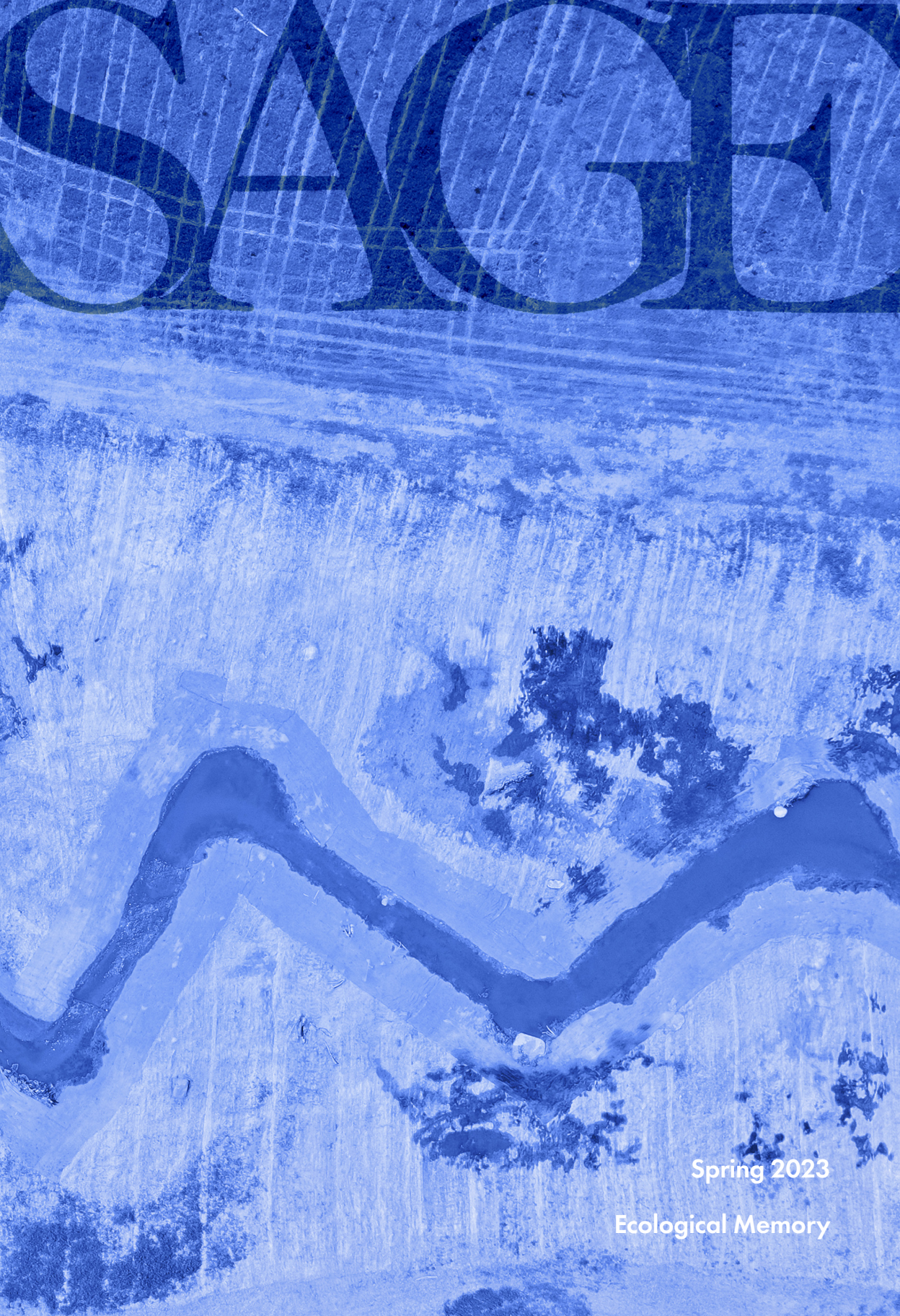


# SAGE

An aerial photograph of a winding river, likely the Colorado River, flowing through a dry, hilly landscape. The entire image is rendered in a monochromatic blue color scheme. The river is dark blue, contrasting with the lighter blue of the surrounding land. The hills are characterized by a grid-like pattern of ridges and valleys. The overall texture is grainy, suggesting a high-resolution aerial shot.

Spring 2023

Ecological Memory



SAGE  
A Student Publication of the Yale  
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Ecological Memory  
Spring 2023

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Image credit: 2017 USGS PAMAP LiDAR



**T**he loss of memory can be devastating. Last year, SAGE published our first print magazine since 2020. It was a massive undertaking, clouded by uncertainty. The one-year hiatus had halted the transfer of institutional memory. Our team had to rebuild SAGE nearly from scratch. This year, we've carried that momentum with us, patchworking together what we know about SAGE's past with our hopes for the future. We recommitted to working with student designers, to embrace our identity as a student publication. SAGE is back on track. We owe this resilience to our incredible team, and to the many SAGE editors who came before us.

This year, we put out a call for pieces that looked to the past for insight on the present and inspiration for the future. The pieces in this magazine illustrate the ways memory is found beyond an individual's recollections. After all, memory — at both the human and ecosystem scale — is selective. Death and genocide rob us of shared and sacred stories. The geologic record is incomplete.

The cover image of this magazine shows a Pennsylvania stream in a state of partial restoration. Scientific research revealed that a wetland had persisted for thousands of years at the site before it was buried in recent centuries by sediment eroded and deposited through human land use. The image shows a newly-engineered stream channel after this anthropogenic sediment was removed with heavy machinery. This "floodplain restoration" is an attempt to erase what we've determined to be harmful to reclaim something valuable that we've lost. But change is the only constant in nature. We cannot resurrect the past exactly as it was. Remnant landforms and legacy species will persist and influence the future. Others will be lost — forgotten, in an ecological sense.

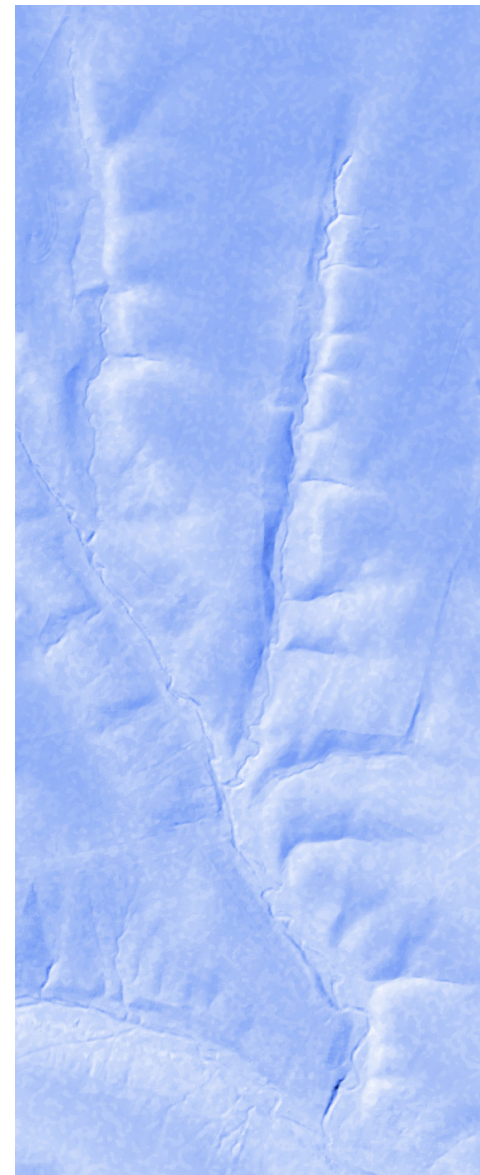
In 1992, Judit Padisak defined ecological memory as 'the capacity of past states or experiences to influence present or future responses of the community.' This

definition can be interpreted many ways, and it has across scientific disciplines. The utility of the concept is what we make of it — much like our relationship to the past.

The contributors to this magazine bring us from backyard rocks to blazing forests. From bird brains to the blood pumping through our veins. These stories explore the decisions, or random happenings, that have created the world we know today.

We must appreciate the ways the past has shaped our present before we can envision a future. Storytelling preserves memory. We hope publishing these stories saves them from evaporating into the passage of time. As you read these pages, allow yourself to reflect, recover, discover something new. Thank you to our editing team, the designers, and above all, the artists and authors who daringly shared your work with the world. For our part as Editors, we won't forget what it's meant to us!

Sam Feibel and Shaylyn Austin  
SAGE Magazine Co-Editors in Chief





## Into Sea

By Zack Steigerwald Schnall

Cliff crumbles into sea,  
god's sandcastle  
worn away by rising tides.

Ebb and flow separate the days  
from the months and the years,  
and the time before time  
from the time after.

Seagulls soar above,  
circling as if in wait  
for waves to weave together  
home from silt and sludge.

Storm clouds orchestrate  
an undulating crescendo,  
tugging stone from sand  
into watery depths.

Rainfall gathers  
beach balls into sandy vans,  
as hikers in the distance  
consider another path.

A furtive glance back to civilization  
spells doom —  
photographer loses his shot.

Coastal lagoon  
Photo by  
Sam Feibel





## Aegean Specter

By Athena Sofides

My body leaks tears,  
from each duct a small explosion of ink,  
until my self is slick  
and my every imprint writes a story.  
My cells respire, blood flows, but I am not really here —  
I am hidden, waiting to be uncovered.  
Your words clank against my skin and bone,  
and I see into your eyes and blink,  
undeterred but undone.

Looking in the mirror, I am lost in the seas that  
form in my crevices.  
I yearn for the pool from which my people crawled,  
a bodied water of cold, salt, and scales,  
pebble beaches and αχινούς\*,  
where I may rest my body in the sea and  
let them, my-self, re-member and  
imagine what would happen if the animals understood.

Traveling through memory means  
unwinding time and place.  
I leave my-self bound in diaspora.

I pick my-self up on the way back from the Aegean  
and take them home.  
But along the way, I have left a piece  
in the sea, communing with the fish.  
In both depositing and recollecting, I'm  
at all times nowhere and almost everywhere.

Me and the fish and the animals,  
I hope their tentacles ascend from beneath  
the metronome of the waves and the gentle curls of the kelp  
wrap around my wrists and ankles and chest  
and bring me to the floor  
just for a minute  
because you can't tether what's immaterial.

\*Greek for sea urchins



## Conley Street

Poem and Artwork By Jess Jones

Is it worth the time to learn their names?  
They will leave us all the same.  
The robin, flicker, mourning dove I love—  
How much time do they have in the warming skies above?

But it is not of birds I wish to speak,  
Rather a people, the color deep.

Music takes flight almost every night.  
Barbecues and nieces!  
No homeowners, just leases.  
Motown's soul to take your blues away,  
'Patron on ice' when you want them to stay.

Go to the church built by the children of slaves,  
Now red oak bursts through the unkept graves.

New neighbors coming in, the crest of a wave.  
This'll be all cleared out, the Atlanta way.

time seems indifferent to our stay...

yet—  
Keisha,  
L.C.,  
Tony,

I know your names.





## Sunday School in the Anthropocene

By Luke Scott Stringer

Two by two, then one  
at a time we extinguish them.

Not the fires, which consume  
the homes we heated and cooled.

Not the cars, careening us  
past need for future tense.

Three billion birds dead. Two thirds  
of all wildlife razed in one half century.

As a child, the story: a flood  
for our sins. Now our heat and greed

render creation creatureless.  
Heedless of flood, we feed the pyre.

What ark was it  
we thought would save us?

Photo by Sam Feibel



## Melting

By Bianca Jensen

Thoughts drifting, I sat on my couch drinking tea, peering out at the view from my new apartment. My thoughts floated back to what I had wanted for myself now, and a specific conversation: this is exactly it, all I had said that I wanted. My window overlooks a field encased by mountains in the distance, barely containing the expansive sky. I wake up in the morning every day to a crisp sheet of snow muffling the city noise and at night the sky swells with stars. There's somebody I wish I could show it to.

I saw a single snowflake fall and it stuck right onto the mesh frame encasing my window. It was the most perfect, intricate symmetry forged high above me in the atmosphere. In an elegant fractal pattern, I imagined you could dive into each edge deeper and deeper to find an infinity of these designs, melting. Snow has always intrigued me, each flake uniquely its own.

I lost a friend last March, and so I've been finding myself lost in thoughts a lot that I have trouble untangling. I'm left with open-ended questions and doubt. An event like that makes you think about how fragile everything beautiful in this world is, how temporary even the most wild lives can be. It makes you realize the content has no effect on the end: we're falling like snowflakes.

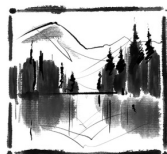
It was absolutely dumping snow the morning I found out. I had decided to take the day off and get a hot chocolate so I could watch the snow drifting down from a café window near campus. I thought of him in passing as I walked there, slippers kicking up flurries of fresh and strangely dry snow that pooled around my feet like dead leaves in the fall. Only a few minutes later I saw the news. It hit me gently like a wall of snow: it was delayed, slow, quiet, but it felt like enough to bury someone alive. Now that I understand the value of a human life, which I guess comes with losing someone you love, I started to wonder what the value is to oneself.



When you go, you leave a gaping hole in somebody's life. Probably a lot of somebodies. But it doesn't really matter to you, you're dead. It's like it never happened. Did it matter at all? I felt silly thinking these intense brooding thoughts over the sight of the snowflake still gripping onto the thin threshold between us. He would probably laugh, big and booming, and tell me that all this environmentalism has gone to my head. His optimistic outlook remained consistent and unwavering. As the little snowflake continued to melt, I wondered: does it matter how intricate and beautiful the fractal patterns of snowflakes are? They spend their whole existence falling to their fate or melting halfway. In a way, human life is this fragile and this intricate.

But perhaps, time is relative to snowflakes. Maybe that fall is a thousand years to them, enough time to fall in love, to say everything that should've been said, to climb the mountain we had planned to do someday. I've wondered about this a lot. The way we perceive time has such an impact on not only how we live our lives but also how we place ourselves within our greater understanding of nature. In the grand span of time, which daunts me more and more the closer I come to understanding my place in it, the existence of our entire global culture on this planet is nothing but a melting snowflake, falling fast to the ground.

Ecology has a way of making you feel small like that.



But we still matter to each other, so, does that matter? The patterns on the snowflake meant something to me, even though I was the only person in the entire world to see the tiny miracle unfold. There really is no way to describe the magic of moments like this in nature to somebody who hasn't experienced one. It's like an ineffable secret between you and your creator, nature, who hears every tree fall in the woods and knows every snowflake drifting because she created them, and someday she will take them all back. No matter how long I peered into it I could never understand the depth of the dynamic changing patterns in time to know this snowflake, an imprint on the most infinitesimal changes of atmospheric pressure, like a mirror or a polaroid photo developing before my eyes of where they told me he would be now. Snowflakes are a reflection of the sky, and the uniqueness of each snowflake comes from its journey down.

It's something like the best kept secrets in a human soul.

After we're gone, will the snowflakes keep falling? Should I care if they do? Is such temporary beauty actually a kind of intrinsic worth? Someday the sun will engulf this world, even if I stopped ocean acidification in its tracks, even if I had told him I loved him, even if we all stopped driving cars and we don't even take showers anymore, maybe this planet never belonged to us to save.

Someday all the snow will be rivers and the mountains we train our whole lives to scale will melt back into the magma sea. Nature will reclaim my favorite places, and his favorites too. Every rock face he climbed, every dirt road he followed, and even the entire states we moved apart to will melt together and become something new. Should I run around catching snowflakes and keeping them in my icebox so that I can hang on forever? Perhaps we're nothing but an epic snowstorm on this planet that archaeologists of a new species will find someday. Will they see the intrinsic worth in our delicate lives? Will it matter to them that I, yes, me; I tried to save them all? Or perhaps they would think that's a pretty sad waste of time, when all you get is a few seconds of plummeting, what good is flapping your arms? If I hadn't left home to try and save the world, maybe I could've saved him.

I stayed lost in my drifting thoughts for a moment too long, and the snowflake melted, along with all the answers it held.

## Ammonite

By Riley Erlandson

**T**he rock pile lives at the rift between a tilled field and an old cattle yard. It's ten feet wide, 50 feet long, and the rocks stack up to about four feet high. Most of the rocks were unearthed by plows and picked from the open field by my family — my dad, his sisters and brothers, and his father, uncles, and cousins, all raised on the family farm in north central Minnesota over the past century. At first glance, the mound seems to be a haphazard array of waste; a dumping ground for machinery-breaking nuisance stones. But the longer I spend with it, the more I suspect it was arranged quite intentionally by the Erlandsons before me.

Both ends of the long, oval pile are composed of smaller rocks — rubble, not climbable. Two meter-long cement squares form a ramp up to the top. The crest of the pile is a flat spine, a trail of stones wide enough to sit cross-legged on. Medium-sized and lumpy stones scaffold the sides. The rock pile is solid. My brother, cousins, and I would clamber around it for hours in our youth. As we climbed, outer stones would shift or even clatter to the bottom. But we knew that the crest of the pile was stable. We could sit, climb, and jump on the rocks without fear of falling. They would not move. And at the rock pile's center — unknowable mystery, cool, dark, and unshifted for decades.

I climb the pile and perch on my favorite flat stone, my back facing the farm. The tilled field stretches before me until it meets the swampy reeds and cattails of the waterfowl preserve that covers miles, scored with a grid of gravel roads. To the left is Aastad church, where we worship on Sundays — a white-walled, gray-roofed, perfect figurine. The church is nestled in concentric squares devised by the order-craving settlers who cut up this land: first a cemetery, many of its inhabitants my ancestors; then a border of towering, emerald conifers; then wetland. Across the road from Aastad it's mostly flat fields bordered by unnaturally straight lines of trees, farmer-planted windbreaks. To the right, the tilled fields gently swell and fall like ocean waves to the open horizon. I take in the view for a time before turning my eyes back to the pile.

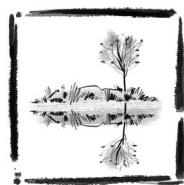


Illustration by  
Riley Erlandson



The rocks are every shade of earth-tone — bone-white, blushing pink, purple-salmon, caramel, coffee-brown, or marbled in every hue of gray from bluish slate to charcoal. Some stones are smooth as if river-polished, some chalky. Others are stippled, have coarse, granite-like bumps, or rough scars and fissures. Perched on this grand, heterogeneous collection, it's difficult to believe they were all pulled from this dusty gray-brown field. It seems more like a collection of riches to be marveled over at a museum.

The pile is alive, too — many stones are fuzzed over with moss and lichen. Grasses, even saplings, peek their way through the margins. Snakes and mice flit around, making homes in holes and crevices, leaving shed skins and tufts of fur. Two birdhouses stand sentinel at each end, stuffed full of grass and straw to house baby sparrows or the occasional bluebird. Wasps buzz around one end or the other, their hives buried out of sight.



If you're patient and willing to shift rocks, you can find other treasures in the rock pile. Some are signs of the people who lived here before — rusted flakes of metal, clay pigeon fragments, a palm-sized triangular stone indented like an arrowhead, a hammerhead crafted and used by the Anishinaabe or Mdewakanton peoples who lived here for millennia before the U.S. government parceled out their land to Norwegian settlers with the name Erlandson. And, rarely, you can find fossils. One rock holds a curled-up snakeskin indent, the impression of each grooved scale perfectly preserved. We found another while searching for pretty rocks to border my aunt's garden. It was sitting face-up on the edge as though someone placed it there, but none of us remember doing so. It's a chipped, weathered, yet perfect Fibonacci spiral. We think it may be an ammonite fossil, though it has no visible grooves, just a smooth swirl turning counterclockwise, inward and inward.

Sitting here with the rock pile turns me inward like the fossil. Perched on the pile's sun-warmed spine, my thumb tracing the ammonite's ancient swirl, my mind casts backward. First to my childhood. I spent dozens of hours here with my brother and cousins, searching for treasures, making little caves, grinding and chipping sharp-edged fragments to make 'knives.' We'd use these to cut wild grasses whose seeds we'd then grind into 'flour' between a heavy, curved rock and a smooth, flat one. Further into the

spiral, I turn to my dad's childhood. I see the chunk of cement into which his sister carved "June 25, 1977" when it was fresh-poured. I consider the hours they spent loading trailers with these rocks and dumping them here; did they play too, or were they sickened by rocks at the end of a day of bending and picking them from the soil? Spiraling further, before the stones were picked up, some must have peeked over the soil while the rest were hidden underground. They nestled in rich, black loam. The soil was covered with grass and aspens on a gentle hill down to mallard-teeming wetland. The rocks were stepped over, grasped, shaped, discarded by the people who resided and traveled here.

The spiral turns further and further inward. How many thousands of non-human beings saw these rocks, passed over them, rested on their sun-warmed surfaces? Perhaps their species and even taxonomic families are long extinct, their bones dust in the soil that now nourishes the soybeans. Earlier than that, these rocks were ground up by glaciers, colossal frozen rivers. And turning back more, swirling toward the center, an ocean covered these stones once. Its salty brine teemed with microbial and marine life, species even more alien and far-removed from me, including the ammonite that nestled into sediment and left the impression my fingers trace now, the minerals solidifying and forming the rocks themselves. Turning faster, the spiral shrinking; a volcanic, churning Earth with the molten atoms that cooled into the earliest forms of rock, the meteor collisions that deposited their base elements, Earth itself an inchoate mass, and before that, at the center —

This pile of rocks is the best place I know to watch the heavens open up above the Earth. I recline and watch the colossal clouds drift under an aching blue summer sky. The sunset is painted in shades of gold, rose, lilac, and tangerine. The night sky — uninterrupted by buildings, trees, or mountains; its veil seems close enough to touch — yawning above me. The brilliant planets dimming the multitude of stars, the Milky Way's arc a paintbrush spatter, glittering faintly emerald and indigo in the night's darkest moments. The blackness beyond soft, smoky. The distance and the years that stretch between my eyes and those faintest stars, perhaps long dead like the ancestors and ammonites that lie here before me, feel small.

## Looking Out For Your Neighbor

Story and Photos By Isaac Merson



Artwork by  
Mark Millicent

A silver moon hangs low and heavy in the sky. Oaks ring the road through East Rock Park like dark candelabras. Small beings move on silent wings through the branches and the understory, calling softly in the fading light: "I'm here" or "I'm going there" or "come with me?" They scoop the wind and catch it, slip through cracks in the sky and fall gracefully into arcing flights. Hidden in the folds of shadow, they seek their meals in safety, or so they might think.

A Screech Owl wings in from the south in the cool dusk. The owl is hungry, hunting by ear, listening for its dinner. She lands in delicate silence on a bare oak branch.

But someone was paying attention: as the owl lands, the forest explodes into motion. First one, then many Mourning Doves scatter with high fluttering whistles, chickadees ring out their dee-dee-dees, sparrows dive for cover in the low bushes, nuthatches crane their necks and cry out. Blue Jays arrive in a ragged pack, puffing their chests as they land.

Forming ranks, the small forest birds line the twisted branches, eyes darting, calling out, bodies alive with fear. The owl is observed by dozens of watchful eyes. There will be no easy hunting here. The owl has run into an age-old problem: a well-coordinated opposition.

Flocks of small birds respond to the threat of quick, silent predators like Screech Owls by feeding and roosting in bands of mixed species. Many birds feeding together, often at dusk or dawn, means each bird can spend less time watching for predators and more time enjoying its grub. In a wide band across the northern forests of North America, from Newfoundland to the Aleutians, these flocks take their cues from two expert conductors of alarm: the Chickadee and the Mourning Dove.





Black-Throated Blue Warbler

The fluttering whistle you hear when a Mourning Dove takes flight comes not from their melodious voice, but from specially-adapted wing feathers that shape the wind as it passes over them. Somehow, Mourning Doves with this trait survived the long march of evolutionary time, and those without it did not.

Isolating the reason why is challenging, but one hypothesis is that these whistling wings serve as an early warning system to kickstart the “mobbing” response.

Scientists researching an Australian relative of the Mourning Dove have shown that there’s a significant difference between the sound created when a relaxed dove takes flight and the high loud whistle created when doves scatter in fear from a predator such as a hawk.

Like a blaring car alarm, the loud whistle wakes up the whole neighborhood: other birds hear the sound of the dove’s takeoff, and respond with the appropriate level of panic.

In North America, research on mixed-species flocks has shown that when a chickadee makes its “Danger” call, a buzzing chicka dee-dee-dee, the number of dees



Parula



Piping Plover and newborn chick

actually responds to the level of threat the bird perceives. A minor threat to small fast-flying birds, like a rodent-eating Red-tailed Hawk, may only elicit an abbreviated chicka dee-dee. But if you hear an extended trill of four or more, that means a bird-eating predator like a Cooper’s Hawk or Screech Owl is near. Other birds are listening closely to the differing levels of fear, and respond either by going along with their business, or by calling out a battle cry and joining the mob.



When small birds make a ruckus, they can attract even larger predators of their predator, or a gang of corvids like crows or jays who work together to drive off the offender. Each bird is making its own decision, weighing the options, judging the risk of making themselves visible versus the risk of staying hidden with no idea where the predator is. In breeding season, they might be brave parents stepping boldly out to protect their children, or to draw a predator away from the nest.

All this suggests that birds navigate a complicated web of decision making, weighing risks to determine whether they should act to protect their community or choose to stay selfishly silent. It suggests that songbirds have an awareness of one another, and communicate in a shared language. This is a community built on shared interests in a dangerous world. Pausing as we pass beneath a grove of trees, we can listen in.

Globally, bird populations are in steep decline. Since 1970, three in every ten North American birds have disappeared. Is this a different sort of alarm call we can understand?

There are shared dangers which affect us too: climate change, broad-scale



Pileated Woodpecker



Wood Thrush

pesticide use, the grinding machinery of land development, dispossession of people, and species transplantation associated with global capitalism. Rippling effects in the food system and the air we breathe. Historically marginalized communities face the brunt of these dangers in the continuing saga of colonialism. What will our response be? How can we show up for the human and more-than-human community the way a nuthatch shows up for a chickadee?

We do not know what flies through the minds of these birds, whether it is possible for these hollow-boned beings to feel joy, or fear, or love as we do. But we do know behind those double-lidded eyes, bright and black, there is a mind. In the chest, expelling song, there is a spirit.



Red-winged Blackbird



## Forged Art in the Panhandle

By Kalle Fox

**Y**ou might have heard of the 1998 movie “The Truman Show,” starring Jim Carrey and directed by Peter Weir. The plot was fairly original for its time: a man’s life was secretly filmed twenty-four hours, seven days a week, for thirty years, with everyone around him playing designated roles as friends, family, colleagues, and strangers. The protagonist, Truman Burbank (played by Carrey), starts noticing oddities in his environment as he longs to leave the place where he spent his entire life. The movie unfolds as he grapples with these feelings as everyone around him — in order to keep him contained — attempts to convince him nothing is wrong.

The place he yearns to leave is a beautiful beach town called Sea Haven. In reality, Sea Haven is not actually a beach town, but a giant dome-like set design, constructed solely for the purpose of filming Truman’s life and broadcasting it to a global audience.

In reality — nonfiction reality — the movie was filmed in Seaside, a small beach town community in the Florida Panhandle along the Emerald coast, nestled between protected dunes, sand pine forests, and coastal lakes.

Reality aside, Sea Haven and Seaside hold comparable atmospheres. Monochromatic houses brighten up the neighborhoods with varying colors — off-white, buttercream yellow, turquoise, sea foam green, robin’s egg blue. Single family houses are tightly compacted along the brick-laden streets, the limited yard space of each landscaped with dead pine needles, holly shrub, and oaks. Each house comes with a name painted in blue across a white picket fence along with the names of its owners, their kids, and sometimes even their pets. Neighbors and local vendors are on a first-name basis with one another.

There is, however, a key distinction between the fake Sea Haven and real beach towns like Seaside. Sea Haven, by design, doesn’t change at all in the thirty years of the Truman Show’s runtime. By contrast, Seaside, a victim of its own land planning success, had to make some adjustments in set design since its inception. Over time, the 80-acre haven was uncovered by the masses, and while Truman was determined to escape his environment, members of the rich white Southern demographic were desperate to stake their claim in privatized paradise. My parents got their piece in 1994, and there’s even a scene in the movie where I can pinpoint our house on Tupelo Street.

Nowadays, every time I return to the beach town of my childhood, something is always different.

Certain features do remain intact, such as the demographic of white southern elites characterized by polished summer attire and the twang in their accents. Seemingly timeless businesses like Modica Market and Sundog Bookstore still stand, though the former’s founder, Charles Modica, passed in the early 2010s, and his kids who still run it are now graying in their hair.

Once upon a time, however, entrances to the beach along the Emerald Coast weren’t marked by signs that say “private beach.” The pavilion entrances, once easily accessible on each street, now have gates with a keypad, restricting entrance even to homeowners unless they’re given the entry code. An attendant stands at the pavilion during daytime hours and asks to see your wristband indicating whether you’re homeowner or guest.

Those who’ve had houses in Seaside for twenty-plus years now complain of this incremental transformation of their no-longer hidden gem. So even the beneficiaries of gentrification, myself included, have their struggles too.



It’s not just Seaside. Seaside is merely patient zero of an entire county road that has continued developing. Drive through the two-lane road of 30A today, and you will see sleek plazas that weren’t there five years ago. Alongside them are cleared patches of former pine forests where John Deeres idle between hours of

construction-slash-destruction.

If, one day, the entire Emerald coast is paved over entirely in the name of simple living, at least the Florida State Parks save some fraction of ecologically intact landscapes in the region. For now, there are a surprising amount of pine forests across central and western Florida. While spending a week up in Seaside one January, my mother and I visited Grayton Beach State Park, which hosts one of Florida's rare dune lakes. A mile-long trail took us through mounds of sand, a small patch of forest with live sand oaks, past palmettos and magnolias, and then briefly along the shore of the dune lake, murky from organic matter and the exchange of nutrients between the Gulf and the freshwater watersheds. Bunches of sea oats dotted the sandscape, blowing with the Gulf breeze.

My mother and I had known this region for years, but were only just imagining its pre-development state. Only then did I realize the landscape once existed as an ancient, untrammelled body of Earth before the first developer cast his profit-seeking lens upon it, the first sand pine was cut down, the first boardwalk built. It makes the State Park's motto: "...the REAL Florida," all the more haunting.

How many vacationers like us know that they own properties in and around one of the rarest ecosystems on earth? One such dune lake along route 30A is fringed by several lakefront properties, not uncommon for many bodies of water in the States. Passing by this lake, either by car or bike, provokes the feelings of, including but not limited to: jealousy for those who can hop on a paddleboard or kayak and cruise the watershed; horror and rage at the fact that people were allowed to construct homes on a rare ecosystem; guilt at the realization that I'm no different from, if not worse than the lakefront communities, since my parents own a house on a landscape buried by brick and property taxes.

If they could talk, I could hypothesize how those sand pine forests that still stand, tall enough to look down at me with contempt as I ride by them, would respond to my newfound grief and anger: *"We know. It sucks. Do you even know how many of us were killed for your parents' beach house alone? How many were lost to the brick streets your mom walks your dogs on? Don't kid yourself into suddenly caring now. Either enjoy your bubble on our graves like you have for twenty years, or fuck off."*

And I wouldn't have a proper response, because if I were to suddenly denounce all acts of zoning and development, I'd be a hypocrite as a decades-long beneficiary of said development. And though I have a newfound respect for Florida ecology, I don't have it in me to return to the state, plant my roots, and try to preserve

what remains of it.

Recently, I started noticing the signs in between the pavilion stairwells and million-dollar beachfront properties that indicate a dune restoration in progress. Only when it was too late did I recognize the dissonance of trying to protect an ecosystem — one that, in the case of dunes, protects the inner shore and its human and non-human inhabitants from storm surges — while building upon it all the same. It's the dilemma amongst the (majority Caucasian) environmental philosophers and ethicists and circle-jerkers: Can ecological protection and expansion of the built environment even co-exist? Some scholars like Dr. Eric Katz would say no, and that we wouldn't be dealing with the ethics of restoring ecosystems if we didn't expand to begin with. Two years after Seaside was founded in 1980, another environmental academic named Robert Eliot called out commercial developers who promised to repair the ecosystems at stake after they tore into them — specifically referring to dunes in his case study. He compared "restoration" in this form to "forged art," in that yes, it appears natural and real and accurate to the landscape's history, but ultimately devalues the viewer's experience as false advertisement of a pristine, untouched, "wilderness."

Meanwhile, in Truman Burbank's reality — arguably another forged art — nothing about the place he's in changes, except for the people around him due to the natural occurrence of aging — one of the only aspects of the show that its producers could not control. Another major character, Christof, the in-film creator of the Truman Show, speaks a line that hits at one of the movie's overarching themes: "We accept the reality with which we're presented." It's precisely this reality of stasis that Truman wishes to break free from, much to the threat of the structures built around him. Throughout the movie, every moment that he expresses interest in exploration and travel is immediately interrupted by weather events or lamentations by his "loved ones" that there's no place like Sea Haven, therefore no reason to leave.

Perhaps Christof, or maybe the movie's screenwriter Andrew Nichol, had his own version of a childhood summer home. Perhaps he, too, witnessed his quiet beach town transform before his very eyes, to his dismay. It makes sense to want a place like Sea Haven to exist, where no land development occurs beyond a certain threshold, no populations rise, no ecological services are compromised, no beloved shops close down and get replaced by enterprises devoid of heart. There is comfort in places that don't change, as if time passing is inconsequential. Maybe he doesn't have a place like Seaside; maybe he just hates the way things around him change, for better or worse.

(Of course, if you're of a non-white or non-upper-class background, or one



of the millions of sand pine citizens of Florida, such a sentiment that favors stasis falls harder on itself than those dense forest stands).

In the final confrontation and climax of the movie, Christof says to Truman — who has finally uncovered the false reality of his world — that the “real world” is ugly, and violent, and people are awful and murder each other and destroy the planet and are driven by greed and self-preservation. It’s been twenty-plus years since the movie came out, and still he isn’t wrong. If his intentions were truly altruistic, and not based on keeping Truman as a means of his own success and profit, he’d probably be less of a villain than the movie portrays.

It’s one thing to uncover the ugly reality behind your once-innocent haven, and another to realize that it still serves as said haven when put against the even uglier reality of the world outside of it.

In the end, Truman finds the exit door to the dome and steps through, an entirely new life, new world, new adventure awaiting him. The viewers cheer his decision, Christof bows his head in defeat, and a former love interest-slash-ex-cast member of the show runs out of her apartment to go find the freed man. Some speculate on what would happen if there was a sequel to the film, and whether Truman, after experiencing years of the real world, would ever wish to go back to Sea Haven.

I can envision a scene in a hypothetical sequel where Truman, now informed of the world’s true state, frantically searches for that dome in California, and once he finds it, begs security to let him back in, even attempts to fight his way through. He stumbles around dismayed, then finds Christof on the side of a curb, appearing disheveled and out of luck, yet still wearing his trademark cap and turtleneck. Truman, stunned after recognizing him, approaches Christof and asks what happened to him, what happened to Sea Haven, and, breaking down again, declares he was wrong and the world is, in fact, horrible, and he wants to go back. I imagine that Christof would stare at him with the same contempt that those sand pine forests, dwindling ever so incrementally across the Emerald Coast, would have towards me, uttering this sentiment:

*“You made your choice. You left. And now you want to come back to your forged art of a reality, to hide from what I warned you about? It’s too late. Begone. Start anew. And don’t you dare be blind to your nostalgia again.”*

## Georgia O’Keeffe Wasn’t Buried in a Tomb

By Charly Frisk

**G**eorgia O’Keeffe possesses Ghost Ranch, New Mexico. It is her muse, as well as her burial site. Though, one might forget her ghost. The toils of ranch work — the heat, the labor — may momentarily distract the haunting truth of that red ground. Soil and soul, one and the same.

Arise. Prepare the feed. Seed the ground. Slaughter the chickens. Clean the horse stables. Sleep. Salvage what you can from the harvest. Repeat. A cowboy’s mind is majority governed by meticulous tasks. In the momentary pause of one’s existence — perhaps an evening alone, accompanied by a frightening storm brewing overhead — O’Keeffe has other plans.

Tonight, in the cool of the evening, seeking reprieve from a day’s work, your body aches for the alchemy of bitter hops and refreshing ales. You notice an absence in the fridge, so you admit that you must walk to the ranch kitchen, where you know there to be a plethora, only a few hundred feet or so outside the door of your desert home. But you don’t want to.

Outside, in between the bright flashes of lightning kisses, are the harrowing booms and banshee screams of thunder. Once a year, one or two rain events will lift the land’s drought curse. Though the thunder does little to frighten you. Instead, you fear the petrichor of a desert rainstorm — the smell. She’s back.

Soil consists of the following: minerals (~45%), air (~25%), water (~25%), and biota (~5%). Biota might manifest as leaves, earthworms, or the billions of microbes — actinobacteria, nematodes, methanogens — that function to sustain life on earth. Navigating the life of the living, and of the dead, microbes use spells of both decomposition and regeneration. They constantly break down corpses of plants, animals, and humans into minerals/nutrients. The spells of soils release their own plumes of gas. Carbon dioxide. Ammonia. Methane.

In prolonged periods of drought, such as those afflicting Ghost Ranch, the amount of water held within the soil decreases. Bioactivity slows down. Soil microbes become somewhat dormant. Of course, there is the occasional rotting cactus or partially devoured desert mouse. In this case, the microbes will respond according to their biological duty. Rain will bring a particular resurgence to the dry spell, stirring life within otherwise dormant microbes once again.

The rain resurrects the earth.

Who is so naive to think that the water will pick and choose which microbes to bring back to life? Actinobacteria, nematodes, methanogens, and, perhaps, if one's imagination runs a bit too wild, if one spent a tad too much time in the sun, is spending a night alone in the desert once again: Georgia O'Keeffe herself, reduced to microbes. Perhaps if she was buried in a tomb, constricted and confined, then the microbes wouldn't have so much of a hold on the land. Though I don't fear too much that some floral desert witch might knock over my mounted cattle skull or suddenly, with the illumination of a lightning flash, appear in the window or possess me in my sleep, as it so happens, according to semi-rare accounts from half-drunk desert ranchers. I fear something else.



At the crown of our planet, frozen soil residual, dormant in a way so much like the biologically quiet soil of Ghost Ranch. See, temperature, just as precipitation, can also be a limiting restraint on biotic activity. When precipitation occurs, soil is breathed with life again. When the temperature rises, the soil is breathed with life again. As it happens, the temperature rises. Soon, the microbes of the northernmost soils will be resurrected. These are the microbes I fear the most. I can't sleep at night because of these microbes. Methanogens.

In these northern soils are repositories of biotic material. In the past, soil microbes have resisted decomposing organic material due to cold temperatures. Climate change unravels the dormancy of the ground's permafrost, forcing the microbes to decompose death and decay in soil that lacks significant inputs of oxygen — "anaerobic" soil. Such occurrences demand the labor of methanogens,

which break down this soil's materials.

As the resurrected desert soil releases the ghost of Georgia O'Keeffe, so too does the resurrected permafrost soil release methane, potent greenhouse gases. Gases that will dramatically alter the course of our future.

The release of greenhouse gases is quite perilous. The warming planet warms permafrost soils. Biotic activity increases. Releases of greenhouse gases occur. More greenhouse gases warm the planet. When imagining greenhouse gas emissions, we often imagine industries and huge plumes of smoke. However, some gases are naturally emitting around us all the time, even if we can't see them, akin to the likes of ghosts. Just so, it is unwise to ignore ghosts.



## Presence

Stories and Photos By Kevin Corcoran

I

**A**s we round the steep road into the southeast entrance of Lassen, we are struck by the expanse of burned forest; a field of trees stripped of foliage and branches, bark blackened with bits of brown exposed here and there. A complete sense of stillness grounds us as we look out on what Rebecca Solnit describes as “the blue of distance” currently inscribed by these spires; the barren stand of burned trees guides the eye over distant summits before vanishing into a gray-blue gradient of sky and shadow. Noting the contrast of lush foliage on one side with the burn scar on the other, this bend of Highway 89 looks like the break point of the blaze which ripped through 963,309 acres of northern California in 2021. Our view is a small sample of the damage. New growth is scarce, the soil soft and ashen. We step into incinerated space and perceive silence as an indicator of displaced life. Touching glassy bark and sifting our fingers through the earth, we sonify textures by tracing our hands over them, but have nothing to say. I find three links of heavy gauge chain lightly torched by the flames. This I hold for a while, letting it dangle through my fingers. I wonder if it was employed by firefighters when the whole scene was aglow with wild orange heat. Or maybe it arrived after flames were suppressed to assist in pulling down lingering snags. What memories of struggle are contained in these three meager links? I think of this for a while as I carry the chain with me. Could it have a place in a small, simple sculpture? But then it feels absurd to remove it from this forest where it does — yet doesn’t — belong. I drop it back where I found it and walk the slight incline to the car. Once inside, I lower the windows, wanting to remain present in this air of stillness. We drive on toward the entrance of the park, gazing at the landscape without saying anything.





Where the city meets the ocean, a road ends. Just beyond it, a network of meandering trails navigate bluffs that continually change as wind and water chisel them away. These narrow paths along sandstone cliffs cut through swaths of reddish-green iceplant, whose sturdy roots resist erosion. The flowering succulent was introduced and is invasive; it displaces native flora in a different sort of subtraction. Regardless, iceplant feels familiar. It has lived in this region for as long as I remember. One of the trails here flows south along a sheer cliff where a portion of old roadway appears, gradually cracking and falling to sea as the land beneath recedes. So much is shifting. In Doris Sloan's guide to Bay Area geology, she describes this as the place where the San Andreas fault "goes to sea." Does a fault have a sense of direction? Is there a functional difference between thinking of a fault as going to or coming from the sea? Whether or not we assign it direction, action, or intention, it feels as though the fault has agency over the physical identity of this place. Agency in the sense that a quake through this fault could reassemble the built and natural contents of the coast. As evidenced by fragments of fences and drainage pipes jutting out from cliff faces currently, this reassembling occurs even in the lower intensity of ongoing tremors. I'm thinking of this while standing on what feels like the edge of the world, some place wild and remote despite its position on the cusp of two cities. While walking here, I practice what feels like an infinite listening to the unceasing roar of waves coming ashore and the sizzling foam left in each retreat. These are sounds of an ongoing work of incidental sculpture. The resulting form looks like a cave; a cone shaped alluvium; displaced infrastructure; a fracture in stone; a future of finer lines on a topographic map.





A city built on infill crumbles under the weight of its own construction. Tucked beneath pavement and railway, this history of human debris tells a story of excess, abandoned ships, negligence, earthquake, fire, the sustenance of first people displaced from here . . . What would a crosscut of this composite look like? Imagine the bleached tones and brittle textures of bivalve shells harvested and mounded by Ohlone ancestors. Imagine the posts and gables of Victorian houses shattered by seismic movement and charred by subsequent flames. Imagine the marbled material of rusted metals, blocks of brick and stone, perpetual plastic waste . . . San Francisco is known geologically for its almost eponymous Franciscan Complex, a mixture of sandstone, shale, chert, limestone, basalt, and serpentinite. The eastern coastal edges of the city extended with infill offer an alternate identity for the nomenclature. While burying waste under urban spaces, perhaps a new complex forms and a project of human presence is to recreate the strata we inhabit. Is this accumulation conducive to life over time? Tectonic events have shaped this region into current form and will certainly continue to change it. Think of the uplift causing vertical cliffs along the Pacific coast. This process occurs at a much slower scale than our human timelines. After we're gone, will our own buried garbage seep gradually from landfills, and fuse with stones, forming new bluffs, hills, and beaches through synthetic sedimentation? Would this mosaic of matter lend itself to liquefaction or tectonic folds and wrinkles? In either case, the extended coastal city may eventually wash out to sea.





## No Man's Land

By Jordan Humphrey

There once was a place called Ashley Woods, a hundred-acre oak-maple forest with hiking paths, a meandering brook, and a pond made by a colony of beavers. When the school day was over, my little brother and I, both wearing Levi jeans and cowboy boots, would march past the giant holly hedges at the edge of our neighborhood and enter those enchanted woods.

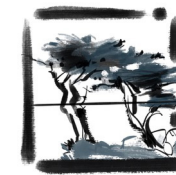
Stepping from pavement to path, sticks became swords. The blue heron that visited the pond appeared prehistoric, coming from lands where dinosaurs surely roamed. We built a tree fort out of scraps of lumber. The roof was a sheet of corrugated tin, the walls were plywood. We had a rope with a bucket attached, for pulling things up, and a long PVC pipe we used like a periscope. We collected things no one else wanted and made them our treasures: two bent license plates, empty paint cans, the yellowed skulls of small mammals. Some nights we slept there, high above the earth, held between the trunks of three tulip poplars. During storms, the fort shook with thunder. Lighting veined the black sky. You had the feeling the world might end.

A year ago, Ashley Woods was sold to developers. My mother, who knows how much I love that place, texted updates and pictures. Bulldozers, excavators, and backhoes roared through the neighborhood. They knocked down trees and pushed the trunks into massive piles. A subdivision called "Owen Park" would be developed: a grid of streets and 130 single-family homes.

The verb "develop" is an interesting one. Originally, it meant "to take off the wrapping" — as in to unwrap, unfold, or unfurl a thing already there. Now "develop" — when used to talk about land or property — almost always refers to a different kind of unraveling. It means changing a place to enhance its profitability. Old growth forests were developed into farmland, those fields grew into forests, and now those forests are being *developed*, one by one, into subdivisions like Owen Park. This is a story repeated all over the South. Every neighborhood you pass was once a forest, was once a home — to someone or some creature.

During Prohibition, my great-grandfather, a bootlegger, ran moonshine and whiskey across the Carolinas. He was caught, arrested, and sent to prison in Ohio, where he was "retrained" into a field of work deemed more productive to society. He came back from prison with a contractor's license and began developing land. With the help of his son (my grandfather), he developed two neighborhoods adjoining Ashley Woods. They ordered the cutting of thousands of trees, the building of hundreds of homes (my family's included). Even as they divided and paved the forest, the brook remained — a neighborhood crest, evidenced by the street names. There's Shadowbrook, Brookview, Longbrook, and Running Brook (where I grew up).

My great-grandfather struggled with alcoholism; he had an unquenchable thirst for escape. He grew up during the Great Depression — a childhood that seemed to haunt the rest of his life. One afternoon, when he was only forty-nine, he went into his home office and shot himself through the head. I never learned the reason why. Afterwards, my grandfather took over the company. The blue pages online list my father as vice-president. Roaming the neighborhood as a kid, I would often see signs stabbed into earth — "Land For Sale" — with my grandfather's phone number and my own last name. I felt free on those properties; I had the illusion they were *mine*.



Recently, I visited my childhood neighborhood. My parents live there still, with my grandfather living next door. The street has grown more crowded; almost all his lots have sold. There were lights strung around tree limbs and electric candles flickering in windows. One yard had a giant inflatable Santa; another had a mechanical deer, its body made from wire, its antlered head nodding up and down.

On my first night back, around sunset, I went to the holly hedges at the street's dead end. Yellow barricades blocked the entrance. Where once there'd been forest, now there was only an open expanse of dirt. The trees lay sideways in piles, their trunks stained red with Carolina clay. Thin saplings poked up through barren earth. Hickory shoots grew from dying stumps. The forest itself was unfurling, was fighting to come back. Did it know it had no chance? Did it know it was up against development? Part of me considered turning back. I didn't want to think about what had become of all the animals that inhabited this parcel of wild earth. But an equal part of me wanted to know and see

and be with the forest, even in death.

There's an uncanniness in returning to a place familiar from childhood and finding nothing recognizable. I could say the air seemed eerily quiet, or the sky glowed orange. I could write about how I felt: wandering the earth after an apocalypse or walking across a battlefield after the fighting had ceased. But language, here, seems like such an inadequate tool.

Instead, I will tell you what I did. I slipped behind the no-trespassing signs and found a rutted track left by machinery. I walked slowly, taking in this new world. Pools of rainwater glistened with splashes of oil. A crow flew overhead, silent, alone. I went right up to one of the massive piles of trees. The felled trunks were stacked horizontally, the branches sticking out like human limbs. The pile was probably five times my height. I bent down to one of the trees and touched its scarred trunk. It had crisscrossing patterns of ridged bark and white furrows. It was a tulip poplar — the kind of tree my brother and I had built our fort in. I wiped dirt from the base and counted the rings. I got to fifty before the lines became too compressed to see. I counted again, some rings thinned by drought, others widened by heavy spring rains. One ring was thickened with a dark scar. Someone more knowledgeable might interpret the sign, might read into the past and decipher the story of what had gone wrong.

I collected a few pieces of the tulip poplar: scraps of bark, flower buds, a dozen or so leaves, each dying a golden yellow. I took them home, sealed them in a mason jar, and put the jar on my desk. I didn't have any big plans of preservation; I simply liked looking at the leaves as they slowly decayed. They were perhaps the first leaves I had, as a kid, learned to recognize as belonging to a distinct tree — wide like a hand but with no pointed tip. My third-grade teacher had each of us draw whiskers and eyes on a thin, green leaf. Twenty years later, and still every time I look at them, I see the face of a cat.

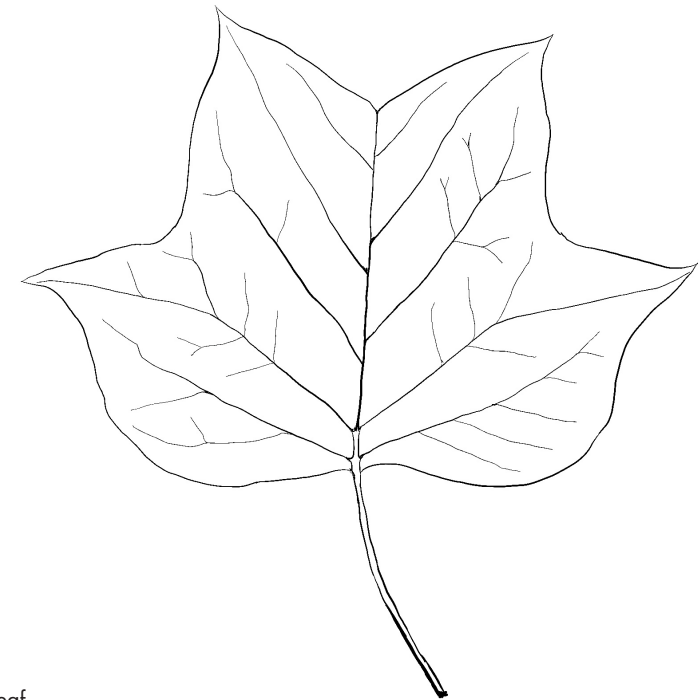
Tulip poplars — *Liriodendron tulipifera* — can live for five-hundred years. They're as straight as telephone poles but much taller. There's one in the Great Smokey Mountains that's nearly 200 feet tall. They're early successional trees, which means that when a forest is cut down, they're one of the first species to grow back. They race to the sky, growing a yard each year, soaking up sun with their wide, cat-faced leaves. Their flowers attract hummingbirds; their leaves feed the larvae of eastern tiger swallowtails. Their long, straight trunks were used by the Cherokee for dugout canoes. As they grow, they self-prune, dropping their lower branches, devoting their energy to exploring ever greater heights.

The jar with pieces of tulip poplar is still on my desk. I don't know whether it's a memorial to the forest or a collection of macabre specimens. But I do know I've been

noticing tulip poplars more and more around New Haven, where I now live. They're in the forest at East Rock Park, on a ridge by Lake Wintergreen. There's one planted near Marsh Hall, which I walked by with a botany professor last week. I pointed out the tree and told her about the jar on my desk. In turn, she talked about new evidence that suggests the tulip poplar may be one of the few remaining prehistoric trees. Scientists had believed it evolved from the magnolia family, but recently discovered fossils suggest it may have its own separate lineage, dating back millions of years to when dinosaurs roamed the earth.

As you might expect, my professor didn't speak to my grief. And yet, I *did* find her words comforting. She seemed to be describing a different kind of development — one that doesn't erase what came before. It's the unwrapping kind. An unfolding of all that was. The way a picture is developed, or how a tree develops rings. It's time and darkness and what came before. It's the Big Bang unfurling itself into the cat-faced leaf of a tulip poplar.

Later this spring, I will go home again. The hundred-acre plot will look almost the same as when I visited for Christmas. The town has refused to grant permits for removing the logs, worried not about the forest but about the wear-and-tear on roads. Development has, for the moment, been stalled. Ashley Woods is no longer Ashley Woods, but



Tulip Poplar Leaf  
Illustration by  
Tian Xu



it's not yet Owen Park. It has become disputed territory, land caught between two different kinds of development. It's what my brother and I would've called "no man's land."

Perhaps I'll go back there one last time. Perhaps this time, I'll imagine those piles of trees as ground forts, like hideouts or bunkers. I'll climb up the felled trunks and look out over the apocalyptic landscape of red clay furrows and unmanned machinery. From this height, let me see with the vision of something that has survived for eons. Civilization is collapsing, has already collapsed. Dinosaurs have come and gone. Cities erected and then left in ruins. Dynasties built, now long forgotten. Through it all, the forest fights back. It can't help but fight back. It knows no other way. There will be poplar saplings three-feet tall, rising above thornbush spines and the brushy sprouts of eastern red cedar. No one owns this land. No one ever will.

## Reflections on Rwanda

Story and Photos by Coral Keegan

**R**wanda is located at the junction of East and Central Africa, at the very heart of the continent. Nestled in the lush Albertine Rift, the country pulses with life. It is home to 17 species of primates, including a thriving population of mountain gorillas; the largest protected wetland-savanna complex in Central Africa which supports nearly 500 species of birds; and the biggest remaining tract of montane forest in Africa from which the most distant source of the Nile flows. All of this in a country no bigger than the state of Vermont.

Like our own hearts, this land carries many memories, both joyous and painful. Less than 30 years ago, a brutal genocide tore apart the country. In just 100 days, one million people were killed, with countless more raped and tortured. But incredibly, the Rwandan people have found a way to forgive, to heal, and to persevere. They have come together to build one of the safest nations in Africa, where sustainable tourism supports a thriving and resilient economy. Rwanda teaches us all that while our memories may shape us, there is no limit to what we can become.

This past May, I had the incredible privilege to explore this nation alongside five YSE colleagues under the leadership of Drs. Amy Vedder and Bill Weber. Partners in life and work, they served in the Peace Corps in what was then Zaire (now Democratic Republic of the Congo), conducted extensive research on mountain gorillas, and were fundamental in the launch of Rwanda's ecotourism program. They are deeply connected to the region as conservationists and possess an unrivaled understanding of its history, politics, and ecology. Their knowledge and connections afforded my colleagues and I an intimate look into Rwanda's complex conservation challenges. Throughout our journey, we deliberated on how this nation, with the highest human population density in continental Africa, could continue to support such biodiverse natural environments. As with so many conservation questions, the answer is: it's complicated and uncertain, but there is no doubt that hope remains.



Nyungwe National Park is home to more than 300 bird species, including this iridescent variable sunbird (*Cinnyris venustus*). The future of this forest depends on birds, as their pollinating and seed dispersal behaviors are key elements of the regeneration process.







Kigali, Rwanda's capital, is nestled in a vast landscape of rolling hills and valleys. This undulating topography has earned it the nickname "land of a thousand hills." For us, it was the land of a thousand lessons.

Claver Ntoyinkima smiles with a chameleon he saved from a precarious road crossing. Claver was born in Banda, one of the most remote villages in Rwanda. He has always been passionate about nature and started the wildlife club at his secondary school. Now the head naturalist guide for Nyungwe National Park, he continues to teach others about the importance of conservation.







Akagera National Park is Rwanda's only savanna park. In the distance, the park's extensive network of wetlands is visible. Home to nearly 500 bird species, it has been recognized as a wetland of international importance by the Ramsar Convention.





Mountain gorillas (*Gorilla beringei beringei*) are one of conservation's most famous success stories, growing from a total population of fewer than 500 in 1981 to over 1,100 individuals today. The population is split between the Virunga Volcanoes and Uganda's Bwindi Impenetrable Forest. This handsome silverback belongs to the Kwitonda group.



Visitors can track chimpanzees (*Pan troglodytes*) in Cyamudongo, an isolated forest fragment of Nyungwe National Park. Local people conserved this fragment because of its spiritual significance.





Nyungwe's many plant species each have their own story to tell. Here, expert naturalist guide Claver Ntoyinkima points out the seed of the umushwati tree (*Carapa grandiflora*). These seeds can be boiled to make a tea that treats amoebic infections. Dispersed primarily by elephants, which are no longer present in these forests, the tree's future in Nyungwe remains uncertain.



An Angolan black and white colobus monkey (*Colobus angolensis*) pauses between bites. This species is unique among arboreal primates in that it can be found in groups up to 400-strong.



## River Body

By Raffa Sindoni

### Author's Note:

It is with my deepest respect and gratitude for the Yurok Tribe that I publish my account of the Pacific Northwest and the greater Klamath ecosystem.

While I have worked in past partnership with the Yurok, I am not a member of the Tribe and do not speak for their rich and storied history.

I am profoundly honored to have been invited to collaborate with the Yurok in the past; this experience shaped my understanding of the world I inhabit.

My writing reflects only my own views and experiences as an ally of Indigenous People and my own sacred relations with the land.

By capitalizing human names, but not the names of plants or other living beings, we perpetuate "deeply held assumptions about human exceptionalism, [and] that we are somehow different and indeed better than the other species who surround us" (Kimmerer 2013). To respect and acknowledge my kinship with this living earth, I have capitalized plant species and other entities of the non-human atmosphere.

Kimmerer, Robin Wall. *Braiding Sweetgrass*. Milkweed Editions, 2013.

In 2014, psychiatrist Dr. Bessel Van Der Kolk published "The Body Keeps the Score," a New York Times best-selling book that illustrates how past trauma shapes our brains, bodies, and minds. A traumatic event of the past can alter the way our neurons develop, our muscles form, and our breath flows.

Our present is a tender shadow of the past. Everything now is what has been.

Our bodies keep the score.

What is a body? Is it constrained to our physical form — flesh, hair, bones, and blood? Does it include consciousness — thought, mind, emotion, and feeling? Who are we to decide? Humans do not have a monopoly on body.

Body goes beyond flesh and mind. It is our living landscape — the interconnected nodes of this world. Body is where our feet kiss the soil. It is the soil supporting and feeding the tall Oak tree. It is the Oak breathing as one of many in the forest. It is the forest shifting slowly into grassland, desert, mountains, farmland, and cityscape.

We must not forget. We shape this ecological body too — traumas and all.

To see this body breathing, look toward the northern California coast. But first, set aside your vision of golden sand and mellow sunshine. This is no place for a Sunday picnic. Roaring waves pound coarse black sand onto jagged shorelines. Saltwater batters the serpentine cliffs, sending spray to mix with the endless fog. Even the trees have character. Sitka Spruce dig their crooked roots into the cracks of mossy ravines, hanging on for dear life.

When the rain arrives on the mainland, it hits hard and cold. Raindrops ping-pong down the green needles of Spruce and Fir. Drop by drop, water percolates



into the forest soil and swims with the roots and mycelium. A rich stew of connective life. Air pollution from Portland hitched a ride too, carried hundreds of miles on the backs of rain clouds. No matter — it all ends up in the soil, left for the bacteria and microorganisms to break down in their dark kingdoms. After dancing through the earth, the rain always finds its way downhill. Right into the waiting arms of the Klamath River. She is the great unifier of this forest.

The Klamath spans 263 miles, collecting water across 12,000 square miles before returning to the Pacific Ocean. She is home to Salmon, the California Condor, and the Yurok Tribe. The Yurok are the heartbeat of this ecological body. They have been since time immemorial. To reflect their storied relationship with the river, the Yurok granted legal “personhood” to the Klamath in 2019. By doing so, the Yurok acknowledged the Klamath as the first North American river with human rights in the legal court of man.

How can we understand the body of the Klamath River?

What memories and trauma does the Klamath hold?

To answer these questions, we must relate the river to its forest and its stewards, the Yurok. Only then can we see the full body, scars and all.

In the last 200 years, the U.S. government has tried its hardest to decapitate the Yurok from the larger Klamath ecological body. Since the mid 1800s, the Yurok have been violently removed from ~90% of their land by the state. On the Tribe’s remaining land, the Yurok were coerced into abandoning their forest stewardship practices, including the use of controlled fire. After outlawing “prescribed burns,” the U.S. Federal Government began jailing Native peoples who continued to steward their forests with fire. Yurok children were taken from their families and forced into boarding schools run by missionaries and American officials. The U.S. government did everything in their power to erase Yurok ties to their native language and ancestral ecological knowledge. Finally, the Klamath was dammed. Her waters were diverted upstream, right into the hands of settler-colonists to establish their farms in the middle of a desert.

The Klamath and the Ancestral Yurok Forests still feel this pain.

Without the Yurok’s fire and deep ecosystem knowledge, the abundant grasslands and savannas have been overrun by dense and unruly forests. Dead wood, huckleberry, and madrone crowd the understory. These are called *ladder fuels*. Their abundance is to blame for the current wildfires across the West. Without frequent burns by the hands of the Yurok and other Indigenous land stewards, *ladder fuel* has accumulated over centuries. Our forests are a ticking time-bomb waiting for an ignition

source. Now, we face a future of uncontrollable wildfire that shakes down ecosystems, dislocates communities, and blots out the sun for weeks each fall.

It wasn’t always like this.

Before the federal government’s misguided *no-fire* policy, the Yurok used small, prescribed burns to keep *ladder fuels* at bay, encourage biodiversity, and maintain a balance of grassland and forest. Without the Yurok’s “good fire,” the forest has become crowded and uniform. Today’s homogenous sea of Douglas-Fir used to be a mosaic of grassland, prairie, and forests with Beargrass, Hazel, Tan-Oak, Redwood, and Chinquapin. These mono-dominant forests are now some of the most susceptible in the world to uncontrollable wildfires. They are less resilient against invasions of insects and disease, and, of course, they are more exposed to the effects of climate change.

Listen to the land, now. The West is in flames.

The forest demands her fire back.

Today, timber companies still own thousands of acres near the Klamath. Sharp rectangles of clear-cut logging plots obtrude from the sloped contours of the mountains. Dams upriver still block the Klamath, at least until they’re removed in the next few years. Hopefully.

These are the wounds of the past. Scars on the land’s flesh that point to centuries of genocide, exploitation, silencing, and racism.

Of course, the Yurok are still here. They always have been, and always will be. And they have made tremendous strides in reclaiming their ancestral land and reaffirming themselves as the rightful stewards of the Klamath River Basin. More than 25,000 hectares of stolen Ancestral Forest land is back in Yurok hands, the Klamath dams are slated to be removed, and “good fire” is starting to find its way back on the ground by human hands.

But, this is just the beginning.

To heal the trauma of our ecosystems and our collective society, we must join the Yurok to make recompense for the past. Public agencies and private landowners must return Yurok land and make reparations for all stolen Indigenous land across North America. This goes beyond justice or politics. It is the root of our ecological crisis. The health of the body is the health of its parts. We must let the land’s original stewards do their work. We must remember.

## ወደጊዜ. Memory.

By Joshua Friedlein

ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ወደጊዜ. *The land of my mothers remembers.*  
She remembers ኩሳወጥሃ *how it was before;*  
the three sisters: ፋጠ *corn*, ልጋ ስጦ *beans*, and ወፋፒ *squash*, growing together  
and sustaining each other, ፀ ወዘፀጋ *her people, and herself;*  
the clans, the matrilineal lines, the war chiefs, and the peace chiefs;  
her relationship with ዐፕፑ ወዘፀጋ, from ፐላጎፕጋ ፑፕ *Time*  
*Immemorial;*  
ሃሪግ *Kituwa* and ፀ ስፕፕፕ ወዘፒ *the sacred fire;*  
ኩሳወጥሃ ፀ ወዘፒ *how it was before the white man.*  
ዐደጊዜ *she remembers.*

ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ወደጊዜ. *The land of my mothers remembers.*  
She remembers first contact;  
the ዐፑክፊጋ *the plague* that ፀ ወዘፒ *the white man* brought, and how  
smallpox killed half of ዐፕፑ ወዘፀጋ *her people* in a year;  
the first land cessions, when ፀ ወዘፒ forced ዐፕፑ ወዘፀጋ to sacrifice  
parts of her—parts of themselves—to satisfy ፀ ወዘፒ ወደ ሄ.ፀ ስሰፑጋ  
*the white man and his lust for land.*  
ዐደጊዜ *she remembers.*

ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ወደጊዜ. *The land of my mothers remembers.*  
She remembers ፀ ወሰግግፑወዘጋግ *the gold rush;*  
the great scars ፀ ወዘፒ carved into her, and how they used the search  
for gold to justify the removal of ዐፕፑ ወዘፀጋ;  
the fight for ዐፕፑ ወዘፀጋ ላዘሪግፑ ወደፑፑፑፑፑፑ *her people's treaty*  
*rights* in ፀ ላላላፑፑ *the courts of "justice;"*  
every footstep ዐፕፑ ወዘፀጋ took on ላፑፑፑፑፑፑ *the Trail of Tears*  
and ፀ ሆፑፑፑ *the graves* left along the path.  
ዐደጊዜ *she remembers.*

ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ወደጊዜ. *The land of my mothers remembers.*  
She remembers ወዘፀጋፑፑፑፑ *Indian Territory;*  
ዐፑጋ ወወፑፑፑፑፑፑ *assimilation;*  
ላላላፑ ሄፕፒ *allotment;*  
ፊፑፑፑፑ *Oklahoma statehood;*  
ፀ ላሪፑፑ *the divorce* between herself and ዐፕፑ ወዘፀጋ.  
ዐደጊዜ *she remembers.*

ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ኩሳወጥሃ ወደጊዜ. *The land of my mothers remembers*  
*how it was.*  
ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ኩሳወሰፑፑ ወደጊዜ. *The land of my mothers remembers*  
*how it will be.*  
ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ፐግሪፑፑ ወደጊዜ. *The land of my mothers remembers*  
*everything.*  
  
And on the day I take my last breath and return to her,  
ፀ ሄ.ፀ ስፒፒ ላሃፒፒ, ሆፑፑፑፑ. *I will remember the land of my mothers.*  
ወደ ወሃፑፑ ሄ.ፀ ስፒፒ ላሃፒፒ ኩሳወሰፑፑፑፑ. *And I know that the land of my*  
*mothers will remember me.*



**T**he summer sun was slowly setting as I pulled into the gravel driveway on Mark Reed's family farm in Manheim, Pennsylvania. A few days earlier, I'd introduced myself to Mark over the phone. I told him about my work with a local nonprofit mapping stream bank erosion across the Chiques Creek watershed. I'd never been to his farm, but from behind a computer screen I'd followed every bend of the tributary that meanders through it. I told Mark that my colleagues and I had used elevation models to measure a relatively high rate of sediment erosion along his stream, and I asked if I could visit his farm to see the stream and to hear his thoughts on the erosion we'd detected. He was happy to talk, and suggested I come by around 8 pm.

Mark arrived from the fields on his tractor and offered to walk with me down to the stream. His children trailed behind, giggling as they listened intently. I could tell Mark was also curious about what I had to say, so I got right to the point. I asked if he'd heard of legacy sediment. He hadn't, so I explained that it's a term used to describe sediment that's accumulated on the landscape as a result of human activities — namely, the disruption of natural geomorphological processes. Scientists, policymakers, and conservationists have increasingly recognized this anthropogenic sediment (and its associated nutrients) as a major component of the pollution that degrades aquatic ecosystems in the Chesapeake Bay. I told Mark that his flat pasture by the stream likely didn't exist just a few centuries ago. For millennia, the valley bottom topography may have been more undulating. Multiple branching, anastomosing channels may have rambed around hummocks and wandered through wetlands, unlike the single stream that carves through sediment today. I told Mark that his cows may be grazing atop thousands of tons of legacy sediment. This required some elaboration.

Less than half a mile downstream from Mark's property, a grist mill building



Mark tills the soil on his organic farm.

constructed in 1805 still stands, but the dam that once provided waterpower to grind grain is long gone. When the dam stood, it elevated the local water table, creating a mill pond that submerged the natural stream. Over generations, the pond filled with sediment. The dam eventually breached, either by accident or design, and the water level dropped instantly. Powered by gravity, the water behind the dam formed a single-channel stream that cut down through the stack of sediment, revealing a cross-section of history like dynamite through a roadcut. The fine sand, silt, and clay left behind became a new, flat ground surface known as a fill terrace, with vertical banks fringing the new stream channel. Today, pieces of the banks occasionally calve off like icebergs into the stream below, often causing issues for landowners and contributing sediment and nutrient pollution to the waterway. I pointed out how flat Mark's pasture is and noted the vertical stream banks. He confirmed that bank erosion had long been an issue, and that over the years he'd built a fence and planted trees only to be frustrated as both collapsed when banks retreated.

In the weeks before I met Mark, I'd visited other farms across the watershed to have the same discussion with landowners about how dams may have fundamentally altered valley bottoms on their land. Even for those who believed the idea, it sometimes



seemed hard for them to envision how this process of damming, deposition, and incision could actually have created some of the ground on which they and their livestock trod today. Surely it is a difficult conceptual leap to make, particularly for those who've spent their entire lives on the same farm, walking along the banks of their stream since childhood, as Mark had. Yet the idea seemed to click immediately for him. "So, you're saying that maybe there's a possibility that there was a dam somewhere? And what the pasture is on is all just build up that filled in behind the dam? That's fascinating. No, no, that's very interesting. I would have never...it makes a lot of sense," he said. He pointed across the stream, "You can see over there where I planted the trees. Now you can see the roots hanging out. That poplar and then this sycamore, so the banks really change." I saw what he was talking about. Roots protruded from vertical banks. Trunks bowed toward the stream, reaching for the sun as the soil beneath them fell away.



Mark planted the trees along his stream to serve as a riparian buffer — a sort of filter between his cultivated fields and the stream. Among other functions such as providing shade and wildlife habitat, riparian buffers can absorb excess nutrients from agricultural runoff before they reach the stream. Mark told me he'd recently done a water quality test in his stream and was pleased to find that nitrate levels weren't as high as he'd expected. But Mark had also planted trees to combat erosion, so he was disappointed with the loss of some of these trees to collapsing banks. The curving, meandering nature of the stream channel made it hard to predict where rapid erosion might occur next. Mark pointed to an area by an old locust tree that was now a wet, grassy depression but had once been a channel before the stream steered in a new direction. As we wrapped up our conversation, Mark's son asked him a question that got my attention. "Daddy, can we show him the dam?"

"What's that?" I asked.

"We built a dam in the creek yesterday, so he thought maybe we should show it to you," Mark said. The kids took off running and giggling, and Mark and I followed

Right: A tree is undercut by a retreating stream bank of legacy sediment.







Shells Run meanders through Mark's land.





Mark's daughter admires the dam she and her siblings built.

behind. Sure enough, they'd piled up some rocks and logs to construct an impressive little dam. Mark's son was hopeful he'd be able to catch some fish in the calm water. I asked if I could take a photo of the kids in front of their handiwork. As they posed proudly and I framed the shot, I couldn't help but smile at the fortuitous scene. The eroding stream bank looming over their makeshift dam was the result of the breaching of a larger dam that once stood not far downstream. The same processes trapping sediment behind this temporary dam had operated over generations in a larger mill pond that once submerged the entire valley bottom.

Over the years, my colleagues and I — along with researchers at Franklin and Marshall College — have mapped 56 historic dam locations in the 126 square mile Chiques Creek watershed alone, not to mention thousands more in multiple counties across the Mid-Atlantic. In this context, Mark's manmade valley bottom is not unique in the Chiques or even within the greater Chesapeake Bay watershed. Before the Industrial Revolution, landowners saw even the tiniest tributaries as valuable sources of energy. European settlers and the generations that followed constructed thousands of valley-spanning dams across central Pennsylvania alone, all of which trapped sediment that had been exposed and shed from hillsides through extensive land clearing and agriculture. Dams were so ubiquitous that nineteenth century maps reveal strings of mill ponds like beads in a necklace.



Bob poses in front of the remnants of a mill dam.

The same evening I stopped by Mark's farm, I first visited his neighbor Bob Brandt just a half mile up the road. Historic maps showed another dam on Bob's property, this time spanning Little Chiques Creek. I was curious what evidence might be left of the dam, and what Bob might know about it. As it turned out, Bob did know a thing or two, as his farm has been in the family since 1861. "That's when my grandfather — I mean my great, great — whatever it was — bought the place," he told me. The dam breached during a flood in 1936 when Bob's father was seven years old. By that time, the era of small-scale hydropower was over, and there was little motivation to replace the dam. Bob wanted to show me what remained, so we bushwhacked through the chest-high grass alongside the faint, backfilled depression of the old millrace — the canal that once diverted water from the mill pond to water wheels and turbines.

We crossed into a meadow by the stream, and just over onto the neighbor's property Bob pointed out what appeared to be a section of an old stone wall. "This is what's left of the dam," he told me. The section of dam that crossed the stream was long gone — the stones dispersed by storms over the past 80 plus years. The remnant dam structure stood conspicuously in a patch of freshly mowed grass, a ruin not yet ready to be forgotten. "In here, it's all sediment," said Bob, pointing to the wide, flat meadow behind the dam. He hadn't heard of the term "legacy sediment," but he clearly



understood what it was. Unlike Mark's serpentine stream, however, the stream through Bob's property runs relatively straight along the edge of the valley margin, resulting in fewer erodible cut banks. Because the stream channel has maintained its straight path for so long, Bob didn't consider streambank erosion to be an issue on his land.

Despite their geographic proximity and shared history of damming, Mark and Bob's stream segments illustrate the variability of landscapes on small spatial scales. In his 2010 paper *Landscape memory: the imprint of the past on contemporary landscape forms and processes*, the environmental scientist Gary Brierley uses the concepts of geologic, climatic, and anthropogenic memory to describe the hyper-contextual interplay of past conditions – both “natural” and human-induced – on a landscape's trajectory. The ability of farmers, geologists, and ecologists to interpret any current landscape depends on, and is limited by, our incomplete knowledge of the past.

Indeed, Mark and Bob hold different personal, historical memories of their streams. Although Bob never saw the intact dam, he knows the field behind it is a terrace of legacy sediment because he carries stories from his family's century and a half on the land. Mark's parents, on the other hand, purchased their farm in the 1970s. Historical memory of the dam (or series of dams) that impounded sediment on Mark's land has been lost, but its geomorphological impact persists as a form of landscape memory. The gradual migration of the current stream is more than just a response to basic geologic and climatic factors such as topography and precipitation. The stream's changing course is also an ongoing reaction to human impact. Mark and Bob's streams carve through history. Deforestation by European settlers rapidly destabilized hillslope soils, then dams trapped that soil for generations. As the streams rework legacy sediment and respond to change, they continue their dialogue with the past in complex ways.

This story was made possible by Yale Environmental Humanities, the Berkley Conservation Scholars Program, and the Water Science Institute. Special thanks also to Drs. Robert Walter and Dorothy Merritts for their guidance and pioneering research on legacy sediment.

Right: Remnants of the recently demolished Hiestand Mill dam at the mouth of Chiques Creek.





## Man and Nature - A Review

By Jesse Callahan Bryant

Marsh, George Perkins. *Man and Nature, Or Physical Geography as Modified by Human Action* by George P. Marsh. A Kindness of Ravens LLC, 1864.

Perhaps the answer to why a book written in 1864 should be relevant to read today can be found in Charles Scribner's review from the same year in *The New York Times*:

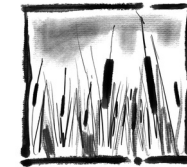
*"We are deeply interested in the subject discussed in this book, and generally with the author's manner of treating it. [But] it appears that we live in an age too early to admit of a book being written on this subject, which should give full satisfaction in every respect."* (emphasis added)

The subject of *Man and Nature* is the ecological unsustainability of Western civilization from the Roman Empire through the nineteenth-century United States. Reading Marsh today is an important reminder of the timelessness of today's environmental crisis. It is a reminder that our current crisis is ultimately not constituted by the failures of capitalism nor the blindness of industrialization, for if it were, the entire Roman Empire from "Northern Africa, the greater Arabian peninsula, Syria, Mesopotamia, Armenia and many other provinces of Asia Minor," today would not be a desert.

The main argument of *Man and Nature* is that *environmental degradation is a function of a misalignment between bureaucratization and nature*. Marsh writes that "it is...the result of man's ignorant disregard of the laws of nature...an incidental consequence of war...of civil and ecclesiastical tyranny and misrule," of Roman colonial taxation which "the sale of the entire harvest would scarcely discharge," of "military conscription" that severed people from landed labor, and of "absurd restrictions and unwise regulations" on local economies.

Marsh framed *Man and Nature* as a wakeup call for state and corporate bureaucracies, and in the short term it no doubt worked. Domestically, it inspired Gifford Pinchot to found the U.S. Forest Service and Yale School of Forestry. Abroad, it inspired

similar conservation policies across the globe, from Japan to New Zealand. Marsh observed that as diverse forms of political bodies rapidly converged upon the nation state as the natural form of governance throughout the 1800s, the same basic pathology emerged globally: an inability of modern nations to integrate ecology into politics.



*Man and Nature* should be thought of in relation to two trends at the time of writing. First, with nineteenth-century innovations in transportation, researchers could travel globally to collect observations for the first time. Humboldt's masterpiece *Cosmos* was the first true global empirical naturalistic study and, as historian Andrea Wulf has shown, this work influenced the spatial and temporal imagination of Marsh enormously. And yet, we should understand that whereas Humboldt was focused on imagining a global ecology, Marsh's work was focused on the globalization of a particular relationship between ecology and economy.

Second, we should also understand *Man and Nature* as historically situated within and against the then-emerging field of physical geography; *within* in the sense that it dealt with the relationship between man and landscape; *against* in the sense that whereas his contemporaries were focused on the "geographical deterministic" directionality of that relationship — how environment affects society — Marsh was focused on the reverse causality — how society affects the environment.

The structure of the book follows six major sections: a) an introductory section laying out the possibility that civilized societies destroy their environment, b) empirical sections on plant and animal translocation and extinction, c) "The Woods," d) "The Waters," e) "The Sands," and f) on the potential environmental effects of future projects including the Suez and Panama Canals.

The comparative range of this book in space, time, and content is enormous. For instance, a single section on the "Influence of the Forest on the Flow of Springs" includes naturalistic observations from Pliny the Elder (Roman, 23-79 AD), chemical measurements by Jean-Baptiste Boussingault (French, 1801-1887), and journalism from William C. Bryant (American, 1794-1878). The work flows interdisciplinarily, with policy sections on "Royal Forests and Game Laws" situated next to naturalistic



sections on “Small Forest Plants” next to sections connecting the two: “Special Causes of the Destruction of European Woods.”

*Man and Nature* functions as a bibliographic time capsule for anyone interested in the environment. “The Woods” features innumerable accounts and observations of timbering throughout the West. “The Waters” features countless historical case studies of state river and lake manipulation. For instance, there is an entire section devoted to the economic and technological means of the draining of Lake Haarlem in the Netherlands from 1840-58, and the subsequent “climatic” and environmental effects.

Another section covers France’s 1860 tree planting program (1,000,000 Franc per year) aimed at slowing groundwater profusion and thus river inundation rates. Comparative historians will feel at home here, in that France’s bureaucratic interventions to prevent river “inundations” are compared to similar interventions in Egypt, Italy, Brazil, India, New York, and Germany, as are their climatic effects. In a sense, *Man and Nature* functions as a cure for the historical environmental amnesia that allows us to forget that the land between Amsterdam and The Hague was recently a lake, that Toledo, Ohio was recently a 1,500 square mile malaria-infested swamp, and that not long ago we reversed the direction of flow in the Chicago River. Though useful for today’s science, *Man and Nature* at times feels dated, and yet in this datedness is a reminder in some ways of the progress we have made.

For instance, the section on “Trees as a Protection against Malaria” predates the discovery of malaria as an insect-borne illness and operates by assuming it was caused by “bad air” (81). He recounts how in the 1850s the Potomac in Washington was planted with rows of sunflowers along its banks to cleanse the air from the marshy banks before it made it into the city. We must have humility for the fact that this was a public health policy to an environmental health problem based on the best science of the time.

The extensive section on “The Sands” appears on its surface dated, however is in truth a section primarily about the interface of land and sea and historical policies that have mediated between the two. A case from Pointe de Grave in 1846 France shows the deconstruction of a town and lighthouse threatened by the sea and reconstruction further inland (269). Another case in 1610 Koegras shows the implementation and environmental effects of artificial dune projects (272). Another case from 1539 Denmark shows the criminalization of the destruction of dune plants necessary for stabilization (273). “The Sands” thus provides 500 years of historical policy context as we look forward toward a period of sea-level rise.

Though naturalists and environmental policy analysts will find the details of *Man and Nature* useful, the book will be fascinating for anyone interested in broader philosophical questions about today’s globalized world. Marsh does not hold back in making some enormous claims. We can think of *Man and Nature* as an empirical essay proving the theses that, in the context of Western society, ecological management and ecological abuse are synonymous; that technological and political efforts to curtail these abuses have been abundant throughout history but have largely failed; and finally that unsustainability is not a function of industrialization, but of a constitutively extractive culture that links Ancient Sumeria and Chicago.

This review opened with the implication that *Man and Nature* would not have an audience in the 1800s, but that it must at some point. Another New York Times review from the same year explained why:

*“[The problem addressed in Man and Nature] is one that appeals to no passion dominant in the present hurry of events; there is nothing in it that any political party can make capital of, and scarcely anything that can be turned into private advantage.”*

Today we live in an age of climate anxiety, of the Green New Deal, and of Tesla — an age in which at long last this quote has lost validity and yet a time also that is plagued by an ecological urgency that is causing widespread ecological amnesia. We may no longer “live in an age too early to admit of a book being written on this subject,” and instead one in which *Man and Nature* has finally found its time. If we are to truly know where to turn at this moment, we must take history seriously. *Man and Nature* is an historical vortex that is a salve to our collective ecological amnesia.



## Contributors

**Jesse Callahan Bryant** is a PhD student in sociology at Yale School of the Environment. His work focuses on the intersection of social theory, politics, and the environment, with a particular eye toward conservative politics and the far-right.

**Kevin Corcoran** works with an open interest in sound as medium as it moves through contexts of music, art, communication and place and takes form as performance, publication, installation, and text. His background in percussion and improvisation opens up to field recording practices and place-based making focused on abandoned and overlooked areas, conditions of excess, processes of decay and intersections of infrastructure and open space.

**Riley Erlandson** is a second-year Master of Divinity student at Yale Divinity School. Before coming to YDS, Riley studied biology, neuroscience, and religion at Concordia College in Moorhead, MN, and she is passionate about stories that bring together spirituality, nature, and community.

**Kalle Fox** is a non-native transplant from South Florida, currently living in Montana. An aspiring steward who oftentimes prefers connecting with land than with humans, Fox's writing examines the ways our physical surroundings shape our relationship to land, place, people, and self.

**Joshua Friedlein** is a citizen of ᎠᏍᏆᏚᎦ ᎠᏰᏍᏔᏅᎦ (Cherokee Nation). He is a Master of Forestry candidate at Yale School of the Environment.

**Charly Frisk** is a climate storyteller and environmental studies researcher from the Rocky Mountain West, advocating for the protection of biodiversity and cultural

diversity. She anticipates graduating from Yale School of the Environment in 2023 with a master's degree in Environmental Management, and a concentration in Climate Science and Solutions.

**Jordan Humphrey** currently studies at Yale Divinity School. Originally from the North Carolina Piedmont, he has previously worked as an English professor in downtown Manhattan and a wilderness guide in the Utah desert.

**Bianca Jensen** is a graduate student at the University of Montana in the Environmental Studies writing track. Hailing from Washington, she moved to Missoula in 2017 to pursue her love of ecology.

**Jess Jones** is a Master of Environmental Management candidate at Yale School of the Environment — Hi! This year I am letting birds guide me. I like the way chickadees hang out with titmice, and I'm broadly interested in the relationship between birds, food sovereignty, and land use.

**Coral Keegan** is a Master of Environmental Management student at the Yale School of the Environment, where she studies international wildlife conservation. She received her B.S. in Foreign Service from Georgetown University and previously worked for National Geographic Expeditions as a trip leader and marketing manager. She is passionate about visual storytelling, sustainable tourism, and how these can contribute to successful conservation initiatives.

**Isaac Merson** is a Master of Environmental Management candidate at Yale School of the Environment. He is a tall thin man with kelp eyes and a heart o' gold. Having grown up covered in sea salt on the coast of Maine, Isaac loves coastal marshes and pine forests. In the past he has tracked birds, produced radio, and taught kids. He is trying to ask the questions that lead towards healing.

**Mark Millicent** is a UK writer and illustrator based in the USA. He works in the advertising and film world of Los Angeles, living in the Santa Monica Mountains with his family and a peacock. His poems have been published in various literary journals. His latest book can be found on Amazon.

**Zack Steigerwald Schnall** is a graduate student in Environmental Policy Analysis and Climate Change Science & Solutions at Yale School of the Environment.



**Athena Sofides** is a queer, Greek-American artist and environmental justice advocate from Brooklyn, New York. Athena's work focuses on toxicity, embodiment, chronic illness, diaspora, and gender. Athena is currently pursuing a Master of Environmental Management at Yale School of the Environment.

**Raffaele ("Raffa") Sindoni** is a Master of Environmental Management candidate at Yale School of the Environment, focusing on ecosystem stewardship, environmental justice, and Tribal sovereignty. Raffa is interested in the pathways for environmental and sociological healing in the wake of historical exploitation, oppression, and extraction. His work and writings focus on reaffirming and reimagining connections between human and non-human beings.

**Luke Scott Stringer** is a poet and artist from Oologah, OK. He lives in New Haven, CT, where he is pursuing a master's degree in religion and literature at Yale Divinity School. His writing has appeared in The Yale Herald and These Fifty States. Sunflowers are his favorite flower, followed very closely by daffodils. Find him on Instagram at @stringer\_things.

#### Editors

**Shaylyn Austin** is a Master of Forestry student at Yale School of the Environment, where she studies forest management and conservation. Previously, she worked as a field researcher in Kalimantan, Indonesia and a conservation crew member in her home state of California. She's curious about the ways storytelling influences land ethics and land management.

**Cloe Dickson** is a second-year Master of Environmental Science candidate at Yale School of the Environment. She is passionate about environmental history and the role of creative storytelling in advocating for climate action. She enjoys hiking, skiing, and traveling around northern New England, where she grew up.

**Sam Feibel** is a Master of Environmental Management student at Yale School of the Environment, where he studies ecosystem conservation. He received his B.A. in Geoscience from Franklin and Marshall College, served in the Peace Corps in Madagascar, and mapped streambank erosion in the Mid-Atlantic. Sam is a photographer who uses his camera to connect with people and tell stories.

**Julia Jacobson** is a Master of Environmental Science student at Yale School of the Environment where she studies more-than-human relationships in Colorado agriculture. She holds a B.A. in English literature and ecology from the University of Colorado, Boulder. Julia is passionate about the intersections of multispecies interactions, food, and community.

**Anna Lenaker** is studying climate change science and environmental policy at Yale School of the Environment. She believes art and literature are essential for enduring, understanding, and addressing the climate crisis.

**Claire Nichols** is a Master of Environmental Management candidate at Yale School of the Environment, studying urban inequities and environmental policy. She is interested in using art and storytelling to communicate science and create community.

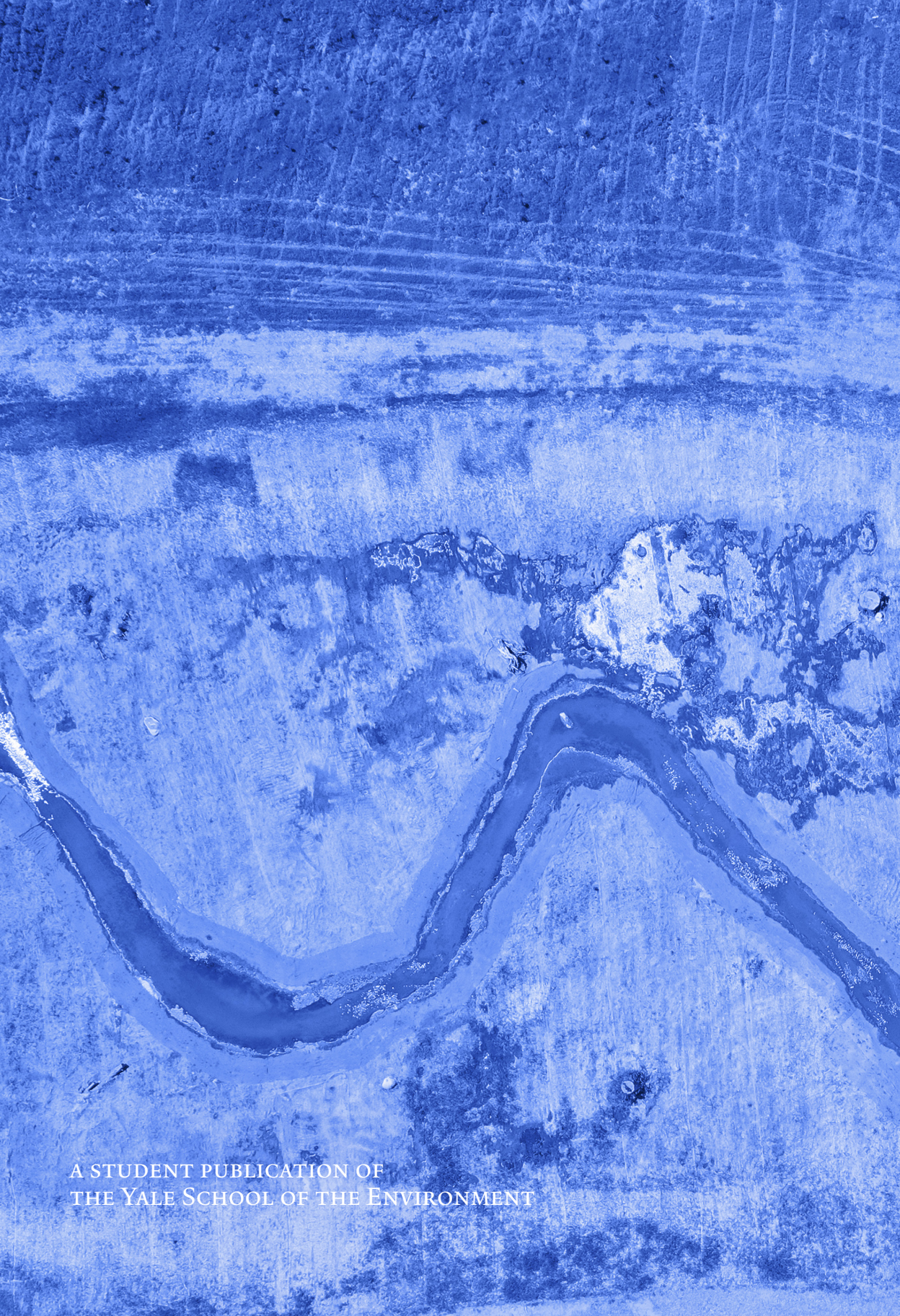
**Molly Ryan** is a Master of Environmental Management candidate at Yale School of the Environment, where she studies the social aspects of conservation and land management, with a particular emphasis on equitable and collaborative conservation that helps people connect to the natural areas around them. Prior to YSE, she received her B.A. in Environmental Studies and Geography at Dartmouth College and conducted visitor use management projects on behalf of the National Park Service. She loves stories, sunbaked canyons, and starry skies.

#### Designers

**Tian Xu** is a M.Arch I student at Yale School of Architecture. She received her B.A. in Architecture at University of Bath. As a designer, she's fascinated by the sensory world. She believes the power of material textures and tectonics could create connections between people and their built environments. She explores this concept in and beyond the realm of architecture.

**Yikai Qiao** is a M.Arch I student at Yale School of Architecture. He received his B.E. in Architecture at Soochow University. He is passionate about architectural visualization and the interdisciplinary study between architecture and design computation. He previously worked in several architectural and tech design firms. He is also a photography lover and an active volunteer.





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