

A person wearing a wide-brimmed hat and a plaid shirt is kneeling in a field of tall grasses. They are holding a pair of glasses and a notebook, and are looking down at a plant in their hands. The background is a soft-focus field of similar vegetation under a bright sky.

# RESILIENCE

A VOICE OF THE NEW AGRARIANISM

Issue 46

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*The*  
**COLORS**  
*of* **HOME**

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# Editor's Note

Dear *Resilience* readers,

When the world feels overwhelming, when the cows get out again, when the sun shines too bright and the clouds don't produce enough rain, it is easy to close our eyes and shrink into the darkness. The black of the inside of our eyelids can feel safe and grounding, can help us shut out the pain or frustration or sadness that is biting at our heels.

But it's really hard to care for ourselves, the land, and our communities with our eyes closed. What happens when we open them, when we squint into the light? For me, those first few blinks let in the color that brings me hope.

There is something special when the fields hum with the vibrant hues of a colorful harvest. Whether it's the shiny green of bluebunch wheatgrass, the soulful grey of a sheep's wool, or the multi-colors of Indigenous glass gem corn, it's more than a visual feast; these colors are a testament to the health of the land and the power of community stewardship. Regenerative practices – where soil is nourished, biodiversity thrives, and local ecosystems are restored – allow for a kaleidoscope of colors to emerge from the earth, each shade a promise of resilience. In these harvests, the vibrancy of nature mirrors the strength of the communities that tend to the land, bringing people together in a shared commitment to grow, nurture, and protect what sustains us.

So many things around us tell us to turn inward, to revel in the dark and depths of the hardness of life. I hope that this collection of stories helps to remind you of the beauty that happens when we work together, when we plant seeds, when we share a meal or try something new.



Anica Wong  
Editor

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Quivira Coalition publishes *Resilience* annually as a benefit of its membership program – becoming a member is one of the best ways to support our work. Additional copies are available for \$10 + shipping within the United States.

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We welcome your letters, comments, questions, and compliments.

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A photograph of a desert landscape. In the foreground, a bush with small, white, spiky flowers is in focus. In the background, a dirt path leads through a dry, hilly area. Two hikers are visible on the path, one in the foreground wearing a blue shirt and a backpack, and another further ahead wearing a white hat and a blue shirt. The sky is clear and blue.

**Thank you to our  
Horizon Level members**

whose financial support helps make  
on-the-ground storytelling like this  
possible:

**Kevin Watt  
Redwing Ranch**

# RED CANYON WORKSHOP

# RED



Twice a year, a group of Quivira staff and volunteers head out to Red Canyon Reserve (RCR) for a three-day land health workshop.

Bordered on three sides by the Cibola National Forest, with breathtaking views of the San Mateo Mountains and a canyon ripping through its grassy plains, RCR is a living laboratory for restoration, conservation, and community building.

Alongside photography by Luca Berkley, our RCR volunteer-turned-coordinator, Nina Katz, offers a glimpse at a typical, but transformative, weekend in the high desert spent building erosion control structures, sharing meals, owl-spotting, connecting with the biodiverse landscape, and so much more.



# Contents

- 6** **Contributor Bios**
- 8** **Color Crafting**  
*Kate Mannix*
- 14** **The Color of Piñon Country**  
*Christina Selby*
- 20** **Evolving Views of the Leopold Legacy**  
*Richard Rubin*
- 24** **Wandering Sunward**  
*Santana Shorty*
- 33** **Sunday Morning**  
*Ben Gotschall*
- 34** **The Sheep Jawbone and the Fool's Gold In the Harvest**  
*Angie Mestas*
- 37** **The Colorful Truth: How Plant Health Affects Pest Resistance and Nutrient-Density**  
*Mattie Griswold*
- 41** **Horno**  
*Leeanna Torres*
- 46** **Growing Into Myself**  
*Dan Flitner*
- 52** **Black: The Forgotten Color of Fall**  
*Levi Johnson*
- 58** **Red Canyon Reserve**  
*Nina Katz*
- 64** **Soil and Water: The Harvest of Additive Conservation**  
CCALT
- 68** **Conversing with Seeds**  
*Rachel Bordeleau, Chrissie Orr, and Jeanette Hart-Mann*

# Contributors

**Rachel Bordeleau** is an interdisciplinary artist and educator whose work centers on plant-human relationships and place-based entanglements. Her current practice is rooted in Albuquerque, New Mexico, where she works in collaboration with the native and invasive flora, archives, and found and leftover materials to create artworks about place. She is a member of the SeedBroadcast artist collective and holds an MFA in art and ecology from the University of New Mexico.

**Dan Flitner** is passionate about helping others with mental struggles and mentoring young men and women as they navigate this crazy world, especially in agriculture and the Western culture. He is currently the chairman of the Luke Bell Memorial Affordable Counseling Foundation, which is a foundation to support people with logistics and finances who couldn't otherwise afford counseling. Luke Bell, Dan's nephew, died in 2022 due to mental illness.

**Ben Gotschall** was born and raised on a cattle ranch in the Sandhills of southwest Holt County, Nebraska. He obtained an MFA in poetry from the University of Idaho and taught creative writing at Nebraska Wesleyan University for several years before returning to ranching. Ben is now the owner and manager of Holt Creek Jerseys at Clover Cove Ranch, where he grew up. Along

with his wife, Tammy, and their daughter, Charlotte, he raises grass-fed Jersey cattle and American Bison on native Sandhills rangeland.

**Mattie Griswold** developed a passion for food, and care for the land that provided it, from an early age in the mountains of central Idaho. This led her to pursue a B.A. in Environmental Studies-Geology from Whitman College. In 2023, she earned an M.S. in Sustainable Food Systems from Montana State University. Mattie now works with Quivira Coalition to support beginning agrarians across the Northern Plains and enjoys tending to her gardens and community.

**Jeanette Hart-Mann** is a farmer, artist, activist, and teacher committed to the transformative potential of traditional ecological knowledge, embodied land-based practices, creative engagement, and eco-social relationships. She is an associate professor of art & ecology at the University of New Mexico, co-director of RAVEL, and co-founder of SeedBroadcast. Her greatest work to date is HawkMoth Farm where she grows food and seed for her community.

**Levi Johnson** bridges science and art through his background in soil ecology and visual arts. A graduate of Colorado State University, he works with CSU's Agricultural Experiment

Stations and the Colorado Soil Health Program, blending data-driven research with illustration and storytelling. His work reflects a deep appreciation for natural systems and a passion for making science accessible and engaging.

**Nina Katz** spent a decade working on diversified vegetable and livestock farms across the US, and growing as a facilitator, advocate, and educator at organizations such as Cottonwood Gulch Expeditions, The Santa Fe Botanical Garden, and Girls Inc. of Santa Fe. As part of Quivira's Education and Outreach program, Nina merges their passions for human systems and food systems while facilitating conversations and programming around regenerative agriculture, as well as kindling connections throughout the Mountain West.

**Kate Mannix** is a first generation rancher and textile artist based in the Blackfoot River watershed in western Montana. Her studies in forest and fire ecology took her from the big trees of the west coast to the significantly slower growing forests of the Rockies, and eventually to the interface of forest and rangeland ecology. She participated in Quivira Coalition's New Agrarian Program in 2018 and has been with the Mannix Brothers Ranch for the past six years. Due to the name on her marriage certificate, she is likely to remain at the Mannix Ranch indefinitely. In her nonexistent

free time she tries to convince vegetables to grow in a Zone 3 wind tunnel and is writing a fantasy novel.

**Angie Mestas** lives in the San Luis Valley in southern Colorado. She works as a K-12 art teacher and middle school science teacher in a small town on the Colorado-New Mexico border. On the weekends and summers, she spends as much time as possible with her family, helping on their family ranch and farm as they, too, work across the Colorado-New Mexico border. Angie is inspired by the people, animals, and landscape of desert farms and ranches. She grew up on a sixth-generation ranch, studied art and agricultural biology, and enjoys projects that combine the experiences.

**Chrissie Orr** is an artist, seed steward, and creative investigator exploring intersections between the creative process, renewal of collective story, and participatory social action. Her vocation engages the transformative capacity of Mother Nature to cultivate connection to place and belonging, strengthen community capacity, and renew our compass bearings in this time of radical transitions. She is the co-founder of SeedBroadcast, Creative Practice Fellow at the Academy for the Love of Learning, and is recognized internationally for her pioneering work. She has kept a journal for more years than she can remember, their

broken, worn spines line her bookshelves and contain her secret memory lines. One day she might share these.

**Karina Puikkonen** is the former communications and design manager for the Colorado Cattlemen's Agricultural Land Trust.

**Dr. Richard Rubin** is a retired physician in Arroyo Seco, New Mexico and alumnus of a University of New Mexico Medical Residency. He has recently authored and co-authored four culture and ecology books: "Taos Horno Adventures: a Multicultural Culinary Memoir Informed by History and Horticulture" (2020); "Homescape Rewilding: Stories of Ordinary Ecological Practices" (2021); "Living the Leopolds' Mi Casita Ecology" (2023); and "A New Mexico Land Ethic Handbook" (2024), all with Nighthawk Press in Taos.

**Christina Selby** is a conservation photographer and writer based in Santa Fe. In her pursuit to bring important conservation issues to the public eye, she has kayaked with dolphins in the Sea of Cortez, traversed Central America by bus, followed honeybees through the Himalayas, staked out wolves in the American Southwest, stalked rare wildflowers in alpine meadows, and pursued lost species in the Amazon rainforest. She is the author of two outdoor guidebooks and producer of a feature conservation film. Her work has appeared in such

outlets as Audubon, National Wildlife, bioGraphic, Scientific American, National Geographic Online, High Country News, and New Mexico Magazine, among others.

**Santana Shorty** is a writer and poet from northern New Mexico. She received her B.A. from Stanford University and MFA in creative writing from the Institute of American Indian Arts. Her poetry has been published in Paperbark Literary Magazine, Identity Theory Literary Journal, and in the anthology "Water Bodies: Love Letters to the Most Abundant Substance on Earth" from Torrey House Press. Currently, she is working on her first novel. She is the creative writing and literature department chair at the New Mexico School for the Arts. She is a member of the Navajo Nation and lives in Santa Fe.

**Leeanna T. Torres** is a native daughter of the American Southwest, a Nuevomexicana writer who has worked as an environmental professional throughout the West since 2001. Her creative nonfiction essays have appeared in various print & online publications, which most recently include, "A New Mexico Land Ethic Handbook" (Rubin, Gulliford, & Torres, 2024, NightHawk Press), and "Water Bodies: Love Letters to the Most Abundant Substance on Earth" (edited by L. Paskus, 2024).



# COLOR CRAFTING

KATE MANNIX

photos by Kate Mannix and Ashlee Ophus

The hues of fall are my favorite. Montana doesn't have the showgirl qualities of a New England autumn, no flaming hills of hardwoods. There are a few exceptions: larch pretends to be just another evergreen until late October, when she suddenly springs forth and performs her Opry to great effect. And aspen will always belong on the stage, her quivering leaves dancing their way to the forest floor.

But for most of this territory, forests are merely a backdrop canvas, an ebony emerald rising above the predominating ecosystem. The true lords of this land are grass and sagebrush.

Dryland grasses make no performance of their hibernation ritual. Their only moment of flash comes for a brief period in spring, when they participate in the boastful green-up of the growing season. By the time the balers are click-click-clicking away in the irrigated meadows, they return to their humble hues — the penetrating beige of the West.

And then, as the inevitable smoke clears in September, the sun lowers in the sky and the stage manager directs a new spotlight upon the sagebrush hills. What was once the impoverished brown of late summer transforms into a rich golden canvas, painted with burgundy stems, sage leaves, and rosy seedstems, long since dispensed of their cargo.

It's in this setting that I return to the studio, changing the patterns of my day with the shift of seasons. The rush of the harvest is over, and now it's time to settle down and settle in. For me, this means turning to my craft.

I began experimenting with the art (and science) of coercing color from plants in 2019, after stumbling upon the work of Sara Buscaglia, a fellow Rocky Mountain agrarian and fiber artist. Her work focuses predominantly on dyeing cotton and linen for quilting. I come from a long tradition of quilters — my Grandma Ruth was an award-winning quilter and started me on the sewing machine at a young age. I have always loved the honesty of quilting; you simply cut





squares and triangles, sew them together, and now a solar system's-worth of stars are lined up in neat rows, culminating in far more than the sum of their parts.

As soon as I witnessed the hues created by plant dyes, I was hooked. My first experiments were with plants around the ranch — sagebrush, aspen and willow barks, marigolds, cosmos, and others. As I progressed, I purchased dyes from plants too wise to try to propagate in the unforgiving climate of the northern Rockies: indigo, sappanwood, cutch.

I learned to use mineral elements to shift the colors created by each dye. Iron, aluminum, and copper will all impact different dye baths in various ways. My favorite by far is iron, which tends to

“sadden” hues. A dip in an iron bath will turn bright pink into dusty mauve, rich gold into sage green, and coppery rust into bear brown.

Iron baths can be prepared by soaking rusty metal in water for several days before straining the larger chunks of rust out and warming the remaining water. On a fifth-generation ranch, bits of rusty metal and forgotten tools are effectively an unlimited resource.

The year of 2020 brought many challenges, but a silver lining catalyzed by the pandemic was the transfer of courses from in-person to online. I gained hard-earned wisdom through a myriad of different courses, deepening and expanding my own experimentation and confidence. One of the courses included dyeing silk and wool fibers. Protein fibers are more eager to take botany's hues, their expressions richer and more even. The seed of an idea was planted: what if I tried dyeing a handful of silk wild rags? I have always loved things that merge beauty and utility. The wild rag epitomizes this and also something more.

For context, let me backup. The wild rag came to me during my first winter ranching in Montana. For the first half of that winter, my imposter syndrome convinced me that I had no business wearing the iconic western rag. I was fresh off my apprenticeship with Quivira Coalition's New Agrarian Program. A year of cowboying on the Mescalero Apache Reservation in New Mexico was under my belt, but I was no cowboy. I had only barely conceded to wearing a straw hat in New Mexico, persuaded by a genetic inclination for skin cancer and emboldened by the 100,000 acres of isolation our lease provided.

The ranch I was wintering on had five families living on it, all tried and true cowboys. I couldn't possibly don yet another emblem of quintessential cowboyism. I'd embraced several different identities by that time. Raised as a ski bum, I experimented with bohemianism in college, and then weaseled my way into the elusive “women in timber” splinter of the forest industry. But cowboy felt like a mountain too tall to climb. I rode horses,



but wasn't a horseman. I'd tossed a rope a few times, but usually forgot to dally when I managed to catch a head.

There was one hiccup in my self-imposed abnegation: the winds of winter on the Rocky Mountain front range. Cascade, Montana is a blustery S.O.B. The wind deems it a personal challenge to redesign the topography of the snowscape, building blockades across every gravel road, and relocating feet of snow from one end of the field to the other. Creatures, including, it seemed, the newly-arrived ranch hand, must adapt to the snow falling horizontally.

The first borrowed wild rag I added to my uniform was sage green with white polka dots. Most importantly, it was silk. In my humble opinion, most things that humans try to replicate from nature make a poor imitation. Satin is no exception for silk. Satin would have been no match for the tempests generated in Canada and delivered to our little basin. Silk has been

*In my humble opinion, most things that humans try to replicate from nature make a poor imitation. Satin is no exception for silk.*

cultivated in the Yellow River Valley of Eastern China for at least 4,000 years, each silkworm producing a single, unbroken thread. Sericulture, the production of silk, was a Chinese trade secret until 500 years ago, the exportation of silkworms or their eggs an executable offense. And I would argue, for good reason — liquid gold as far as this rancher is concerned.

Once again, the practicality of the cowboys' paraphernalia overrode my nervous system, and after the first day with silk wrapped around my neck, I became an evangelist. These days, I recommend silk rags to skiers, rafters, farmers, business women, and cowboys alike. If you leave the house in the winter, the rag is for you. If you leave in the summer, may I recommend a lighter weight silk?

The opportunity to combine these newly-discovered colors of botany with nature's most illustrious fiber was too tempting to pass up. The results surpassed even my own expectations. As it turns out, there are no ugly hues on silk. As long as the dye is fairly even, silk will do the rest.



I started with a batch of eight wild rags. Eight turned into twenty, and five years later, I dye hundreds of silks each year.

Everyday colors become extraordinary. Fence post green, egg yolk yellow, cured hay bale gold, pussy willow bark burgundy, summer sky blue. Silk takes these hues and buffs them up, does their hair real pretty, and dresses them in sequins.

I started with a batch of eight wild rags. Eight turned into twenty, and five years later, I dye hundreds of silks each year. I keep waiting for the novelty to wear off, for the anticipation of pulling the silk from the dye pot to lose its luster. It hasn't happened yet, and I have only waded in the shallowest waters when it comes to the possibilities of botanical color alchemy. The only thing stopping me? Time and an unshakeable addiction to ranching.

Just as I balance pH in the dye bath, so must I balance the hours in a day. Those of us fortunate enough to have been born to, or found our way to, an agrarian life know that the demands on time and energy are as unyielding as they are rewarding. Everyone would love to be a rancher for just 40 hours a week, but unfortunately, that's not the job. Instead, we wake early, tend our herds, try to keep the equipment running, and put out fires (literal and figurative), until the sun finishes her daily migration. There are few ways of life that are painted more vividly than those of a rancher. Everything is depicted in sharp relief. Decisions are hard, consequences are tangible.

I typically dye early in the morning and late into the evening. In winter, I first stoke the wood stove that heats our downstairs, where my dye studio neighbors the plush beds of our pampered cowdogs. In the summer, I relish in the coolness of having a house built into the side of a hill, sheltered by the earth from the dry heat of July and August. It's a year-round retreat, a place of mandatory attentiveness and creativity.

I am able to fit two large dye pots on my flat top range, so I typically work with two colors at a time. The first batch comes from a recipe, a known percentage of plant material to the weight of fiber that creates the depth of color I'm looking for. From there, it becomes an odyssey of discovery. In order to conserve water and coax every little bit of color from the plant material, I do not replace

my vats. I add to them. The second and third baths are no longer a prescription, but an instinct. Sometimes I combine baths at the end, sometimes I start adding different dyestuff to discover new hues. Often colors emerge that I can't replicate exactly, but the thrill of their outcome is added to the catalogue of new possibilities.

The process requires presence. For someone with a propensity to multi-task, the demand to sit down and keep the spoon moving in the pot is a personal form of meditation. If I lose focus, so do the dyes — their hues concentrate on one portion of the fabric and abandon others.

So I sit. I pull up my stool, pick up my wooden spoons, and tend to my craft. Wafts of madder root and marigolds rise from the pots, intermingling into an incense of earth's bounty. Sometimes I listen to an audiobook, sometimes I give my brain the space it craves and play music. For me, to be at home and be creating is to be at peace. The meditative relief of botanical alchemy is a stone set in a tray to balance the scales against the frenzy of ranching. It lets me take the hues of my day on the ranch and infuse them into something beautiful. Something useful.

Each wild rag is a missive, a transposition of hues from our little corner of Montana to wherever you are. You'll have your own interpretation, your own ecological reflection by which to collate the colors of your silk. But just as the cocoon of *Bombyx mori* is interwoven with hundreds of other silkworms to create your wild rag, so too are we interconnected, a web of folks who value land and craft and finding our sense of place within our ecosystem, instead of aside from it.

These days, I wear all sorts of hats. Some of those hats are literal: the dirt-stained straw brim, the always-expanding collection of baseball caps, the wool beanie. Others are less tangible. But the thread through it all is creativity, embodied by the silk rag that I tie around my neck each morning. A bit of art to take with me through my day. A mirror held up to the landscape around me, but infinitely easier to fold into an envelope and ship across the world. ☻

# THE COLOR *of* PIÑON COUNTRY

WORDS AND PHOTOS BY CHRISTINA SELBY

On rugged mountainsides and red rock mesas throughout the intermountain West, piñon and juniper trees grow where few others can survive.



Humble by almost any standard, their gnarly, stumpy stature has rarely inspired poetry or exhalation like the heights of sequoias or baobabs present in other parts of the world. And yet, those of us who live in this rugged “Piñon Country” know that piñons, and their companions, the hardy juniper, are the lifeblood of these arid states. As a photographer, I, for many years, had ignored this landscape right out my back door. Color is what often attracts me to want to photograph a landscape. I can’t resist a mountain meadow teeming with a rainbow of flowers, buzzing with pollinators, and filled with birdsong. I had not known the piñon-juniper ecosystem to be as eye-catching as my beloved mountain meadows. A sea of army green junipers and blue-green piñons seemed the only constant against the big, blue New Mexico sky. Then, in 2022, I began a multi-year conservation photography project to visually

document the lives of pinyon jays and their unique relationship with piñon trees. I traveled across the Southwest, returned in different seasons, sat under trees for hours, and listened for the call of pinyon jays. As my experience and understanding of this landscape deepened, one thing became clear – the presence of color in this ecosystem is a clear sign of health.

Pinyon jays are a social bird with a deep relationship with the piñon tree. They depend on piñon for food, shelter, and nesting sites, and in turn, they are the main dispersers of piñon seeds. Large flocks of pinyon jays can gather millions of seeds in a few weeks and store them for winter at cache sites. They remember where they hide 90 percent of their seeds, but the 10 percent they forget enable these woodlands to rejuvenate and establish in new areas.



Unfortunately, mass die-offs of piñon pines from insect infestations brought on by long-term drought, clearing of land for housing and energy development, and thinning for fire suppression and livestock forage have contributed to the loss of 85 percent of the pinyon jay population across the West. In 2022, the pinyon jay was petitioned for listing on the Endangered Species Act. In 2023, the U.S. Fish and Wildlife Service acknowledged there was sufficient information to warrant further review but a final decision has been delayed and their status remains in limbo. The impetus for my photography project was to support the petition by creating media that would educate a broad audience about the lives of pinyon jays, the importance of their habitat, and the challenges they face.

I began my project where I live, in Santa Fe, where piñons and junipers are the dominant trees across the landscape. The trees give texture to the land

from the foothills of the stunning Sangre de Cristo Mountains, with their dense old-growth piñon woodlands, to the Caja del Rio Plateau, where the Rio Grande cuts through rugged juniper-dotted grasslands.

Pinyon jays use this entire landscape, and in Santa Fe we can still find some of the most abundant populations of these birds. Historically, they formed mega flocks of over 500 birds in the fall and winter as they scoured the land for their preferred food – piñon seeds. However, today in most places, groups of only 20-30 birds are more common.

Pinyon jays are year-round residents, but because their home ranges can cover an area of 10,000 acres or more, they are not easy to find. To document this story, I partnered with scientists and traveled across four states, meeting them as they conducted studies on pinyon jays in the field. When they can find it, pinyon jays favor



old-growth piñon woodlands where mature trees provide better cover for their nests and fledgling young in the spring, and more abundant seeds in the fall. In these centuries-old woodlands, I found that color abounds.

As I searched for social flocks of these birds, I spent time with them throughout the day to understand their behavior. I noticed how their feathers change color in different light. In the full strength of the midday sun, their feathers became a brilliant cerulean blue, as blue as any tropical ocean bay. Birds, unlike many other animals, don't possess a pigment that produces blue color; the color is a result of how light interacts with the microscopic structure of the feather. Blue wavelengths are scattered and reflected when light hits the feather, while other colors are absorbed. Like the woodlands they live in, mature birds are more colorful than young grayer birds. They come into their full blue-ness over time.

As I followed these blue feathered flocks, I traveled to relatively undisturbed woodlands where, unlike in the juniper grassland of my backyard trampled by dogs, people, and occasional goat herds we hire to cut the grass, the ground was often protected by mounds of cryptobiotic soil, or “biocrust” for short. This craggy, often dark or burnt-looking carpet stretches between shrubs and grasses in arid lands. At closer inspection, biocrust mounds often contain verdant green moss and algae, lichen in shades of lime, brown, grey, and blue-green cyanobacteria. This – the earth’s skin – is a community of living organisms that hold together the soil surface of drylands. They take time to mature and form. The most colorful of them can be several decades or centuries old. It keeps soil in place, holds in moisture, and regulates soil temperatures, all factors which piñon trees need to survive and produce seeds.



In winter, I would travel to Piñon Country around Taos and Questa, New Mexico. White snow blanketed the piñon woodlands under grey winter skies, accentuating the human size of the individual trees and the vast areas these woodlands cover in the West. Piñon woodlands form bands around mountain ranges throughout the Southwest, marking the transition zone from desert lowlands to the high alpine environs. During my visits, I would find some of the largest flocks of pinyon jays I'd ever seen. In late afternoon, they would roost in groups on piñon tree branches sagging with their collective weight. I watched through my lens as pinyon jays preened and murmured to each other, settling in for the night.

*Each new generation accepts a more degraded environment as "normal," due to a lack of understanding of the historical state of the environment.*

In late winter, or mud season, in the rural outskirts of Montrose, Colorado, I found color in sunburst lichen forming bright yellow sun stars on black volcanic rocks that share space with orange fire-dot lichen. Another slow grower, lichen is the most alien of plants, a symbiosis of algae and fungi. Usually less abundant around urban areas, their presence is an indicator of air quality. I watched from a distance as a large pinyon jay flock noisily chased off a pair of ravens attempting to invade their nesting grounds.

When spring finally arrived outside of Flagstaff, Arizona, wildflowers signaled a healthy ecosystem. The full "Pink Moon" of April shone down on the flower that gives it its name. Pink phlox formed great mats in the juniper-studded hills blooming in spring after ample winter precipitation. At another spot, the orange



and black gravel in the mouth of volcanic cones were dotted with coral-colored Utah penstemon. Here I found a small flock of pinyon jays opening still green pine cones with their long needle-like and feather-less beaks to feed their fledgling young.

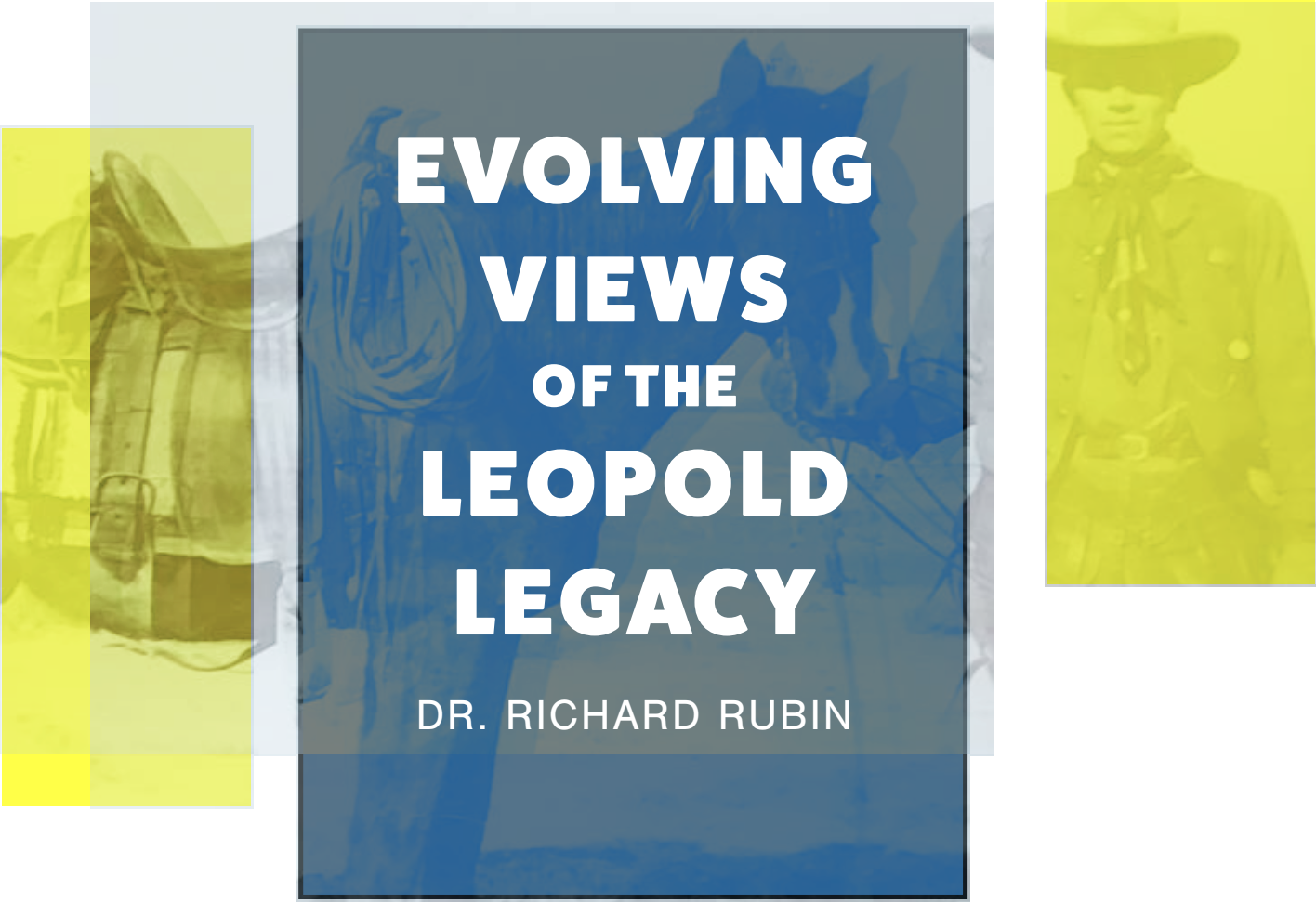
In the foothills of Salida, Colorado, broken branches on piñon trees dripped with sap that hardened to a golden yellow and crystallized into geometric shapes refracting the light of the setting sun. Pinyon jays flew overhead, chasing each other in the aerial acrobats that are part of their mating rituals. In a healthy woodland, the ips bark beetles help dead trees decompose and serve as bird food. When the insects tunnel too deep into the wood, trees produce sap to push the beetles out – a self-defense mechanism no longer possible as higher temperatures and long-term drought create even drier soils and trees lack the moisture needed to produce their sticky sap traps.

Four years into this project, I've come to understand firsthand how color is the triumph of a diverse,

healthy, and vibrant piñon-juniper ecosystem. Resilience is all shades of the rainbow in Piñon Country, and it takes time to grow. This project has shown me that I, like many of us, am prone to what scientists now call “shifting baseline syndrome,” a tongue-tying phrase to describe the gradual change in our perception of what constitutes a healthy ecosystem. Each new generation accepts a more degraded environment as “normal,” due to a lack of understanding of the historical state of the environment.

The absence of color in some areas of these iconic woodlands of the Southwest highlights the challenge ahead of us to care for and keep this ecosystem thriving. However, where color persists in the sunburst-covered rocks, spring blooms, golden fractals of sap, and the deep green hue of a fresh pine cone that dries and opens to a crisp brown teaming with the piñon seeds that nourish life in Piñon Country, so too persists the abundance of life in these woodlands. 🌀





# EVOLVING VIEWS OF THE LEOPOLD LEGACY

DR. RICHARD RUBIN

Quivira Coalition's co-founder Courtney White has been immersed in Aldo Leopold's conservation philosophy and science. He was the first Leopold Writing Program Resident at Mi Casita in 2012. This new program sponsored environmental writers with a month's retreat at the 1912 vintage house Aldo built in Tres Piedras when appointed supervisor of the Carson National Forest. Aldo's new wife, Maria Estella Luna Otero Bergere, happily named the Craftsman-style bungalow Mia Casita, now known more popularly as Mi Casita. They only enjoyed seven months there, as Aldo suffered extreme weather exposure in 1913 when managing grazing permit conflicts in the northern Carson. His kidney failure required 16 month's recuperation before returning to Forest Service office administration work in Albuquerque. Aldo went on to initiate important advancements in wildlife preservation, overgrazing and erosion management, and wilderness area protection.

To summarize a rich biography, he and Estella then moved to Madison, Wisconsin where he pioneered university ecology teaching and the restoration of depleted farmland. Their "shack" land in northern New Mexico is now preserved by the Aldo Leopold Foundation, which was created by his wife and five children after he died while fighting a neighbor's prairie fire in 1948.

Courtney's advocacy of Leopoldian knowledge infused the early work of Quivira, but this commentary is not to review the organization's past but explores the evolution of the Leopold legacy in New Mexico and the world today. I can speak to this from 10 years' experience as volunteer steward of Mi Casita and student of her development from Forest Service utility to inspiration, scholarship, and education center. This paseando will provide substance for how the Leopold legacy still matters.

## The Origins to Now

It is fair to ask how this outdoorsman from Iowa who graduated from the Yale School of Forestry in 1908 and his subsequent work deserve our attention now beyond just interesting history. On first assignment in the Arizona Apache National Forest when large predator control was policy, Aldo's survey crew shot a mother wolf and her cubs. Moved deeply by the experience, 25 years later, Aldo wrote an essay that has become foundational in ecological literature. Titled "Thinking Like a Mountain," he described his epiphany "watching the fierce green fire fade from her eyes." Scholars have identified over 300 essays, journal articles, lectures, and thousands of field note pages that are archived at the University of Wisconsin and curated by the Aldo Leopold Foundation. The collection of essays published posthumously in 1949 is titled "A Sand County Almanac and sketches here and there." Thought centers around the world recently celebrated its 75th anniversary, including translation now into 14 languages. The anniversary edition has an introduction by Barbara Kingsolver that ends: "For the urban reader, I hope you will let down your guard with this man as he sits on his rock in the stream, waiting for his trout to rise. If you take him for a redneck, listen anyway, because he's wiser than most any two of us put together. He may help you see past the frustrating divides that plague the awfulest failure of our day, as we try to reconcile human subsistence with the needs of our damaged biological home. If you've lost all hope of finding a common language for that conversation, you might find it here." (Oxford University Press, 2020).

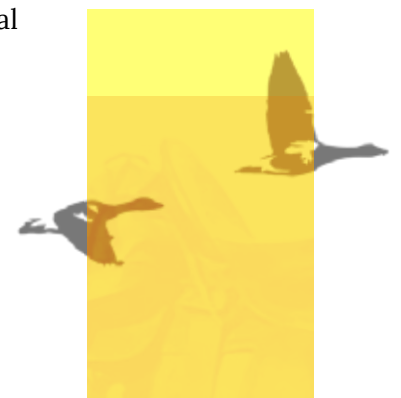
## The Recent Literature Story

Keeping this essay's view to the present, I know about such Aldo literature because Mi Casita was given the start of a library in 2012 by the Albuquerque Wildlife Federation: 16 books of scholarship by and about Aldo. In his Albuquerque Forest Service administrative years, Aldo began

advocating for the habitat management and preservation of wildlife. He founded the New Mexico Game Protective Association in 1914, and this subsequently was renamed the Wildlife Federation. Still active, this volunteer group does field-based public land restoration and ecological regeneration projects. When beginning my volunteer service at Mi Casita in 2014, the collection was thrilling for this old doctor who might have become an ecology professor, having read the Almanac in college. Among my curiosity, the Wisconsin Leopold Foundation resources, publications by the writing program residents, regional Taos history and culture authors, Forest Service donors, current environmental commentaries, and even a retired agricultural economics professor's collection; this library now has 145 volumes available to Forest Service staff, visiting students and scholars, and eventually, the public.

## Historic Registration

Why does this old Forest Service utility building now accommodate such resources? After the Leopolds left in 1913, it housed many staff. The Civilian Conservation Corps converted it to a bunkhouse in the 1930s. Facilities and appliances were eventually modernized, original features remodeled, and the appearance painted with government institutional colors. The modern story begins with the conscientious work of Forest Service archaeologist, Jon Nathan Young, to complete the extensive application for National Historic Site registration, achieved in 1993. His application states: "The Old Tres Piedras Administrative Site stands as a constant reminder of the day when Aldo Leopold – founder of the American Wilderness Movement – administered the Carson National Forest from its headquarters at Tres Piedras. More importantly, the Site is a living memorial to the very beginnings of the National Forest Service and the American conservation ethic."





a retreat for persons interested in modern conservation issues and as an interpretive site...The Forest Service will offer the house to the public as a place of reflection and scholarly pursuits.” The extensive work was completed in 2007 by the HistoriCorps volunteer organization under the supervision of district ranger Ben Romero. Modern electric wiring, smoke alarms, a gas furnace, and plumbing were provided for public safety and accommodation as a temporary residence. The newer feature of additional bedrooms expanded during the Civilian Conservation Corps bunkhouse days was maintained. Of value for the aesthetic, the plan comments: “Leopold was obviously a man partial to the outdoors, so perhaps the desire for light and a view was a priority in the house design.” The front porch opens to a magnificent wide vista of the Sangre de Cristo mountains 30 miles across the Taos Valley.

However, the restoration plan introduced an administrative complication: “Continued maintenance of the Leopold House will not be possible without a cost recovery strategy. Adequate funds have

not been, and will not be, available through appropriated (tax) dollars. This has been the trend for decades within all public agencies. It will be necessary to charge rent for the use of the Leopold House so that the Forest Service can recover operations and maintenance costs.” Given the extraordinary demands recently on Forest Service resources – such as wildfire management – our subsequent Mi Casita story has progressed to community volunteerism and philanthropy.

## Restoration

After achievement of this distinctive status for Mi Casita, the next significant evolution occurred with the celebration of the centennial of the U.S. Forest Service in 2005. Funding was authorized for restoration of the house to the original bungalow as designed by Aldo in 1911 and built in 1912. The house aesthetic had harmony with the setting, natural finish woodwork, and multiple windows open to the environment, in contrast with decorative Victorian architecture. The rigorous 2005 Aldo Leopold House Restoration and Rehabilitation Plan stated: “When restored and rehabilitated, the house will function as



## Modern Stewardship

Interested people began discussing how the new mission could be fulfilled. In 2011, Albuquerque architect with conservation interests, Anthony Anella; director Buddy Huffaker; biographer Curt Meine from the Wisconsin Leopold Foundation; Carson Forest leadership; the Tres Piedras ranger, and interested others developed the Leopold Writing Program. The Forest Service agreed to provide two month-long house stays as community outreach. Courtney was recruited to be the first writer resident at Mi Casita in 2012. My Leopoldian odyssey began in 2014 when collaborating with Forest Service staff to lead New Mexico Native Plant Society field trips. I was taken to Mi Casita, and was enchanted with the opportunity to immerse myself in ecology during retirement; I was then recruited for native plant restoration there. The experiences of living the tradition, appreciating the setting as Aldo did, learning from the new library, and being useful for the historic house maintenance, were very engaging. In 2018, the Carson Forest staff cited me as an outstanding volunteer. Soon after, the district ranger asked me to organize a Friends of Mi Casita volunteer group. Pursuing my intention to create a philanthropy, the Taos Community Foundation approved our group for nonprofit Community Impact Fund status. Various donations have allowed us to replace warped porch floors, improve interior safety carpentry, get ahead of the invasive rodents, install a chimney liner, and repaint the weather-beaten exterior. We also helped the Forest

Service obtain a federal grant to replace the old cedar roof shingles with fire retardant upgrade. My availability on-site provided guidance for community, college student, and school kids group visits. And several volunteers enjoyed connecting through our annual oiling of the porch rails. The Friends of Mi Casita received a certificate of appreciation for our continued stewardship from the Carson National Forest in 2024. You can find more details in my book “Living the Leopolds’ Mi Casita Ecology,” (Nighthawk Press, 2022) which explores the old history and new developments from the past century to the present. All book sale proceeds are contributed to the Friends of Mi Casita Fund.

## Our Ongoing Evolution

Aldo’s definitive biographer Curt Meine, professor at the University of Wisconsin, summarized: “Leopold may be regarded not as an apotheosis of conservation thinking, but as an essential transitional figure within a still broader, ongoing movement, informed by an ever-evolving ethic of care.” (“Land, ethics, justice, and Aldo Leopold,” in Socio-Ecological Practice Research, July 2022). Aldo stated it this way in the Almanac “Land Ethic” essay conclusion: “I have purposely presented the Land Ethic as a product of social evolution because nothing so important as an ethic is ever ‘written’...because evolution never stops.” ☺



# WANDERING SUNWARD

WORDS AND PHOTOS BY SANTANA SHORTY

*“I cannot decide  
if you are lightning  
or thunder.”*

**- Laura Paskus**

It is 2019 and I am in Pescadero, California. I am staying in a glamping village immediately off Highway 1 where the pavement mimics the ocean line. The resort is called Costanoa, and serves as a driveable, curated, coastal getaway for tech bros and their girlfriends. This weekend I am one of those tech bros and have myself brought many boyfriends here over the years.

The glamping tents are reinforced wood platforms and all the rage. You can simply put thick canvas over a cube frame, slap a queen bed inside to fill the majority of the space, hook up basic electricity and charge a normal four-star room rate for the experience. Glamorous camping.

I will leave out the part where you have to stumble out of your tent at two in the morning and walk through Pacific Ocean fog to the shared bathroom outpost in a flimsy cotton robe that will be damp by the time you return from your nightly pee. And I will leave out the mortifying detail that the tents are rented by mostly young couples who will have loud sex with the lamps on, offering a free, gratuitous shadow puppet show for all to see.

But I've been here many times, and I accept the reality of my frigid nighttime pee and I am here alone so I don't have to worry about shadowboxing. This time, I am here because I want to die.



On my way to Costanoa, after the Pescadero turnoff, I come upon a family stranded on the side of the road. It is a young woman, a middle-aged man, and a child, perhaps six or seven. They are standing on an unforgiving highway curve, holding a red gas can up, brilliant beacon in the air.

I have been in San Francisco for nearly nine years and I've become almost proud of my developed street-smarts veneer: keep one ear bud out while walking on the sidewalk to stay aware, move to the other side if there's a man, run only where there are street lamps, don't give money to the homeless, don't carry cash, don't befriend strangers, look down most of the time.

But in the singular second it takes me to pass the family at 60 mph, I remember driving with my dad on rural, reservation washboard roads, or the barren, gray highway between Cuba and Farmington, New Mexico, that crosses the Continental Divide, and the always offered ride in the back of the truck. Or the local drunk, who pulled up to our house on a wayward Tuesday to sell my mother green firewood she didn't need and the \$20 bill she handed him for it. The wood was unusable that season, and would have to sit on the porch for another year or two.

I would be breaking every rule a single, city-living woman should abide by, but I am homesick and generally hate my life so I flip a U-turn and come back to the family, pulling up behind their maroon 90s Chevy van, and get out of my car. The man approaches me, while the woman holds the child's hand.

"Any chance you can buy us some gas? There's a station in Pescadero."

"Sure."

"They'll go with you," he says, motioning to the woman and child.

I shove my road trip trash and overnight bag to the back, and the young woman alights to the passenger seat with her little one on her lap. I call her young woman, yet I think we are the same age. I wonder at the child sitting on her lap instead of the backseat, but we are not going far and I am not a mother.

"Where are you headed?" I ask.

"Fort Bragg. My husband's gonna get work there," she says.

We don't say much more. When I pull up to the empty gas station, night has fallen. The pooling overhead lights look harsh on the cement and have a cutting periphery. I fill up their gas can as much as it will hold. \$17.22. That will probably get them a little past San Francisco.

The full can seems to loosen the woman's nerves and she starts chatting. She tells me about her love for her son: "I've taught him to count to 65

and he's only three!" Her love for her husband: "He saw me when I was going down the wrong path and saved me." Her love for nature: "I don't use paths, oh no, I go right into the trees and bushes." She tells me I will find someone who will fit me like a glove. She tells me to wait to have children until I am really sure. "I'm 23, soon to be 24," she says.

When we return, the man thanks me and the woman lets fly a toothy smile. Their son starts to cry, and she rubs his head and cheeks.

"He hates goodbyes," she says.

I get back into my car and wave as they refill the van, breathing life back into its rusty bone structure.



When I arrive at Costanoa, it is dark. I get my keys and pause too long at the concession, surveying chocolate-covered almonds, fancy rosemary crackers, and the wine selection – all overpriced and specifically for the people who come here and say, 'well, we are on vacation.' I unpack in my glamping tent. I am grateful there is no cell phone service, and for extra measure, I turn my phone off completely. There is a digital clock on the nightstand that will serve me just fine. The tent feels cold and damp, like wading through thin water, and I am eager to leave the space. Outside, I can't see any of the classic California hills and shrubbery; everything is dark. Everything is dark.

At the on-site restaurant, the menu matches the energy of the concession stand. Seated next to the fake fire and ornate, stone mantle, I order the scallops and a bottle of Cabernet for just me. I am getting drunk tonight.



I am here by myself for two reasons: I am running away and trying to find something. Nine years ago, I arrived in the Bay Area for college. Against all odds, I got into Stanford University and as my mom left me after moving me into my dorm freshman year, she said, "I'm so proud of you for getting into this fancy school." I learned many things – who Plato was, the impact of Dadaism

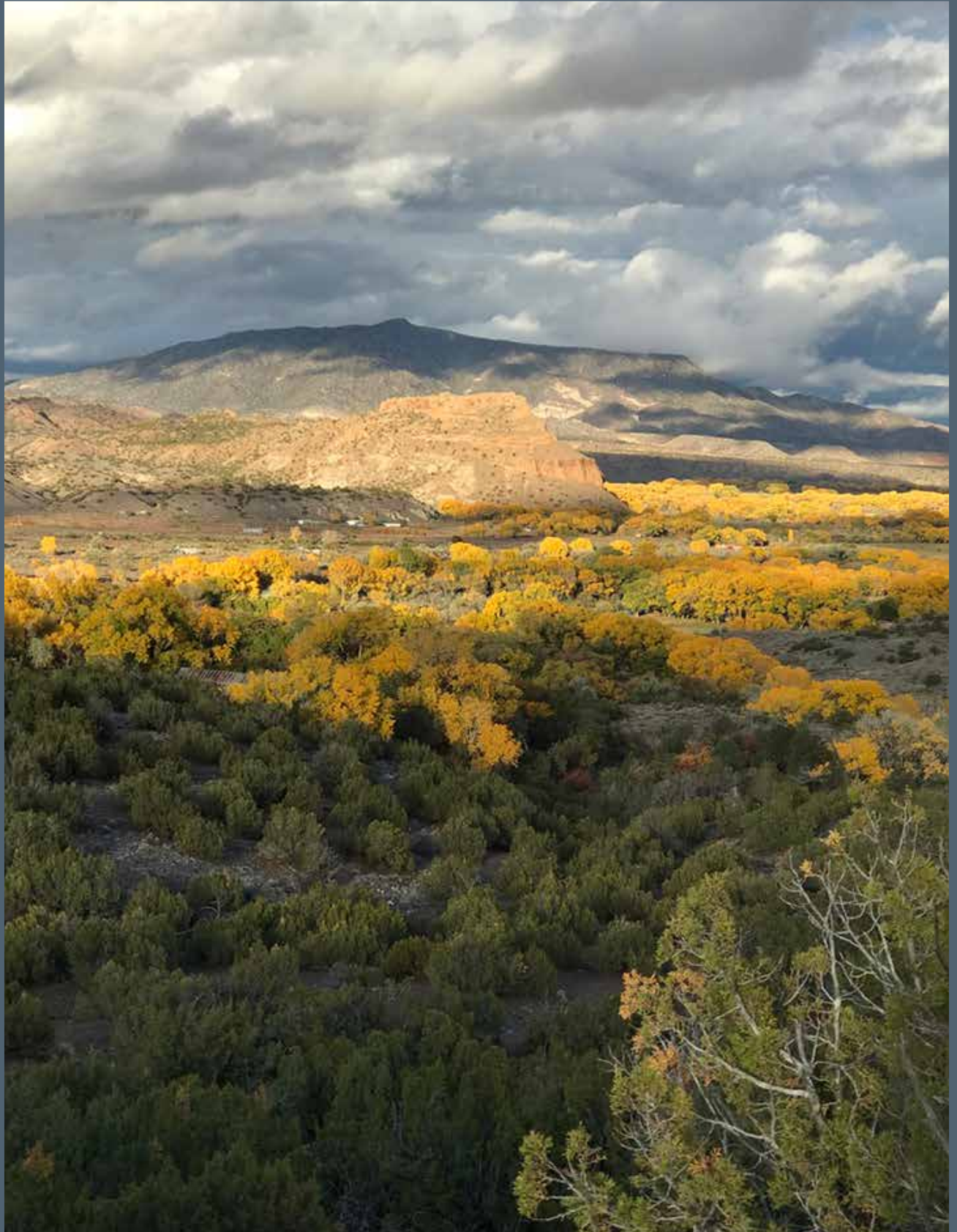
on the trajectory of art, how to do calculus when I was bad at math, how to act like everything was fine when I was stressed beyond imagination, how to speak tech and keep up with the latest startup news, how to act visibly unimpressed by impressive things.

After fancy school, I couldn't get a job. My human biology major felt useless and prepared me poorly for navigating the world. I didn't have connections. I didn't understand retirement plans or benefits packages, and I lived in a college friend's family's basement, who had built their wealth working at Goldman-Sachs. In the daytime, I worked at the charter school they started in the East Bay, and in the evening, they gave me lessons on networking and writing a resume for someone with no experience.

They helped me land my first job at a startup tech company, which gave me everything I needed to begin my life as an adult. I committed myself and progressed – I moved quickly upward, starting a new, advanced role every year with increased responsibility and giving more and more of myself with it. I ended a long-term relationship, moved deeper into San Francisco, and immersed myself fully in the Bay Area chase. I began drinking more, going out multiple nights in the week, buying experiences and trinkets to make myself feel better, all the while making just enough money to live, but never enough to save more than a month or so of emergency funds. Eventually, a depression so murky and deep took hold of me that I stopped noticing the sun.



Earlier today, I had my first-ever panic attack. I pulled into the parking lot at work and began crying even before I got out of the car. I calmed myself enough to get inside, but as soon as I opened my first unread email, the shaking became so severe that I fled to the bathroom. I was losing it and I had never lost it and I didn't know what you were supposed to do when you lost it. My boss – a smart woman who had lasted the longest at this crazy-ass company – sent me home and ordered me to take the next two days off. She'd seen this before.



I fled to my car, tears and snot clogging my face, and drove west. The car guided me on and off Highway 280, into the narrow, hilly roads toward the ocean. Everything followed me. The never-ending to-do list of my job, the constant need to work harder than the day before, the rent for my room in a two-bedroom apartment that had mold, the text messages from a married man who I thought I loved, the home I would never own because I was living in a city where the starting price was \$1.2 million. I was too exhausted to keep working, and I was too exhausted to find a new job, and I was too scared to make any sort of change that would free me. I was the furthest from myself and I didn't know how to get closer.



I am here because I am trying to find something.



The pavement gave way to the ocean horizon, white light skating along the windowpane of the world. I parked and ran to the water's edge and cried until I wrung myself dry. Sitting on the fringe of the Pacific Ocean, I wondered what to do next. More crying wanted to come out, but I was too dehydrated – a desert being without water staring at the largest, undrinkable expanse of it. I thought of home. Though I had been in the Bay Area for almost a decade, when I said 'home,' I always meant New Mexico. When I thought of 'home,' I thought of rustling cottonwood leaves, the windchimes of fall. I thought of the irrigation waterfall outside the adobe house I grew up in, and how we would leave the windows open on summer nights, the hushing sound of cascading water pulling forth the calm of night. Perhaps that is why I ended up here, seeking comfort from a water body that I couldn't give to myself. The fancy school smarts were not going to help; trying to use logic to get me out of my mess had become an unending circular loop.

From my bag, I dug out a piece of paper and wrote the following promise:

*What a life it must be,  
To live one that you choose.  
How might you live given that chance?  
I will tell you a secret.  
You have that chance.  
It should feel both magical and mundane.  
Both epic and empty.  
Both transformational and tame.*

*The most natural act is to find yourself.  
The most rebellious act is to be what you find.  
Be grateful without shame.  
Be humble without guilt.  
Be honest without omission.*

*It is natural for you to doubt.  
It is normal to feel like your world's most critical moment is taking place right now.  
The tectonic plates of your soul are shifting.  
Earthquakes are simply growing pains.  
It always comes back to Earth, Mother.  
People pay money to get closer to her.  
To spend days in silence with her in the mountains, hoping, praying, waiting to hear her voice.  
How lucky you are to find her whenever you need.  
At the ocean's end, at the river's sleeve, at the night's edge.  
Today you start your ceremony.  
Tonight you start your healing.  
And tomorrow you begin anew.  
Rise with the sun and give thanks,  
For a good night's sleep,  
But more importantly,  
For waking up.*



I folded the paper into my notebook and looked back out to the water. Pulling out my phone, I decided I needed to spend a couple nights away. I couldn't think in the apartment with my roommates hovering. I didn't want to be anywhere in the city or with friends. I wanted to stay right here at the water, or as close as I could get. Costanoa was perfect and I booked a glamping tent for that night and the following.

I drove to San Francisco to pack my bags. I decided I would approach this mental breakdown and need for reprieve with the same gusto as I did anything I needed to accomplish: I made a plan with appropriate supplies. I needed a new journal. I needed smooth-writing pens. I needed sweatpants, a swimsuit, and the cozy PJs that no one was allowed to see me in. I needed to have all the necessary materials at the ready for inspiration to take hold, for planning and prosperity to grace me with an epiphany and bonus kiss on the forehead.

Before leaving the city, I stopped at a favorite stationary store. Mostly I window-shopped – the array of glossy and matte journals of varying sizes, all with the eclectic paper varieties to make a stationary glutton's heart sing. I thumbed through journals, feeling for my ideal paper grain, pushing aside wide-ruled and dotted sets. Once I found a suitable candidate, I moved on to the pens. Testing their ink release and line stroke was the most joy I'd felt in weeks, and I wrote little nonsense messages on the sample journal that had been left out for testing pens. I turned to a page with more white space to try the pen in hand, but then froze, staring at the page, cluttered with heavy blue lines, spindly red ink patterns, bright baby blue marker, and more. I picked up the sample booklet, my palms aching under the weight of sweat and my breath shallow in my nose. On the left page was my name. Santana. Written, not by me, in slanting, blue ink. On the right page, in large, blocky green letters, were the words, "Learn to Listen!" Placing the booklet down, afraid it would say more that I wasn't ready to hear, I glanced around the room, searching for the face of anyone familiar, anyone who would know my name – an altogether highly uncommon one, especially here.

I quickly paid for my journal and pen, rushed to my car, and aimed southward.



I am here because I am running away.



The wine is making me rethink the day. The week. The year. This is all just the late twenties slump I've heard so much about. Saturn Return is a convenient term made up by people who needed the prefrontal cortex development of their late twenties to finally dump their college boyfriend. Blowing up my life is not a solution, nor is it prudent. Leaving this career and city would be going against everything I worked for, everything my family sacrificed for me. Valedictorians from small towns who manage to graduate from a top college with a full-ride scholarship don't go back. Going home is failing and I don't fail.

Eventually, I pay too much for my dinner and find myself in the hot tub. Alone. Drunk on Cabernet. A dumb combo for a smart person. The emboldened light from my poetry promise earlier on the shores of the ocean starts to feel feeble and ridiculous in comparison to the hollowed-out core of my gut; the unabashed banality of being a sad, drunk girl alone at a nice resort trying to find herself. I do not know what to do and I am regretting the wine.

The stars have decided to join me. They shudder behind layers of worn clouds and lackluster ocean fog. Twilight is bold in her rendering, and her royal blue provides enough contrast to bring the surrounding shadow of sloping hills into focus. I pull myself out of the hot water and lay on the particle board that makes up the deck. The fake wood grain, a far cry from the Mother Earth that my body knows intimately, suspends me, offers me up to the sky and I let it. I consider my skin. I consider the heat in me. How water can be boiling on either side of the membrane, and I only need to shift my body, to move it elsewhere, to make it stop. How it is in my control to change the environment and conditions for my body to exist. To survive. To flourish, even.

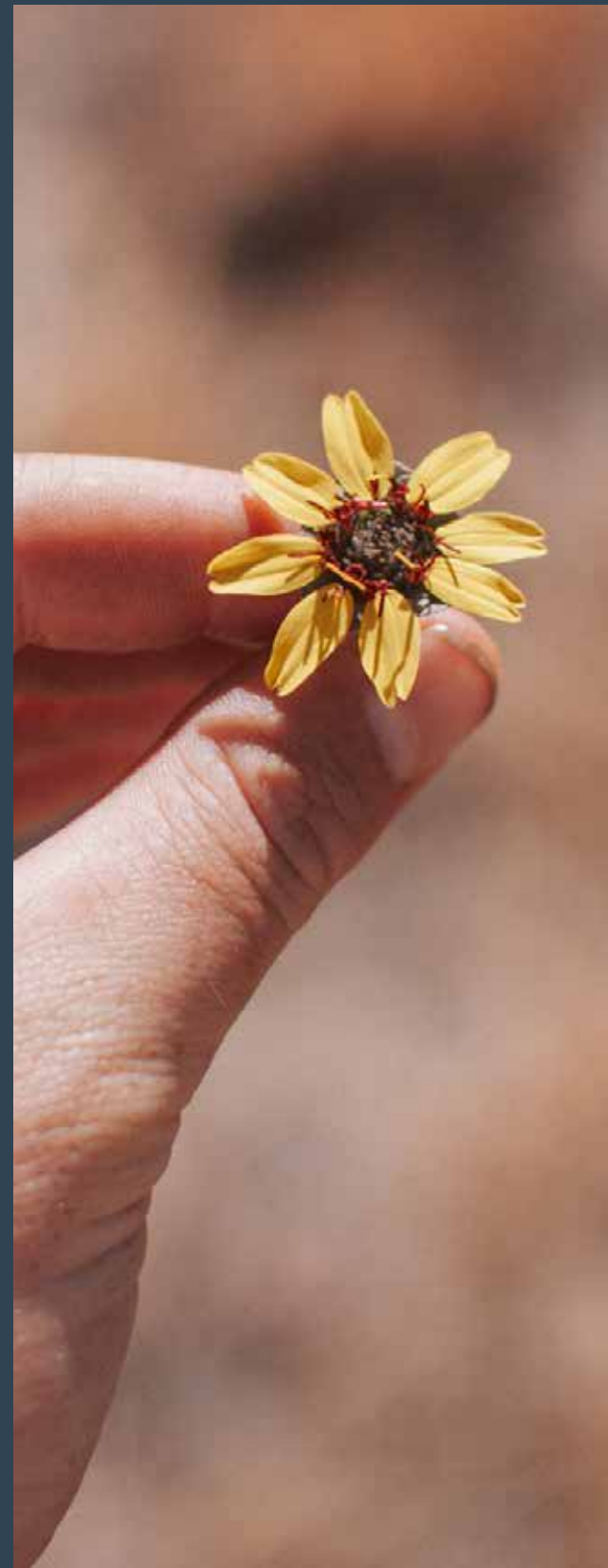


How much of wanting to go home is simply nostalgia? Does home only exist in our memories? How much of it is yearning for the familiar? For the open-armed blue that is the summer desert sky? For the wild spring blizzard that takes you by surprise – to no one's surprise – every year? For the purple aster and dusty juniper and regal ponderosa pine? Does wanting to go home make one less adventurous? Less worldly? If we are children of the Earth, shouldn't anywhere feel like home? Shouldn't everywhere feel like home?

The sky is spinning and I cling to the floorboards. I am racing through the galaxy with hot tub in tow. Every option I consider that would keep me here, in this job, in this life, in this city, feels like it will eventually kill me. I am not being dramatic. Nor am I textbook suicidal, but I feel a heaviness in continuing this existence that can best be described as being so very, very tired that all I might want is to go to sleep and not wake up. Every option I consider that would take me away from here is living. And when I think of living, I see my mother laughing, in that way that crinkles her nose and eyes; the laugh that sends her bending forward, as if praying to the Earth. I see my family home, framed against the wheeling cerulean sky and mesas brimming with sharp and fragrant juniper berries. I see my dad, driving ribboning roads through varying New Mexico landscape that is both simultaneously and distinctly desert and mountain and river valley, eagle feather hanging from the rearview mirror, ebbing against the cut of air from the open window. I feel the southwest sun, burrowing into my skin, but I am not burning. I am light.

I will not remember getting back to my glamping tent. I will not remember changing into my unsightly PJs and going to sleep. I will not remember what I cried about, though I can guess.

But I do remember waking up. ☻



# SUNDAY MORNING

*O brothers and sisters!  
The meaning is all here—  
Here in the barn and the milk.*

—William Kloefkorn

The jersey, not startled by my waking her,  
regards me with the same doe-eyed indifference  
she would any other day. The cows rise  
and stretch, bones of their backs creaking,  
beds of matted grass dry hollows  
in dew as they drop manure and line  
out, head to tail up the hoof-  
packed trail along the plum-  
thicket's edge. I lean against an elm and light

my pipe, ritual of smoke passed while  
the herd stops to water at the hill-  
top trough. When again they resume  
their walk along the lane the sun has risen  
over slopes of emergent corn, far-off city  
lights dim amid gray shapes of buildings,  
the capitol's golden dome standing above them  
like a pope. I turn away, follow  
cows to the barn, where the small dog  
awaits supplication, this chore sacred  
even unto her. The final teat stripped,

last drops purged, any spill dog-licked clean,  
I spray the barn floor spotless and draw myself  
a tin cup of cool milk, its color  
pure symbol. From the north, the monastery bells  
echo across the hills. The cows loaf, eyes  
half-lidded in sun, ears twitching one  
by one to flick lazy flies. I tip  
the cup to my lips and drink it dry.

by Ben Gotschall

# THE SHEEP JAWBONE AND THE FOOL'S GOLD IN THE HARVEST



WORDS AND ARTWORK BY ANGIE MESTAS



My family comes from a long line of sheep herders and cattle ranchers. For us, sheep head is a delicacy. Whether a birthday, a special visitor or harvest celebration, a roasted sheep head is the center of a meal for special occasions. My family savors the tender crispy meat from the jaw bone and a tender piece of salted tongue.

Growing up, after the meal, my brother and I would use the discarded jawbones as *pistolas* (or pistols), and use coffee cans and bottles as targets. When we turned the jaw bone upside down, the teeth looked like a barrel and the jawbone a handle. It was a game we'd play for years, *pistolas*. The jaw bones would be left in the yard 'til a ranch dog carried them off.

During a recent harvest celebration commemorating filling the freezer with lamb, I was enjoying the meat off the jawbone and noticed sparkling golden mineral accumulations

on the teeth. After some research into the strange appearance, I learned that livestock can get gold- and silver-appearing accumulations on their teeth based on the minerals of the plants, soil, and water they consume. Our livestock are raised along the southern Colorado and northern New Mexico border, and forage on native grasses, forbs, and shrubs, including blue grama grass and thread and needle grass. These plants are native to the region and provide early spring to late fall forage, going into dormancy at different times of the year, uniquely adapted to environmental conditions. During my digging, I couldn't figure out which plants or minerals specifically lead to these metal-looking accumulations on the teeth; was it these native grasses, invasive weeds, or minerals from the water? But it led me to think more about the ecology of the region and nutrient and mineral cycling that's happening all of the time between soil, plants, livestock, and humans.



I also think about how our agricultural communities were founded around sheep markets that the Spaniards brought in the 1600s. The land was taken from Utes and Navajos for the Spanish land grants, then for the Mexican land grants, and then for the U.S. government. Now, sheep are raised on private land or on leased public pastures. Who owns, manages, and benefits from the land has always been deeply contested. The sheep jaw bone as a pistol also references that fact. The gold on the jawbone, being minerals that only have a golden appearance and no inherent value, also reference the history of fascination with precious metals and the boom bust economies and false prospects that affected generations.

Being raised on a family ranch that benefits from both generational family land and public grazing allotments, and operates across a state border, I feel art gives me a way to unpack and focus on some of the complications and beauty that coexist in this space. I've gravitated towards folk-art that uses everyday objects as canvases, like pieces of scrap wood, metal, or bone and art that depicts scenes from everyday life. This type of art records and saves the stories of our lives and people around us. I like to use either found materials from the ranch, like the jawbones, or materials that are similar to the colors and textures of the desert, like chalks and muted colors. 🌀

# THE COLORFUL TRUTH

## HOW PLANT HEALTH AFFECTS PEST RESISTANCE AND NUTRIENT-DENSITY

WORDS AND PHOTOS BY MATTIE GRISWOLD

Have you ever walked into a grocery store, farmers market, farm, or your own backyard garden and been struck by the vibrant colors of fruits and vegetables? Perhaps it was the pyramids of shiny apples, dewy green leaves, or bright red strawberries drooping from their branches. I don't know about you, but when I see all those deep, rich colors, I usually get a little hungry.

You've probably also noticed when produce appears sad or dull. I grew up in a rural community with two small gas station grocery stores where that was a regular experience. In winter, road closures would often delay the already infrequent deliveries of fresh produce to our town. I remember seeing the same tomato on the shelf week after week, more dull pink than red, certainly not enticing anyone to take it home. In our current global food system, much of our produce is harvested before it reaches full ripeness. While early harvesting increases shelf stability for global shipping, it also explains why those tomatoes look and taste so bland.

There's science behind our intuitive attraction to vibrant produce. I recently learned that a plant's color – whether in its leaves, blossoms, or fruit – indicates not only the plant's health but also its nutrient

density. Generally, fruits and vegetables that appear vibrant in color are higher in phytochemicals, bioactive compounds that are critical for human health and help protect against chronic disease. There are exceptions, of course. Humans have invested heavily in plant breeding and genetic modification to produce greater yields, often at the expense of nutrient density and flavor. It makes sense then that those fruits and vegetables found at local markets, farms, and gardens that are in season and traveled shorter distances were more likely ripened to their full phytochemical richness on the vine, making them both healthier and tastier for us.

### THE SURPRISING ROLE OF PESTS AS INDICATORS

While the connection between color and nutrition may seem intuitive, until recently, I didn't understand the direct correlation between plant health, nutrient density, and insect pests. In early 2025, I attended a talk by Dr. Tom Dykstra, an entomologist who helped me understand that insect "pests" actually play a vital ecological role – they consume unhealthy plants.





Just as turkey vultures with their powerful stomach acid serve critical ecosystem functions by consuming carrion that other animals cannot digest, insect pests fill a similar role by consuming unhealthy plants. What we often overlook is that pests aren't attracted to our healthy plants, but rather our unhealthy ones. According to Dykstra, insects only feed upon plants that are nutritionally poor, dying, or dead. Consider the thousands of species of dung beetles worldwide (450 specializing in cattle dung alone), termites feasting on decaying wood, or dermestid beetles that consume decaying flesh and clean skulls. Similarly, bark beetles don't kill healthy trees – they kill unhealthy ones.

## WHAT MAKES A PLANT HEALTHY?

A plant's health depends primarily on how well it photosynthesizes – aka its ability to transform energy from sunlight, water, and carbon dioxide into sugar and oxygen.

As someone gardening in a deep, narrow canyon between two steep forested hills, where direct sunlight is limited, my plants don't always photosynthesize well. It's not uncommon for my annual veggies to appear stunted, and I typically end up with a thriving population of insect pests by season's end. Sometimes I question whether I should attempt gardening at all, given that my growing season is even shorter than in the nearby Gallatin Valley where on average, growers can expect a 100-day season. The short and often unpredictable growing season we face at 45 degrees North makes growing annual plants a challenge.

Throughout my 34 years of life, I've grown many gardens, attended permaculture and master gardener courses, and managed community gardens; despite all of this, my approach has evolved to be more intuitive than scientific. Aside from adding some compost to the soil each spring and mulching my beds with straw and leaves each fall, I have put minimal effort into understanding the root cause of my garden challenges, much less changing my practices.



While this has served me well in certain settings, I was excited to discover a simple tool for quickly assessing plant health: the refractometer.

## MEASURING PLANT HEALTH WITH A REFRACTOMETER

Refractometers are small instruments that provide insight into how well plants are photosynthesizing, helping growers prevent pests, increase nutrient density of crops, and troubleshoot when things go awry. These tools are readily available online, and can range in cost from \$20 to \$300. Built like small telescopes with a viewfinder and a plate where plant sap can be applied, refractometers are commonly used in the wine, honey, and juice industries to determine optimal harvest time by measuring sugar levels in fruit. For gardeners, farmers, and ranchers, however, they can be used to measure leaf Brix.





Leaf Brix refers to the sugar content in plant sap and correlates with the presence of phytochemicals and thus, health and nutrient density of a plant. Since Brix levels depend on photosynthesis, several factors can influence readings: time of day, atmospheric pressure, soil health, cloud cover, and soil moisture. Plants grown in greenhouses tend to be UV-deficient and will have lower Brix than those growing outside. Leaf Brix is typically lower in the morning compared to the afternoon, when sunlight intensity increases. The application of herbicides, fungicides, and insecticides, can reduce Brix by destroying beneficial soil microbes, crucial for soil health. Given these variables, some skeptics question Brix as a reliable measurement, but when used consistently, and in conjunction with careful observation, it provides valuable insights into plant and soil health.

## THE BRIX-PEST CONNECTION

Generally, plants with low Brix (6 or below), aren't photosynthesizing optimally. Not coincidentally, insect pests favor plants with low Brix. Aphids, for example, are attracted to plants with Brix readings of 6-8, while grasshoppers will consume plants with Brix levels of 10-12. Plants are generally safe from insect pests when they reach Brix levels of 12 or higher, eliminating the need for pesticides and indicating that the food you're growing is healthy for humans, not insects. At a Brix level of 14 or higher, insect pests won't even glance at your crops.

*Whether you're managing a small backyard garden or a larger agricultural operation, monitoring Brix levels can provide valuable insight about your growing practices and inform decisions.*

In their respective books, "Dirt to Soil" and "For the Love of Soil," both Gabe Brown and Nicole Masters emphasize the importance of increasing Brix levels as an indicator of soil health improvement over time. This simple measurement can transform how we understand the relationship between soil health, plant vitality, pest resistance, and ultimately, the nutritional quality of our food.

## BRINGING IT ALL TOGETHER

Being able to see the connection between plant health, nutrient density, and pest resistance gives us powerful tools for growing better food. By focusing on improving soil health and optimizing growing conditions

to increase Brix levels, we can naturally deter pests while producing more nutritious crops. Whether you're managing a small backyard garden or a larger agricultural operation, monitoring Brix levels can provide valuable insight about your growing practices and inform decisions.

— ■ ■ ■  
Next time you're admiring colorful produce at a market or in your garden, remember that those vibrant hues aren't just pleasing to the eye – they're nature's way of signaling optimal health and nutrition. And if pests are attacking your plants, consider it nature's feedback system telling you there's room for improvement in your soil or growing conditions. With this knowledge and simple tools like a refractometer, we can work with nature rather than against it, producing food that truly nourishes both our bodies and our soil. 🌀

# HORNO

BY LEEANNA TORRES



It was late October, and cooler air was finally setting into New Mexico; I'd sent Olivia a text, asking "will you be in Taos this weekend?"

*I'm actually going to be there Saturday afternoon to Sunday afternoon, she replied. I'd love for you to come by! We're doing a cultural interview with my parents about the Renaissance of Adobe Architecture in northern New Mexico. We will be filming at our home in front of the horno we built. I can send you directions...*

So Olivia sent directions, but the GPS in the car wasn't familiar with the winding roads of Llano Quemado in Taos, and led me the wrong way, even into the wrong yard. A slow-moving car, dirt road after dirt road, trying to find the way.

But finally, as afternoon waned, the color of Mr. and Mrs. Romo's yard came into full view. Fading scrap wood piled neatly and stacked for re-use or burning, and pallets bleached grey by summer sun. A slate-metal wheelbarrow turned upwards (so the tire won't go flat and rain won't gather like a puddle to rust its bucket). Two old work trucks, a single-cab Chevy, faded blue, and a powder-grey Toyota, extended cab. Something in me smiled because so much of the yard was colored familiar to my own childhood home. As the colors of a working family's yard greeted my entrance, at last I spotted Olivia.

“Eeee, mana, que hay de nuevo!” she greeted, stepping down from the home’s front-door steps. And as we embraced, two friends not having seen each other in quite a while, the *horno* stood stately by the house.



Pronounced “orno” (with a silent “h”), these outdoor beehive-shaped ovens have been crafted and used by Southwest Pueblo and Hispanic communities alike; these functional ovens have become iconic symbols of century-long traditions within New Mexican culture. Tewa-speaking Pueblos call it *pante*, which means ‘bread house.’ Constructed most commonly from adobe – traditional hand-made mud bricks – many *hornos* are then plastered over with more mud mortar or mud plastering. These hand-shaped earthen ovens grace the yards of rural homes in and around communities of NuevoMexico.

Native New Mexican artist and *enjarradora*, Anita Rodriguez, revealed, “...the history of the *horno* is layered, a long story of cultural conflict and confluence that began in the Middle East, traveled to Spain, and then to this continent.”

And with a resurgence of interest and appreciation for traditional adobe building techniques and styles – characterized by a return to such techniques as using adobe as a building material, incorporating elements of Pueblo, Spanish Colonial, and territorial architectural styles – the tradition of building and utilizing *hornos* in and among New Mexico families remains strong, often passed down generation to generation. Thus, the presence and use of the *horno* colors our New Mexican culture and traditions with its functionality, with its contemporary use.



“Come in, come in,” offered Olivia, inviting me into her childhood home as the afternoon wanes. Inside, *more* familiar colors – framed family photographs like confetti on the walls, a couch with blankets draped over the top.

“Hello again,” I say to Mrs. Romo, who’s inside the kitchen, and she offers me a hug instead of just a hand; her embrace is warm and wide, as though she’s known me for years rather than meeting me just once at one of Oliva’s poetry workshops.

And seated at the far end of the kitchen table is Mr. Romo, one hand steady on his *bordón* (walking cane) even as he remains seated. His place at the table reminds me of where my Nana used to sit in her older years, a place at the table where one can easily see both through the window to the outside, as well as directly into the kitchen. A seat of strategic viewing, a place to see all the ongoings both inside and out.



Two Taos women baking bread in outside oven, New Mexico, 1916  
Public domain



Pueblo at Taos, New Mexico.  
"Hornos", or Ovens for cooking  
food - Arthur Rothstein, 1936  
Creative Commons 4.0

Mr. Romo asks me where I'm from, *quien soy*. Explaining I grew up in the farming area along the Middle Rio Grande Valley, a community called Tomé, he nods his head, and his eyes light up as I speak to him in New Mexican Spanish, relaying family names.

"Comen, comen, (eat, eat)" motions Mrs. Romo, waving her hand over to the kitchen counter, "there's plenty, *anda* come and eat." On the stove sits a big pot of beans, and next to it, a *puela* with red chile. Picture also little bowls with garnish – mint-colored shredded lettuce, yellow sharp cheddar cheese, and a bowl of Frito-Lay Fritos. Classic New Mexican Frito Pie.

There is something about a shared meal, an invitation to eat. I remember the ceramic red and yellow of Mrs. Romo's plates, the cream white of her kitchen's window curtain above the sink, the tint of holy apricot in the generosity she offered.

As I eat at Mrs. Romo's table, an easy Saturday evening conversation, I wonder at all the family and friends they've welcomed to their table. Olivia asks me how work is going, and I ask her how living in Santa Fe is treating her.

What makes a feast? What defines a friend? And what cultural traditions meld us together tighter than adobe itself?

"*Hola mana...*" is often the greeting received when my *comadre* Olivia answers the call. Most times it is just to check in, just to *platcar*, shoot

the shit or else simply see how one another is doing. It's a simple thing – friendship – yet its essence colors my ordinary days like the *verde* of *alamo* trees along our dusty, high-desert landscape.



"We built the *horno* one summer," explained Olivia. "I was about 12...my dad just *really* wanted to have our own *horno* where we could cook the meat we raised and dry *chicos* from the corn we grew."

"Did your mom help build the *horno*, too?" I ignorantly asked. "Heck yeah, of course she did!" replied Olivia.

Olivia's mother built an *horno*. Along with her only daughter and husband of over 30 years, imagine her hands helping stack the earthen adobes. While a school teacher by day, I imagine Mrs. Romo's role as a mother and gardener her *more* beloved profession.

With nearly 200 adobes, its egg-shaped curvature resembles a rising mound, much like Taos mountain in the backdrop.



"It took us most of the whole summer to build it... first my dad laid the concrete slab, then we had to make all the adobes...my strongest memory was making the mud itself...I remember using the cabador (hoe hand tool), and the sound it would make as it scraped against the metal wheelbarrow...and then adding water, and more and more mixing and scraping, and then adding straw to the mud, and more and more scraping... and I remember how tired I was at the end of those days...all of us bien ensocetaous (all muddy)..."

When Olivia speaks of her familia's horno, her voice is colored with confidence and joy, a knowing in her that seems both embodied and spiritual.

"...And then we'd pour the mud into the formas (adobe wood forms), then we'd have to stand the adobes on their sides, to let them dry...Eeee, but I remember just being so muddy! I remember at the end of those days we would make dinner on the disco and listen to northern New Mexican music. Those summers were perfect, I just loved it!"

The history of the horno in Nuevo Mexico has origins in both Native (Pueblo) and techniques brought over from the Spanish (adopted from the Moors in the Iberian Peninsula/southwest corner of Europe). This outdoor oven is used to cook meat, bake breads, dry corn into the common New Mexican staple known as chicos, small, tender, roasted, corn kernels - often cooked with pinto beans or made into a stew with pork, onions, and garlic.

"We always kept a garden," explained Olivia. In the heart of Llano Quemado, imagine a small garden growing larger and larger by the year, blood-colored turnips and beets, earthy-green lettuce and peas, blue corn and white corn, carrots, potatoes, cebollas (onions), and calabacitas (zucchini).

"Even now, my dad still grows sweet corn," revealed Olivia, and I picture Mr. Romo with his *bordón*, tending to corn in his yard, the colors of his own life fading into an older age we are all headed toward, the reality of a human body, a working man, getting older and older.

Despite his work trucks now sitting quiet and idle in the backyard, I imagine Mr. Romo all those years prior, driving to and from work sites, coming home on summer evenings to his wife and daughter, tending to their *jardín* planted with *maiz*, *calabacitas*, beans y *chilé*.

To **have** a garden, to **tend** to a garden, to **feed** and **nourish** your family by a garden - these actions serve as the colors of a life, the lives of a woman and man who raised an incredible daughter who then became my friend. These threads of color between us, between the actions of our daily lives, the people we interact with, the hearts we touch. Imagine then the blue corn from the *jardín* roasting inside the *horno*, then fed to the *familia* and *gente* who sit around the table talking about the ordinary of days. Labor. Community. *Vecinos*. *Querencia*.



"*Gracias por la comida y la platica*," I say, shaking Mr. Romo's hand and hugging Mrs. Romo goodbye. Both Olivia and her mom walk out of the house with me, showing me their *horno*.

Olivia's family built an horno and marked the finished date to remember the process.



It stands adjacent to the house, atop a concrete slab; on a corner of the slab foundation sketched in for memory to keep are the date and initials: 6-7-05 OR.

But what the initials and date on the concrete slab cannot fully capture is all the use the Romo's family *horno* has seen over the years – entire pigs, lambs, or turkey cooked within its adobe cavern, enough to feed a family through the seasons, or an entire community gathering for a *matanza*. And the countless pounds of corn dried within the *horno* since its construction, home-grown sweet corn soaked, steamed, then dried. “My absolute favorite way to enjoy them is how my mom would prepare them, just cubed pork chunks with chicos, onion, and garlic simmered all day in a *caldito* (stew)...and then with some fresh tortillas, oh so delicious.”



Olivia's *familia* built an *horno*. Imagine then, this functional tool, crafted and maintained by hand, then used to bake and prepare food to nourish a family, even community; such then is both the function and reflection of the *horno* itself, an essence as much about function as it is about architecture as it is about culture as it is about landscape.

The use of a traditional *horno* includes first building a fire inside the cavern of the *horno*, often using local piñon, cedar, or juniper wood, allowing it to burn for several hours; once hot enough, the fire and ash are replaced by the food to be cooked inside, and the entrance of the *horno* is covered with a homemade door and sealed with wet burlap sacks.

Imagine then, the colors of food from an *horno* – golden brown, crisp white, autumn orange, warm yellow. And speak the names of the foods that feed us – *carnitas y maiz, pastelitos y pan*.

But what feeds us as much as food, what nourishes as much as any protein or vegetable or carb, is *familia*, friendship, community.

Before leaving Llano Quemado, I ask to capture a photo of mother and daughter beside their *horno*.

I imagine all the food they've prepared inside. On the exterior, plaster cracks are showing, maybe from sun, maybe from use, but I also notice where the cracks have been mended, tended too, and inside the *horno*, *ceniza* (ash) still inside from the last time it was used.

*"But what the initials and date on the concrete slab cannot fully capture is all the use the Romo's family horno has seen over the years..."*

What I really want to tell you is not just about the Romo's family *horno*, but about the spirit of *comunidad* and *familia*, the graciousness of daily human actions so often caught up in the fleeting song of what may seem ordinary. But Mr. and Mrs. Romo are far but ordinary. Mr. and Mrs. Romo raised a daughter, built an *horno*, color the world with the continuation of Taoseño *tradiciones* including food, language, and agriculture.

It's the color of culture and traditions giving life to the harvest.

It's as much the color of *papitas* and peas, *lechuga*, turnips, and beets. Hues from these vegetables and food have graced Mr. and Mrs. Romo's garden throughout the season, and perhaps just as precious as the corn – blue and white – is the labor they put in, the traditions of the *horno* they pass down.

As I take the photo, Olivia and her mother lean in, one arm around the other one, like an instinct, and they both smile, *sonrisas* brighter than the yellow shirt beneath Olivia's sweater.

And beside them, the *horno* stands, stout, low, and wide, hunkered into the earth, the color of its essence enough to feed both body and soul. ☻



# GROWING INTO MYSELF

PHOTOS AND WORDS BY DAN FLITNER

When I was asked to write an article to bring awareness to mental health and what it means to me, to be completely honest, I nearly said no. I am not an author or a writer, I can't even boast that I was a good English student. Ever. After thinking about it and realizing the discomfort I was feeling, I thought I should challenge myself and take it on. Here is my attempt to share my relationship with mental health and agriculture, how it's come into my life, and how I continue to grow spiritually and mentally into my truest self and my God-given talents and gifts.

Mental health was never on my horizon until I found myself with two beautiful kids suffering from depression, my wife struggling with them, and the two of us meeting with attorneys to discuss how to amicably divorce. I was in therapy by that time, per my wife's strong and

compelling request that "I see a f\*\*ing counselor." I was totally struggling mentally but had no idea with what or why. My wife's background of trauma was more than willing to take the fall for all of our problems, and I was willing to let it. I did not realize how unhealthy and unstable I was at the time. I didn't know what anxiety was, but looking back, I was jumping out of my skin with anxiety. I couldn't understand why we were in so much trouble collectively. Our cattle and horse programs were finally ours and ours only. No more family to answer to, just my wife, Mary, myself, and the kids. It has taken years to unpack that and fully accept my role and responsibility. I think what I've come to believe as I wrestle with mental health is how important it is to rediscover ourselves going through our life story and looking at it through a new lens.



I began to question some things for myself and my system when I was 26 years old, the youngest son ranching with my folks and brother on our family ranch in Wyoming; I'm fourth generation on that ground. My brother, Tim, had been diagnosed with a slow-growing lymphatic cancer with not great odds. It was a shock to all of us, and we agreed to do whatever it took to get through this as a family. At the time, there was no clear path and the doctors were extremely conservative about Tim's chances of growing old; although they could help, they told us that he should plan on a rough battle. We were worried about my brother and we were also worried about our ranch and how we could keep it together during this very hard time ahead. We knew it was going to be a rough go, but I was young and had always felt overlooked by my brother and my folks, and wanted to prove myself to them that I could take care of the ranch. I didn't want to hire help because there was no time to train someone – I thought our exceptional hired hand, Luis, and I could take care of most of the work. I was putting in extremely long days and then coming home to my brother, who may or may not have eaten since I'd last seen him, and so I'd throw something together, clean up a bit, and get some rest. It was like that most of the summer. My folks were struggling with what was happening and why it was happening to us, as my family had been, for the most part, unscathed of emotional pain. My dad's hardest times were always related to what was going on with the ranch and its finances, which were extremely difficult but nothing compared to the possibility of losing a family member. If I asked him about hard times, it would not be about my brother's cancer, the illness that I contracted that year, or my eldest sister's miscarriage that same year; it would be about the 1980s and how we barely survived and the ranch divorce he and his brother were still battling 20 years later.

**We were worried about my brother and we were also worried about our ranch and how we could keep it together during this very hard time ahead.**

Toward the end of the summer, I found myself unable to rest and extremely tired all at the same time – I just wrote it off to hard work and stress. I finally made a doctor's appointment and after some blood tests, I was diagnosed with Graves Disease, which is an autoimmune disorder that affects thyroid function. I decided to take care of this as best I could without much support from family, so I went to my appointments alone and wouldn't let anyone support me. I'd mismanaged my treatment plan and ended up at the ICU with heart palpitations for a few days. My doctor assured me it was going to be okay, but I was in for a long ride until things stabilized. Finally, ten weeks later, on the morning we were shipping our calves, my heart came to rest at a normal rate. It was an amazing sensation to wake up to a normal heart rate and I was so grateful. I wasn't much help that day, as I didn't want to risk upsetting my heart in any way, and my dad and I got into a fight about how slow I was moving. I was shocked. He was more concerned about the loading of the truck than he was about my condition. I confronted him with this and while he did listen, his answer was if I couldn't be full speed to not show up. I tell this story not to belittle or begrudge my father, who I have a deep love and respect for. It is illustrative of the environment I grew up in. The ranch came first and everything else fell into line after that. That is how my parents survived – they sacrificed everything for the ranch to keep it together for the next generation. So we didn't complain much and we learned to take care of ourselves and not to depend on a lot of help. We lived by the code that there was nothing more important than the ranch and we applied ourselves accordingly. It seemed like sickness and strife weren't going to shake that way of living, and I was angry that we were going to fall back into the same patterns.



I met Mary at the beginning of my illness and we were married the following summer. We only spent a few weekends together before I'd asked her to marry me and not a whole lot more time together leading up to our wedding. Mary is a veterinarian and had taken an internship in Phoenix, and I had decided to go with her for the year so we could begin our life together. It was a hard decision to leave the ranch, and I felt guilty, as if I'd let everyone down. I also knew that I'd met the love of my life and we wanted to be together. I went to work framing houses while Mary worked around the clock as an intern for a clinic. I thought my job was to provide for her, so I never missed work; Mary had a similar belief system that work is where we found our value. But after two bad events in Phoenix (Mary getting a severe concussion while euthanizing a horse and then she was assaulted while on a call in the middle of the night), we decided to move back to Wyoming.

We spent the next seven years in Shell and I worked on the ranch almost every single day as she worked as a local veterinarian. We adopted our son, Samuel, in 2001 while we were in the process of building Mary a vet clinic. This is the period of time when I began to struggle with my mental health. I didn't know it at the time but as I processed all of this later, I realized that I had gotten to a limit emotionally and I was depressed. I wasn't looking-down-a-gun-barrel depressed but I was definitely not happy. My brother and I were working incredibly hard, my wife was working incredibly hard, we had just started a family, and Mary and I needed to support each other with our new infant son. I felt torn between being a dad and a husband while at the same time, felt like I was failing at the ranch and letting everyone down, including myself. I was checked out from my work and it was killing me emotionally. The only thing I'd ever felt good at

**I felt that I was faced with two choices: stay and support the ranch or leave and support my family.**

was working on that ranch, and I started to hate going there. My dad was clueless once again; he showed up at my house the day we brought our son home and told me to get back to work. I didn't go and he was furious. I had wanted to build an empire with my brother right there in the Shell Valley, and instead, I was exhausted and questioning my identity. I had worked so hard to prove myself through all of our struggles, and I had ended up very sick in the process. Mary and I had been going to counseling and I felt that I was faced with two choices: stay and support the ranch or leave and support my family. I chose my family.



We left and moved to Las Vegas, New Mexico to work for Mary's stepfather, who had recently purchased a small ranch. Mary left a flourishing business behind and we both left a community that we feel, to this day, compares to no other. We spent the first couple of years just trying to get the house livable and getting a few improvements operational. We bought a handful of cows from George Whitten and his wife, Julie. We worked extremely hard, once again, to prove ourselves as valuable neighbors and bonafide ranchers. Mary took a part time job for an equine vet and I bared down, once again, on the ranch. We adopted our baby girl, Grace, who is from Guatemala, and was 16 months old when we got her. She'd been given to foster care at eight months old and now, eight months later, was part of our family, not knowing a word of English.

After eight years in New Mexico, we found ourselves once again in a family dynamic that wasn't sustainable. Mary and I were struggling to please her folks. We felt we were being questioned as parents and I felt questioned as an employee. I had done an amazing job helping build a grass-finished beef program, Sweetgrass Cooperative, from the ground up and to this day, it is one of my greatest accomplishments. I had done countless improvements for livestock and wildlife on that ground to create a better environment for all living things. My in-laws didn't value the work I'd

done to help create such an amazing company and that just felt empty to me. We have all moved beyond these painful times but only by ignoring them, not by actually addressing how each of us was feeling.



There is deep pain and trauma in Mary's family, and it has taken me years to try to understand and accept how people who love each other can do horrific things and carry on as if it never occurred. Mary's childhood is laced with abuse and trauma rooted in alcoholism and violence. I thought that keeping these secrets over the years was in protection of Mary, but ultimately it only protected the perpetrators: the alcoholic father and stepfather who have too much shame to truly do the work to heal themselves, and a mother with an even deeper shame as both a victim and as an abuser herself. So what I've witnessed is an embedded system filled with dark emotional and physical abuse that is completely off-limits because of the unprocessed pain. Mary was the victim and receiver of the burdens of abuse; to this day, none of her caregivers or perpetrators have ever taken any responsibility for the acts they committed.

When we got married, Mary was forthcoming about her family's past, but neither of us truly knew the impact each of our pasts were going to have on our marriage and family. I've come to understand that we each have trauma and pain but deep trauma is different; it is most often passed down from generation to generation and embeds itself in the family system. The lies and shame are embodied by the actors and victims, so it continues on unless someone finally breaks the cycle. I was not equipped emotionally at the time to understand or deal with this system. Unhealed abusers bully and control the narrative with whatever power they have. My in-laws could be so incredibly generous one day and then the next take it all away, so we were in a cycle of finally

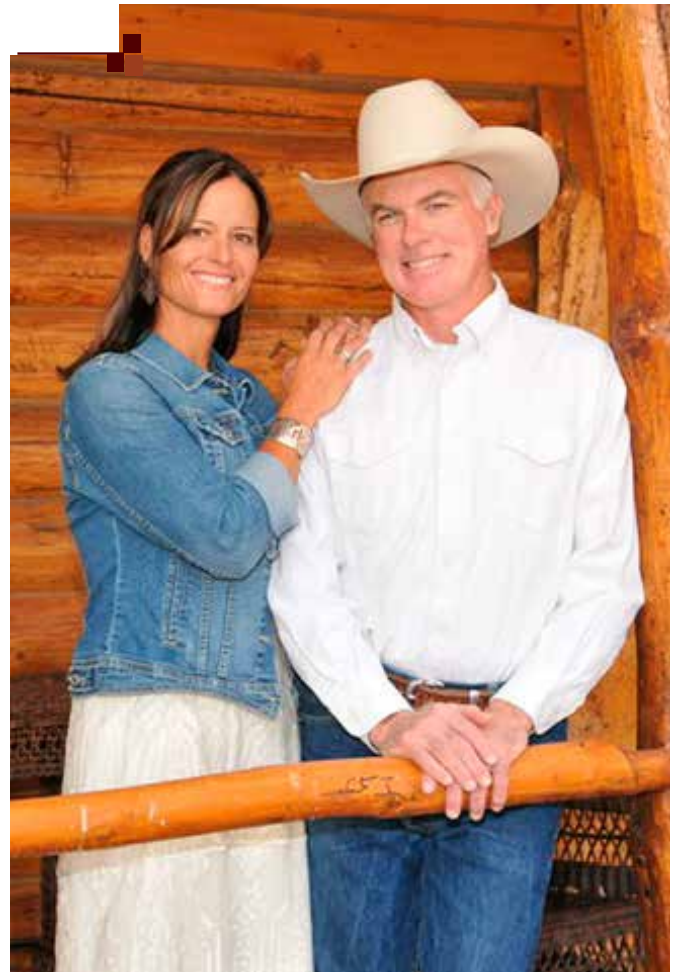
getting approval and then it's gone in a moment. We adapted every way we could to be accepted and it was never good enough.

We had grown to love that community in Las Vegas, our kids were flourishing, and we had earned the respect of both the ranching and larger community. But we couldn't stay. I once again found myself leaving a piece of land that I had deeply connected with. Mary's mom needed to get to a lower elevation, so they moved to southern Oregon. We wanted to be close enough to be able to still support one another, so we moved from New Mexico to Oregon and purchased the place we are still at today.

Once in Oregon, we felt good about the community we were in for our kids who were in the fourth and fifth grades at the time. Mary and

I went to work like crazy to make our dream come true. The place we bought was in really poor shape – the fences were all falling down and the irrigation systems were in terrible shape – so it was basically one emergency after another of either cattle out or

**I once again found myself leaving a piece of land that I had deeply connected with.**





something broken. I applied what I was taught. I had to work hard to prove myself to our neighbors and also to my past self in Wyoming and New Mexico, where I had felt like such a failure. This is when the real mental health struggles started to show up in my life. Gracie and Sam were having a real rough time adapting, so we started seeing a family counselor. It seemed to help, but it didn't take away from the fact that they were really unhappy at home. I took the optimistic approach, which was to dismiss it and tell everyone that it was going to work out; we were great parents and these were great kids, so of course it was going to be fine. Things weren't fine and both of our kids went through some really rough spots with depression and it was taking its toll on all of us. I began to check-out emotionally. I was physically present and trying to show up for our kids but I was coping by working harder and letting every ranch problem be an emergency that I had to deal with. I wasn't even aware I was doing it. I maintained this optimistic attitude with Mary that was completely unrealistic and dishonest. She

knew and could feel we were all falling apart and was asking for more of me, so I worked harder because I thought that was what more meant.

I completely lost myself in this period. I was a cowboy with lots of experience and a strong work ethic; I was raised to think that was all that mattered and that that was what fixed everything. I was crawling out of my skin because everywhere I looked, I was failing. My kids were really suffering and I had never witnessed or carried the kind of pain they were in. The ranch was not doing well at all, as we had purchased a place that was in way worse shape than we thought and also way harder to physically work. Financially it wasn't making sense. Mary and I had come to an impasse in our marriage and we were talking about divorce, or at least separation. I was anxious and unpredictable and dishonest. I'd say I would be somewhere or do something and then not show up. I had a ranch emergency, which always trumped any other problem someone might be having.

I was hiding in this pattern and it was killing me. I was so angry at everyone. I was having to do all of this work and nobody even cared. I was mad at Mary because she could not see how hard I was trying or working. I was mad at the kids because they were struggling. I was at nearly rock bottom; I'd lost 25 pounds and was back to my high school wrestling weight. I honestly thought I was fine and was just waiting for everyone else to get things figured out so we could get on with our lives. Mary demanded I see a counselor, which made me even more mad because at this point, I thought our marital problems all stemmed from her childhood trauma.

I did find a really good counselor and he helped me start the process of healing from all of the wounds that I didn't even know I had. It was slow because I really didn't think I had any. I thought all of my problems stemmed from everybody else's wounds. Mary and I met with a divorce attorney not long after I started in counseling, and I remember going straight from my counseling appointment to the attorney's office to see how our divorce was going to look. I was shattered. I felt so misunderstood by

Mary and I still could not see my way through a divorce. It was excruciating and I was an emotional mess. We both were. When you are in emotional pain and angry, you are not exactly in a balanced headspace to do combat. You say and do things that hurt and you are being hurt the same way. It's a vicious cycle and I truly don't know how we survived it. For me, it started when I finally started taking responsibility for myself.



Over many counseling sessions, I finally discovered that even though I thought my childhood had been wonderful, the ways that my family members interacted with each other created in me a belief system that told me that I am inadequate. It wasn't mom and dad's fault; it was just what happened to me growing up. I wasn't taught how to feel or listen to emotions as a child. We threw some dirt on it and got to the task. I am grateful for that hardness and I am sad that I didn't learn how to cope with things well. I love the cowboy toughness mentality and how it taught me to see things through, but I just wish I would have been taught another side, a side that would have said, "Hey little man, I know this is really hard and we are asking a lot but you are amazing and we will get through this together. It's okay if you need to cry and I can tell you're mad, why don't we talk about it for five minutes." We simply weren't given the time and I don't think most kids from my generation were. It left me in a bad spot later, when my kids and wife were really needing me to see how much pain they were in and I couldn't because in reality, I was feeling pain, too. I ignored it and distracted myself with work until it nearly cost me everything. In the mental health profession, therapists talk about emotional awareness all the time and I can honestly say it's taken me years of hard work to fully understand the concept, but it has been a huge part in my coming back to myself.

I began to see that I was not being honest with myself and that I needed to learn how to build value from within instead of thinking it comes from performing tasks and working. Unpacking a belief system of inadequacy that I developed and

reinforced for over 45 years has been really hard. I prayed to God and read the Bible, I meditated and went to yoga, and I went to a lot of therapy. I read self-help and marriage books, and Mary and I went to retreats, hungry to heal. When I found myself in an attorney's office talking about a divorce that nobody wanted, I knew I had some choices to make. I could get a divorce and start all over, alone, and continue to work; I knew this would have given some short-term relief. Or I could get some help and try to grow emotionally and spiritually into a person who has a better understanding of himself and therefore sees others more clearly. I am so grateful that I made the choice to grow and see myself more clearly. I now can discern that when someone is in pain, it's not my pain. I can't fix it but I can be present with them. I know if I am in pain that I can be honest with myself and my loved ones and it doesn't mean that I'm weak. It actually means I'm honest and courageous. I still find myself in old habits from time to time and only now I recover quicker and accept that I am still a work in progress. 🌀

**The 988 Suicide & Crisis Lifeline is for everyone.** Through the 988 Lifeline, you have access to free, quality, one-on-one assistance. Whether you're facing mental health struggles, emotional distress, alcohol or drug use concerns, or just need someone to talk to, caring counselors are here for you. **Call or text 9-8-8.**

**The AgriStress Helpline® is a free and confidential crisis and support line that you can call or text 24/7.** The helpline is answered by trained professionals who can offer support and help you find mental health and agriculture-related resources in your area. If you or someone you know is struggling, **call or text 833-897-2474.**



# BLACK

## THE FORGOTTEN COLOR OF FALL

LEVI JOHNSON

When we think of fall, bright yellow, crimson red, and fiery orange typically come to mind. Autumn is a season that evokes closure for some, excitement for others, and dismay for many. Whether it's the celebration of a harvest or the creeping dread of withering crops and shortening days, I believe fall should ultimately symbolize one thing: resilience.

I understand that may seem counterintuitive. After all, this is the season where landscapes turn brittle, where trees shed their canopies, and the soil begins to chill. But beneath all that decay is preparation — a hidden renewal already underway. And while fall is known for its brilliance, I often reflect on its lesser-known hue: black, the color of rich, carbon-loaded soil.

After graduating from Colorado State University in 2022, I moved into a home on an acre of land in northern Colorado. The landlady, a generous and socially-conscious woman, gave me free rein to garden and landscape however I pleased. For a budding soil scientist, it was a dream. I began by crafting a modest Zen garden beneath a mature blue spruce in the front yard, complete with a sitting area and winding paths for reflection.

But the real transformation began that fall, in the backyard, with a plan for a pollinator garden. Pigs had once been used to clear out an infestation of smooth brome grass, a tenacious non-native species. The pigs did their job, leaving behind compacted but nutrient-rich earth, shaped by their wallowing and enriched by their waste.

I chose not to till deeply, just a light loosening of the soil to restore grade and introduce oxygen. This kind of gentle aeration helps preserve soil aggregates — small clumps of particles that create space for air, water, and roots — while also maintaining fungal networks and supporting microbes that break down organic matter and feed plants.

I laid out garden beds using sun-bleached branches from the property, then seeded a mix of annuals and perennials. While some were native and others not (none of them invasives) my guiding thought was that ground cover, even temporary, protects soil and supports structure better than bare earth exposed to wind and weather.

Besides, I reasoned that I needn't bother tilling when deep-rooted perennial plants can do that for me.

To finish, I blanketed the beds with fallen leaves gathered from the yard and charitable neighbors. This leaf litter would break down slowly over winter, boosting organic matter, encouraging microbial activity, and eventually forming a rich humus layer, often called black gold by gardeners.

Fall is arguably the toughest season for gardening. You've harvested, yes, but now must plant again: cover crops, annuals, and perennials. It demands forward thinking. What grew here? What comes next? What will thrive in this rotation or microclimate? Yet, there's hope in that work. For me, fall always brings the thrill of possibility. I couldn't wait to see what would emerge come spring.







What I came to appreciate most about fall, more than the transformation above ground, was the activity still pulsing below the surface. Even as the air cooled and plants began to die back, the soil stayed alive. Beneath those leaf-covered beds, an invisible workforce of microbes, fungi, and invertebrates was hard at work. Earthworms turned the leaf litter into castings, bacteria broke down organic matter, and mycorrhizal fungi formed unseen partnerships with roots, trading nutrients for carbon sugars.

This living network — the soil biota — is what makes soil more than just dirt. It's the engine of soil health, regulating everything from nutrient cycling to disease suppression. Nutrient cycling refers to the way soil organisms break down dead plants, leaves, and organic matter into simpler forms of nutrients that other plants can use, basically like a natural composting system happening constantly beneath our feet. Without it, soils would eventually run out of accessible food for plants.

Autumn offers a final flourish. Organic matter accumulates, the ground holds its warmth, and the soil life rallies in full force. By feeding the soil in fall through mulching, compost, or even leaving plant roots intact after harvest, we're giving this underground community the resources it needs to sustain itself through winter and support new growth come spring.

This isn't just relevant for backyard gardens; it's a foundational concept in agriculture too. Many farmers time their soil prep for the fall, not just to beat spring rains or labor bottlenecks, but because of what fall soil biology can accomplish. When they plant winter wheat, rye, or cover crops like hairy vetch or crimson clover, they're tapping

into this natural system. These crops germinate before the freeze, quietly establish roots, and then go dormant, holding the soil in place and building structure through the coldest months. Come spring, they're already growing, taking advantage of moisture, shading out weeds, and contributing organic matter when turned under or grazed.

Preparing beds in the fall, whether in a backyard or on hundreds of acres, is about more than getting ahead. It's about working with the season, acknowledging that rest and resilience aren't passive states. These are active, living processes that unfold in the cold and dark.



But let us not forget to whom the color of all colors owes its humble origins. Fall may whisper of dormancy, but it shouts in color, and soil, like the season, is no less vibrant when you learn to read it.

Take red soils, for example. In the same way that sugar maples blaze crimson in October, some soils wear their redness with pride. These hues often point to iron oxidation — iron minerals weathered by time and moisture, giving rise to deep, rusty reds and burnt oranges. You'll find these colors in the well-drained uplands of the South and parts of the Colorado Front Range foothills. The presence of hematite or goethite — iron oxides formed through cycles of wetting and drying — is more than aesthetic as it tells a story of climate, drainage, and the soil's ability to breathe.

Then there are the yellows and ochres, echoing the changing cottonwoods along river corridors. Yellow soils tend to form in more consistently moist conditions, where iron is present but less oxidized, often due to a slightly lower pH



or periodic saturation that slows the oxidation process. These soils may occur in alluvial valleys or on north-facing slopes where moisture lingers. They're transitional in nature, hinting at both fertility and instability, depending on how water moves through them.

Brown soils – the earthy, umber tones we associate with tree bark and tilled fields – often indicate a healthy balance of minerals and organic matter. They're the generalists of the soil color spectrum, versatile and adaptable. Their coloration can result from partially decomposed organic residues mixing with silicate clays and iron oxides, which also contribute to their ability to retain moisture. These are the soils that support much of our agriculture: not flashy, not extreme, but full of potential.

But gray or bluish soils, which are often found in low-lying areas where water sits for long periods, are a sign that the ground doesn't drain well. These are known as gleyed soils, and their color comes from the way waterlogged conditions push out oxygen. In places like this, certain microbes that don't need oxygen take over, changing the soil chemistry and removing the natural reddish tones that iron usually imparts. These muted colors are a quiet warning that in these places, water lingers rather than drains, which is an important clue for anyone planting crops or restoring native ecosystems.

And then there's the revered black soil, rich in organic matter, especially humus, which coats soil particles and darkens them like coffee grounds. High in carbon and microbial life, these soils are typically found in cool, semi-humid grassland regions like the prairies of the Midwest or, on a smaller scale, places like the garden beds of the Colorado Front Range. They're often the result of centuries of root and litter turnover, storing not just nutrients but stories of past ecosystems.

What makes all these colors so meaningful is their connection to the soil-forming factors outlined in the discipline known as pedology: climate, organisms, relief, parent material, and time. Soil color is an outward expression of these inward

processes. Just as tree leaves change based on daylight and temperature, soil transforms based on chemistry, biology, and history – not just the present but the legacy of what's been.

These colors don't appear in isolation; they reflect the environments in which soils form. In high-elevation meadows where cool, moist conditions slow down decomposition, soils may appear darker from the buildup of organic matter. In contrast, arid plains often reveal paler, sometimes reddish hues, where calcium carbonate builds up because there isn't enough rain to wash it deep into the ground. This mineral is important. In some cases it can balance the acidity of soils, affect how nutrients move and are stored, and even help the soil hold together better. But too much of it can make it harder for plants to get certain nutrients they need, most notably phosphorus, a key macronutrient. These clues from the environment shape how soil feels, what it can grow, and how much life it can support.

And the life they host is layered. Soil biota – bacteria, fungi, nematodes, and other microfauna – respond to these physical and chemical signals. In darker, carbon-rich soils, microbial diversity tends to be higher, promoting nutrient cycling and structural stability. In poorly drained, low-oxygen zones, certain anaerobic microbes dominate, shifting the balance of processes like nitrogen availability and methane production. The former weakens plant growth while the latter contributes to greenhouse gas emissions that affect us all.

As microbial communities shift, so too do the organisms that feed on them. Meso- and macrofauna like springtails, mites, beetles, and earthworms, depend on healthy microbial populations to break down plant matter and form aggregates that make soils habitable. These


organisms, in turn, aerate the soil, improve infiltration, and transport nutrients upward, linking the micro and macro scales of the soil ecosystem.

And it doesn't stop underground. These shifts ripple upward into the plant community, influencing which species thrive, how resilient they are to drought or disease, and what kind of habitat they offer to pollinators, birds, and mammals. Ultimately, these differences affect us as well, whether we're harvesting a field of grain, walking through a woodland trail, or deciding how best to steward the land. The color of soil – just as the color of fall – is chemistry. The life supported by soils is implicitly connected to the complex web that caused the formation of that soil. Understanding that web brings us closer not only to the land but to the seasons that shape it, and ultimately, our own ability to thrive within the rhythms of nature.

So, when fall rolls around and you see those vivid leaf piles accumulating, remember: it's not just a seasonal spectacle. It's

a mirror of the very ground you walk on.

Red, yellow, brown, and yes, even black – these colors don't end at the treetops. They continue underfoot, where roots anchor, worms tunnel, and fungi form silent symbiotic networks.

And for gardeners and farmers alike, understanding this color palette isn't just poetic, it's practical. It informs what crops will thrive, how to manage water, when to amend, and what a soil might need or already have. Fall preparation, then, becomes an act of translation: interpreting what the soil is saying, responding in kind, and planting with both memory and intention. Because even in the season of dying light, there's a spectrum of life unfolding, quietly, colorfully, and always just beneath the surface. 

**And for gardeners and farmers alike, understanding this color palette isn't just poetic, it's practical. It informs what crops will thrive, how to manage water, when to amend, and what a soil might need or already have.**

# RED CANYON WORKSHOP

RED



**A WIN FOR COLLABORATION**

WORDS BY NINA KATZ  
PHOTOS BY LUCA BERKLEY



# DAY 1

## ARRIVAL & IMMERSION

Another weekend at Red Canyon Reserve (RCR) awaits! No better way to celebrate the end of the work week than packing up my car and zipping down I-25, past signs for the Bosque del Apache as pronghorn antelope prance through the rangelands outside of my window. After a few turns onto bumpy stretches of dirt road, I arrive at the RCR basecamp. Nestled in the eastern foothills of the San Mateo mountains, I quickly set up my tent near a grove of junipers so that I have some time to explore before dinner. I follow the trails to the rim of the canyon and say hello to the alligator junipers I've come to know over the years. All I can hear is the wind and the birds, until I make it back to basecamp, where my fellow volunteers have started to gather for our potluck supper. As the sun sets, we sit around the campfire to eat, meet friends old and new, and go over the plan for tomorrow.





# DAY 2



## **LISTENING & LIVING SYSTEMS**

Coffee and breakfast burritos are served bright and early to begin our full day at RCR. Our longtime volunteers share about the history of the space: in 2003, this 320-acre parcel of high desert in poor rangeland health was donated to Quivira Coalition. Volunteers spent the next twenty years restoring the property, which had poor soil and was overgrazed. It's work that continues today, as our crew gears up to build an erosion control structure using just rocks and manpower, a technique that has been implemented hundreds of times at RCR. These structures are a huge factor in how this space went from dusty and barren to teeming with biodiversity. Our morning volunteer work is part contribution to the legacy of RCR, part take-home-lesson for improving land health on a property of any size, from backyard to cattle ranch.



After lunch and siesta, the day continues with an activity that helps us get even more grounded in this beautiful place. In the past, land artists, geologists, soil scientists, botanists, and more have led lessons and walks through this living laboratory. Today we are joined by ecologists based in Socorro to lead us on a full moon walk through the canyon. The red rock canyon reminds me of the not-too-far-away Gila Wilderness: lush and green with canyon grapes, apache plume, desert spoon, and tall trees protected by the cliff walls. Our guides help us spot owls perched in the rocks above and hummingbird nests built amongst tree branches. We watch bats fly in and out of a cave painted with petroglyphs. We sit in the darkness and silence, bathing in the sounds of owls hooting, sparrows chirping, and coyotes yipping in the distance. We turn our headlamps on to head back to base camp, where a campfire, cold beverages, and the makings of s'mores wait for us.

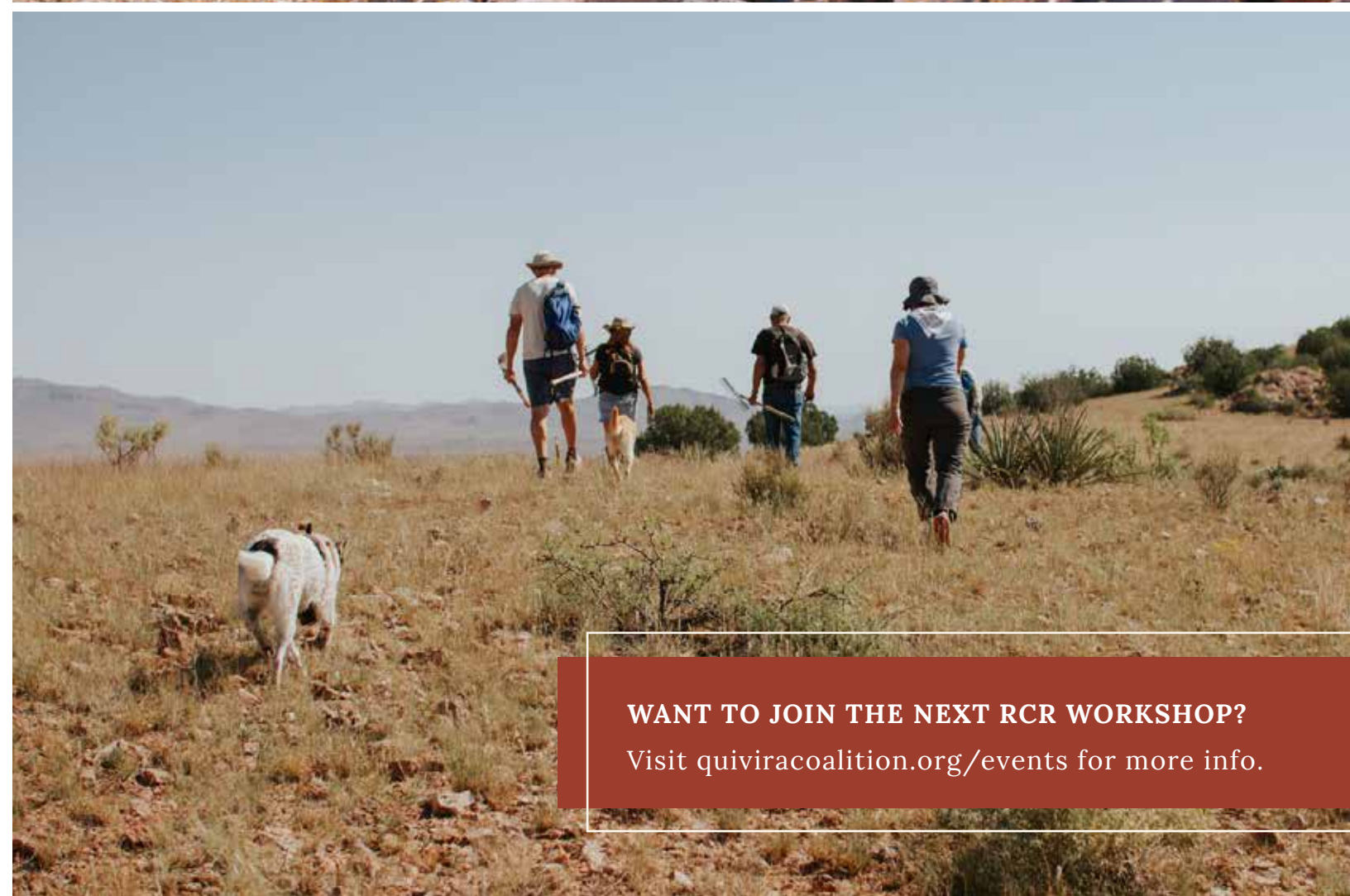


# DAY 3

## REFLECTION & RELATIONSHIPS

Today, I wake up with the sunrise; the sky is a canvas of purple and pink watercolors, seeping into the San Mateo mountains below. After our busy Saturday, we take things slow, sharing breakfast, and reflecting on the weekend before heading out on a plant ID walk. Much appreciation is shared for the chance to build a relationship with this landscape, while building community with each other. It's true that in less than 72-hours of learning, sweating, eating, listening, and adventuring, I feel like we are all one big Red Canyon family. During the plant walk, we learn to identify the difference between a sedge and a grass, come across a rare mammalaria cactus, and ogle at a claret cup in full bloom. It's time to leave, but not before I make a pit stop in the beautifully decorated outhouse. I make an entry into the log book, securing my place in the history of RCR, and hit the road back home to Albuquerque. 🌀





**WANT TO JOIN THE NEXT RCR WORKSHOP?**  
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# SOIL & WATER

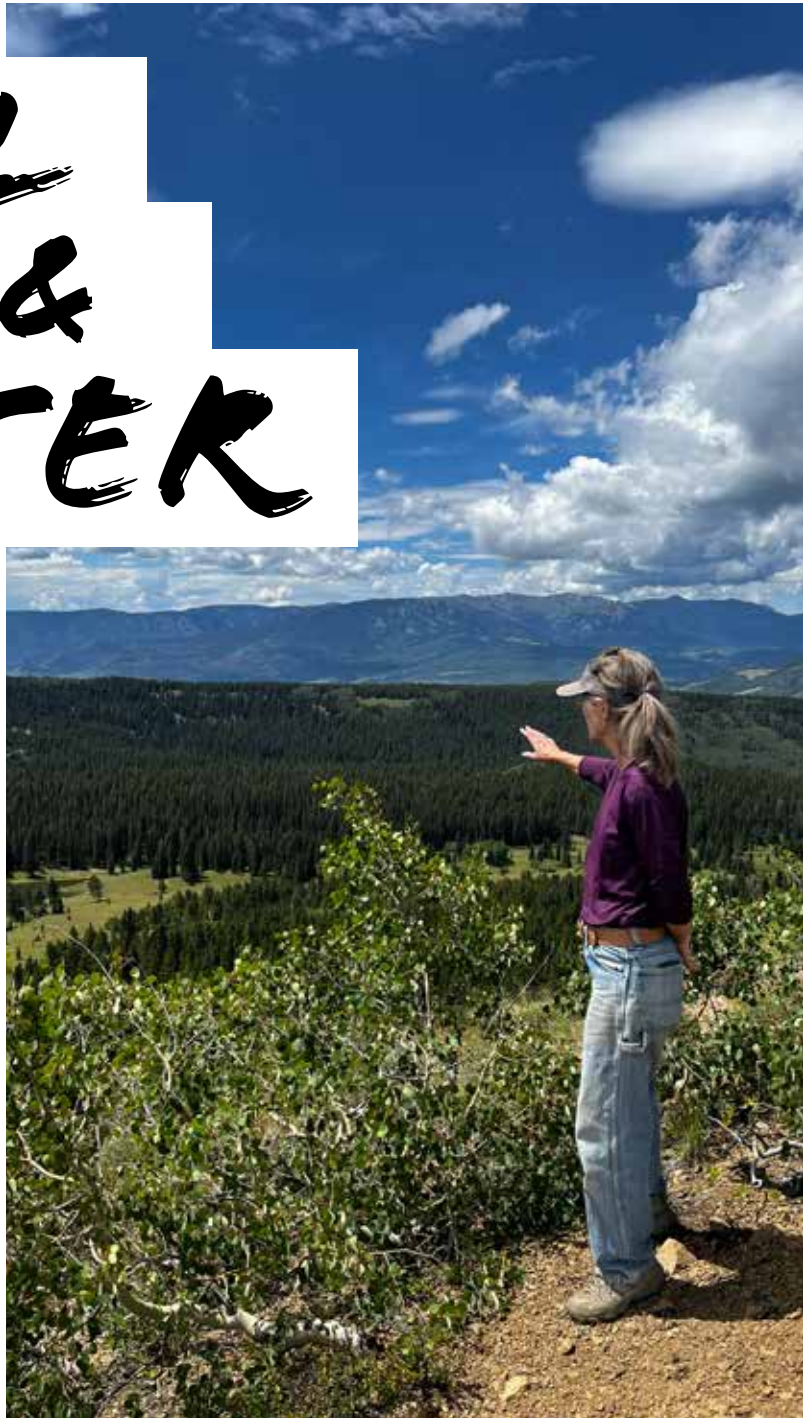
## THE HARVEST OF ADDITIVE CONSERVATION

KARINA PUIKKONEN

WITH PHOTOS BY

GRADY GRISSOM

GUS MARTENS



Thirty years may not seem like a momentous anniversary year, but for the Colorado Cattlemen's Agricultural Land Trust (CCALT), 30 years of service marks one full generation of conservation success. The rewards of this stewardship will be reaped by generations to come, nurtured by the visionaries who first planted the seeds of preservation. In this season of reflection and gratitude, CCALT celebrates a flourishing land ethic: "From One Generation to the Next."

In 1995, Colorado Cattlemen's Association members planted the seeds of a unique land trust model for conserving agricultural land, rooted in the belief that keeping stewards on the land offers exceptional conservation outcomes. Since then, CCALT has partnered with Colorado landowners to place conservation easements on working lands across the state. With more

than 810,000 acres conserved to date, these lands ensure the continuation of open spaces, healthy ecosystems, and vibrant agricultural traditions across the state.

Agricultural producers have long lived by the rhythms of sowing, cultivating, and harvesting with the seasons, adapting and enhancing their lands progressively with each passing generation. Ranchers, while anchored in raising livestock, describe their profession as in “the business of growing grass”; they recognize that the true harvest lies in the health of its soils, its waters, and its diverse ecosystems that sustain their land.

To honor this land ethic, CCALT launched its Additive Conservation Program in 2021 to empower agricultural land stewards and enrich the vitality of their lands, ensuring richer soils, cleaner waters, and a more abundant future. “Agricultural stewards have always known that healthy land is the key to success,” said Brendan Boepple, director of conservation at CCALT. By bridging essential funding with technical expertise, the program enables landowners to nurture the living foundations of their operations, leading to improved soils and thriving local ecosystems.

## DOWN THE RABBIT HOLE

Grady Grissom began his cattle operation on the plains of southeast Colorado in the late 1990s, planting the first seeds of his ranching journey with a focus, like most, on his cattle.

“In the first five years, I would show people my cattle. That is what I wanted to talk about,” Grissom said.

However, while running a cow-calf operation in those early years, Grissom discovered that the roots of success ran deeper than he first realized. In that moment, he realized that his land was not just the setting

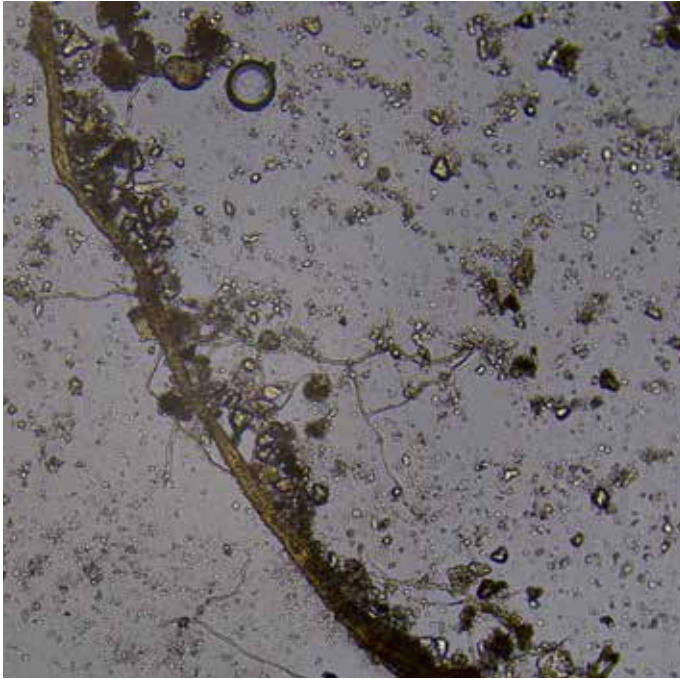
for his cattle but a vital partner in his success. With a growing interest in ecosystem health, he began nurturing both the land and his cattle. This led to a decade of improved cattle health and forage production, which allowed Grissom to increase stocking rates with 95 percent breeding success. For this innovative stewardship, he received the Colorado Leopold Conservation Award in 2017.

Grissom began exploring soil science after a workshop led by Nicole Masters of Integrity Soils, where she highlighted the relationship between soil, ecosystems, and water capture and storage. Inspired by Masters’ workshop, Grissom dove deeper into the subject and, along with several other ranchers, partnered with CCALT in southeast Colorado.

“I’ve gone down a rabbit hole on soil science,” Grissom said.

With support from CCALT and in collaboration with Colorado State University Extension, Grissom learned how to analyze soil data to improve soil health in arid rangelands. “The microscope has helped me figure out what we’ve only been able to see above ground and have always wondered [about],” Grissom said. “The soil food web is broken with too many bacteria and not enough





fungi, so my goal is to capture all the rain that hits the ranch, cycle the minerals and carbon, and get the right fungi back into the system.”

Grissom and fellow ranchers hope their data will reveal how various land practices may impact soil health, help guide management decisions, and generate new knowledge to implement and share with other ranchers.

Grissom doesn't believe he is doing anything extraordinary. He believes that successful ranchers, multi-generational families, and producers who pursue conservation easements operate with a long-term vision for the land. For Grissom, improving land and water resources is a continuation of good ranching practice, sustaining the industry for the generations to come.

## THE LANDSCAPE VISION

Farther west, Wynn and Ryan Martens saw a field of opportunity on a conserved property in Gunnison County's Ohio Creek Valley. As a fifth-generation rancher whose family advocated for significant conservation initiatives in Colorado, Wynn Martens has long been familiar with conservation easements. Wynn's uncle, George B. Beardsley, was a rancher and a founding trustee of Great Outdoors Colorado (GOCO). In that

role, he was integral in securing the Colorado Lottery funding model GOCO utilizes to preserve and improve open space, including private lands conservation throughout the state.

Redden Ranch in the Ohio Creek Valley was conserved by the Redden family and CCALT in 1998 with funding support from GOCO. When the ranch came up for sale a few years ago, Wynn was reminded of her family legacy and childhood ranch in Douglas County. She could see the potential for enhanced landscape-scale conservation along the Ohio Creek Valley.

“This place is classic Colorado. It is one of the state's prettiest mountain valleys, and people who live here seem very connected to preserving it,” Wynn said. “I love it because it's so diverse – hay meadows on the bottom, sagebrush hills on the sides, and snow-capped peaks in the background.”

The Redden family's conservation efforts were well-known in the region. The Martens seized the opportunity to build upon this legacy through regenerative grazing and wetland restoration projects. In 2012, The Nature Conservancy led a restoration project along Ohio Creek to repair eroded stream channels and breathe life back into the upland wet meadows – critical habitat for Gunnison sage grouse – by placing hundreds

of stream restoration structures on surrounding public and private lands, including Redden Ranch. Years later, when touring the land with the same restoration team, they found the water had slowed, allowing it to seep back into the ground, enriching sediment and replenishing the groundwater.

Continuing their efforts in wetland restoration, water infrastructure improvements, adaptive grazing, and soil health initiatives, the Martens are cultivating not only agricultural productivity but vibrant biodiversity. With funding from CCALT's Emery-Wilhelm Family Agricultural Resiliency Fund and the Upper Gunnison River Water Conservancy District, the Martens improved water distribution across the ranch's meadows, ensuring a stronger, more resilient landscape.

"We are implementing a holistic management approach on the ranch. If the soil is healthy, everything else we hope to achieve becomes easier to accomplish," Wynn said. "We're trying to support that system naturally."

Like Grissom, Wynn and Ryan Martens trust the land to guide them, knowing that every observation, every project, every restored meadow is another successful measure for long-term resilience.

## COLLABORATION IS THE KEY

Modern land stewardship thrives in a culture of partnerships and common ground. Private ranches are part of wider ecosystems and watersheds managed by a variety of landowners and organizations. Partnerships and external support are essential ingredients in the stewardship of working lands.

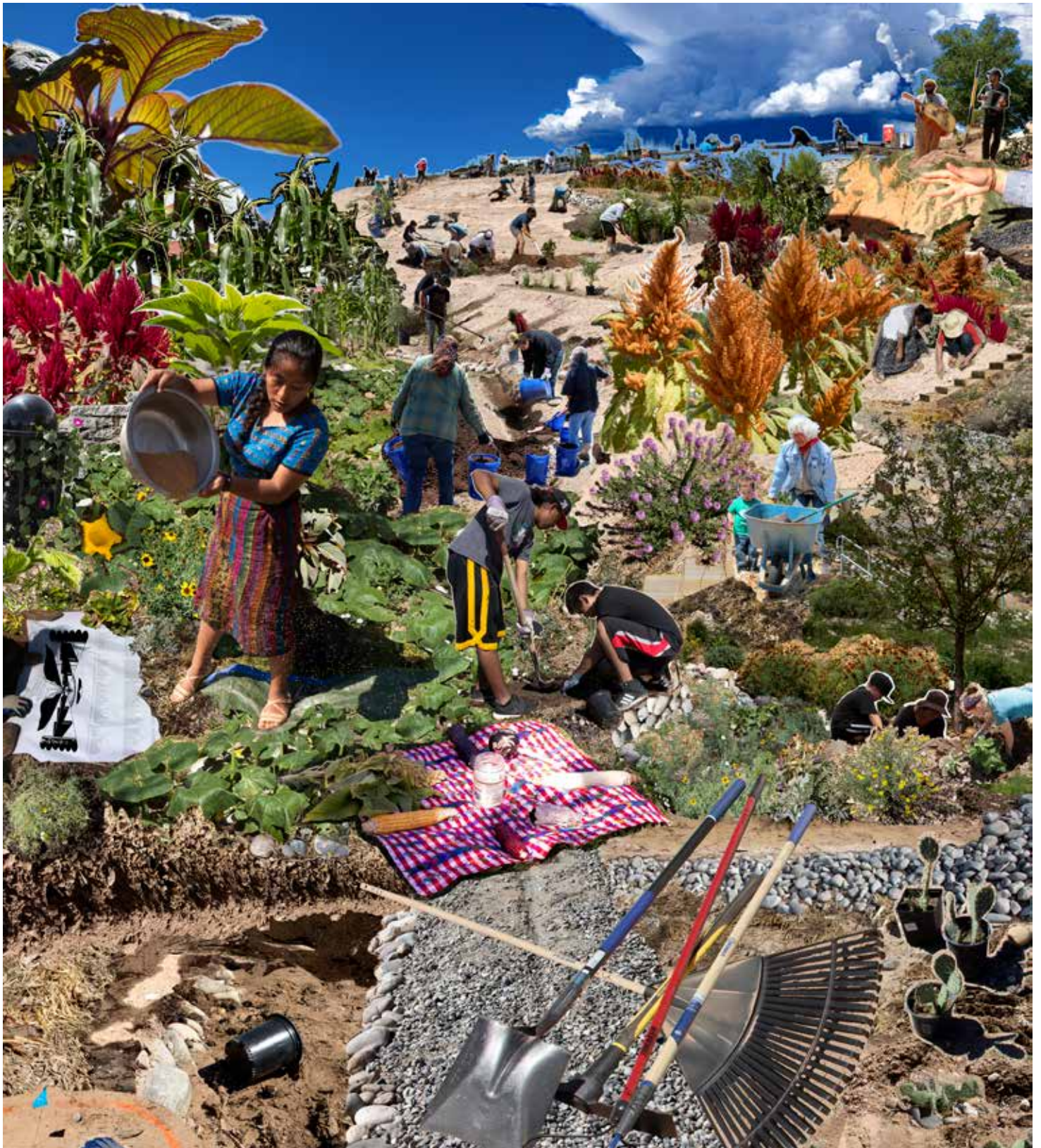
"More partners and collaborations are always good," Wynn said. "Continuing to be dynamic and additive is critical."

For 30 years, CCALT has cultivated conservation in partnership with Colorado's landowners. Today, the Additive Conservation Program continues to help land stewards plant new seeds of resilience, adaptability, and abundance on the lands they care for.

Ranchers like Grissom and the Martens help ensure the picture painted by working lands remains a living, breathing resource for the Centennial State. Looking ahead to the next 30 years, CCALT is honored to continue supporting those who understand that stewardship is not a one-time act, but an ongoing process – season after season, generation after generation. 🌀

**If the soil is healthy, everything else we hope to achieve becomes easier to accomplish.**





# CONVERSING WITH SEEDS

ARTWORK, PHOTOS AND WORDS BY  
RACHEL BORDELEAU, JEANETTE HART-MANN, AND CHRISSIE ORR

What if collaboration was the normal everyday way we interacted with one another? What if we saw it not only as a relational interaction but as a life force for everything we do as individuals and community? How different would our world be right now?

As a New Mexico-grown creative engagement initiative, SeedBroadcast's work is rooted in agri-Culture and is inspired by the story of seeds and community seed action. We believe in collaboration, its messiness, innovation, plurality, strength, and tension between each of us as individuals and our shared vision for eco-social relationships and reciprocity. So we decided to write this piece together.

Much of our seed work has centered on the creative intersection between open pollinated seeds, seed saving/stewardship, open-source resource sharing, and Seed Stories. While story is literally and metaphorically a seed, a seed is fundamentally a story filled with hope, agency, and the potential to become so much more, as well as plants, flowers, food, and seeds – over and over again. Seeds are exponential collaborators:

interdependent, interactive, and interrelated with all of life's ecologies. And so are we.

As caregivers, artists, seed stewards, farmers, and gardeners, we are Jeanette Hart-Mann, Chrissie Orr, and Rachel Bordeleau. When working together as SeedBroadcast, we ask folks to collaborate with us by sharing and broadcasting their Seed Stories. We decided to reflect our intention back on ourselves and ask what stories are emerging right now. In this writing, we each share a Seed Story from our life and creative work with seeds. The messy tension between each of our stories and the collective act of story sharing creates a space where culture emerges.

Stories are culture. We create them and they create us. Each of us shares a Seed Story from our individual lives and yet we amplify each other with a shared commitment to the belief that stories matter. They help us perceive, reflect, dream, and transform our worlds ecologically. This process of collaboration is a foundational ethic of SeedBroadcast and we learned it from seeds. What if we filled our daily lives with the confluence of stories as diverse as the earth that supports us? How different would life be right now?

### **Rachel Bordeleau**

I am a plant-curious person, raised on a perennial nursery in northeastern Wisconsin. Now based in Albuquerque, New Mexico, my creative practice takes root in backyards, sidewalks, cracks, and puddles, where unnoticed seeds sprout stories of place. As a research-based artist and educator, I work in collaboration with native and introduced flora to consider the entanglements and complexities of plant-human relationships.

### **Chrissie Orr**

I am a descendant of the Picts (the painted ones) born to a mother with green fingers. As a creative practitioner, now based in northern New Mexico, I strive to seek and activate relational narratives of connection and caring solidarity. My social sculpture-based life recognises the interconnection between aesthetics and farming, involving diverse communities, the human and more than human to liberate the often buried stories.

### **Jeanette Hart-Mann**

I grew up on a small family farm in Ohi:Yó where we planted hundreds of acres of corn, yet I never remembered seeds until my neighbors in Anton Chico, New Mexico began gifting them to me. This sharing, reciprocity, and ecological care has infected everything I do and has taught me how seeds and people can change the world together. The animacy of seeds and their stories are so relevant today; their struggles and revolutions mirror our own.

# NEW RETURNS

RACHEL BORDELEAU

It is spring as I'm writing, and my neighborhood poppies have just begun to bloom. I spotted the first one on March 31, a welcome pop of color amid the emerging green of spring. She was courageously making a home in a crack on the sidewalk, a preferred habitat in this novel ecosystem some call Albuquerque. These narrow networks of rain gardens are a perfect resting spot for tiny, travelling seeds waiting for the late-fall moisture that ensures their survival. This year's poppies have likely gone to seed by now. Their elongated seedpods dry out, crack or burst, and cast countless, tiny black seeds into the soil.

Poppies know how to hedge their bets, and if their explosive seed dispersal methods aren't met by rain then they will patiently wait in the soil until conditions are right. Conditions have been right since at least 2022, when I started keeping track, and each spring I watch these poppies' range expand across my neighborhood.

These poppies aren't native, and look nothing like the iconic California Poppies and Mexican Golden Poppies that blanket the mountains on the California coast and various ranges in southern New Mexico. These poppies don salmon petals marked by black dots, a high contrast get-up that might beckon certain six-legged visitors in its native range in Northern Caucasus. At best guess, this poppy is a subspecies of *Papaver dubium*, known as *Papaver dubium* var *stevenianum*. And based on citizen-science, it is a newcomer around here, only identified in and around Albuquerque and regions in the countries of Georgia, Russia, and Ukraine. It is remarkable these poppies are here at all, when you consider the journey those seeds must have taken. Perhaps it was a single seed, so inconspicuous that it hitched a transcontinental ride all the way to the Rio



Grande Valley. Or maybe it was more intentional, a seed pod in the pocket of someone leaving their motherland, hoping to remember the beauty of home through the petals of a familiar companion.

A newcomer myself, I've folded these poppies into my sense of place, looking forward to "poppy season" each spring. My three-year-old has never known life without these black-and-red companions and unabatedly delights in their emergence. As the poppies move through their lifecycle, I am reminded through Indigenous wisdom that plants are our teachers. Born to an ornamental horticulturist, I was taught about deadheading rather than seed-saving as a child. Now, a parent myself, I look to the poppy to guide me and my offspring through the life-giving cycle of seeds.

These seed cycles remind me that as climates shift, life remains resilient. As years go by, time traces itself in the poppy's emergence – predictable yet fluid. Poppies are notoriously diverse, presenting themselves in various configurations within a single taxa. I imagine this species running micro experiments to adapt



to their new home: which leaf shape collects moisture best in this dry land? Do four petals, or six, make for better pollination? The answer lies with the seeds – the next generation – quickly adapting after just a few months above ground. Their responsiveness is not just impressive, but imperative, to ensure their return.

I have no doubt the poppies will return on their own accord. I make an effort not to water them so they can adapt to life without me. Yet I still

collect and crack open their seed pods each year, spreading seeds across the yard as a seasonal ritual. This year's drought has been hard on the poppies, and their first moisture was a strange snow after several April days in the high 80s. Most of the poppies in my yard are withering away before they can flower. Yet a small colony thrives near the Russian sage I water weekly. I greet them each morning as they hold their blooms up high, as if to say, we need each other.



## WE ARE YOU.

JEANETTE HART-MANN


We were awake in there for so long that it felt like being buried alive. He called it a morgue, but we think he was joking. We were not sure since we had never been in a morgue. It was dark, cool, dry, and kind of lonely. We were there for years or maybe decades. Perhaps it was a century? It's hard to remember in such an absence, removed from our sense of place.

Many of us disappeared, selected for a big mission named Hi-Bred for someone called Pioneer. The disappeared ones never came back and we wondered what happened to them. But others came back instead. They were identical-identicals nearly indistinguishable in every way – shape, size, color – and even in ways we could not quite tell. We asked if they had seen us out there and they told us the same thing in the same monotonous

voice, over and over. “I am hybrid pioneer – modification patented, replicable, capital growth – I march onward row by row and field by field – controlled uniform simplicity – I populate and make it great.”

It was uncanny, really weird, and kind of arrogant. So, we decided to just ignore them.

Since we had so much time on our hands, we started dreaming of home. We were born in the great river country called Ohi:Yó. It was filled with life and abundance – plants, animals, soils, insects, clouds, birds, rivers, trees, and people. Vibrancy bloomed through diversity. It was a sensical flourishing of complexity drawing together love and interdependence. With the incantation of these stories, it was strange being in such an



empty and lifeless place. In every memory shared, we noticed how different it was from the solitary marching orders of the identical-identicals, which kind of terrified us. What was it really like out there now? But the identical-identicals started gathering around too, listening, and dreaming with us.

It was hard to breathe inside our sealed vessels. We tried to hold still, but some of us died waiting for what seemed like the end of eternity. Occasionally one or another of us would stretch our senses outwards, seeking the feel of warm-wetness to entice our radicle into prying us back to our soil-born freedom.

He was an agronomist from Ohio:Yó State University. When the big storm came, he knew it was true and that climate was his history's undoing. Noticing us locked up in the morgue,

he thought that we might know what to do. He thought we might remember how to grow, adapt, and survive in the chaos of the present and future. He asked, "Can you help us learn how to live and thrive again?" We shared an understanding that life can never be lonely when we are together. So, he bundled us up and took us home.

We are happy to be botanical monsters with you because we need you as much as you need us. We plant and grow together, tend each other, harvest and feast together. We are emergence, as radicle becomes root, leaves unfurl up and up, one by one by 16 or more into tassels shed of pollen. Our ears are born with strands of sticky silk to capture each other's love. We blister fat with nourishment into milk, dough, and dent. You care for us, eat us, and bury us alive in the soil once more. We are you. We are corn.



# BREATH IN BREATH OUT

CHRISSIE ORR



Breathe in oxygen, breathe out carbon dioxide, breathe in carbon dioxide, breathe out oxygen, respiration, reciprocity. We are interconnected, plants and humans braided together, seed to seed, reliant on one another. The Mayans believe we arose from the corn mother; we are plants.

I have a distant memory: I am under the huge, dappled leaves of my mother's rhubarb plants, curled up like a seed on the moist, dark Scottish soil. The variegated canopy above me is my protection, branching ribs, lifelines, conducting minerals to where they need to be. Another world, my refuge where my overactive imagination can run wild, uncontained. The plants and I breathe our collective story. And what a cyclical story it is. To be told and retold.

A recent memory: I hold out my desert-parched hand, fingers bent towards the palm, a hollow formed between the fleshy part of my thumb and

my fingers, the lifeline wrinkled, what fortune to be told. Someone I just met carefully pours seeds into the hollow. I feel their presence touch my skin; their beauty touches my heart. A soft voice: "Protect them, nourish them and they will nourish you, these are a precious gift, what will you gift back?" A resilient agreement made there on that New Mexican land, not to be forgotten, to be held in reverence to impact how I move through life, one careful step at a time.

And so it began: that special handful of seeds were planted, tended, and watered from the meandering acequia. When they got too crowded, I cleared space for them so they could reach their full potential, became saddened when the waters dried up awaiting the monsoons, and chased away the demolishing herds of grasshoppers. I soaked in their seed mystery and hoped they would survive the dry, hot summer.



They did and I now have been growing these seeds for over twelve years. Every year I carefully select and save some to share them with the same clear voice: “Protect them, nourish them and they will nourish you, these are a precious gift, what will you gift back?”

They have nourished me in more ways than I could have imagined. Since that auspicious moment, many more seeds have graced the palm of my hand. They, too, have been tenderly planted, adapting to their new terrain, and now are carefully arranged in glass jars on hand-sanded wooden shelves or hung in the rafters of the root cellar awaiting to be planted again and again. Continuing their unfaltering story into the future.

These ingenious seeds have disrupted my being, shaken it loose, turned it inside out to recreate and to regenerate. To delve into the breath

of inspiration (from the Latin verb spirare, to breathe) my creative process challenged. Five years of fine art college, becoming a mother, grandmother, and seed steward. My art not fine, not that European colonial art, no more. Now it is dutifully tending and caring for a truer value guided by attentive listening to the plant and seed teachings. While drawing the unique aspects of the seeds, they draw me into the seed of an idea. While digging the hard packed earth, a worm appears, my tongue twists, a new language emerges. A collaboration, the best kind, one with a tension of diversity, of sharp edges to challenge the authenticity, the moral authorship, the expansion of the story. To create symbiotic beauty, beautiful trouble, to stir, to render anew from the dark to light. We sprout from our roots a new reciprocal language broadcasting seed syllables on common ground. ☯

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