their tributaries.

Threats: Irrigation, dams, introduction of non-native species.

Known for: Early colonial settlers used mice and birds as bait to catch what they called the "white salmon," which can live for 40 years and grow to 6 feet long.

2020 expenditures: \$1.1 million

1/3: Estimated amount of endangered species' recovery needs covered by federal ESA-related spending over the last two decades.

5% of listed species (mostly salmon and sturgeon) receive more than **80%** of funding, while **80%** receive just **5%** of funding.

\$2,686: Average annual federal expenditure per ESA-listed species.

Three Forks springsnail

Pyrgulopsis trivialis

Endangered. Listed in 2012.

Historic range: East-central Arizona's springs and seeps.

Threats: Fire-retardant chemicals, climate change and predation by non-native crayfish.

Known for: It is strictly aquatic, and respiration occurs through an internal gill.

2020 expenditures: N/A



\$1.3 billion

Amount the Association of Fish and Wildlife Agencies estimates it would cost annually to implement three-quarters of every state's wildlife action plan.

\$528 million

Amount appropriated to ESA-related activities in fiscal year 2021.

\$58.3 million: Total expenditures for the bull trout in 2020.

\$10 million: Total expenditures for the Rio Grande silvery minnow in 2020.

\$300: Total expenditures for the Palos Verdes blue butterfly in 2020.

\$100: Total expenditures for the Hutton tui chub in 2020.

Dixie Valley toad

Anaxyrus williamsi

Endangered. Listed in 2022.

Historic range: West-central Nevada, in the wetlands of the Dixie Valley Playa.

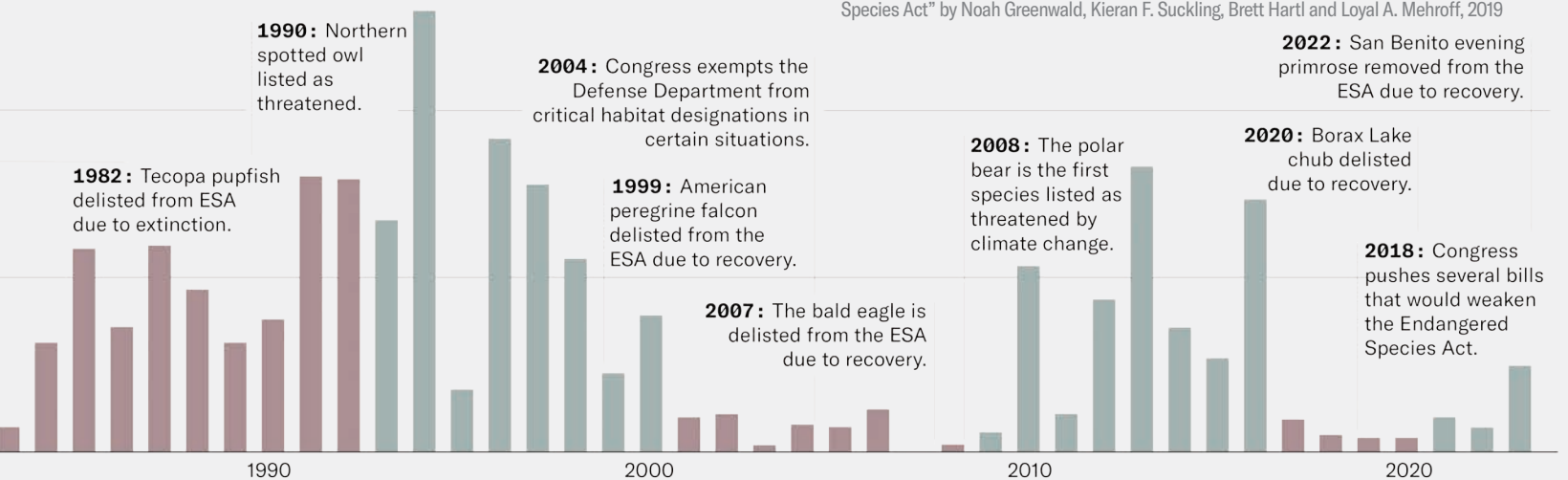
Threats: Invasive species, livestock grazing, groundwater pumping and climate change.

Known for: Its tiny size and range; the first new U.S. toad species identified in five decades, it is threatened by a geothermal energy project.

2020 expenditures: N/A (wasn't yet listed)



SOURCES: U.S. Fish & Wildlife Service's Environmental Conservation Online System; U.S. Forest Service; National Wildlife Federation; Congressional Research Service; Environmental Protection Agency; U.S. Geological Survey; Center for Biological Diversity; "Extinction and the U.S. Endangered Species Act" by Noah Greenwald, Kieran F. Suckling, Brett Hartl and Loyal A. Mehroff, 2019



The epic history of a landmark law

The two-volume *Codex of the Endangered Species Act* takes a long look back — and forward.

REVIEW BY MICHELLE NIJHUIS

ON DEC. 28, 1973, President Richard Nixon signed the Endangered Species Act into law. For nearly two years, the legislation’s supporters had fought to keep its language straightforward and its directives clear, intent on its deceptively simple purpose: “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”

The law won almost unanimous support from Congress, thanks in part to massive public demand for environmental protection. The 1962 publication of Rachel Carson’s *Silent Spring* had not only powerfully conveyed the far-reaching effects of the pesticide DDT but merged Progressive Era concerns about wildlife conservation and urban public health into a new and broader movement. Major environmental disasters, especially the Santa Barbara, California, oil spill in early 1969, underscored Carson’s warning — delivered to an audience of medical professionals shortly before her death from breast cancer — that “man is affected by the same environmental influences that control the lives of all the many thousands of other species to which he is related by evolutionary ties.”

Membership in national environmental organizations had

grown from about 125,000 in 1960 to 1 million in 1970, and would expand sixfold over the next two decades. Environmental activists adopted civil disobedience and mass protest tactics from the civil rights and antiwar movements, making headlines and ultimately contributing to the passage of dozens of environmental and public-health laws between 1963 and 1970 — including two forerunners to the Endangered Species Act in 1966 and 1969.

The Endangered Species Act we know today was developed by Nixon administration staffers and introduced as a House bill in February 1972. The ensuing debates in the House and Senate were substantive and, from our weary modern perspective, almost comically earnest and optimistic. Even Nixon, who by the end of 1973 was facing impeachment proceedings for his role in the Watergate scandal, marked his signing of the law with the cheerful prediction that “America will be more beautiful in the years ahead.” The Endangered Species Act was — and remains — one of the most powerful environmental laws in the world.

As historian Lowell Baier recounts in *The Codex of the Endangered Species Act*, the law that initially enjoyed such wide approval would attract increasing criticism, deepening

existing divisions over land and governance in the Western U.S. and elsewhere. The Endangered Species Act’s allies within and without the federal government have protected its essentials through decades of attacks. But as Baier notes, the chronic controversy has also kept the law largely frozen in time, unable to adapt to new circumstances or realize its full potential. Half a century in, the Endangered Species Act remains unfinished business.

THOSE OF US WHO GREW UP with the Endangered Species Act — I was born 10 days after Nixon signed it — learned early on that extinction was not just for dinosaurs. Sometime in elementary school, many of us got a double-edged lesson: Yes, extinction could still happen, even to the animals and plants we knew and loved, but now *there was a law against it*. That the adults who delivered this news seemed to believe it themselves was enormously reassuring, especially during a time of palpable Cold War anxiety. Extinction was possible, but unlike nuclear war, it was simply not allowed.

What we didn’t know, of course, was that this comforting idea had already collided with reality. In 1978, after University of Tennessee law student Hiram Hill and his professor, Zygmunt Plater,

secured Endangered Species Act protection for a tiny fish called the snail darter, the Supreme Court ruled that construction of a \$116 million dam on the Little Tennessee River had to be halted to protect the species. Eventually, Congress approved an exemption to the law, and the Tellico Dam was completed — while the snail darter, which was later discovered in nearby streams, was declared recovered and removed from the list of threatened and endangered species in 2022. The dispute, which made national headlines, reminded legislators and the public that the Endangered Species Act was designed to protect *all* species, even the smallest, regardless of cost.

Though the Tellico Dam debate eroded the consensus around the law, Baier points out that Congress continued to work productively on endangered species issues well into the 1980s, regularly passing amendments that clarified and elaborated on the law’s original provisions. That changed in 1988, when a coalition of environmental groups sued to protect the northern spotted owl, hoping to stop the clear-cutting of the Pacific Northwest’s remaining ancient forests.

Environmentalists turned to the Endangered Species Act because its clarity made it more powerful than most land-use laws, but they also recognized the risks of focusing a sprawling regional dispute on a single species. Many of their fears were realized: Public relations consultants hired by the timber industry effectively framed the conflict as owls against jobs, alienating timber communities and further radicalizing anti-federal activists throughout the West.

The Northwest Forest Plan, developed by the Clinton administration and formally adopted by federal agencies in 1994, brought

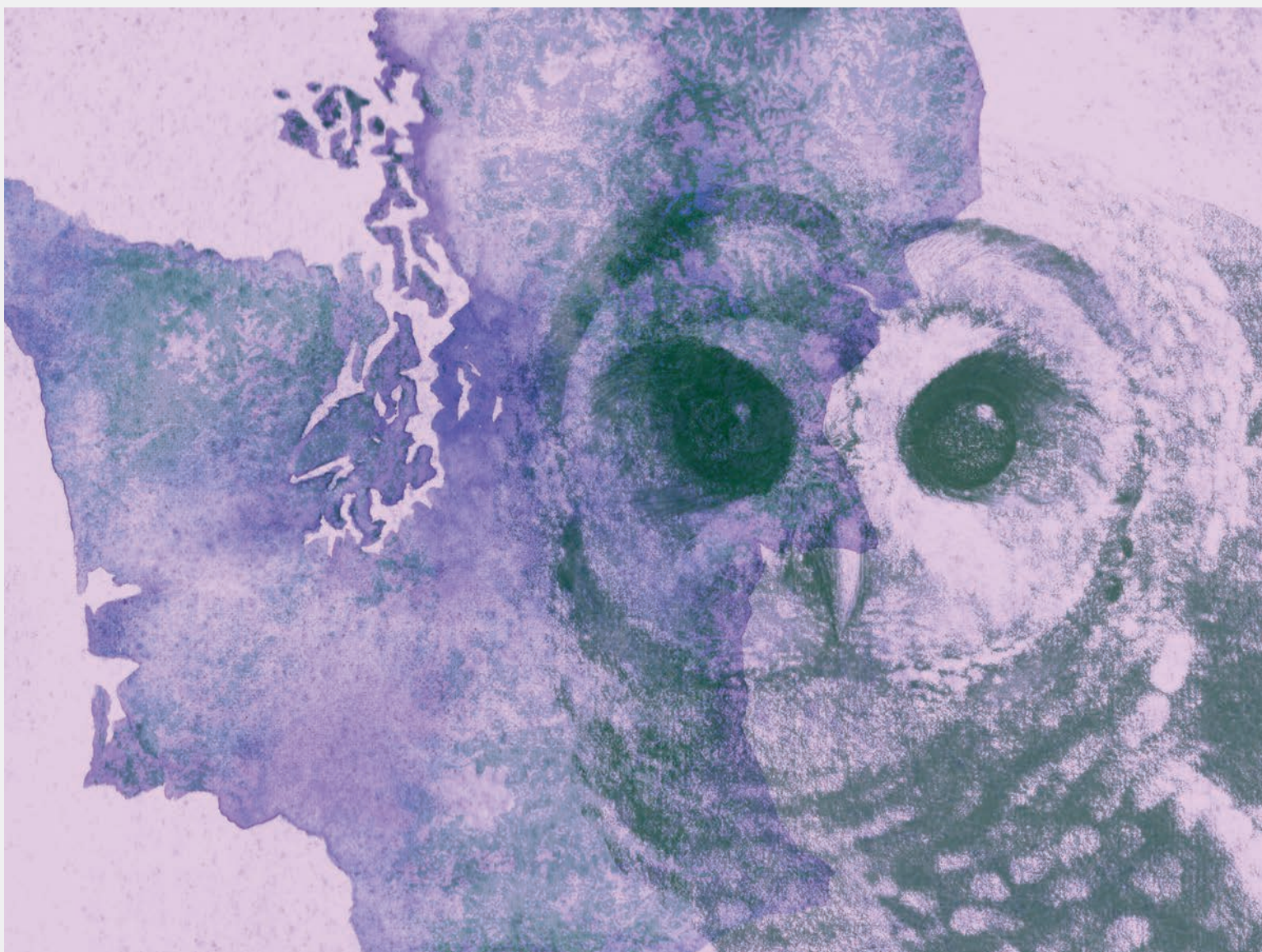
an official end to the hostilities. While far from perfect, it enabled agencies to manage the region's public lands as an ecosystem rather than a patchwork of potential timber sales. A companion economic relief package also helped ease the very real pain of the region's transition away from timber — a transition that was already underway when the spotted owl was listed. The controversy entrenched political attitudes toward the Endangered Species Act to such an extent, however, that Congress has not managed to substantively update the law since 1988.

THE CODEX of the *Endangered Species Act* is divided into two volumes: *The First Fifty Years*, written by Baier and his collaborator Christopher Segal, is an exhaustive but readable history of the law and the politics that have shaped it since its passage. (If you'd prefer a briefer treatment, Baier will publish a shorter and more personal book about the Endangered Species Act in April 2024.) In *The Second Fifty Years*, edited by Baier, Segal, and wildlife biologist John Organ, an array of scientists, legal scholars and policy experts examine legislative and regulatory paths

through the current political stalemate.

The original architects of the Endangered Species Act, schooled in the top-down strategies of the early conservation movement, favored regulations and penalties over incentives and rewards. Several of the authors in *The Second Fifty Years* envision an Endangered Species Act that retains its strength as an emergency room for biodiversity while expanding its support for what might be called preventive care. Among their recommendations are more funding for state-level conservation of all species,

endangered or not; regulatory changes that encourage collaboration between federal and state agencies; and various incentives for conservation on private land and at landscape scales, designed to finally “provide a means” for protecting not only species but ecosystems. The *Codex* wouldn't interest today's elementary school students, much less reassure them, but its story offers a sliver of genuine encouragement: Given a sense of common purpose, it's still possible to protect species — not only from extinction but from becoming endangered in the first place. ☀



HOLLY HUNTERS

Meet the scientists and conservationists fighting to save the Northwest's forests from an invasive plant.

By Steven Hsieh | Photos by Peter Bohler

HENRY MUSTIN POPPED OPEN THE TRUNK of his electric Volkswagen to reveal his arsenal: Loppers, pruners, saws and trowels, tucked into bags. Taking up the most space was Mustin's weed wrench, an L-shaped specialty tool branded The Extractigator, which leverages the ground to yank deeply rooted vegetation from the earth.

We were in the parking lot of Island Center Forest, a 440-acre wooded park home to miles of hiking trails and one large pond where birdwatchers flock. Island Center Forest is on Vashon Island, southwest of Seattle. Mustin's summer home is on Vashon, and my partner and I have a small farm here.

We were looking for English holly, a cherished Christmas symbol that is threatening biodiversity in the Pacific Northwest. We were there to poison it.

Perhaps nobody in the state of Washington has killed more holly trees than Mustin. After a long career as a doctor, Mustin retired in 2013 and began dedicating several days a week to bushwacking deep into the woods

to destroy the plant he loathes.

We hiked through a tunnel of greenery: Douglas firs towered above and sword ferns fanned around our feet. It was a mild day in July, and Mustin, wearing long sleeves and work pants, worked up a sweat. At 75, he is a discursive thinker and talker, answering questions before I could ask them.

"Start looking for where the contrast in the vegetation stands out," he said. Holly's dark green leaves and red berries pop against the forest's lighter hues. We climbed over downed branches, dodged stinging nettles and stomped across carpets of trailing native blackberry.

We walked until we found a tree not already flagged for removal by county workers. Standing at about 20 feet tall, its many branches were lined with alternating leaves, each shaped like a "POW!" bubble in a comic strip, oval with serrated edges. The reds and greens were unmistakably Christmassy. The trunk split into a v-shape, the thicker sub-trunk reaching toward a nearby alder as if it wanted a hug.

Invasive holly in the forest at the Lake Youngs Reservoir (*facing*).





Mustin knelt and dug into his backpack, pulling out a plastic tube containing .22-caliber shells he'd purchased online from a forestry supply store in Colorado. Mustin's shells contained a heavy concentration of tarry black imazapyr, an herbicide favored by weed technicians as the best — really, the only — method for tackling big holly efficiently.

Most people who inject holly with herbicide-filled shells use a specialized spring-loaded lance called an EZ-Ject. To avoid alarming anyone, Mustin left his EZ-Ject in the trunk with the weed wrench. "It's kind of like walking into the park with a pickaxe or a shovel," he said. Instead, we'd have to Macgyver today's application.

Some might accuse Mustin of committing a misdemeanor — herbiciding without a license. Mustin would argue that he still operates as an "arm" of the Washington Department of Natural Resources, which supervised his holly-killing sprees from 2015 to 2022, when he led volunteers on restoration excursions. Today he mostly works independently, finding solo missions more efficient, though the state still occasionally supplies him with herbicide equipment and he maintains permission to work on state land.

Using pliers, he carefully lifted an imazapyr-filled shell and pressed its open end against the holly. With a tack hammer in his other hand, he tap-tap-tapped the shell into the wood, repeating this process every four inches around the tree. He stopped halfway; I finished the other half, completing a collar of shells around the trunk.

Over the next few weeks, the tree would absorb the imazapyr, which would travel through its vascular system, slowly killing it. "By the fall, there may not be many leaves left on there at all," Mustin assured me.

We made plans to return.

VASHON ISLAND, at less than 40 square miles, accounts for a tiny percentage of the hollies invading the Pacific Northwest. English holly has roots in parks and forests from Vancouver Island to the Willamette Valley. Municipal watersheds, private timberlands and tribal nations have all contended with it, and it's become widely established in the lowlands of Olympic National Park.

There are more than 500 species of holly, but only the English variety (*Ilex aquifolium*) threatens Northwestern ecosystems.

In its native range — Europe, West Asia and Northern Africa — English holly can grow upward of 80 feet tall, but the tallest known specimens in the United States hover around 50 feet. Conservationists are less worried about holly's height, however, than they are about its spread.

Under human control, holly can be shaped and shifted to meet our needs for beauty and privacy. Cut through a holly stem, and several new limbs will eventually emerge. Wander through a Northwest neighborhood, and you might see holly hedges meticulously shaped into sharp-edged boxes.

Some of the same qualities that make

Holly branches can also produce new hollies. Lower branches on taller trees often sag groundward, brushing the soil. Given enough moisture, roots can grow from just about any point of contact, supporting a new holly stem in a process called layering. If something in the woods — a falling branch or an animal — severs the connecting shoot, you've got a new holly tree.

Suckering and layering often produce dense thickets, which suppress native plants, reduce visibility for wildlife, and haunt conservationists. But roots and branches can spread holly only so far.

Long-distance travel requires the col-



Henry Mustin holds an orange weed wrench and a red EZ-Ject lance for controlling holly on Vashon Island, Washington (facing). Above, he shows the root system of a holly sucker.

holly such a desirable landscaping plant also make it a ruthless invader. It can live for a century, withstand considerable damage and thrive in the shade. It also reproduces prolifically; many parts of one tree can make new hollies.

Holly's shallow root system spawns new growths through a process called suckering, in which holly fledglings, connected to their parent's network, shoot out of the ground. Dozens of holly suckers can emerge from a single root system. Over time, some suckers develop their own root systems and strike out on their own, emerging as independent plants.

laboration of bird and berry. The red of ripe holly berries, somewhere between Kool-Aid and blood, beckons birds like a well-lit diner at night. The cold-hardy berries must look especially tasty in wintertime, when other foods are scarce.

When robins find holly berries, they split into teams. One team dive-bombs the berry bonanza, picking fruit at a speedy clip. The others watch for predators from nearby trees. Fruit in tow, a feeding robin retreats to a relay perch for lookout duty, allowing its flockmates to take their turn at the buffet. The robin digests its meal while keeping guard. Processing berry pulp, from beak to



butt, takes about 15 minutes, though, contrary to popular belief, most holly seeds do not depart through droppings. Instead, they go down and up again, exiting via mouth, one-by-one, like Pez.

During a feeding frenzy, robins can regurgitate holly seeds more than 150 feet from the source. If a predator — say, a hawk — interrupts the meal, the birds may scatter nearly a third of a mile before expelling their seeds.

Viable seeds can take years to sprout, but once they do, the resulting sapling has the potential to grow into a mature tree capable of suckering and layering. If the tree happens to be a female near a male, it will one day produce berries.

“IT’S ONE OF THOSE THINGS that, once you see it, you start seeing it everywhere,” said David Stokes, a former ecologist at the University of Washington Bothell and perhaps the foremost expert on invasive holly

in the Northwest.

Stokes, a fit 70-year-old, has kind eyes and a professorial beard. As a doctoral student at UW Bothell, he studied the migration patterns of Magellanic penguins in Patagonia. Later, his focus shifted to urban ecology. As a professor at Sonoma State University, he dabbled in invasive plants as faculty advisor for a student conservation group, leading field trips to a creek where they removed the notorious tree of heaven (*Ailanthus altissima*).

After returning to the Seattle area in 2006 to teach at UW Bothell, Stokes spent a lot of time at St. Edward State Park. Walking in the shade of alders and maples, Stokes noticed clusters of English holly in the understory, something he knew did not belong. Alarming, the non-native shrub appeared to be thriving in a mature forest, contrary to the prevailing scientific view.

When the study of invasive plants took off in the '80s and '90s, scientists focused

David Stokes examines holly while visiting an area of holly-infested forest at the Lake Youngs Reservoir. Facing, an ornamental holly planted in the yard of a house near St. Edward State Park in Kenmore, Washington.

on the fast-growing, sun-loving species that overrun grasslands, farms and disturbed or logged forests. Ecologists thought intact forests were largely immune to such invasions.

Scientists began publicly questioning this assumption in the mid-aughts. In a frequently cited 2009 paper in the journal *Frontiers in Ecology*, a trio of researchers identified more than 139 shade-tolerant plants that have invaded deeply shaded forests. The authors theorized that the relatively slow growth of these plants lulled scientists into “ignoring their potentially severe and long-term impacts on forest ecosystems worldwide.”

By the time Stokes noticed holly on his walks, some researchers and environmen-

talists had already raised anecdotal concerns about the plant. In 1992, Robert Ticknor, an Oregon horticulturalist, expressed misgivings about “holly trees where they are not desired.” Ticknor had devoted his life to ornamental plants, including holly, often in service of growers supplying the Christmas market; he’d even lived on Holly Street once, with a daughter named Holly. But toward the end of his career, Ticknor questioned whether English holly was, as his article in the *Holly Society of America Journal* put it, “A Jewel or a Menace in the Pacific Northwest?”

Then, in 2005, a U.S. Forest Service researcher named Andrew Gray published perhaps the earliest data-backed report on holly’s presence in Northwestern woods. As part of the Forest Inventory and Analysis, a program that sends crews out across the country to collect data, Gray studied invasive plants in Oregon forests. He singled out English holly — and another European import, English ivy — for their shade tolerance and predicted that they would “continue to spread” in the state’s lowland woods.

In 2011, Stokes decided to determine the true rate of holly’s spread. He chose St. Edward State Park as the site of his field research.

Student lab assistants traversed a 20-acre section of the 300-acre park, treading in straight lines regardless of topography, up and down steep inclines, over and under downed branches. If a tree blocked their path, they’d step around it, then return to position.

Whenever one was spotted, the students took a sample. Sometimes that meant pulling up a young sapling and sticking it in a plastic bag. Sometimes, Stokes said, an “unlucky person” landed the triceps-burning job of sawing through a dense trunk.

The field work took two field seasons. Wood rounds gathered, Stokes and his assistants counted their tree rings to discern their age. The resulting data covered almost half a century.

The first holly to invade Stokes’ study area sprouted in 1966, during a residential construction boom north of the park, where ornamental holly still grows today. The invasion started slowly, and then exploded, a common pattern for invasive species. After 1990, the holly population in their study

area doubled about every six years.

Stokes and his students also observed a significant reduction of native vegetation under holly canopies. In the biggest holly clump they found, roughly 645 square feet, they found no native plants. Stokes’ findings were published in the journal *Northwest Science* in 2014.

But the forests of St. Edward weren’t the only woods where holly spread exponentially. In August, 18 years after Gray published his analysis of invasive species, I asked him over Zoom if he had since tested his prediction that holly would spread in the Northwest’s shaded woods. He hadn’t, but was

“Invasion will take place more slowly on human scales. It’s when you consider that a forest takes 200, 300, 500 years to mature — it’s happening quickly.”

willing to take a look.

With input from Stokes, Gray crunched two decades of Forest Service data on holly in Washington and Oregon. The surveys were taken from 2001 to 2009 and 2010 to 2019.

When Gray looked at all 87 of the forest plots that had holly in either decade, he found a 108% increase of holly cover in Oregon and 105% in Washington. Over 10 years, the holly spread had roughly doubled.

When he looked at plots with at least 50% tree cover — shade — the increase was starker: 143% increase in Oregon and 119% in Washington.

Gray’s analysis of this publicly accessible data has not gone through a formal peer-review process, but I sent it to Stokes for his opinion. Stokes noted the differences in their methodology, but said that Gray’s findings broadly confirmed his own conclusion that holly spreads exponentially in closed canopy forests. Gray’s data provides further evidence that holly’s rate of spread “is very rapid relative to ecological time scales,” Stokes wrote to me in an email. The relatively slow growth of holly in the forest compared to that of the weeds more often seen near places used by humans has kept it from getting as much attention as, say, Scotch broom or tansy ragwort.

“Invasion will take place more slowly on



human scales,” Stokes said. “It’s when you consider that a forest takes 200, 300, 500 years to mature — it’s happening quickly.”

IN THE MID-TO-LATE 1800S, European settlers planted the first hollies in the Pacific Northwest, perhaps as a reminder of home. A Dutchman named Jan Bajema, for example, sailed to New York City in 1893. He changed his name to John, settled on a farm in north Washington, fathered 15 children, and, according to one grandchild, planted several holly trees.

In the 20th century, U.S. demand for Christmas wreaths skyrocketed. A few entrepreneurial farmers in the Northwest wagered that English holly could make them wealthy. The region benefited from “an exclusive monopoly,” as one grower put it. English holly, as its name implies, thrives in a temperate, wet climate. The lowlands of western Washington and Oregon are its Goldilocks zone.

By the 1940s, Washington and Oregon were supplying the vast majority of holly shipped in the U.S. Farmers saw it as a safe investment, and nurseries marketed holly as a retirement plan. “Plant a holly orchard and let nature do the work for you,” read one brochure. By the end of the decade, an estimated 300 acres of western Washington were dedicated to holly.

It’s unclear whether this marketing inspired either John Bajema’s third son, Dingeman, who started a holly farm along the Columbia Gorge after a career as a schoolteacher, or Dingeman’s son Ken, who spent many weekends and evenings as a teenager helping his father harvest holly branches during the cold, wet winters. “The worst weather of the Pacific Northwest,” he told me over the phone.

After a long career in the federal government, Ken Bajema retired in 1988, returned to his childhood home, and picked up where his dad left off: Harvesting, cutting and shipping holly branches to customers across the U.S. There were about 50 growers in Washington and Oregon then, and the industry brought in millions of dollars annually.

The same year Bajema started farming, he also volunteered to serve on the Skamania County Noxious Weed Board, which regulates unwanted plants in his county. In 2005, Bajema also joined the Washington

State Noxious Weed Board, the governing body that decides which unwanted plants counties can regulate.

Bajema kept his private and public business separate for many years. But then his two worlds collided.

In January 2011, fresh off harvest season, Bajema traveled north to Olympia, walked past the grand columns of Washington’s neoclassical Capitol, and took a seat before the state House Agriculture and Natural Resources Committee.

The fall before the hearing, officials in King County (which includes Seattle) sent a proposal to the Washington State Noxious Weed Control Board asking Bajema and his

“This is a worst-case scenario. But it could get even worse.”

colleagues to add English holly to its official list of regulated weeds.

“Holly, a longtime tradition at Christmas, has taken a bum rap from activist groups for several years in news articles, publications, word of mouth and hearsay,” Bajema told the lawmakers, apparently referring to conservationists’ warnings about holly’s invasiveness.

So, Bajema, holly farmer and holly regulator, donned yet another hat: holly lobbyist. As secretary of the Northwest Holly Growers Association, he launched an aggressive defense of his crop. Holly farmers dismissed claims of its invasiveness while extolling its value to the economy. Although the board’s proposal would not have banned commercial production, farmers said that merely associating “holly” with “weed” could hurt sales.

Their campaign succeeded: The nine board members voted unanimously to keep English holly off their big list of bad weeds, citing the need for more empirical evidence.

A WEED IS JUST A PLANT out of place, or so the saying goes. From the late Middle Ages until very recently, “out of place”

meant anywhere that might inconvenience agriculture: “The noisome weeds, which without profit suck; / The soil’s fertility from wholesome flowers,” as the Gardener said in Shakespeare’s *Richard II*.

In 19th century America, industrialization brought new weeds to new places. Seeds crossed state lines as stowaways on trains or carriages. Farmers discovered new thorns, literally, in their sides and in their fields. And states began passing “seed laws” to target unwanted plants.

This approach to weeds, centering humans and ignoring the environment, was still mainstream when President Gerald Ford signed the Federal Noxious Weed Act of 1974, creating a Federal Noxious Weed List that regulates interstate and international commerce. Today, more than 100 species of plants are federally regulated; another 600 or so are controlled by state authorities.

Washington’s Noxious Weed Control Board resembles most of its cohorts in that it sprang from agricultural interests. When the Legislature created the board in 1969, lawmakers defined “noxious weed” as any plant that harms “crops, livestock, or other property.”

It wasn’t until the 1990s that agencies caught up with increasing scientific interest in ecological invasions. The state noxious weed board became the de facto invasive plant regulator. Now, “out of place” included forests, wetlands and wild prairies, as well as farms and ranches. Washington codified this change in 1997, when lawmakers expanded the legal definition of noxious weed to consider impacts on “natural resources.”

Trying to advance ecological goals through regulations that favored agricultural systems proved ineffective. “Weed laws developed as a reaction to potential economic development,” Bryan Endres, a professor of agricultural law at the University of Illinois, told me. In 2013, Endres helped author a paper in the journal *Bioscience* showing that weed regulators heavily favor listing agricultural pests over ecological ones.

Such was the situation in 2011, when Bajema lobbied lawmakers to prevent holly from ever again appearing before the noxious weed board. It wasn’t enough that the industry had already kept holly off the noxious list; Bajema was hurt that the state board had even *considered* the question.



Elliot Church and Zoe Loutos compare notes while visiting a holly-infested forest at the Lake Youngs Reservoir.

“The damage to our industry has already begun,” Bajema told the House Agriculture Committee. “Once an allegation is made, your crop is guilty.”

Working with the Washington State Farm Bureau, the holly lobby pushed a bill that would have banned any commercially grown crop from being listed as a weed. That was a nonstarter for state weed officials. A compromise bill, eventually signed into law, said that new scientific research on a plant’s invasiveness would have to be published before it could be brought to a second noxious weed vote.

The slow pace of science guaranteed that the growers had bought themselves time. Stokes’ study would not be published for another three years. But it would take

much longer for the Noxious Weed Control Board to consider listing holly again.

IF YOU ASK HOLLY WATCHERS why they’re so worried, they’ll often point to an overrun section of forest — a total hollypocalypse — in a fenced-off area in the suburbs south of Seattle.

On a damp morning this August, I met Zoe Loutos, a restoration ecologist for Seattle Public Utilities, in a parking lot outside the fence. We were joined by Jamie Trotto, an invasive species technician, professor David Stokes and Elliott Church, his former research assistant.

Beyond the fence and restricted-access signs lay Lake Youngs, a reservoir that provides treated drinking water to the Seat-

tle metro area. The lake is surrounded by 2,000 acres of forest. Access to the woods is restricted to Lake Youngs staff. We planned to visit a section on McElhoe Peninsula, which is named for 19th century homesteaders, though Loutos calls it “Holly Peninsula.”

“It’s a legend,” Church said. Neither he nor Stokes had been there. “You see the pictures and go, ‘Wow.’”

Church, who’d been Stokes’ lab assistant over 10 years ago, continued to research English holly, completing a master’s thesis on the plant in managed timber forests in 2016. Now 32, he works as an arborist. On the day we met, Church wore his hair in a bun, binoculars around his neck and a wool Forest Service jacket from eBay.

“You’ll have to tell me if it’s worse than St. Edward’s,” Loutos said, wearing a neon orange safety vest and a gray baseball cap embroidered with a hummingbird. Loutos led a three-car caravan through a gate and onto a dike road encircling a lake larger than Disneyland.

Before we entered the forest, Loutos reminded us that Lake Youngs was closed to the public. Nobody seemed to know for sure exactly how long it had been closed, though Loutos thought it had been since the 1920s, when a dam was built to increase the lake’s capacity; that would suggest that birds introduced holly to the area rather than humans. In any case, the limited access makes it a poster child for a holly infestation unmitigated by human intervention.

“Anyway,” Loutos said. “Should we walk into the woods?”

She led us up a short incline. Our boots squeaked against wet salal, while damp shrubs brushed our pants, soaking them. And then we emerged into what Loutos aptly called a “sea of holly.”

We saw holly to our left and holly to our right: 20-foot-tall trees dappled in beams of sunlight. Ankle-biter hollies congregated below us, and tangles of branches blocked the light; at times it was nearly opaque, nothing but bare ground underneath. Partially felled holly trees grew at angles, like javelins thrown by gods. Impenetrable thickets obscured our view. We saw sick hollies with

yellowish-brown splotches on their leaves, but very few dead ones.

“This is a worst-case scenario,” Stokes observed, carrying a meter stick that doubled as a hiking pole. “But it could get even worse.”

“You got these guys filling in between,” Church added, pointing to a cluster of young saplings. The retired professor and his former student bounced ideas off each other as if they were back in the classroom.

“In this case, you wouldn’t have a complete replacement of vegetation because it’s Douglas firs above the holly,” Stokes said. “Holly’s never gonna get that tall. But the whole understory, instead of being native plants, you’ll have holly.”

“Holly would be in a position to really dominate,” Church agreed. If a forest disturbance, like a storm or fire, wiped out a chunk of the overstory, “it could change that successional trajectory.” Translation: It could become a holly forest.

“The other thing that we never really addressed is the potential for holly to be a ladder fuel,” Stokes added. In a 2022 wild-fire risk study, King County cited holly as a “flammable thicket-forming understory shrub” that could carry flames upward.

In recent years, wildfires in the Pacific Northwest have become more frequent and intense, a trend that will likely continue with climate change.

The scientists tossed out hypotheses and imagined experiments. Could they replicate their St. Edward study here, on Holly Peninsula? Maybe compare the age of the hollies with Douglas firs to determine which came first? What changes would they notice in holly if they moved from the outer edge of the forest inward?

Church was most excited about the sickly holly. He walked quickly, as if spellbound, to a plant with graying shoots and yellowing leaves. Palming a cluster of leaves in one hand, he snapped a photo with his phone. “It’d be great to get some cuttings to a lab and get some analysis,” he said. (Seattle Public Utilities would first need to sign off on any kind of scientific collection, so no collecting was done that day.)

A few meters away, Stokes was examining a plant with crinkly brown leaves and a desiccating stem.

“Is that a holly that’s totally dead there?”

Church shouted to Stokes. We descended on the tree. Stokes’ voice lifted multiple octaves. “Check this out,” he trilled. He pointed at a fresh sprout, shooting out from the holly’s lifeless stem.

“It’s suckering from a dead — ” Loutos said.

Stokes finished her sentence: “ — from a dead tree!”

IN THE SPRING OF 2022, private citizens emailed the Washington State Noxious Weed Control Board, urging it to label holly as a noxious weed. That set the stage for another vote.

Eleven years had passed since Ken Bajema successfully campaigned to stop King County from listing holly. Conservationists had reason to be more hopeful this time; Stokes’ research lent scientific legitimacy to all the anecdotal evidence of a holly invasion.

At Bajema’s suggestion, weed board staffers worked with the state attorney general to add the term “feral holly” — meaning not intentionally planted by humans — to Washington’s administrative code. The proposed listing would cover only “feral holly” and explicitly exclude holly grown on farms or for ornamental purposes.

Bajema had returned to the board in 2018 after several years away, reprising his role as holly’s defender.

He didn’t think much of the new research. “Dr. Stokes has a hatred for holly,” Bajema told me. “He’s been after holly for 20 years.”

During one September meeting held on WebEx, Bajema tried to shut down the holly-listing effort by invoking the law he helped pass in 2011. He claimed, inaccurately, that “there is no peer-reviewed scientific evidence to prove that holly is a noxious weed.” A staffer corrected him, noting that at least two such articles had been published since the last vote.

“I don’t recall the Holly Society of America or the Horticultural Society signing off on those peer reviews,” Bajema replied. (Industry groups do not take part in the multi-step, anonymous peer-review process for scientific journals).

Stokes, Church and Andrea Watts, another researcher who wrote a master’s thesis on holly, presented their findings to



The leaves of a dead holly branch on Vashon Island, Washington.



the board. Stokes left one meeting thinking, “Well, this is a slam dunk.”

The vote fell on Nov. 2, 2022. Though two members were absent, there was a quorum, and the director called the roll:

Ken Bajema, holly grower: *Nay*.

Jerry Hendrickson, former rancher: *Nay*.

Allen Evenson, weed inspector: *Yea*.

Carey Caruso, beekeeper: *Nay*.

Janet Spingath, habitat restoration specialist: *Yea*.

Bill Agosta, retired chemist: *Yea*.

A tie means no. English holly remained unlisted in Washington.

Bajema’s victory seemed complete — for about a year. In response to several complaints over his clear conflict of interest, the board passed a new rule barring any of its members from voting on proposed weeds in which they have a financial interest. This time, only Bajema voted *Nay*.

THIS OCTOBER, Henry Mustin and I returned to Island Center Forest to check on our poisoned holly tree. Mustin, who’d spent the morning clearing holly in another park, wore raingear. I lacked his foresight and was once again doomed to soaking-wet jeans.

Fall was in full swing. Fern tips were turning brown and crinkly. Baseball-sized mushrooms poked out of the ground along the trail. My eyes, now trained, locked on all the hollies, evergreen standouts in the senescing understory.

After less than half an hour and a couple GPS consults, Mustin spotted our tree. It was a skeleton of its former self, its top completely devoid of leaves and its body thinned out, emaciated. Brown leaves sagged from the tips of branches, and most of the berries had dried up like prunes, black and wrinkled.

“It’s been a very effective injection,” Mustin said.

Then I saw the saplings surrounding our tree, all very much alive. To truly eradicate this colony, we’d have to return to Mustin’s trunk, grab more tools, and get our hands dirty again.

I thought of all the berry-bearing hollies still in this park. Poisoning our tree was relatively pain-free, but controlling thicker growths requires trimming, digging, wrenching, crawling, lifting and pulling. It’s back-breaking, blood-drawing labor, often performed on hands and knees by under-

paid 20-somethings just starting out in natural resource management. Or by the Henry Mustins of the world, volunteer “weed warriors,” the term used by stewardship groups who have found their calling in preserving natural habitats.

No one has calculated how much public money has been spent controlling holly in the Northwest. Washington State Parks spent more than \$30,000 removing holly at St. Edward State Park after David Stokes studied that invasion. When Sally Nickerson, the former invasive species manager for Seattle Public Utilities, discovered the holly at Lake Youngs, the agency approved around \$90,000 of taxpayer dollars for control work. Those efforts — and many more tucked within local budgets and contracts — merely snip at an exponentially branching problem.

Even when holly hunters do defeat an invasion, keeping new hollies out requires constant vigilance and optimism.

During our field trip to Lake Youngs, Zoe Loutos described the “hamster-on-a-wheel” nature of her job. “That’s a familiar feeling for me and honestly keeps me motivated,” she told me. When Loutos tackles holly in the Cedar River Watershed, another natural area under her watch, she envisions Holly Peninsula as the disaster she’s working to prevent. “I’m one piece of the puzzle. And even my little contribution is still meaningful.”

Mustin represents another piece of the puzzle. He is credited with removing hundreds of hollies on Little Si, a small mountain and popular hiking spot east of Seattle. (On a recent hike there, I didn’t see a single holly.) During our walks in Island Center Forest, Mustin often mused that a similar effort could work here. “It’s not an impossible task for even a few people to just stop it,” he said.

Weeks later, I returned to our poisoned tree with gardening gloves and a weed wrench and yanked out the surrounding holly saplings. Following restoration best practices, I hung the freshly unearthed invaders on a nearby tree, keeping their roots away from the damp soil, ensuring they would stay dead. ✨

WEB EXCLUSIVE: Read about the pesticides used on Christmas trees and the risks involved Dec. 8 at www.hcn.org/christmas-trees





GREEN ACRES

Will a billion-dollar infrastructure project heal a North Denver community — or displace its residents?

By Raksha Vasudevan
Photos by Amanda Lopez

A PARK ON TOP of a busy underground highway was a first for Denver — a first, in fact, for the entire Mountain West. To outsiders, it seemed like a wonderful addition to Globeville Elyria-Swansea, or GES, a predominantly Latino community in North Denver. It featured an amphitheater, two soccer fields and a splash pad for overheated kids on hot days, though no splash pads were needed at the ribbon-cutting ceremony last November, when temperatures dipped into the 20s. About 160 freshly planted saplings, their bases powdered with snow, dotted the park's four acres, and the Rocky Mountains rose dramatically in the distance. Plumes of smoke from the nearby Purina factory marred the view slightly, but overall, it was a peaceful scene, especially considering that 10 lanes of cars were speeding by underneath.

The facility, dubbed simply “the cover park,” represented a milestone in the \$1.2 billion reconstruction of Interstate 70 — one of the largest and most controversial infrastructure projects in Colorado's history. Freeways had long divided this community, and the project was designed to reconnect it. For over four years, residents' lives had been upended by all the demolition and construction. The park's unveiling was supposed to symbolize the end of a

The new “cover park” over 1-70 in the Denver neighborhood of Globeville Elyria-Swansea, November 2022. **Kevin J. Beaty**



difficult chapter and the beginning of a better one.

The park itself cost \$125 million, and the soccer fields' turf was so new that it still curled up at the corners, occasionally causing attendees — mostly bureaucrats in puffer jackets and polished dress shoes — to stumble. Gov. Jared Polis was present, as was Denver's then-mayor, Michael Hancock, a 54-year-old Democrat. At 11 a.m., the speeches began.

Hancock, the second Black mayor in the city's history, declared, "This is a proud moment for Denver." With more stories coming to light about how highway projects had fractured communities of color, a national demand has risen to address the consequences. In 2021, President Joe Biden's Bipartisan Infrastructure Law set aside \$1 billion to reconnect divided neighborhoods, and while that money didn't fund I-70's facelift in GES, which was already underway, politicians would frame the project as emblematic of the national moment. Hancock boasted that it sought input from residents and created local construction jobs. "This," he said, "is the result of community engagement and community visioning."

Following his remarks, teachers from the adjacent Swansea Elementary School led their students into the park; the kids whirled on the new merry-go-round, shrieking in delight.

Just before the ceremony ended, Alfonso Espino, a 27-year-old GES resident, dropped by. Espino, who has a round, boyish face behind a mustache and goatee, had heard about the park for more than a decade and often jogged by when it was under construction. Now, he felt lost. "Looking around and not being able to place myself — it's kind of weird," he said. But GES



Colorado Gov. Jared Polis and then-Mayor Michael Hancock, center, along with other officials, gather at the ribbon-cutting ceremony for the cover park on Nov. 30, 2022 (top). A young athlete joins MSU Denver women's soccer players on the cover park field.

could use more green space, Espino conceded, and it was great to see the kids playing. Previously, only about 55 acres of parkland existed in the nearly five-square-mile neighborhood. The project had also added almost seven miles of new sidewalks to a neighborhood that needed more of them.

But Espino, who works as a community organizer, feared the new amenities would come at a cost. Realtors were already calling GES “Denver’s next hottest neighborhood” — a chilling pronouncement for locals to hear. Espino, who was raised here as one of eight children, hoped to one day buy a house of his own, but outside buyers meant higher prices. Like many locals, he wondered: Would the revitalization project really help remedy generations of marginalization? Or would it precipitate a forced exit for longtime residents?

Across the street from the ribbon-cutting, the lunch line formed at Casa de Sanchez, a beloved neighborhood restaurant. But 47-year-old Yadira Sanchez, who’d helped her father open the place 25 years earlier, wasn’t there. “I did not make it today, nor do I care of the park,” she messaged me. “It did not connect anything.” Sanchez, who often wears her bangs swept to the side and has a high-pitched, musical voice, had spent much of her life in GES, raising her three children here. She rented her home but, like Espino, hoped to one day buy a place. A pillar of the community who was passionate about trees, she worked as a planter. Inside Casa de Sanchez, near a portrait of legendary revolutionary Emiliano Zapata, who inspired the slogan “Tierra y Libertad” (“Land and Freedom”), she’d hung a poster offering free trees to residents. She worried

that the new park’s stewards had planted too many vulnerable saplings just before the first freeze and “did not even take the wire off the roots.”

But the people in power were focused on the bigger picture. Before Hancock spoke, Stephanie Pollack, the Federal Highway Administration’s acting administrator, lauded the project as a model for the country, and Shoshana Lew, the executive director of the Colorado Department of Transportation (CDOT), said, “We’re proud to be here delivering the state’s largest infrastructure project on time and on budget while celebrating the space that will bring people together.”

FROM DOWNTOWN DENVER, the bike ride north is pleasant. The wide lanes lure cyclists past glass-walled skyscrapers and Coors Field to RiNo, the River North Art District, with its breweries and CrossFit gyms. Past RiNo, though, things quickly change. The bike lanes vanish; railroad tracks close in. Highways and smokestacks loom overhead, and the air feels thicker, smoggy; GES is one of the most polluted areas in the country.

But for Sanchez, Espino and 15,000 other people, it’s home. The neighborhood’s single-family houses are lined with heirloom rose bushes, and laughter rings out from the community pools in the summer. Like most of Denver’s neighborhoods, GES sprang from a national demand for connectivity. First came the Denver Pacific railway, which linked the young gold-mining town to the Transcontinental Railroad and violently displaced the region’s original inhabitants: The Arapaho, Cheyenne, Ute and Očhéthi Šakówinj peoples. Not long after, a livestock market that eventually became the National Western Center was built

next to the railway. Soon, smelters appeared, employing Eastern European immigrants. In 1948, the state highway department built Interstate 25 north-to-south through Globeville, dividing it; I-70 followed.

By this time, many early GES residents had relocated. In their place came another wave of immigrants from Mexico and Latin America. Espino’s grandfather left Durango, Mexico, in the 1980s and, like many recent arrivals, got a job at a meatpacking plant. Sanchez’s father had also come from Mexico in the late 1970s to work at a slaughterhouse. But after he was injured, he started selling homemade bread door-to-door. Sanchez and her siblings would wake at 1 a.m. to hold the table steady while he rolled out the dough. Eventually, they started offering meals — tacos, tortas, enchiladas — and, in 1998, Sanchez’s father opened the family restaurant at its first location.

In order to live here, Espino and Sanchez’s families had to accept the drawbacks: soil and groundwater contaminated by the old smelters, highway noise and exhaust, industrial pollution from a petroleum refinery and a coal-fired power plant. These things not only disrupted life in GES, they shortened it; researchers have found that extended exposure to pollution from traffic and industry is linked to higher rates of asthma, cardiovascular disease and premature death.

By the early 2000s, it was clear that new infrastructure would yet again upend daily life in GES. The hulking I-70 viaduct between Brighton and Colorado Boulevards, first built in 1964, was initially designed as a four-lane bridge. Narrow cross-streets and sidewalks ran underneath it, and murals covered its walls, including one of a panting bulldog.

Denver’s population grew by 20% between 1996 and 2001, and the section of I-70 that ran through GES and connected to I-25 became dangerously congested. Inadequate interchange spacing and on-ramp lengths made driving perilous, and the outdated design contributed to accident rates more than twice the state average.

In 2003, CDOT began seeking a solution. The approximately 90 ideas it initially considered reflected a tension in priorities: Some plans would accommodate more traffic, while others would minimize environmental impacts. The community’s own hopes were clear: It wanted other neighborhoods to share the burdens of this highway. Many GES residents pushed for rerouting I-70 north of Denver along the I-270 and I-76 corridors, an option that would move traffic out of the neighborhood but add miles of travel to vehicles heading west to Front Range ski areas. That proposal died after local leaders in neighboring Adams County objected. Another option was to push I-70 farther south — but that would displace Purina’s pet-food factory. The company opposed it, and the idea was abandoned. At one point, the state considered replacing the viaduct and expanding the number of lanes — but that would require demolishing the elementary school, and the community strenuously resisted.

By 2015, the viaduct was well past its 30-year lifespan and literally crumbling. Huge pieces of concrete occasionally broke off, endangering students walking to Swansea Elementary School. “These kids were basically taking their lives in hand, going across railroad tracks,” Mayor Hancock said at the White House last October, when he was invited there to discuss the projects facilitat-



Patrons wait for their orders at Casa de Sanchez, a staple in the GES community (above). GES organizer Robin Reichhardt (facing, far right) speaks to members of the GES Coalition as they prepare to go door-knocking for their campaign for community ownership of National Western Center land.

ed by the Infrastructure Act.

But reimagining old infrastructure often invites unintended consequences. In what's known as the "green space paradox," residents who historically lacked access to parks are the most likely to be displaced by rising housing costs once the greenery finally arrives. In central Dallas, a similar highway-capping park completed in 2012 hastened the development of luxury apartments, leading to rents that are among the region's highest. Mark Treskon, a senior research associate at the Urban Institute, a Washington, D.C., think tank, said that parks are unlikely to initiate gentrification on their own, but can accelerate the pressure. "It could make the people who live in that neighborhood technically worse off, if they actually are displaced," he said.

SANCHEZ ATTENDED the community consultations almost from the beginning. They were held at neighborhood hubs like the Swansea Rec Center Gym and Bruce Randolph School,

and the atmosphere was often tense. Residents — including Sanchez, who lived less than a mile from I-70 — feared their homes would be demolished to make room for the highway. She also worried that her family's restaurant would suffer from extended traffic closures, or, even worse, that CDOT would decide it needed the restaurant's land and invoke eminent domain to seize it.

Eminent domain allows agencies to repossess private property without the owners' consent as long as it's done for a public good — a road, an easement, a fire station. It's hard to compare how often it's used from place to place, though conservative states like Arizona and Utah tend to have stronger private-property protections against eminent domain than liberal ones like California and Colorado.

Families in GES displaced by the project would receive fair market value for their homes as assessed around 2012 — generally between \$50,000 to \$150,000 — along with relocation assis-

tance from several thousand dollars to the low six figures. While the payments allowed some renters to become homeowners, others have struggled to stay in the neighborhood, where the median home price rose by 47% between 2018 and 2022, according to data provided by the Denver Metro Association of Realtors.

Sanchez felt her family's survival was at stake. She and her three children, like many of their neighbors, have asthma; between 2013 and 2017, approximately one in 100 locals were hospitalized for asthma-related conditions, a figure at least 75% higher than the state average. Sanchez's son used to love playing soccer but stopped when his asthma worsened. She worried that expanding the highway to allow more vehicles — and increased emissions — would further complicate their respiratory issues, and therefore supported rerouting the highway to the north, away from her neighborhood.

But by the fall of 2013, the Department of Transportation seemed to have settled on a dif-

ferent option. In its meetings, CDOT started calling its Partial Cover Alternative the "preferred" alternative. This option would get rid of the viaduct and move the highway underground for 800 feet. It would also expand the highway, replacing six lanes of traffic with eight, plus two temporary auxiliary lanes. Now, officials were asking what amenities residents wanted on top: soccer fields and an amphitheater, which the community eventually approved, and a venue for lawn games like croquet, which it didn't. Sanchez felt that the cover park had been all but greenlit. "Are you letting us choose?" she wondered. "Or are you just basically telling us what it is that we're going to have?"

But CDOT sees it differently. Bob Hays, the reconstruction's project director, told me that the community "came to us with this idea of the partial-cover lowered solution." He described meetings where families sketched out the park's design, along with a 2005 petition supporting the partial cover that collected over 500 signatures. But some community leaders note that the now-18-year-old petition had been signed by just a fraction of the population and say CDOT's emphasis on it is misleading.

"It was really a careful engineering of the narrative by picking what people said here in this year and this year, and then, like five years later, weaving it together to say, 'This is what the community wants,'" said Candi CdeBaca, a former

city councilwoman for District 9, which includes GES. CdeBaca is among those who believe the department chose the partial cover for its political benefits, given the national desire to reconnect neighborhoods. In October, Colorado Public Radio reported that the city is considering similar caps in seven other locations.

To accommodate the cover and the extra lanes on I-70, CDOT's contractor tore down the homes of 56 families. When asked about the impact, Hays said, "It's not that we don't empathize, and it's not that we're not sensitive." But, he said, it was impossible to please everyone on such a project and, when it came to community consultation, "We're above and beyond what the minimum requirements are. It's all stuff that we wouldn't have done in the past."

Construction started in August 2018, with demolition crews spraying down the newly vacated homes and yards. CDOT had committed to hiring 20% of the workforce from 13 ZIP codes adjacent to the project. By its own assessments, it met that requirement — but ultimately, less than 1% of the laborers came from GES itself. The crews sprayed high-powered jets of water that tamped down the dust flung up by a yellow excavator. Once the houses were soaked, the excavator began clawing out the structural roots of each home: foundation, studs, drywall. The people who'd lived there had scattered, some to suburbs like Thornton and Aurora; according to the state, 12 of the 56 families have remained in Denver.

Espino, a college student at the time, enjoyed running in the area, and he continued to do so throughout the construction. In the morning, he crossed the light-rail line as the sun lit up the weeds sprouting between the

tracks. He passed Casa de Sanchez, where cooks were whipping up breakfast burritos, and single-family houses from the 19th century: a periwinkle-blue home encircled by a white picket fence, and a pink house with sun and moon signs by the door.

By the time Espino looped back to his home, the day's demolition work would be well underway. Houses were being reduced to rubble, their driveways torn out and hauled away. Despite the sprayed water, dust hovered in the air.

SANCHEZ LIVES in a 1940s ranch-style house. It's cozy; the living room is lined with sofas and throw pillows. But the highlight of her home is her yard. In the summer, pots of flowering plants bloom pink and red in the front; in the back, raised beds sprout zucchini, strawberries and jalapeños. Honey locust trees wrap around the house. The chalky smell from the Puri-

na factory saturates GES, but it's barely detectable here.

When Sanchez first moved here, in 2005, the grass was dead and the backyard was dirt. At the time, she worked as a full-time nursing assistant. Slowly, she turned her yard into a colorful sanctuary, inspired by her grandmothers in Mexico. "I've rented this house for 17 years," she said. "You're going to want to make wherever you live your home."

Most GES residents have neighbors who had to leave because of rising rents or taxes. Since Sanchez moved here, Denver's median home price rose from \$246,613 to \$649,993; from 2018 to 2020, Globeville's property taxes increased by 44% — the highest of any Denver neighborhood. And yet, for almost two decades, Sanchez's rent had hovered near \$1,000 a month, well below market rate. She credited her "good landlord," who grew up nearby.

Within GES, her yard is a rare

oasis. In this era of rising temperatures, urban heat islands like GES tend to be uncomfortable at best and dangerous at worst, contributing to "respiratory difficulties, heat cramps, heat exhaustion, and non-fatal heat stroke," according to the Environmental Protection Agency. In 2017, a group of neighborhood associations and the Sierra Club sued CDOT, claiming it had failed to adequately account for the project's pollution. The following year, the department settled for more than \$500,000, and allocated \$25,000 for tree planting in public spaces and residential yards. Sanchez started working with the GES Tree Planting Project, a nonprofit set up following the lawsuit.

She smiled when she talked about helping residents discover their "tree personality." Are winter colors important to them, she asks? If so, she might recommend honey locusts or maples. Do they want trees that flower?





A crabapple or cherry blossom might be perfect.

After that initial discussion, Sanchez gives residents a “tree menu,” which lists the available species: evergreens like Austrian pines and Colorado blue spruce, shade trees like bur oaks, and flowering trees like crabapples and chanticleer pears. She focuses on varieties that require minimal maintenance and can thrive in GES’ acidic soils. Since 2018, Sanchez and her colleagues have helped plant over 400 saplings in GES, though not all of them survived. “We have been through round after round of tree planting in my neighborhood,” CdeBaca said. “And I watch them die.” CdeBaca believes the city should treat the trees like any other public service and subsidize watering costs.

Sanchez is aware of the challenges but refuses to be deterred. Longing suffused her voice when she spoke of Monaco Park in the nearby Park Hill neighborhood. “It is like a forest,” she said. “We deserve to have that, too.”

She also sees the air purification effects that trees have as one way to combat pollution, which increased during the highway reconstruction. Levels of fine particulate matter spiked when the viaduct was demolished. And the noise was constant: Construction happened not only during workdays, but also on weekend evenings. The closures, dust and noise affected business at Casa de Sanchez. Though Sanchez doesn’t receive any income from the restaurant, one of her sons did until recently. Her finances are tenuous, and she worries that she might one day be priced out of her home. She copes with the stress by working in her garden.

IN 2015, A GROUP of residents calling themselves the “GES Co-

alition” started meeting at the Valdez-Perry library. Some were losing homes to the I-70 expansion; others had heard rumors of rent increases. “That room was full every single Friday,” Espino said.

At the time, he worked at the library while studying history and urban planning at the University of Colorado Denver. He was particularly excited by the coalition’s discussion of land trusts. Set up as nonprofits, community land trusts purchase land, build or rehabilitate homes on it, then sell them to low-income residents at below-market rates. The trust maintains ownership of the land, leasing it to homeowners who agree to limit the resale price. In 2018, the GES Coalition helped launch the Tierra Colectiva Land Trust, and in 2020, after graduating, Espino took a job with the coalition as an organizer.

The trust sells only to current or former GES residents who earn 50% to 60% of the area’s median income — between \$41,000 and \$49,000 for a single-person household. Sanchez, who sits on the board, finds this stipulation onerous. “If you’re going to be doing lower income, do lower income to what it truly is,” she said. She has a personal stake in the matter: Since 2021, she’s been trying to get a Tierra Colectiva house but has yet to clear the income threshold and join the waiting list of families. Buying a land-trust home is “not necessarily an investment,” Sanchez told me. “It’s more of a protection for my kids. My children will never have to be homeless.”

Recently, the coalition began trying to claim land from one of the neighborhood’s oddest landmarks: the National Western Center, which has housed an annual livestock show and rodeo for nearly a century. Back in 2014, Mayor Han-



cock proposed transforming it into a year-round events center and agricultural research hub. The project would have cost up to \$1.1 billion, and 42 acres of public land were tentatively allotted to it. The city also acquired 38 properties from local families and businesses, five through eminent domain.

Expanding a site steeped in cowboy mythology in a community long erased by such whitewashed versions of the West was itself controversial. Dispossessing more residents of their homes was even more contentious. By 2021, Hancock had failed to raise sufficient funding, and the full expansion stalled. Now, the coalition wants to get those 42 acres back into community hands.

But the city has not always been helpful. Espino recounted a meeting in late 2017 between coalition members and Erik Soliván, head of an office called Housing and Opportunities for People Everywhere (HOPE). The coalition asked for funding for Tierra Colectiva, but Soliván was dismissive. “This guy sat there and disrespectfully told mostly women, ‘You’re never gonna see a dime of the city’s dollars,’” recalled Espino. (When asked for comment, a city spokesperson replied that Soliván no longer worked there, and that the HOPE office has since been subsumed into another department.)

But the coalition persisted, and CdeBaca fought for it from City Hall. In 2018, as part of the partial cover’s “environmental justice mitigation measures,” CDOT awarded it \$2 million to develop affordable housing. In the years since, the trust has received \$5 million more and built or rehabilitated 13 homes. By next year, it hopes to increase the number to 22.

THE COMMUNITY is not always united. Disagreements arise about whether the land trust should keep building homes for sale or focus on rentals. Equally contentious is the coalition’s relationship with the city: Some members favor protests, while others prefer quiet negotiation. Espino said that’s part of community organizing. “You don’t really have a relationship with someone unless you have tension.”

GES residents have learned to be suspicious of amenities they haven’t fought long and hard for themselves. The cover park and the Western Center are two examples; the 39th Avenue Greenway is another. Opened in November 2020, the greenway features trails, play areas and 12 acres of open space just south of Elyria-Swansea. Espino visited with his younger sister and her son after it opened. “They were like, ‘Damn, this park is nice,’” he recalled. “Let’s enjoy it while we can.” Even if not all projects are created with the same intent — parks and agricultural hubs serve different purposes — many longtime residents share Espino’s suspicion that this surge of development portends an influx of homebuyers with lighter skin and deeper pockets.

Espino and Sanchez believe there’s another way to develop green space. “We should be allowed to deserve good-quality things and beautiful things,” Sanchez said. “We don’t have to be gentrified in order to get those.” It was with this idea in mind that, on a sunny Saturday morning last October, she, Espino and others unloaded speakers, gazebo tents and 39 trees and bushes in a deserted parking lot. For months, the coalition had been planning “A People’s Plaza,” modeled after town squares in Mexico, as part of its campaign to reacquire



land from the National Western Center expansion. They wanted to show that the community had its own vision for the place, something better than another gargantuan arena, and that residents saw the land as theirs to fight and care for.

The parking lot was surrounded by I-70, a few boarded-up buildings and a single home that formerly belonged to a man named David Torres, who now sits on Tierra Colectiva’s board. Until 1999, Torres’ family lived in another house. Then the government razed it to build an on-ramp to I-70. Torres and his family moved across the street — but in 2014, they were forced to vacate yet again, this time for the planned expansion of the National Western Center. Houses all around them were demolished, but after the city bought Torres’ home, it decided to preserve it as a key historic property.

Community organizer Alfonso Espino speaks at a 2023 mayoral forum in GES (above). Yadir Sanchez waters a sapling during a community tree-planting event in June (top, facing). Sanchez takes a break in her front yard while helping neighbors select a tree (bottom, facing).

Though the house near the corner of 46th Avenue and Baldwin Court no longer belonged to him, he’d given coalition members his blessing when they asked to cover it with murals.

A few days before the People’s Plaza, Espino and Sanchez went to the plant nursery. As Sanchez drove around in a small cart (“She was whipping that shit,” recalled Espino), she pointed out which trees were in season and hearty enough to sit outside. They chose eastern redbuds, Oregon pines and Tanyosho pines, along with 40 pots of mums, hydrangeas and snake plants.

By early afternoon, coali-

tion members had enclosed the parking lot with trees and pots of mums and strung colorful pennants and paper pinwheels between the pop-up gazebos. Soon, Spanish music from the stage they'd erected drowned out the highway traffic. Families painted murals, creating a multicolored geometric design on the walls of Torres' former home. The coalition had set up a wooden model of the area, and asked people to add to it: How would they revitalize the neighborhood if given a choice? People filled in the empty spaces with homes and patio areas, gardens and parks.

Sanchez hurried around, making sure that the mums got enough water and that the place looked "welcoming and good." At dusk, the coalition started packing up. "All right, these plants are free," someone announced. "Take them." People rushed forward, and Sanchez hustled after them, shooing them away from the rented trees and making sure the other plants were handled with care.

THIS MARCH, more than 200 GES residents gathered at Bruce Randolph School. English and Spanish bounced off the brick walls, and Espino wore a T-shirt reading, "Our Hood, Our Community, Our Land!" Six chairs sat onstage: The coalition had organized a mayoral debate, with the hope of putting affordable housing on the agenda of Hancock's successor. The mayor would be termed out in July, and the election to replace him was expected to be hard-fought. Residents seemed most keen to hear from progressive candidate Lisa Calderón and from Mike Johnston, a 48-year-old Democrat, who had promised to improve housing affordability. The six candidates trickled in, as did Sanchez, sporting mauve lip-



stick. About 45 minutes into the debate, she got up and, with another woman, asked if the candidates would support community-led land trusts through public spending. Would they also commit to meeting with Tierra Colectiva within their first 90 days in office?

All six candidates answered in the affirmative. Later, Sanchez and Espino met up at the back of the room. "What do you think, Yadira?" he whispered.

"I think they all talk real pretty," she replied. "*Pero, a ver. But, we'll see.*"

Three months later, Johnston was elected. Soon after taking office, he agreed to tour the acreage once intended for the National Western Center expansion, saying his staff wanted to "look at ways to establish community ownership of that land."

In July, during a record-setting heat wave, I visited GES's cover park. The park's few "shade structures" — sleek white metal formations with semi-transparent panels — were

no match for the sun. The young Kentucky coffee and oak trees were now about 10 feet high — too small to offer shade, but at least the vast majority had survived the winter. Traffic rushed below my feet. For the most part I couldn't hear it, thanks to 18 jet fans installed beneath the cover.

The park was mostly empty, but around 2 p.m., a family of four pulled up in a beat-up red car. Two boys rushed to the playground's slides. The family, who lived in a nearby suburb, had been out for a drive when they saw the park and decided to stop. The parents were glad the kids were enjoying themselves, but doubted they'd return. The park was too close to the road, they said, and too hot. The father complained that the splash pads weren't on, and he couldn't figure out how to work them.

A little while later, I met Espino for tacos at Casa de Sanchez. He was cautiously optimistic about the new mayor's rhetoric around land trusts, and he had recently experienced a dramat-

GES Coalition members painted this building near the National Western Center and adorned it with colorful murals.

ic change in fortune: After two years of waiting, he would soon close on a Tierra Colectiva home, a three-bedroom row house that adjoined four other townhomes. All his neighbors would be from GES. Espino was delighted, but also a little embarrassed; he felt guilty about becoming a homeowner while others couldn't — especially Sanchez, whose income still didn't meet Tierra Colectiva's threshold. Worse, her rent had recently almost doubled. She feared that her landlord, who is in his 70s and had battled cancer, might eventually sell her home.

Still, she was happy for Espino. When he shared his ambivalence with her, she urged him to take the house. "Alfonso, it's a good thing," she said. "From the very beginning, I was advocating that we should help those that help the most first." ✨

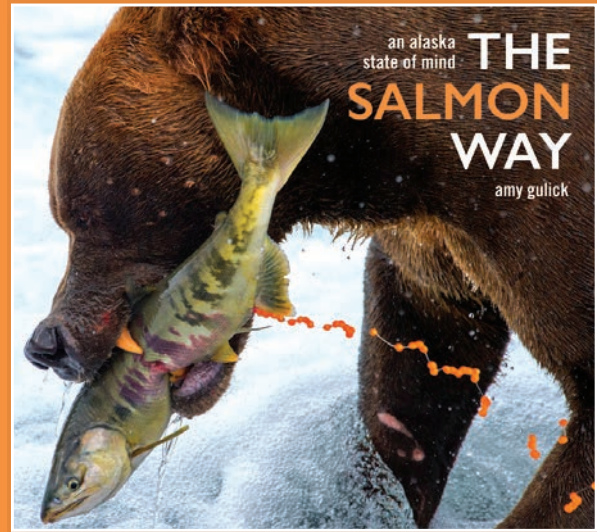
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Crawling around in the dark

A momentous trade illuminates what's true.

BY KATIE DALEY

ILLUSTRATION BY YIFAN WU

I HAVE A POLISHED SHARD of abalone shell I've carried around for almost 50 years — in my pockets, on my windowsills, and even, sometimes, in my mouth. It's the first thing I ever received in exchange for writing a poem, and now it's a talisman I hold close to remind myself that I can do this — I can earn a life — by being a writer.

I first met this shard — and its shaper — at a Rainbow Family encampment at Terwilliger Hot Springs near Blue River, Oregon, in the summer of 1975. I was 18, my brother Walter had killed himself that spring, and I was hitching my way through the country, trying not to shatter into splinters while I fulfilled a childhood dream of adventure. Terwilliger felt like a place where I could fall down for a while without falling apart.

The geothermal springs at Terwilliger are perched beside Cougar Reservoir in Willamette National Forest. Nowadays, the quarter-mile hike to the pools from the forest road features a fee station, signs, guardrails and wooden bridges over narrow canyons. But back then, the way was unmarked, free — and titillatingly treacherous. The single-file path had been carved into steep hillsides by millennia of clambering mammals and all manner of soak-seekers. At canyons, employing circus performer-style balance on a giant fallen fir tree was often the easiest way to get across. The forest hadn't seen a fire in decades, and old-growth Douglas firs towered over everything, hushing the thud of each footstep on the forest floor. The only sign of institutional civilization I witnessed during my two weeks there was a fully dressed ranger yukking it up with a circle of naked hippies. There was also

a social worker from Eugene who visited the encampment once a month to sign people up for food stamps.

Closer to the springs, wisps of sulfur-scented steam meandered into the forest canopy. Four or five pools of water boiled by the earth's core were dug into the hillside, one spilling into the next, so that each successive pool was slightly cooler than the one above it. When I first laid eyes on the pools, they looked like steps made of smoky mirrors. Farther down the hill, I could see the spruce-blue water of the lagoon glimmering between tree trunks and hear Rider Creek waterfall soughing into it. In a clearing just steps away from the springs, tents and lean-tos made of tarps nestled like hobbit homes on the rare swaths of flat earth.

For a few days, an abalone jeweler was camped there. Every morning, he displayed his creations on a black velvet cloth in front of his tent. Even though I'd never seen the point in wearing stones around my neck and even though I was intimidated by the jeweler's glossy turquoise eyes, I found myself kneeling beside his display, ogling his necklaces. The polished shards, with their pearly ripples of pink, lime green and royal blue silk, made my mouth water. I had the distinct urge to pop one into my mouth.

There was one piece of abalone I kept coming back to. It was shaped like the hindwing of a butterfly, the pearly ripples its scales. A hindwing is about all I believed I had back then — not enough to fly into adulthood with, but maybe something to build up from.

I wanted to travel as light as possible, and the idea of wearing jewelry felt like running a marathon with a purse. Besides, I had no money to speak of. I couldn't explain it to myself, but I really wanted that necklace.

I asked him how much it was.

"I don't know. \$10? Or do you have anything to trade?"

I shook my head. Why hadn't I ever learned how to make things with my hands, things you could wear or play or use to get by on?

Then I remembered. For years, I *had* been using my hands — to write. I still spent most of my time stumbling around on the page, but I loved it enough to think I was a poet.

"Would you take a poem for this necklace?"

He furrowed his brows. "A poem?"

"Yeah. Custom-made, just for you."

He took a hit from his hand-rolled cigarette and sent a smoke ring over the canyon.

"I don't know, sister. I put a lot of work into making these things. I don't think a little poem is gonna do it for me."

I flushed. "Wait a minute, man. It's not just a 'little poem.' I put a lot of work into it, too."

He studied me with a glimmer of suppressed laughter in his eyes, as if this was a joke I hadn't finished telling. Then he unfolded the story of what it took to hunt for each abalone shard. How he had to climb cliffs all along the California coast, spending from dawn to dusk in the cold wind and fog, searching for anything from tiny shards to whole shells. How scratched and bruised he got, how he risked breaking bones and maybe even losing his life. And how it took hours to sand the sharp edges off each shard and shape it into something somebody could wear.

How his fingers ached and burned long before the work was done. How could a poem possibly pay him for all that danger and sacrifice?

He had me on the physical stuff, but I was beyond material logic. After all, I was a poet, wasn't I? I told him how it was to write a poem. How it could take days to hunt for just one word. How I usually ended up crawling around in the dark for a while before I found what I was really trying to say, or before it found me. How I had to find the guts to be brutally honest, to dig around in the bruises in my mind till I discovered what was true. How every poem started out rough and needed to be sanded down, how that could take weeks or months. How even though I didn't usually do it out in the wind or fog, it required blood, sweat and tears, just the same.

I fondled the necklace. "Look. It's so cool that you make a living hunting for abalone shells. I could definitely make a poem out of that."

He looked at me for what felt like eons, his eyebrows still furrowed. "All right, sister," he finally said. "Your poem for that necklace."

I was stunned. I was so fired up to fight for poetry, I didn't want to stop. My fingers trembled when I wrote down his address. We shook hands as I promised that his poem would be in his general delivery slot by summer's end.

For the rest of the day, I kept stroking the shard of abalone that hung just below my clavicle. Every time I touched it, I felt like an empty pouch that had just bagged its first coin.

Even now, all these years later, holding it gives me that same buzz. ✨



CONFETTI WESTERNS

A column that explores the queer natural and cultural histories of the American Southwest.



The sapphic lizards of the Southwest

An encounter with a gay icon.

BY MILES W. GRIFFIS | ILLUSTRATION BY PINE BONES

IN THE HOT SUN, the sandstone layers of the canyon were like melting Neapolitan ice cream, the strawberry of the Jurassic entrada liquifying under the weight of vanilla and chocolate. I followed a slim trail of pink puddles through archways of junipers and found myself in the landscape depicted in Georgia O’Keeffe’s 1940 painting *Untitled (Red and Yellow Cliffs)*, a trippy oil that shows the precipice that towers over her beloved Ghost Ranch topped by a tiny slice of blue sky served à la mode.

A cloud of bushtits led me to a boulder that had calved off the pastel canyon rim. It was rough as sandpaper and festooned with an eight-inch lizard. She basked in the Southwest rays doing push-ups, displaying her fierce black-and-yellow stripes. When she raised her chin, the powder-blue underside contrasted with the pink hue of the boulder, a color combination that haunted me with visions of viral gender-reveal parties.

How did I know that she was a she? I had stumbled across the internet’s “gay icon” of herpetology: the New Mexico whiptail. Over the past decade, *Cnemidophorus neomexicanus* has become an idol for some queer people, because this species’ members are all female. They reproduce asexually through a process called parthenogenesis and yet still display sexual behaviors like mounting. They’ve thus been dubbed the “leaping lesbian lizard” and inspired art, comics, a Pokémon named Salazzle and shelves of online merchandise — even the name of an ultimate frisbee team at Wellesley College. One sticker sold on Etsy portrays two lizards in the seven colors of the Sunset Lesbian Pride Flag, their tails curled in the shape of a love heart.

Simply put, parthenogenesis is reproduction without fertilization, Hannah Caracalas, a biologist and board member of the Northern Colorado Herpetological Society, explained. She told me that the process is relatively common in plants, as well as invertebrates such as scorpions, but rare in vertebrates. It does occur in some fish, reptiles and birds; in fact, it was recently observed in a pair of female California condors, though these New World vultures primarily reproduce sexually. Parthenogenesis, however, is well known in certain species of whiptails, including the nearby Colorado checkered whiptail (*Cnemidophorus tesselatus*), whose reproductive behaviors Caracalas has studied.

“There are a series of hormonal triggers

that happen around reproduction time that signal to the female to start producing these eggs,” Caracalas said. “She basically copies her own genetic material and passes it off to her offspring.” This means that the mothers and daughters are all clones of each other — they have identical genetics.

While the lizards reproduce fully on their own, the New Mexico whiptail and Colorado checkered whiptail both engage in pseudocopulation, in which one lizard mounts another, bites, and hooks its leg around the bottom lizard’s body, while the two lizards entwine their tails. “It is thought that that kind of behavior will start stimulating those hormonal triggers that will lead to ovulation,” said Caracalas.

When I found a second whiptail on the south face of the Ghost Ranch boulder, I thought of my dry biology classes in high school and college, and how they were framed through a cisgender and heteronormative bias that excluded the full reality of the natural world: Not all species reproduce via male/female pairs. Many species, in fact, including New Mexico whiptails, lack males altogether, and others, like some marine snails, change genders to mate. This same prejudice has been propagated by everyone from historians and academics to Hollywood producers, who have straight-washed queer people and their relationships, from Susan B. Anthony to the artist Mai-Mai Sze and her partner, Irene Sharaff. Whiptail fans joke on online message boards that the cis-het male biologists of yesteryear must have described the New Mexico whiptail as “a species consisting entirely of good friends and roommates.”

“Our understanding of same-sex sexual behavior in animals has really shifted from when I was a queer youth in the ’80s,” said Karen Warkentin, a professor of biology and gender and sexuality studies at Boston University. In the past, Warkentin added, information about queer biology was “actively suppressed,” and scientists were discouraged from studying it. Today, however, many scientists conduct research without these biases, opening the door to a truer understanding of biology.

Take the common name of the mourning gecko, an all-female parthenogenetic species native to Southeast Asia. According to *Reptiles Magazine*, it comes from a clicking sound they make at night; biologists assumed

that they were “mourning” over never having a male mate. As if. That clicking, along with head-bobbing, is actually a primary form of communication for mourning geckos. A recent study published in *Life Sciences Education* showed that biases like this in biology courses impacted queer students’ sense of belonging and career preparation. By erasing the truth of diverse genders and orientations in nature, this bias helps bigots spread the lie that queerness in humans is “unnatural,” an errant choice. It’s reminiscent of today’s book bans, which label queer texts as profane in a homophobic effort to skew how we view the world.

But today’s scientists are studying and communicating nature to the public *as it is*. Caracalas, who has been a lizard lover her entire life, said she discovered that she was a lesbian around the same time she began studying the Colorado checkered whiptail. Observing the lizards in the field brought her immense joy at a formative time. “Biology has been used as such a weapon against (queer people),” she said. “But ironically, one of the first things that they teach you in a college biology course is that there’s always exceptions to the rule and that nothing ever fits into nice, neat boxes.”

Warkentin believes that the New Mexico whiptail inspires the LGBTQ+ community partly because its complex biology has been studied and communicated so effectively by scientists. For me, learning about New Mexico whiptails has not only anchored me more firmly to the high desert landscape we shared that afternoon, but given me yet another example of how the natural world can shatter human prejudices. In short, these lizards have radicalized me. ✨

“One of the first things that they teach you in a college biology course is that there’s always exceptions to the rule and that nothing ever fits into nice, neat boxes.”

COLORADO

Here's a hair-raising encounter from the Centennial State, reported by *The Denver Post*. Shannon and Stetson Parker were enjoying a relaxing jaunt through the San Juan Mountains on the Durango & Silverton Narrow Gauge Railroad when Stetson spotted something unusual. "We were looking for elk in the mountains and my husband sees something moving and then can't really explain it. So he's like, 'Bigfoot!'" Shannon told *The New York Post*. "It was at least six, seven feet or taller. It matched the sage in the mountains so much that he's like camouflaged when crouching down." Shannon reported the sighting on her Facebook page, noting that the man sitting next to them on the train also grabbed his phone and started recording whatever it was. Shannon posted her photos as well as his footage on her Facebook page. "Y'all, out of the hundreds of people on the train, three or four of us actually saw, as Stetson says in the video, the ever-elusive creature Bigfoot," Shannon wrote. "I don't know about y'all, but we believe." However, some Bigfoot experts, including Jim Myers, owner of the Sasquatch Outpost in Bailey, Colorado, and paranormal researcher Alan Megargle, weren't convinced. *Westword* reported that Myers regards the sighting as a hoax, and Megargle diagnosed it as a case of "Squatch Fever." Myers and Megargle collaborated on the documentary *The Bigfoot of Bailey Colorado and Its Portal*, which explains why the elusive cryptid is so darn elusive: Apparently, it's interdimensional and can travel between worlds through "an alien portal located in a Native American sacred tree." *Okaaay*. As one of the T-shirts Myers sells reminds us: "Bigfoot doesn't believe in you, either."



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

UTAH

If you are a fan of legendary environmental activist Edward Abbey, author of *The Monkey Wrench Gang* and *Desert Solitaire*, then you'd better sit down for this one. *The Durango Telegraph* reported that a Moab housing development company broke ground for, well, for an Ed Abbey-themed subdivision featuring streets named after his work, even though new development and road building are utterly antithetical to everything that the curmudgeonly writer stood for. Lifelong friends of Abbey said that dedicating a subdivision to his memory goes against his legacy, to put it

mildly. The subdivision, which will be dubbed "The Abbey," is expected to include 80 houses on approximately 22 acres within Moab city limits. Street names include "Monkey Wrench Way," named after Abbey's novel about anti-development eco-saboteurs, and "Hayduke Court," named for the guy in the book who plants explosives at Glen Canyon Dam. If you're wondering, as we were, *WTF were the developers thinking?* Mike Bynum, a Moab businessman, explained that The Abbey was years in the making and is intended as an homage to the writer. After all, *Desert Solitaire* was set in nearby Arches National Park and helped put

Moab on the map. But did the developers actually *read* any of Abbey's books? Next on the drawing board: "Silent Spring Pesticides Inc." and "Black Beauty's Olde Horsemeat Shoppe."

WASHINGTON

Since 2012, Whidbey Island has hosted a lone elk known as Bruiser, treating him as a welcome guest. Ralph Downes, an officer for the Washington Department of Fish and Wildlife, has been Bruiser's "de facto guardian angel" in the 10 years since the elk first appeared on the island, *The Seattle Times* reported. But since October, there have been warnings to watch out around Bruiser: KOMO News reported that the elk can get ornery and has been picking fights with cars. "This time of year, he tends to get a little frustrated. He doesn't have anyone to wrestle with and he can't find anyone to have as a companion," Downes said. It's happened before: In 2017, he — Bruiser, not Downes — was tranquilized after getting ensnared with a buoy and 30 feet of mooring line. Maybe the buoy was tailgating?

WASHINGTON

Ziggy Stardust appears to have lost a few spiders on his way back to Mars. Either that, or maybe it's just nature. KION46 reported that residents across California's Central Coast reported "a sticky web-like substance" falling from the sky. But don't panic: John E. Banks, a professor at California State University Monterey Bay, thinks it derives from "ballooning," a method that spiders use to get from one place to another. "It's a special term we use for how spiders disperse from habitat to habitat," Banks said: They spin out spider silk and use it like a parachute — just as efficient as human air travel, and no carbon emissions involved. ✨

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Photo: Cascade-Siskiyou National Monument expansion area by Bob Wick, BLM



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#IAM THE WEST

DAVE HUTCHINS

**Biomimicry Institute program manager,
Community Bike Shop founder
Butte, Montana**

On the global level, I work with some of the world's brightest scientists, engineers, designers and artists and try to inspire them to look to nature for solutions — reconnecting to the living world and to each other to build a more sustainable and resilient future. On the regional level, I live at the headwaters of the Columbia River, in a landscape devastated by our insatiable demand for copper.

I've conducted research on technologies for removing metals from infected waters, and I've looked at how we can empower communities to gain agency in cleanup decision-making. But the most gratifying and impactful work I do is at the hyperlocal level. I run a community bike shop in my neighborhood, where we give away bikes to those in need — mostly youth. It's amazing to see the autonomy, mobility, freedom and empowerment that comes along with the simple offer of a bicycle and the skills to maintain it.

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